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Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Map of the Project Area

Mozambique

Small Scale Aquaculture Promotion Project - PRODAPE

Design report

Map compiled by IFAD | 23-07-2018

Abbreviations and Acronyms

ADNAP	National Fisheries Administration
AfDB	African Development Bank
ANE	National Roads Administration
ARA	Regional Water Administrations
AWPB	Annual Work Plan and Budget
BNI	National Investment Bank
BMP	Best Management Practices
CEPAQ	Aquaculture Research Centre in Chókwè
CIF	Crowding In Fund
CLGRC	Local Committees for Risk Management
COMFAM	National Committee for Food Fortification in Mozambique
CONDES	National Council on Sustainable Development
CONSAN	National Council for Food and Nutrition Security
CP	Crude Protein
CPMT	Country Programme Management Team
CQS	Selection Based on the Consultants' Qualifications
CUT	Single Treasury Accounts
DIPOL	Directorate of Maritime and Fisheries Policies
DNA	National Water Directorate
DNEA	National Directorate for Agriculture Extension
DNGRH	National Directorate for the Management of Water Resources
DNSA	National Directorate of Agrarian Services
DPMAIP	Provincial Directorates of Sea, Inland Waters and Fisheries
DPOPH	Provincial Directorates of Public Works and Housing
DUAT	Land Use and Benefits Rights
EAA	Ecosystem Approach to Aquaculture
ECA	Agriculture Trade Company
EDM	Electricity of Mozambique
ENSO	El Niño Southern Oscillation
EP	Fisheries School
e-SISTAFE	State Financial Management Information System
ESAN II	National Strategy for Food Security and Nutrition Policy
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
FAO	Food and Agriculture Organisation
FFP	Fund for the Promotion of Fisheries
FNG	Fill the Nutrient Gap
GAIN	Global Alliance for Improved Nutrition
GALS	Gender Action Learning System

GDP	Gross Domestic Product
GIS	Geographic Information System
GNI	Gross National Income
GoM	Government of Mozambique
HDI	Human Development Index
HH	Household
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
ICB	International Competitive Bidding
IDEPA	National Institute for the Development of Fisheries and Aquaculture
IDPPE	Institute for the Development of Small-Scale Fisheries
IFC	International Finance Corporation
IIP	Institute for Fisheries Research
IIAM	Mozambique Agriculture Research Institute
INAM	National Meteorological Institute
INAQUA	National Aquaculture Institute
INGC	National Institute for Disaster Management
INIP	National Institute of Fish Inspection
INIR	National Institute of Irrigation
INTOSAI	International Organisation of Supreme Audit Institutions
IPSAS	International Public Sector Accounting Standards
ITC	*Iniciativa de Terras Comunitarias (Mozambican organization)*
ITCZ	Intertropical Convergence Zone
LAP	Local Adaptation Plan
LCS	Least-Cost Selection
LoC	Line of Credit
M&E	Monitoring and Evaluation
MASA	Ministries of Agriculture and Food Security
MCA	Marine Conservation Area
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goal
MEF	Ministry of Economy and Finance
MIMAIP	Ministry of Sea, Inland Waters and Fisheries
MIREME	Ministry of Mineral Resources and Energy
MISAU	Ministry of Health
MIT	Ministry of Industry and Trade
MITADER	Ministry for Land, Environment and Rural Development
MOPH	Ministry of Housing and Public Works
MoF	Ministry of Finance
MoU	Memorandum of Understanding
MTR	Mid-Term Review
NCB	National Competitive Bidding

NCCAMS	National Climate Change Adaptation and Mitigation Strategy
NPSC	National Project Steering Committee
NRM	Natural Resource Management
PADA	Aquaculture Development Action Plan
PAMRDC	Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique
PARPA	Poverty Reduction Strategy Paper
PCRs	Community Level Savings and Credit Groups
PCU	Project Coordination Unit
PDO	Project Development Objective
PDP	Fisheries Masterplan
PDT	Project Delivery Team
PEFA	Public Expenditure and Financial Accountability
PES	Economic and Social Plan
POPA	Operating Plan for Food Production
PPABAS	Sofala Bank Artisanal Fishing Project
PPACDNN	Cabo Delgado and Northern Nampula Artisanal Fishing
PPAGI	Inhambane and Gaza Coastal Fishing Development Project
PPAN	Nampula Artisanal Fisheries Project
PPD	Public Procurement Decree
PPP	Public Private Partnership
PROCAVA	Inclusive Agri-Food Value-Chain Development Programme
PROPESCA	Artisanal Fisheries Promotion Project
QCBS	Quality and Cost Based Selections
RBA	Rome-Based Agency
REFP	Rural Enterprise Finance Project
RfQ	Request for Quotations
SBCC	Social Behaviour Change Communication
SDAE	District Services for Economic Activities
SDGs	Sustainable Development Goals
SDMAs	District Services for Women and Social Action
SEA	Strategic Environmental Assessment
SECAP	Social, Environmental and Climate Assessment Procedures
SETSAN	Technical Secretariat for Food Security and Nutrition
SIC	Selection of Individual Consultants
SISTAFE	State Financial Management System
SSS	Single Source Selection
SUN	Scaling Up Nutrition
TBD	To Be Determined
TBM	Temporary Bench Mark
TC	Total Costs
TFC	Total Fixed Costs
TVC	Total Variable Costs

UFSA	Public Procurement Authority
UNDAF	United Nations Development Assistance Framework
USD	United States Dollar
WFP	World Food Programme

Executive Summary

Country Context. Mozambique enjoyed stable economic growth for over two decades in the range of 7-8% per year. In 2015, the main contributors to the economy were services (53.2%), agriculture (25.2%) and industry (21.5%). Since 2015, economic performance has been significantly affected by a debt burden of USD 9.89 billion, which the Government of Mozambique (GoM) is striving to reschedule. The on-going decentralization process is expected to bring new governance modalities to government administration, which is favourable to community participation in decision making. The recent wave of terrorist attacks in the northern Province of Cabo Delgado raised some concern for the country´s security. Increased extreme climatic events, marked by cyclones Idai and Kenneth in a span of a few weeks in March/April 2019, are evidence of the country's climatic vulnerability.

Poverty. In 2014, 46.1% of the population lived under the poverty line. Poverty is highest in the northern region (55.1%) and more prevalent in rural areas (50.1%) where 70% of the population lives. Small-scale agriculture and fisheries play a leading role in the household economy. Poor access to inputs, technical assistance, financial services and markets together with adverse weather conditions limit production, productivity and profitability of agriculture and fisheries. In 2013, 24% of households were food insecure and stunting affected 43% of children under five.

Strategic and Policy Context. Mozambique´s National Development Strategy for 2015-35 outlines the vision for the country´s development. Under the, National Five-Year Plan 2015-19, aquaculture is regarded as a promising alternative for food production and poverty alleviation. Small-scale aquaculture constitutes a major element in Mozambique´s Fisheries Master Plan 2010-19. The Aquaculture Development Strategy 2008-17 is currently under review, as part of the the implementation of the five-year Aquaculture Development Action Plan (PADA), which initiated in 2019. PADA revolves is focused on three pillars: (i) increased aquaculture production, productivity and competitiveness; (ii) improved access to markets and financial services; and (iii) institutional development. Through PADA, it is expected that national aquaculture production increases from the 1,835 tons produced in 2017 to 30,000 tons in 2023. PRODAPE is expected to contribute significantly in this ambitious transformation of the aquaculture sector.

Investment Opportunity. IFAD has partnered with the GoM for the development of the fisheries and aquaculture over the past two decades. Aquaculture pilot activities have been implemented under PROPESCA and PROAQUA. However, the aquaculture value chain is still nascent and thus requires significant, but strategic support, to meet supply and demand-side requirements for optimal functionality, as well as profitable and sustained stakeholder engagement. This represents an opportunity for continued IFAD investment.

Project Rationale. A number of bottlenecks continue to impact on the growth of the aquaculture value chain in Mozambique, including poor access to inputs, technical assistance, financial services and markets, together with adverse weather conditions. PRODAPE's proposed design aims to address these challenges to enable the engagement of commercial and smallholder producers, entrepreneurs and businesses to prove that freshwater aquaculture can be viable and sustainable. PRODAPE design has benefitted from the lessons and experiences of PROPESCA and PROAQUA and aquaculture projects in other countries, especially in Sub-Saharan Africa. The project will support comprehensive value chain development, promoting aquaculture production as a business, as well as the development of the aquaculture policy framework. The development of the aquaculture industry is expected to provide consumers with a cheaper, locally-farmed protein source and improve the local economy. A well-organised and regulated industry will improve disease control and environmental risk management. The project is expected to prove the viability of smallholder involvement in aquaculture production through two production models, clusters and aquaparks, with the use of earthen ponds and cages. It is important to note that PRODAPE is a five year investment within a long-term (15-year) IFAD and GoM partnership in aquaculture in Mozambique. This is in line with recommendations of the Independent Office of Evaluation of 2016 that future IFAD investments in Mozambique should take a longer term perspective.

Project Goal and Development Objective. The Project Goal is to contribute to poverty reduction and enhancement of food security and nutrition among rural households in the project area. The specific Project Development Objective (PDO) is to increase production, consumption, sales and income levels of rural households and other actors involved in the aquaculture value chain in the target area.

Project Area. PRODAPE will target 23 districts in seven provinces of the country, namely:

- Niassa Province: Lago, Lichinga and Mecanhelas Districts.
- Cabo Delgado Province: Metuge, Mueda and Balama Districts.
- Nampula Province: Mossuril, Ribáue and Larde Districts.
- Zambézia Province: Milange, Nicoadala and Mocubela Districts.
- Tete Province: Cahora Bassa, Magoé and Marávia Districts.
- Manica Province: Sussundenga, Vanduzi, Gondola and Mossurize Districts.
- Sofala Province: Beira, Dondo, Gorongosa and Buzi Districts.

Activities will be implemented only in locations with adequate conditions for aquaculture in each target district. The project will be implemented through a sequenced approach, starting with Lago, Baloma, Ribaue, Milange, Cahora Bassa, Sussundenga and Beira. Interventions in six of the seven initial districts (all except Beira, will include a fish production

component). Expansion into other districts listed herein will occur once the aquaculture value chain in these districts is operational. Lessons drawn in these districts will inform expansion on the basis of local demand.

Once the results of the final assessments of the damage caused by cyclones Idai and Kenneth to aquaculture infrastructure are available, target areas of intervention could be adjusted.

Target Groups. The project aims to reach 88,900 people (17,800 households), of which 87,500 (17,500 households) are producers at the various levels of the aquaculture value chain. PRODAPE will employ a comprehensive and inclusive targeting approach reaching communities and sector institutions. ***Community level*** beneficiaries include:

- smallholder aquaculture farmers. Comprised of poor/subsistence smallholders and economically active/entrepreneurial smallholders requiring support to engage in the aquaculture value chain. These beneficiaries will be expected to be members of Community Level Savings and Credit Groups (PCRs) and will receive technical assistance, and access to aquaculture feed, fingerlings and access to specific financial products for the aquaculture value chain. The poor/subsistence farmers will receive an aquaculture pond, and if they are not labour constrained, they will participate in the construction of the pond. PRODAPE will reach a total of 7,000 people to engage in smallholder aquaculture production over the course of five years, through earthen ponds (60%) and cage culture (40%). Other beneficiaries will also include rural HHs already engaged in aquaculture production as they will benefit from improvements at other levels of the aquaculture value chain generated by the project. It is expected that at least 40% of smallholders owning/managing aquaculture ponds in the target areas will progressively expand from 1 to 2-3 ponds over the project lifetime.
- Rural aquaculture entrepreneurs. Comprised of individuals wishing to engage in levels of the aquaculture value chain other than production but require external support to do so. Fifty per cent (50%) of financial products targeting the value chain will be attributed to women. Specific opportunities and products will also be developed to meet the interests and capacities of youth of different ages. This beneficiary group will also include existing private sector entrepreneurs.
- Youth. A portion of youth in rural communities , fish producers or entrepreneurs will benefit from participating in a youth champion led intervention widely used by the International Labour Organization (ILO, Start Your Own Business). PRODAPE will also target new graduates with aquaculture degrees to engage in the value chain as extensionists, and will strive to attain a gender balance in the selection of candidates. In addition to being offered the support packages offered to any beneficiary, they will benefit from coaching and mentoring activities from specialized institutions to undertake innovative businesses such as *aquaponics* and provision of services to farmers. Efforts will be made to attain a gender balance.
- Broader communities and individuals working in markets targeted by PRODAPE The following activities are expected to reach and benefit the wider communities and markets targeted by the project: (i) The promotion of PCRs; (ii) Nutritional activities; and (iii) Water and sanitation improvements in markets and training of traders in fish handling techniques and business development.

Institutional level beneficiaries. Staff of all institutions involved in the project will benefit from capacity building interventions including exposure visits to locations of successful aquaculture activities. Extensionists will be provided with opportunities to engage in aquaculture activity. A total of 250 extensionists will receive PRODAPE support. The measure is intended to enable these players to participate in commercial activity within the aquaculture value chain. The approach replicates similar positive experiences used in the agriculture sector in the country

Targeting Strategy. The project developed a comprehensive approach to ensure that those who effectively need project support to engage at different levels of the value chain and can thereafter sustain their engagement in the activity, are in fact targeted. The project will implement a transformative and comprehensive social inclusion strategy to ensure that HHs of different socio-economic groups, women, gender dynamics, youth and other vulnerable groups are provided with opportunities to participate. The main elements of the strategy include i) establishing quotas for poorer community members who would likely otherwise not be reached, ii) identification and provision of specific support packages that cater to the needs of each social group at different levels of the aquaculture value chain, iii) ensuring local participation in relevant decision making proceses during planning and implementation, and iv) integration of a *Social Mentoring* intervention to address pressing social risks and barriers constraining sustainable engagement of youth and women and enjoyment of benefits to be generated by the project. Enabling and empowering measures outlined in IFAD guidelines have been integrated in project design.

Project Outcomes, Components and Sub-components. The logical framework presents the hierarchy of objectives and results of this five-year project, summarised as follows:

Outcomes. The following are expected to be the main outcomes from PRODAPE:

- Production and productivity of smallholder farmers in aquaculture are sustainably increased
- Efficiency of aquaculture production and market systems is improved
- Policy and institutional frameworks for sustainable aquaculture development and nutrition are improved

Components. The PDO will be achieved through two interlinked investment components and a third component dedicated to project management together with institutional and policy development. Public Private Partnerships (PPPs) will be

promoted, as required, to propel the development of different aspects across the aquaculture value chain. A “Component 0” has been integrated to address the vulnerability of the country to climatic hazards; the component does not include any budgetary allocations at design.

Component 0: Disaster risk reduction and response. The component will aim to reduce project and beneficiary vulnerability to future climatic hazards. The Component recognises that different PRODAPE target areas are – as is much of the country – prone to the advent of cyclones, floods and droughts. Also, temperatures are expected to continue rising. The component constitutes a programmatic window for the integration of preventive and response measures, yet to be defined and corresponding allocation of additional dedicated funding. Component Zero aims to reduce project and beneficiary vulnerability to future climatic hazards; it constitutes a programmatic window for the integration of preventive and response measures and corresponding allocation of additional dedicated funding (to facilitate easier and quick implementation of level 2 restructuring of the project in the event of an emergency or disaster and in line with the IFAD's 2018 Policy on Project Restructuring and in line with IFAD's 2011 Guidelines for Early Disaster Recovery).

Component 1: Small-scale aquaculture productivity. Aims to sustainably increase small-scale aquaculture production and productivity using climate smart technologies, best practices and environmentally sustainable forms of production. Particular attention will be given to water needs and quality, as well as to the suitability of different agro-ecological zones for different aquaculture technologies. The component is served by four sub-components:

Subcomponent 1.1: Agribusiness for input supply. This sub-component will focus on the development of aquaculture seed (fingerling) and feed supply systems using matching grants to incentivise private sector and small scale participation. On *seed supply*, the project will upgrade and establish hatcheries by targeting medium-level private enterprises. On*fish feed* production, the project will facilitate the participation of private sector (industrial production lines) and small scale farmers (cottage industries) in the formulation of feed, based on demand from smallholders.

Sub-component 1.2: Develop smallholder aquaculture production capacity. Aims to improve smallholder production and productivity using climate smart aquaculture technologies and practices: earthen ponds, ponds integrated with livestock and crops, and cage culture in large inland water bodies. Small-scale producers will be organized in clusters or integrated into aquaparks. Comprehensive support will be provided to smallholder beneficiaries meeting pre-established criteria in line with their needs.

Component 2: Development of aquaculture as a business. Aims to nurture the entrepreneurial capacity of farmers and promote a conducive environment for the development of aquaculture as a business. The component is served by two sub-components:

*Sub-component 2.1: Support to the development of aquaparks:*Aims to support the Government's new Aquaculture Development Strategy focused on the 'consolidation and centralization' of service provision for aquaculture development through aquaparks. The main investments will be towards the development of key infrastructure e.g. "last mile" feeder roads, small water canals, electricity supply (off-grid or connection to the main grid, whichever is cost-effective) and cold chain facilities. Linkages will be established with the Brazilian Aquaculture Parks system to learn from their long experience with establishment and management of environmentally sustainable aquaculture parks.

Sub-component 2.2: Develop market linkages and business partnerships Sub-component will be informed by a market study to assess current and future demand. Investments will promote the development of market linkages through improved handling, collection, marketing and distribution of cultured fish and associated products (spinoffs of some interventions are expected to benefit retailers of non-cultured fish). A second focus is the creation of a conducive environment for aquaculture business to thrive, by linking smallholders organized in clusters or engaged in aquaparks in business partnerships with private entrepreneurs. The sub-component will facilitate the development of frameworks for effective partnerships and the establishment of business partnerships between smallholders and private entrepreneurs to improve smallholder access to inputs, markets and other services including hire purchased arrangements.

This sub-component will pay particular attention to the youth through support to*youth aquapreneurship*. Innovative opportunities for youth employment and entrepreneurship will be explored, with a focus on investments in innovative business-oriented activities such as *aquaponics*, and youth engagement in post-production activities and as service providers. It will support vocational training of youth, preparation of business plans and linking them with the REFP for tailored financing.

Sub-component 2.3: Access to financial services. Aims to facilitate access to financial services in unserved target communities and to players across all levels of the aquaculture value chain, through the ongoing Rural Enterprise Finance Project (REFP). This includes promotion of (Community Level Savings and Credit Groups) PCRs to raise smallholder capacity to invest in aquaculture, a Crowding in Fund (CiF) with co-participation from beneficiaries, a Line of Credit (LoC) and also produce, fund and deliver differentiated business development packages to PRODAPE beneficiaries across the value chain.

Component 3: Project management, policy and institutional development. Aims to establish appropriate arrangements and support mechanisms for PRODAPE management, support sector institutions in the assumption of their mandates, together with the development of sector policies and associated regulatory framework, to create the foundations for the

aquaculture value chain in Mozambique. Nutrition and gender will be mainstreamed through the project to enhance nutrition through consumption of fish and fish-based products to improve and diversify household diet, and address pressing social risks at HH level, e.g. gender inequality and HIV and AIDS. Social mentoring will be key.The component is served by two sub-components:

Sub-component 3.1: Policy and Institutional development. Aims to strengthen the policy and regulatory framework for the aquaculture sector, including aspects related to environmental and social safeguards. Specific activities include the production and adoption of operating guidelines for pond and cage culture as well as PPPs and the establishment of an appropriate aquaculture data system and management, among others. Strengthen the institutional and technical capacity of sector institutions (the National Institute for the Development of Fisheries and Aquaculture (IDEPA), and others) as well as staff involved in planning, implementation and monitoring of small-scale aquaculture in the assumption of their roles, including issues related to adequate environmental & climate adaptation and mitigation practices, biosafety and biosecurity. The project will engage on the country's aquaculture development strategy, and elaborate what markets aquaculture products are likely to target, and what fish trade and tariff strategies may be pursued nationally in the near future to satisfy nutrition requirements of the poorest sections of the population. For example in West Africa this issue has been addressed by importing substantial quantities of cheap frozen fish, while developing aquaculture production from a low base. The project will include a study to explore the political and financial feasibility of a similar approach.

Subcomponent 3.2. Mainstreaming nutrition and addressing social risks. Aims to mainstream nutrition in the aquaculture value chain and address social risks faced by targeted aquaculture producing households. Mainstreaming nutrition in PRODEPA will be guided by the extensive experience from PROPESCA and PROAQUA and will encompass the integration of interventions at two levels: (i) at community level, i.e. in the production pathway (farmers as producers and consumers); and (ii) in the market pathway, developing an enabling and safe environment for increased demand of locally produced fish and value-addition to fish products. Specific social risks facing smallholder farmers, due to their socio-economic vulnerability, will be addressed through the social mentoring intervention. This intervention will be implemented with the aim to instil joint planning and collaboration within fish farmers groups and strengthen individual farmer's ability to sustain their engagement and take adavantage of emerging opportunities in the aquaculture value chain.

Sub-component 3.3: Project management and coordination. Aims to establish appropriate project management structures, systems and procedures for the effective development of the aquaculture value chain in line with project targets.

Social and Environmental Impacts. PRODAPE is expected to ensure manageable and/or reversible social and environmental impacts. As such, the project is classified as Category "B" both by the GoM and IFAD´s Social, Environmental and Climate Assessment Procedures (SECAP). Activities will be limited to freshwater and will exclude operations on sensitive ecosystem areas (i.e. special reserves, conservation areas, wetlands, reserves and/or their buffer zones). An Environmental and Social Management Framework (ESMF) has been prepared, which sets out relevant criteria to be used during implementation. The Project will also ensure the timely elaboration of site-specific Environmental Impact Assessments (EIAs) thus adopting a precautionary approach for activities requiring attention (i.e. cage culture). In addition, adequate resources will be available to: i) develop / strengthen national regulations and guidelines to reduce potential negative impacts of aquaculture activity (particularly cage culture); ii) elaborate site specific studies required to comply with national environmental regulation and IFAD's SECAP; and iii) monitor the implementation of the latter. The SECAP review note integrated in this Project design identifies several potential risks and proposes corresponding mitigation measures.

Organizational Framework. PRODAPE will be integrated into the Ministry of Sea, Inland Waters and Fisheries (MIMAIP) with a dedicated Project Coordination Unit (PCU). The Ministry´s Provincial Directorates (DPMAIPs) will coordinate, implement and monitor PRODAPE activities in close collaboration with the district services for the promotion of economic activities (SDAEs) and relevant service providers.

Financial Management. Financial management arrangements will, to the extent feasible, be mainstreamed within GoM systems providing adequate controls and ensuring proper management of funds. The PRODAPE will capitalize on significant progress made in recent years in the development and rollout of sub-systems within the integrated State Financial Management Information System (e-SISTAFE).

Procurement. Robust procurement systems and procedures will be put in place and used at all times during project implementation. Public, open and competitive procurement processes will be used, as relevant, to warrant transparency and safeguard project resources.

Project Financing. PRODAPE will be financed by: an IFAD loan on higly concessional terms (USD 8.6 million, 17.5% of total project costs), an IFAD grant (USD 34.4 million, 70.2% of total project costs) under the 2018-2021 PBAS cycle, the Government of Mozambique (USD 3.1 million, 6.4% of total project costs), and the project beneficiaries (USD 2.9 million, 5.9% of total project costs). It is to be noted that the total amount of **IFAD climate finance** for this project is preliminarily calculated as USD 13.4 million, representing 31.2% of IFAD's investment. This amount is drawn from IFAD financing of sub-components 1.2 and 2.1. If a climate event triggers Component 0 in the future, the amount of climate financing in this project will increase, likely substantially.

1. Context

A. National context and rationale for IFAD involvement

a. National Context

1. **Political, economic and social context.** Mozambique's political landscape bears the scars from the 15-year civil war that followed independence from Portugal, leaving the country and its economy in distress[1]. The Front for the Liberation of Mozambique (Frelimo) has won five successive presidential and parliamentary elections since the first elections after the formal peace agreement in October 1992. Presidential, legislative, and provincial elections are scheduled for October 2019. It is expected that for the first time, provincial governors will be elected though the general elections system.

2. Mozambique enjoyed stable economic growth in the range of 7%-8% per year for over two decades, underpinned by macroeconomic liberalization, market reforms, massive public investment in infrastructure, large flows of Foreign Direct Investment in mega projects and a rapidly growing extractive industry. Between 2005-15 the Gross National Income (GNI) per capita increased from USD 296 to USD 590 and the Gross Domestic Product (GDP) per capita from USD 313 to USD 529. In 2015, the main contributors to the economy were services (53.2%), agriculture - including aquaculture (25.2%), and industry (21.5%)[2].

3. Since 2015, economic performance has been affected by a debt burden of USD 9.89 billion, triggering inflation, currency depreciation, reduction of donor contributions and drops in commodity prices and exports. Measures to reduce liquidity and adjust trade balances have begun to take effect.

4. The recent amendements to the 2004 Constitution have paved the way for the on-going decentralization process, which is expected to bring new governance modalities. Principally, the transfer of decision-making (and financial resources) from the central government to subnational authorities would enable the participation of local residents and rural communities in decision making proceses.

5. **Stage in transition and presence of fragility.** Continued insecurity (e.g. terrorist attacks) in Cabo Delgado Province can affect investment in areas of that Province. The country's climatic and environmental vulnerability has been brought to global attention by two devastating cyclones Idai and Kenneth in March/April 2019.

6. **Poverty (SDG1), food security and nutrition (SDG2), smallholder agricultural and rural development context.** Mozambique is home to 28.9 million people[3]. Poverty was estimated at 46% in 2014, with the northern region still lagging behind regional (55.1%, 46.2% and 32.8% poverty rates in the northern, central and southern regions, respectively). Poverty is higher in rural areas (50.1%)[4], where approximately 70% of the population lives[5], and higher in isolated areas limiting household (HH) capacity to generate returns on assets[6]. Mozambicans also suffer from poor living standards and poor access to social services[7]. Mozambique ranks 181 out of 188 in the Human Development Index[8]. Poorer HHs, women, youth and other vulnerable groups require specific attention. In 2013, 24% of HHs were food insecure and stunting affected 43% of children <5. Mozambique loses 10.9% of its annual GDP to chronic malnutrition (USD 1.6 billion per annum)[9].

7. Small-scale agriculture and fisheries play a leading role in the HH economy. But poor access to inputs, technical assistance, financial services and markets together with adverse weather conditions limit production, productivity and profitability and lock people in poverty[10]. Diversification is key to spread risk and increase HH income and resilience; aquaculture offers unlocked potential.

8. **National strategies, policies and/or programmes relevant for smallholder agriculture, rural poverty reduction and enhanced food security**. Mozambique´s National Development Strategy for 2015-35 outlines the vision for the country´s development. The GoM Five-Year Plan 2015-19 lays out priority areas of intervention. For the growth of the aquaculture sector, the Five Year Plan identifies the following priorities: environmental protection, use of appropriate technologies for small-scale farmers, development of aquaparks, construction of support infrastructure, safeguarding community rights and gender mainstreaming, among others. Aquaparks are envisaged as models for 'concentration and centralization' of service provision at different stages of the aquaculture value chain, though not necessarily confined to the same geographic space but within reasonable distance.

9. Small-scale aquaculture constitutes a major contribution to Mozambique´s Fisheries Master Plan 2010-19. The Aquaculture Development Strategy 2008-17, currently under review as part of the implementation of the five-year Aquaculture Development Action Plan (PADA), aims to transform aquaculture production from subsistence to commercial level by injecting a business approach into the sector. National aquaculture production is expected to increase from 1,835 tons in 2017 to 30,000 tons in 2023[11].

10. **Key actors and institutional arrangements**. The fisheries sector has gradually developed a range of institutional capacities assumed by different government players, including the Ministry of Sea, Inland Waters and Fisheries

(MIMAIP) with overall policy, regulatory, coordination and sector oversight responsibilities; the National Institute for the Development of Fisheries and Aquaculture (IDEPA) currently responsible for aquaculture development in Mozambique - including the provision of extension support; the Institute for Fisheries Research (IIP) has traditionally played a leading role in fisheries research; the Aquaculture Research Centre in Chókwè (CEPAQ), has enormous potential to play a leading role in research and broodstock production for the country. In addition, a range of small and medium private sector players have engaged in feed, fingerling and fish production in different parts of the country. The potential for private sector investment remains untapped and plays a major role in creating an enabling environment that smallholder farmers can tap into.

b. Special aspects relating to IFAD's corporate mainstreaming priorities

11. The proposed project is in line with IFAD's corporate priorities and Mozambique´s COSOP 2018-2022. Systematic engagement of smallholders living under the poverty line, especially women and youth, has proved to be challenging in previous aquaculture projects, due to limitations in capacity and resources. Changing this trend requires a robust socially inclusive targeting approach. Without special efforts, people with disabilities are left out of development processes.

- **Nutrition.** Mozambique has a three-fold nutritional burden (chronic undernutrition, micronutrient deficiency and emerging issues with overweight and obesity in urban areas). Nationally, 43% of children under the age of five are stunted, 6% are wasted and 15% are underweight. Prevalence of low birth weight in Mozambican children is estimated at 14%. Fish is the main source of animal protein for the coastal areas, providing vitamins and minerals, especially omega-3. Freshwater aquaculture fish, mainly tilapia, is not widely eaten in comparison to marine fish. The main barrier to fish consumption is accessibility, affordability and preference to other food, especially in rural areas located far from the sea and dependent on agricultural crops. According to the 2018 *Fill the Nutrient Gap Mozambique* studies and the in-depth review of the 2018 *Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique* (PARMDC), there is a pressing need to ensure appropriate nutrition interventions are in place for vulnerable populations including quality health and nutrition services.
- The Focus on Tilapia is hinged on three key aspects: (i) taste and demand for tilapia is well developed within Africa and in Mozambique and does not need additional effort on introduction (ii) hatchery and feed system and aquaculture technology of tilapia is well established and significant capacities already in place in the neighbouring countries (e.g. Zambia, Malawi etc.). (iii) tilapia is highly tolerant to a wide range of conditions in the African context and is the leading aquaculture species in the continent.
- Private public (smallholder) partnerships will have to be monitored very closely to ensure that beneficiary investments in aquaculture remain viable over the long term
- **Women.** Gender inequality and HIV/AIDS constitute social risks that unaddressed compromise socio-economic progression. Women in Mozambique play a leading role in managing their homes, rearing their children and feeding their families. However, gender roles abscrived to women result in them facing multiple barriers towards gender equality, including lower education, access to opportunities and income than men. Illiteracy among women is much higher than among men (54% vs. 27%)[12]. Women have limited ownership and control of productive resources, have smaller plots of farmed land and tend to own animals of low economic value. Women´s role in aquaculture can involve feeding, selling and processing fish; while aquaculture ponds "belong" to a woman´s husband.
- **Climate change.** Mozambique´s vulnerability to climate change has been witnessed through recent climatic hazards. Localized floods occur almost every year, causing multiple casualties and loss of economic assets. Droughts, "late rains" also lead to loss of crops, seeds and animals, and generate pockets of food insecurity throughout the country. Cyclones are common and have the same effects along coastal districts of the country. Because of the already low resource base, those endowed with more assets in rural areas resort to selling assets to smooth consumption. PRODAPE integrates resilience to climate change and environmental sustainability through the promotion of context specific climate smart solutions. The total amount of IFAD climate financing for PRODAPE is preliminarily calculated as USD 13.4 million (about 31.2% of IFAD's investment).
- **Youth.** The country´s youth policy considers youth as being people aged 15-35. Enrolment in primary education has increased substantially in Mozambique but quality of education and completion rates are lower than desired. Vocational training opportunities for youth have grown in the past few decades but are still inadequate to provide youth with the skills required by the labour market (especially those without secondary eductation). Youth lack some forms of capital, such as financing, and social capital to access the few opportunities available in rural areas. Approximately 37% remain unemployed. The situation of young women deserves special attention, as they are seldomly targeted by development interventions Entrepreneurship constitutes the driving strategy promoted by the GoM towards youth employment.
- **Loss of labour force at HH level.** The temporary or permanent loss of labour force at HH level constitutes the prime internal shock faced by smallholder households in Mozambique. Mozambique´s generalized HIV epidemic constitutes one of the major threats in this respect; approximately 1.9 million people are HIV positive in the country.
- The PRODAPE design addresses pressing country and IFAD corporate social and environmental priorities.

c. Rationale for IFAD involvement

12. The potential for aquaculture development in Mozambique is enormous, also given its generally favourable climatic conditions (tropical and sub-tropical climate, low population pressure) and important role in the socio-economic development of the country. The majority of farmers in Mozambique are reliant on diverse forms of crops and/or livestock agriculture as well as fishing (mainly in the coastal zones) and other forms of natural resource-based livelihoods.

13. Aquaculture farming is a relatively new subsector and the GoM has recognised that the sector has a high-untapped potential for growth in production, value addition and export[13]. Access to financial services has been identified as one of the critical pillars for the development of smallholder aquaculture farming and related value chain enterprises[14]. However, access to financial sector by smallholder aquaculture producers is constrained by both supply and demand side factors.

14. Aquaculture is practiced at a small-scale level with few exceptions, and the sector potential is not fully exploited, due to the existence of bottlenecks across the entire value chain mostly due to the inadequate supply of quality products and services to smallholder fish producers. This is partly due to the vastness of the country and the fact that the 'centrality and concentration' of service provision approaches have only recently been integrated in the sector´s investment strategy for aquaculture development. The sector is also characterised by smallholder fish production levels that are below the desired quantity and quality levels. In fact, the little cultured fish that reaches the market, is largely sold locally and does not appear to meet demand.

15. Climate trends and projections for Mozambique indicate increasing frequency and intensity of such adverse climatic events, which, coupled with other factors such as sea level rise will continue to undermine the sustainability of development interventions in the country. The coastal zones of Mozambique are expected to increasingly be affected by intense tropical cyclones, namely, Cabo Delgado, Nampula and Sofala. The intensity and frequency of floods, including flash floods, are also projected to be high in two of the provinces targeted by PRODAPE: Zambézia and Nampula. Similarly, more frequent and intense droughts, heatwaves, coupled with higher levels of evaporation rates are expected in another of the project´s target province: Tete.

16. Existing constraints along the aquaculture value chain require concerted and structured investments. IFAD has supported the fisheries and aquaculture sector of Mozambique since 1993 through six operations (loans or grants)[15], which provide a basis for scaled up investments in the aquaculture sector. PROAQUA and PROPESCA supported the development of pilot models that promoted innovative approaches to extension, capacity building and input support for a complete fish production cycle. Indeed, some of the knowledge, good practices, results and technologies from PROAQUA and PROPESCA will be used for implementation in PRODAPE's s 23 target districts, including building on knowledge from studies conducted under PROAQUA, particularly on feed, seed and economic analysis of alternative models.

17. PRODAPE is therefore designed to address pressing challenges along the aquaculture value chain and promotes investments to render aquaculture a viable, resilient and profitable business in Mozambique. By intervening in strategic areas, it is expected that project investments will contribute towards the overall development of aquaculture in the country. PRODAPE design will therefore integrate a number of strategies, which align with key Government of Mozambique (GoM) and sector plans, strategies and policies, including: the concept of centralities for focused aquaculture related investments and associated activities, the establishment of aquaparks (locations in which aggregated production units, required inputs and markets are located in proximity and linked). Also, the project integrates a robust social inclusion approach to ensure the participation of beneficiaries targeted in rural communities, and not only those easiest to reach. Investments on climate change adaptation practices and technologies for aquaculture tailored to the context specific challenges will be done and guided by the CRA. Improved of monitoring and early warning systems (farm, watershed and region) and construction of elevated flood/storm resistant facilities will be promoted.

18. In addressing the challenges of the aquaculture sub-sector, it is important to take a long term view in order to ensure sustainability of this investment. The Independent Office of Evaluation (IOE) evaluation of 2016 recommended that future IFAD investements in this sub-sector in Mozambique take a longer term perspective. PRODAPE is one such response to this longer term vision for sustainability. PRODAPE is therefore a five year investment within a long-term (15-year) IFAD and GoM partnership in aquaculture in Mozambique.

B. Lessons learned

19. The PRODAPE design has been informed by lessons from IFAD's long experience in Mozambique and from other countries in the region, including two of the most recent IFAD-funded projects (PROAQUA and PROPESCA) and the Norwegian funded programme Support to the Fisheries Sector of Mozambique (2013-2017). It is also informed by lessons and recommendations from IFAD's IOE[16]. Key among these lessons and recommendations are the following:

1. **Focus on rural poor and on more vulnerable groups, including women, youth and People Living With HIV.** A bottom-up approach to reduce food insecurity, malnutrition, poverty and vulnerability is compatible with value-chain development; integration into markets is proven to be more effective and efficient in the medium term compared to trickle-down strategies. Project design should include due attention to gender mainstreaming, and specific activities should be carried out to empower women and youth to ensure they can be more prominently involved in productive activities.
2. **Comprehensive approach to farmers "capacity building".** The constraints presented by aquaculture are multi-dimensional; projects in Mozambique highlight that capacities need to be strengthened at individual, community, and institutional levels. Experience from PROAQUA and PROPESCA shows that there is inadequate aquaculture technical capacity at sub-national level (provincial and district level) to meet farmers' training needs.
3. **Private sector engagement.** The private sector has an increasing role in general in Mozambique, and its contribution is fundamental for promoting prosperity among fish farmers. IFAD and the Government should ensure that the role of the private sector is clearly articulated as key partners in aquaculture development.
4. **Duration to have an impact.** Aquaculture is relatively new in IFAD programmes. Experience shows that it may take at least three years of continuous capacity building, mentoring and extension support for aquaculture to take root, especially among smallholders.
5. **Working with farmer organizations.** Lessons from IFAD-supported projects in the country demonstrate that it is more cost-effective to promote capacity building and access to inputs and services through farmer organizations. Groups have been used in on-going aquaculture projects in Mozambique as an entry point to initiate savings and credit activities and to address nutrition mainstreaming, with very positive outcomes.
6. **Mainstreaming Business approach to aquaculture.** Lessons from other IFAD programmes (e.g. ABDP in Kenya) underline the importance of a business approach to aquaculture and linking smallholder producers with good productivity levels with larger commercial players, input suppliers, technical assistance and other services.

2. Project Description

C. Project objectives, geographic area of intervention and target groups

20. PRODAPE's Project Goal is to contribute to poverty reduction and enhancing food security and nutrition among rural HHs. The specific Project Development Objective (PDO) is to increase production, consumption and income of rural HHs and other actors in the aquaculture value chain.

21. PRODAPE is well aligned with the COSOP and contributes to IFAD strategic objectives: SO1 (increased production), SO2 (increased market participation) and/or SO3 (greater resilience) and mainstreaming priorities (climate and environment, gender, youth and nutrition).

22. Project Area. PRODAPE will target 23 districts in seven provinces of the country (see table 1. below). The PRODAPE target districts were selected in line with criteria agreed upon with IDEPA, namely:(i) favourable environmental, climate and natural resource conditions for aquaculture (including aspects related to the environmental categorization of the selected sites; (ii) the existence of water bodies capable of providing sufficient water quantity and quality for aquaculture activity; (iii) the existence of potential markets; (iv) high poverty levels, food and nutrition insecurity; and (v) the existence of access roads, which could be subject to improvements to warrant access throughout the year (less than 10 km).

Table 1. PRODAPE Project Area

Province	**Districts**
Niassa Province	Lago, Lichinga and Mecanhelas Districts
Cabo Delgado Province	Metuge, Mueda and Balama Districts.
Nampula Province	Mossuril, Ribáue and Larde Districts
Zambézia Province	Milange, Nicoadala and Mocubela Districts

Tete Province	Cahora Bassa, Magoé and Marávia Districts
Manica Province	Sussundenga, Vanduzi, Gondola and Mossurize Districts
Sofala Province	Beira, Dondo, Gorongosa and Buzi Districts.

23. Activities will be implemented only in locations with the adequate conditions for aquaculture in each target district. The project will be implemented through a sequenced approach, starting with Lago, Baloma, Ribaue, Milange, Cahora Bassa, Sussundenga with a comprehensive value chain approach except Beira where the emphasis will be placed on the development of feed production. Interventions in six of the seven initial districts (all except Beira) will include a fish production component. Expansion into other districts, listed herein, will occur once the aquaculture value chain in these districts is operational. Lessons drawn in these districts will inform expansion on the basis of local demand.

24. Once the results of the final assessments of the damage caused by cyclones Idai and Kenneth to aquaculture infrastructure are available, target areas of intervention could be adjusted.

25. The selection of specific communities and target sites within these districts will be based on a set of criteria to include soil suitability, the availability of good quality water in sufficient quantity throughout the year, availability of adequate land for future expansion, suitable slope and soil texture for the construction of earthen ponds that can also sustain the growth of crops or vegetation that can be used as fish food. Exclusion criteria associated to the environmental categorisation of the project will also be applied, as relevant, such as avoiding locations with saline water, sensitive ecosystems such as marshlands etc. These criteria will also be integrated in the overall set of criteria for the selection of beneficiaries wishing to engage in pond-based aquaculture.

26. Communities affected by large scale economic activities, including extractive industry projects, whose livelihood strategies have largely deteriorated as a result of these projects and comply with all technical criteria stipulated above will be given priority.

Targeting Strategy

27. The project will implement a transformative and comprehensive social inclusion strategy to ensure that HHs of different socio-economic groups, women, gender dynamics, youth and other vulnerable groups are provided with opportunities to participate. The main elements of the strategy include: i) establishing quotas for poorer community members who would likely otherwise not be reached, ii) identification and provision of specific support packages that cater to the needs of each social group at different levels of the aquaculture value chain, iii) ensuring local participation in relevant decision making proceses during planning and implementation through Community Committees, and iv) integration of a Social Mentoring intervention to address pressing social risks and barriers constraining sustainable engagement of youth and women and enjoyment of benefits to be generated by the project (HIV/AIDS, disability). Enabling and empowering measures outlined in IFAD guidelines have been integrated in project design.

Target Groups

The project aims to reach 88,900 people (17,800 households), of which 40% will be women across all project activities. Out of the total beneficiaries, 87,500 (17,500 households) are producers at the various levels of the aquaculture value chain. The following quotas will be observed to ensure that the project is socially inclusive: across each socio-economic strata 20% will be women headed HHs, 10% youth aged 18-24 and 30% youth aged 25-35. It is to be noted that Fifty per cent (50%) of financial products targeting the value chain will be attributed to women.

28. Community level beneficiaries include:

29. smallholder aquaculture farmers. Comprised of poor/subsistence smallholders and economically active/entrepreneurial smallholders requiring support to engage in the aquaculture value chain. These beneficiaries will be expected to be members of Community Level Savings and Credit Groups (PCRs) and will receive technical assistance, and access to aquaculture feed, fingerlings and access to specific financial products for the aquaculture value chain. PRODAPE will reach a total of 7,000 people engaged in smallholder aquaculture production over the course of five years, through earthen ponds (60%) and cage culture (40%).

30. **Table 2. Targeting quotas for smallscale farmer**

	poor / subsistence smallholders	**economically active / entrepreneurial smallholders**
Earthen ponds	40%	60%
Cage production	-	All if they are able to meet the 20% matching contribution

- Other beneficiaries will include rural households already engaged in aquaculture production as they will benefit from improvements in the aquaculture value chain generated by the project. It is expected that at least 40% of smallholders owning / managing aquaculture ponds in the target areas will progressively expand from 1 to 2-3 ponds over the project lifetime.
- Rural aquaculture entrepreneurs. Comprise individuals wishing to engage in different levels of the aquaculture value chain other than production. Specific opportunities and products will also be developed to meet the interests and capacities of youth of different ages. This beneficiary group will also include existing private sector entrepreneurs.
- Youth. A portion of the youth reached at community level as fish producers or entrepreneurs will benefit from participating in a youth champion led intervention widely used by the International Labour Organization (ILO, Start Your Own Business). PRODAPE will also target between 5-10 new graduates with aquaculture degrees to engage in the value chain, striving to attain a gender balance. In addition to being offered the support packages offered to any beneficiary, they will benefit from coaching and mentoring activities from specialized institutions. Efforts will be made to attain gender balance.
- Broader communities and individuals working in markets targeted by PRODAPE The following activities are expected to reach and benefit the wider communities and markets targeted by the project: (i) The promotion of PCRs; (ii) Nutritional activities; and (iii) Water and sanitation improvements in markets and training of traders in fish handling techniques and business development.

31. Institutional level beneficiaries. Staff of all institutions involved in the project will benefit from capacity building interventions including exposure visits to locations of successful aquaculture activities. Extensionists will be provided with opportunities to engage in aquaculture activity. A total of 250 extensionists will receive PRODAPE support. The measure is intended to enable these players to participate in commercial activity within the aquaculture value chain. The approach replicates similar positive experiences used in the agriculture sector in the country.

D. Components/outcomes and activities

32. **Outcomes.** The following are expected to be the main outcomes from PRODAPE[17]:

- Production and productivity of smallholder farmers in aquaculture are sustainably increased;
- Efficiency of aquaculture production and market systems is improved;
- Policy and institutional frameworks for aquaculture development and nutrition are improved.

33. **Components.** PRODAPE will seek to address key constraints identified in the aquaculture value chain with the aim of generating positive impacts among rural dwellers. The project will support the development of freshwater pond and cage-based aquaculture both through cluster and aquapark models. The PDO will be achieved through two interlinked investment components and a third one on project management and institutional and policy development. A “Component 0” has been integrated in response to the vulnerability of the country to climatic hazards; the component does not include any budgetary allocations at design.

34. A common theme through Components 1 and 2, will be engaging in due diligence of any and all potential private sector players in the project as service providers or beneficiaries of grants, loans, technical assistance or other. Secondly, support offered to private sector entities participating as beneficiaries in PRODAPE / REFP will include technical support to ensure that financial investments result in high quality products / services eligible for certification, as relevant.

35. **Component 0: Disaster risk reduction and response.** In mid-March tropical cyclones Idai and Kenneth hit central and northern Mozambique causing severe flooding. The immediate effects included an elevated number of casualties, destruction of hundreds of thousands of hectares of crop land and of public and economic infrastructure.

36. The projected increases in intensity and frequency of adverse weather patterns calls for adequate preparedness to ensure not only sufficient investments in climate change resilience and early warning systems are made available but also that adequate resources and on-time response is put in place when such adverse conditions make themselves manifest. Component 0 allows PRODAPE to promptly react if/when these recurrent weather extremes occur

facilitating the quick adoption of remedial actions. Interventions will include trainings, elevated flood/storm resistant facilities, equipment to allow farmers to evacuate the fish rapidly and store them in storm-proof tanks to avoid complete loss from wash-outs and climate proofed cyclone shelters to reduce risks associated with these extreme events. Component 0 is therefore a smart mechanism that will facilitate and allow faster processing of Level 2 Restructuring of the project in line with IFAD's Policy on Project Restructuring of December 2018 as well as IFAD's 2011 Guidelines for Disaster Early Recovery.

37. **Component 1: Smallscale aquaculture productivity.** The component will support the establishment and consolidation of local commercial input supply networks of fish feed and fingerlings at competitive and affordable prices; and promote fish productivity through climate smart technologies and environmentally sustainable production techniques suited to the different agro-ecological zones. Matching grants will be used to develop a network of existing and emerging operators, including private sector operatoes and smallscale fish producer groups.

38. Quality seed development from proven strains, produced under proper biosecurity conditions, will include traditional fish species such as: a) Mossambicus tilapia (*Oreochromis mossambicus*); b) Nile tilapia (*Oreochromis niloticus*); c) Tilapia rendalli (*Tilapia rendalli*); d) Tilapia shiranus (*Oreochromis shiranus*); e) *Chambo* (*Oreochromis karongaee*); and f)African catfish (*Clarias gariepinus*). The introduction of exotic species into new areas will be avoided[18].

39. *Sub-component 1.1: Agribusiness for input supply*. The sub-component will support the development of fish seed (fingerlings) and fish feed systems using matching grants to stimulate private sector and community participation in the production of inputs. This will be supported directly by the REFP project that has just started under the Ministry of Finance.

40. *Fish seed production*. Private hatchery operators will be supported as follows: i) construction/rehabilitation of hatcheries and civil works, ii) provision of equipment/material for hatcheries, iii technical assistance to strengthen operational capacity of hatchery owners/ staff; iv) certification costs, v) establishment of linkages between fish seed producers existing and emerging clients; and vi) establishment of simple and viable logistical distribution systems. Criteria for the selection of private sector players will be based on existing operations for fish seed production, the selection of suitable species and the use of production processes that ensure safety, environmental safeguards and capacity to provide matching funds. Private sector operators qualifying for this support would be expected to provide at least 40% of the costs of establishing the hatcheries as cost share or matching grants. *Community producers* (producer groups) will receive a full grant towards the establishment of small-scale fish seed production enterprises.

41. In line with sector vision, fish seed will strive to follow quality standards for certification. Existing microfinance institutions will be used to administer the delivery of suitable credit and grants products to private hatchery operators. PRODAPE / IDEPA will develop both guidelines and standard operating procedures for all private hatcheries.

42. *Fish feed production***.** The development of fish feed will engage combined strategies to meet the clients needs namely i) *on-farm production of high-nutrient fish supplementary feed* for smallholder farmers with 1-3 ponds to close quality gaps in conventional fish feed, (ii) *entrepreneurial start-upfish feed production* among micro, small and medium scale producers and (iii) *large commercial fish feed production through PPPs* to achieve economies of scale and lower production costs.

43. *Private sector feed producers*. Private feed producers will be supported by matching grants and credit lines based on their existing capacity, sound business plans and their ability to supply a given number of farmers in specified areas. The main investments include machinery (feed processing mills), raw materials for fish feed, packaging materials, storage equipment and labour.

44. *Community based feed producers* (smallholder producer groups) will be supported in areas not reached by the private sector. These producers will receive a full grant towards the establishment of small-scale community level production, and will be provided with technical support to meet target production volumes and established quality standards. It is recognised that the feed produced by these local players is likely to be inferior to the one produced by medium / industrial ones, however, both are expected to feed the local market and its diverse clientele with different economic capacity.

45. *Capacity building*. Even though Inhambane and Gaza Provinces are not covered by the project, PRODAPE will take advantage of the knowledge and experience in these provinces to enhance the technical capacity of operators in other provinces, and possibly, improve their capacities. The role of the Aquaculture Research Centre (CEPAQ), a government facility constructed with Norwegian assistance in Chókwè, Gaza Province, will be important for research on the production of quality breeders and fingerlings for the aquaculture industry nationwide and maintaining the gene pool. CEPAQ will be supported to establish zoning of suitable species in the project target area through field trials and demonstrations in collaboration with public and private sector players. Inventories of existing fingerling producers will be produced and regularly updated to fine tune project strategies to meet demand for quality fingerlings in the country.

46. *Sub-component 1.2: Develop smallholder aquaculture production capacity*. The project will promote a range of sustainable fish production technologies, namely, earthen ponds, integrated fish ponds,livestock and crops, cage

culture in large inland water bodies and modern aquaponic systems. Beneficiaries will receive support in the form of matching grants towards capital costs, training, access to inputs and markets in line with their capacity and production potential (for further information also refer to section C above on target groups). The sub-component also includes the organization of beneficiaries into groups.

47. The project will support the provision of aquaphonic kits, the construction of the ponds and cages, and the provision of part of the inputs needed for the first complete production cycle. It is important to note that investments in cage farming will be contingent on the development and approval of regulatory guidelines, determination of the water body ´s carrying capacity and other water management factors and the production of Environmental and Social Management Plans (ESMPs).

48. In all cases, the following measures will be considered to support smallholder beneficiaries:

    1. Organization of beneficiaries in business-oriented groups: PRODAPE will facilitate the formation and strengthening of smallholder fish farming groups, under two models to facilitate joint access to extension and training, inputs and markets: *Aquaparks.* Smallholders and medium/ large-scale producers will be linked to private-sector entrepreneurs (MSMEs) for input, technical assistance and logistic services for market access. *Clusters.* Where aquaparks do not exist, or where opportunities are seen to complement local fish production capacity, smallholder fish farmers will be organised into smaller production clusters of 20-25 people. Clusters will be located in pre-selected zones.
    2. Land and water security: PRODAPE will collaborate both at central and provincial level with DINAT and relevant water authorities (such as ARAs) to ensure regularization of land and water rights for its beneficiaries with special attention to poor and vulnerable groups including women and youth. The Project will assist small fish-farmers to obtain land use titles (DUATs) for both individuals and associations as necessary. Investments in multi-functional boreholes and light irrigation canals to improve water flow to fish farming clusters, that will serve vegetable farmers downstream, facilitating intergration of fish-crop-livestock/ poultry production systems.
    3. Training: Farmers will receive technical training on sound aquaculture practices to respond to identified market needs. Training topics will include improved pond fertilization, feeding practices and the use of local ingredients to minimize feed costs, fish handling, etc. Training will facilitate effective group learning, including (a) on-field demonstrations with Reference Farmers; (b) formal extension services; (c) exchange visits; (d) workshops, etc. A focus will be placed on practical and environmentally sustainable aspects related to production, monitoring of farm inputs, outputs and margins and record keeping. Information on climate and weather forecast will also be made available to fish farmers. Early warning systems will also be established or strengthened by supporting / creating local committees for disaster risk management (CLGRCs).
    4. Access to inputs: Producer groupsreceiving matching grants for the establishment of ponds / cages will receive inputs for the first cycle of production (fingerlings and fish feed).

49. **Component 2: Development of aquaculture business.** The component will address challenges related to weak institutions, missing and incomplete markets and inaccessibile services faced by aquaculture value chain actors – including smallholders. The component will work on: (i) supporting the development of aquaparks; (ii) improving practices for aquaculture products to maintain their value in markets and supporting an environment that facilitates business partnerships, especially PPPs; (iii) promoting financial inclusion; and (iv) supporting youth aquapreneurship. Some of the key activities to be implemented include market surveys, training, technical assistance, demonstrations, exchange visits, the provision of equipment, the improvement of market facilities and access to financial services.

50. *Sub-component 2.1: Support to development of aquaparks* PRODAPE will support the development of aquaparks as a vehicle to integrate smallholder farmers in rural communities into the aquaculture value chain. The aquaparks model will promote common public services such as water, electricity, roads network, marketing infrastructure and extension services, to contribute towards increased production and productivity of small-scale agricultural and aquaculture farmers in the surrounding areas.

51. PRODAPE will support the development of aquaparks by: (i) making the business case for aquaculture to investors and entrepreneurs, through investment fora advocacy and to mobilize public and private sector resources; (ii) provision of technical assistance (assessment of sites suitability for aquaculture, development of site specific ESMP/ESIAs, carrying capacity, biosecurity planning and disease control, business plans, etc., as required); (iii) facilitate the identification of sources of finance and the arrangements for equitable PPPs; and (iv) provision of **enabling and critical key infrastructure**, including feeder roads, water canals, hatcheries/nurseries canals, electricity/rural energy systems and markets, warehouse with cold storage and ice production at key marketing points.

52. PRODAPE will **not** engage in the development of large-scale industrial aquaparks, but plan investments in support of smaller aquaparks in the targeted districts. PRODAPE's main purpose of supporting aquaparks is to ensure the integration of IFAD-supported beneficiaries, especially smallholder farmers, in this arrangement.

53. *Sub-component 2.2: Develop market linkages and business partnerships* The sub-component aims to develop practices to improve cultured fish handling, collection as well as marketing and distribution. It will provide support to the establishment of business partnerships between small and commercial fish producers.

54. Under PRODAPE, *a detailed market and product development study*[19] will be carried out to determine the current and future demand for aqucualture produce. On this basis, the project will provide training/technical assistance on fish handling/ processing preservation/ marketing practise and facilitate access to equipment. It will also support product development for niche markets linked to financial services; training on business development and promote group enterprises for fish farmers, processors and traders. In remote locations, domestic-size freezers running on solar power could possibly be useful for producers and traders to bring ice higher up into the fresh fish value chain. However, provision of such equipment would only be considered for areas with high concentration of fish farmers organized in clusters, with a significant joint production capacity. The same applies for minor improvement to access roads.

55. PRODAPE will also support phytosanitary and food safety measures including: (i) setting up basic hygiene requirements (tap water and toilets) and promote rainwater harvesting and appropriate waste management practices; (ii) sensitization to sellers and buyers / consumers on hygiene and nutrition; and (iii) facilitate access to fish preservation equipment for market traders.

56. Business partnership, including PPPs and outgrower schemes between commercial fish farms and small-scale fish producers, will be enhanced through: i) the provision by the former of quality inputs (fingerlings and feed) and technical assistance (pond / cage/aquaphonic installation and management); and ii) the purchase by the former of fish produced by small-scale farmers. Smallholder producers would benefit from such arrangements through access to relevant aquaculture technologies, procurement of and facilitating access to fish feed and fingerlings of appropriate quality and quantity, and marketing of fish. In return, the small-scale producers commit to supplying a given volume of fish and to adopt the promoted technologies. In PRODAPE target districts, possible linkages will be explored for fish farmers and value chain entrepreneurs to: (i) access markets for aquaculture fish as part of the World Food Programme (WFP) diversified diets food baskets e-voucher scheme used in the organization´s emergency response and school feeding programs; and (ii) access technical assistance in the context of nutrition marketing and demand generation through market place support activities offered by the Mozambique Scaling-Up Nutrition Business Network platform. Hire purchase arrangements will also be considered under this sub-component

57. This sub-component will pay particular attention to the development of*youth aquapreneurs*, providing tailored support package to youth, to facilitate their engagement in small businesses in or linked to the aquaculture value chain in production (aquaponics), trade, agro-processing/value addition, input supply and service provision. PRODAPE will implement a youth champion-led enterprise development initiative applying a methodology promoted successfully by ILO, namely, Start and Improve Your Business (SIYB), a global business management coaching programme. Youth will receive technical support from the specialised service providers (contracted under sub-component 2.3) to design a technically sound and financially viable aquaculture business plan, and they will be linked to relevant micro-finance institution supported under REFP, the Government financed Aquaculture Development Fund or other funding channels available for youth.

58. *Sub-component 2.3 Access to financial services.* To address access to finance constraints across the aquaculture value chain, PRODAPE will facilitate the provision of appropriate, affordable and sustainable financial and business support services. Financial services for beneficiaries will be provided through the ongoing REFP, which will be implemented by the National Investment Bank (BNI) in partnership with participating micro-finance institutions. In addition to supporting the development of PCRs, PRODAPE beneficiaries will be offered financial products such as Crowding-In Fund (CIF), Line of Credit (LoC).

59. Financial institutions willing to work in the aquaculture sector will be supported to develop appropriate financial products (including digital finance solutions) as well as support to expand to the underserved project areas. To achieve this, REFP, in collaboration with PRODAPE will support the development of skills and knowledge within financial institutions, to assist them in designing policies and tools / products on the basis of best international practices.

60. Smallholder fish producers may also be offered climate / weather index-based insurance. The Project will ensure that there is a specific “line of credit” for natural calamities. In addition, PRODAPE will be open to explore synergies with other private sector financing models, inspired by experiences such as that of the International Finance Corporation (IFC).

61. **Component 3: Project management, policy and institutional development.** The component will support the development of policy framework and the strengthening of institutions responsible for small-scale aquaculture to fulfil their roles in project implementation and beyond. The component also supports the mainstreaming of nutrition and addresses the main social risks that could hinder beneficiaries´ ability to sustain their engagement and limit their socio-economic progression.

62. *Sub-component 3.1: Policy and Institutional capacity building* The sub-component aims to strengthen the institutional and technical capacities related to policy, legislation, planning, implementation and monitoring of small-scale aquaculture warranting adequate environmental & climate adaptation and mitigation practices, biosafety and biosecurity. This will include: (i) Technical Assistance (TA); (ii) strengthening skills through training, and; (iii) provision of equiptment and logistical support.

63. Policy development. PRODAPE will support and provide technical advice to sector authorities to develop strategies, frameworks and policies for climate smart aquaculture. Specific activities could include reviews, workshops and other discussions for policy development purposes. Key issues to be addressed include: (i) enabling environment for viable trading of fish-feed and fish to allow growth of local fish production of both feed and fish, ii) the right incentives to attract private sector investments and ensuring inclusive and iii) equitable access by smallholder producers to aquaparks under the new strategy of concentrated and consolidated production.

64. The project will engage on the country's aquaculture development strategy, and elaborate what markets aquaculture products are likely to target, and what fish trade and tariff strategies may be pursued nationally in the near future to satisfy nutrition requirements of the poorest sections of the population. For example in West Africa this issue has been addressed by importing substantial quantities of cheap frozen fish, while developing aquaculture production from a low base. The project will include a study to explore the political and financial feasibility of a similar approach.

65. Institutional strengthening. PRODAPE will support the setup of district administration for small-scale aquaculture on licensing, enforcement and extension services. The project will also develop a aquaculture e-knowledge platform in partnership with ICT provider(s) to facilitate access to market information, technology, service providers, input providers, weather information, environmental and social guidelines, phytosanitary and food safety standards etc.

66. *Sub-component 3.2: Mainstreaming Nutrition and Adressing Social Risks.* The sub-component aims at mainstreaming nutrition and addressing social risks facing vulnerable smallholder fish farmers. Specific nutrition content will be developed in collaboration with relevant institutions and included in the aquaculture extension training curriculum. Main activities include social mentoring to increase consumption of cultured fish and locally produced foods, engaging community health workers and promote fish processing and value addition. The project will use IDEPA fish fair and marketplace multimedia platforms, as relevant. All activities at community level will be planned and monitored within the provincial and district steering committees for food and nutrition security (CODSAN and COPSAN). Experience generated from PROPESCA and PROAQUA will guide interventions in this sub-component.

67. Gender, Gender Based Violence and HIV-AIDs. Addressing social risks among aquaculture producing HHs is an important part of enabling equity amongst smallholder farmers. The Social Mentoring approach addresses common social risks encountered by smallholders at individual, HH and group level. The proposed Social Mentoring intervention is based on the integration of: (i) The Gender Action Learning System (GALS) ; and (ii) Stepping Stones, to enable participants to develop realistic plans, better take advantage of existing opportunities and make decisions on how to avoid social risks. The project will enforce the IFAD Sexual Exploitation and Abuse (SEA) gender based-violence provisions in the project.

68. *Sub-component 3.3: Project Management and Coordination* To fulfil core management responsibilities, PRODAPE will establish a Project Coordination Unit (PCU) comprised of: a Project Coordinator, a Financial / Manager, Accountants, a Procurement Officer, a Monitoring and Evaluation (M&E) Specialist, a Knowledge Management (KM) and Communications Specialist. In addition, the project will recruit technical specialists in key areas who will be integrated into the MIMAIP / IDEPA departments. The technical staff will require high technical standards in the implementation of project activities; this will include support in the areas of aquaculture, climate change, ENRM and safeguards, nutrition, social issues and linkages with REFP. When needed, the PMU will also engage suitably qualified experts and/or advisory panel not affiliated with the project to complement the ENRM, Safeguards and Climate change adaptation activities to be implemented by the project.

69. Based on the recent experience of PROPESCA, a Focal Point for PROPADE will be identified in each target DPMAIP. The PRODAPE Focal Point will be directly subordinated to the Provincial Director and will be responsible for overall project planning, coordination, implementation and monitoring with provincial and district players and streamlining communications with the Maputo-based PCU.

70. Based on previous experience and to support project success, PRODAPE will integrate a modest incentive system benefiting everyone involved in the implementation of the project at MIMAIP/IDEPA, as well as relevant DPMAIPs and SDAEs, representing an across-the-board salary increase of around 30% for these staff.

71. The project shall establish a National Project Steering Committee (NPSC) to serve as the governing body of the project. It shall be chaired by the Permanent Secretary of the MIMAIP and made up of representatives from: (i) sector departments / units related to administration, fisheries planning, research, infrastructure, funding, inspection, maritime and fisheries policy functions, together with representatives from fisheries schools and fisheries organizations; (ii) other relevant ministries, including agriculture and industry and trade; and (iii) civil society organizations. The NPSC will provide strategic guidance towards the achievement of project objectives and contribute to the higher-level sector policy and strategic goals, review and approve Annual Workplans and Budgets (AWPBs), as well as annual reports. Steering committee sessions could eventually constitute a point of the agenda of the MIMAIP Coordinating Councils chaired by the Minister.

72. Steering Committees will also be established at provincial and district levels and focus on strategic operational issues, the review of local AWPBs and overall project progress and effectiveness monitoring. Meetings could be integrated in provincial and district government meetings chaired by Provincial Governors/ Provincial Permanent

Secretaries and District Administrators with the participation of DPMAIPs, SDAEs, IDEPA/ PCU, as relevant.

E. Theory of Change

73. PRODAPE aims to support the development of the aquaculture value chain with the view to reduce poverty and improve food security and nutrition in target project areas. This would be possible through the increase of smallholder fish farmer production, productivity and profitability. The project will seek to address the supply and demand constraints encountered in Mozambique´s young aquaculture value chain. Please refer to Annex 1 for the PRODAPE Logical Framework and Annex 2 for a graphic illustration of the Theory of Change.

74. The main assumptions for PRODAPE are as follows: (i) by strengthening the capacity of all stakeholders, including fish inputs producers (feed and seed), fish producers, Governmement staff and service providers, the aquaculture fish value chain will work more efficiently and effectively; ii) the integration of social mentoring approaches will help to address social risks (malnutrition, hiv/aids) encountered by smallholders which can potentially compromise their participation and/or sustainable engagement and socio-economic progression, iii) addressing policy, institutional, infrastructural and production gaps, will help to facilitate the development of sustainable PPPs that integrate small-scale aquaculture farmers.

75. The integration of PPPs is a cornerstone to the successful development of a commercially oriented aquaculture value chain in Mozambique. The vision of the PPPs will be achieved mainly through the development of sustainable and business oriented small and medium scale aquaparks, which aim to consolidate and centralize aquaculture production, and integrate smallscale fish producers into a viable and profitable business partnerships with the private sector. PRODAPE places small aquaparks at the centre of service provision throughout the entire aquaculture value chain.

F. Alignment, ownership and partnerships

76. Project design aligns with national priorities on strengthening the aquaculture sector towards a commercial orientation, underpinned by the strong involvement of smallholder farmers. The project also supports GoM interests in reaching out to women, poor and vulnerable HHs and youth of different ages. In addition, the project is congruous with Mozambique's National Determined Contributions (2015) and the National Adaptation Programme of Action (2007), which is already factored in the NCCAMS and the NDC, which in turn sets the basis for the National Adaptation Plan.

77. PRODAPE design and implementation arrangements comply with the key IFAD corporate policies, frameworks, strategies and plans. The project will contribute to the three core objectives of IFAD's Strategic Framework 2016-2025 by; increasing rural people's productive capacities, market participation and strengthening sustainability and climate resilience of their economic activities. The project contributes to key IFAD11 Commitments (e.g. no. 2.2 no. 3.3 and no. 3.5) and complies with IFAD Rural Finance Policy. PRODAPE adheres to IFAD Policies on Natural Resources Management and the Social, Environmental and Climate Assessment Procedures (2017), ensuring that environmental considerations and climate change adaptation measures are integrated into project activities to address inherent risks.

78. The project contributes to some of the Sustainable Development Goals (SDGs) linked to IFAD results (e.g. SDG1 on poverty, SDG2 on hunger and food, SDG5 on gender inequality and SDG14 to conserve and sustainably use aquatic resources). PRODAPE complies with IFAD's Targeting Policy – Reaching the Poor (2010) and with IFAD's Gender Equality and Women's Empowerment Policy (2012). Moreover, IFAD's Sexual Exploitation and Abuse (SEA) Policy will be taken into account during project implementation. The project is also aligned with IFAD's corporate commitment to nutrition-sensitive programming.

79. IFAD is signatory to the United Nations Development Assistance Framework (UNDAF) 2017-20. Concrete synergies between the Rome-Based Agencies (RBAs) in-country started in 2008 with implementation of a joint programme - Building Commodity Value Chains and Market Linkages for Farmers´ Associations (2008 -2009). The implementation of the joint programme was key for the formulation of the current on-going joint programme - Support to Accelerate Progress towards Millennium Development Goal (MDG) 1c in Mozambique - aiming at improving agricultural and fisheries production and increasing access to food for vulnerable groups, women and children. To further harmonize interventions in the field, arrangements could be put in place through technical assistance arrangements, that will allow FAO expertise to support PRODAPE implementation during supervision and implementation support missions to the project.

80. PRODAPE draws on the experiences, capacities and systems developed by PROAQUA and PROPESCA. Specific linkages include: (i) IDEPA, which implemented both projects, has been retained as PRODAPE implementation agency, ensuring a rich institutional memory, experience and networks; (ii) PRODAPE has included all PROAQUA districts among its target areas, ensuring continuity of support for aquaculture to take root; (iii) PRODAPE will build on and scale up models developed by PROAQUA and PROPESCA e.g. extension and farmer input support models. Through the Rural Enterprise Finance Project (REFP) implemented by the Banco Nacional de Investimento (BNI),

PRODAPE beneficiaries will have access to four financing windows and one business development support window, as follows: (i) graduation fund; (ii) establishment and/or strengthening of community based credit and savings groups (PCRs); (iii) Crowding-In Fund (CIF); (iv) Line of Credit (LoC); and (v) business development support services.

G. Costs, benefits and financing

a. Project costs

81. Total project costs including price and physical contingencies, duties and taxes are estimated at USD 49.0 million. Of this amount, USD 21.3 million is foreign exchange content, and around USD 3.7 million corresponds to duties and taxes.

82. Project components are: (i) Component 1: Small-scale aquaculture productivity, totaling USD 19.3 million; (ii) Component 2: Development of aquaculture business, totaling USD 17.9 million and iii) Component 3: Project management, institutional development and policy, totaling USD 11.8 million. Furthermore, the project includes a Component 0: Disaster Risk Reduction and Response, to which no resources have currently been allocated.

83. **Climate finance.** The total amount of IFAD climate finance for this project is preliminarily calculated as USD 13.4 million, representing 31.2% of IFAD's investment. This amount is drawn from IFAD financing of sub-components 1.2 and 2.1. If a climate event triggers Component 0 in the future, the amount of climate financing in this project will increase, likely substantially.

Table 3. Project costs by component (and sub-components) and financier
(Thousands of United States dollars)

Components	IFAD Loan		IFAD Grant		Beneficiaries		GoM		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
0. Disaster Risk Reduction and Response	-	-	-	-	-	-	-	-	-	-
1. Small-scale aquaculture productivity										
1. Agribusiness for input supply	1,598	15.2	6,391	60.9	262	2.5	2,250	21.4	10,501	21.4
2. Develop smallholder aquaculture production capacity	1,158	13.2	4,630	52.9	2,459	28.1	505	5.8	8,751	17.9
Subtotal	2,755	14.3	11,022	57.2	2,721	14.1	2,754	14.3	19,252	39.3
2. Development of aquaculture business										
1. Support to development of Aquaparks	218	20.0	872	80.0	-	-	0	-	1,091	2.2
2. Develop market linkages and business partnerships	3,325	19.9	13,300	79.8	-	-	51	0.3	16,676	34.0
3. Access to financial services	36	20.0	146	80.0	-	-	0	-	182	0.4

Subtotal	3,579	19.9	14,318	79.8	-	-	51	0.3	17,949	36.6
3. Project management, institutional development and policy										
1. Policy and institutional development	158	20.0	632	80.0	-	-	0	-	790	1.6
2. Mainstreaming nutrition and addressing social risks	756	17.7	3,025	70.9	168	3.9	315	7.4	4,264	8.7
3. Project management and Coordination	1,3526	20.0	5,410	80.0	-	-	0	-	6,763	13.8
Subtotal	2,267	19.2	9,067	76.7	168	1.4	315	2.7	11,816	24.1
Total Project Costs	8,602	17.5	34,406	70.2	2,889	5.9	3,121	6.4	49,017	100

84.

Table 4. Project costs by expenditure category and financier
(Thousands of United States dollars)

Categories	**IFAD Loan**		**IFAD Grant**		**Beneficiaries**		**GoM**		**Total**	
	Amount	**%**	**Amount**	**%**	**Amount**	**%**	**Amount**	**%**	**Amount**	**%**
Equipment & Materials	278	6.4	1,113	25.6	2,459	56.5	505	11.6	4,355	8.9
Works	4,952	20.0	19,810	80.0	-	-	0	-	24,762	50.5
Vehicles	53	20.0	213	80.0	-	-	0	-	267	0.5
Consultancies	1,076	18.9	4,305	75.6	-	-	315	5.5	5,696	11.6
Credit, Guarantee Funds	210	16.0	839	64.0	262	20.0	0	-	1,311	2.7
Training	988	19.3	3,954	77.4	168	3.3	0	-	5,110	10.4
Workshop	374	20.0	1,497	80.0	-	-	0	-	1,871	3.8
Salaries & Allowances	552	10.9	2,206	43.6	-	-	2,300.9	45.5	5,059	10.3
Operating Costs	118	20.0	470	80.0	-	-	0	-	588	1.2

Total Project Costs	8,602	17.5	34,406	70.2	2,889	5.9	3,121	6.4	49,017	100.0

85.

Table 5. Project costs by component and year
(Thousands of United States dollars)

Components	2020		2021		2022		2023		2024		Total
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
0. Disaster Risk Reduction and Response	-		-		-		-		-		-
1. Small-scale aquaculture productivity											
1. Agribusiness for input supply	3,779	36.0	3,680	35.0	1,988	18.9	626	6.0	429	4.1	10,501
2. Develop smallholder aquaculture production capacity	1,311	15.0	2,152	24.6	2,583	29.5	1,773	20.3	933	10.7	8,751
Subtotal	5,089	26.4	5,831	30.3	4,571	23.7	2,399	12.5	1,362	7.1	19,252
2. Development of aquaculture business											
1. Support to development of Aquaparks	346	31.7	-	-	359	32.9	-	-	386	35.3	1,091
2. Develop market linkages and business partnerships	1,733	10.4	3,924	23.5	4,777	28.6	3,470	20.8	2,771	16.6	16,676
3. Access to financial services	21	11.5	45	24.6	46	25.2	47	25.7	24	13.0	182
Subtotal	2,101	11.7	3,969	22.1	5,182	28.9	3,517	19.6	3,180	17.7	17,949
3. Project management, institutional development and policy											
1. Policy and institutional development	291	36.8	148	18.7	165	20.9	89	11.3	97	12.2	790
2. Mainstreaming nutrition and addressing social risks	590	13.8	1,405	32.9	656	15.4	1,015	23.8	599	14.1	4,264

3. Project management and Coordination	2,426	35.9	1,106	16.4	1,046	15.5	1,176	17.4	1,008	14.9	6,763
Subtotal	3,307	28.0	2,658	22.5	1,867	15.8	2,280	19.3	1,704	14.4	11,816
Total Project Costs	10,497	21.4	12,459	25.4	11,620	23.7	8,196	16.7	6,246	12.7	49,017

b. Project financing/co-financing strategy and plan

86. PRODAPE will be financed by: an IFAD loan on higly concessionary terms (USD 8.6 million, 17.5% of total project costs), an IFAD grant (USD 34.4 million, 70.2% of total project costs) under the 2018-2021 PBAS cycle, the Government of Mozambique (USD 3.1 million, 6.4% of total project costs), and the project beneficiaries (USD 2.9 million, 5.9% of total project costs). The IFAD financing may be provided either in USD or in Euros, subject to IFAD's acceptance of a formal request by Government of Mozambique. Finally, the IFAD loan and grant will finance taxes.

87. The Government of Mozambique (GoM) will finance the salaries of its own staff who will support the implementation of the project on a pro-rata basis, as well as the costs of the PMU office in Maputo.

c. Disbursement

88. IFAD funds will be channeled into a USD designated account maintained at the Bank of Mozambique. The funds will be transfer into the Single Treasury Account (CUT) managed by the MoF The funds in CUT are managed through coded designated ledger accounts that ensure traceability of each project's available funds. Each provincial directorate and implementing agency shall maintain a separate account in CUT to receive the project funds from the PCU. .

89. The PCU will have the responsibility of coordinating and ensuring the smooth flow of funds so that funds are available as and when necessary to meet programme financial obligations towards suppliers, service providers and contractors. This will involve: (i) establishing the liquidity requirements of each implementing agency based on the approved AWPB; (ii) preparing and dispatching bank transfer instructions to the Bank of Mozambique to ensure that there is sufficient liquidity in the operational account at all times; (iii) following up on any funds advanced to implementing agencies and ensuring the timely justification thereof; (iv) maintaining the supporting documentation underlying expenditures incurred by the programme in order to prepare Withdrawal Applications for submission to IFAD; and (v) ensuring that the IFAD Authorized Allocation is fully accounted for at all times through regular preparation of periodic reconciliation statements for the designated accounts. All movements from the Designated Accounts will require countersignature by the Authorized Representative of the GoM.

d. Summary of benefits and economic analysis

90. **Project profitability indicators.** The overall Economic Internal Rate of Return (EIRR) of the Project is estimated at 26%. The Economic Net Present Value (ENPV) is MZN 4.4 billion, or USD 73.3 million at 10% social discount rate. As ENPV is positive and EIRR is above the Social Discount Rate the project is deemed economically viable and acceptable for investment.

91. **Benefits.** Financial benefits will be in the form of increased productivity of the farmers engaging in the aquaculture value chain, as well as increased financial returns of the HHs targeted by PRODAPE. Social benefits will include a reduction in poverty rates in the areas targeted by the Project, with special measures taken to ensure inclusion of disadvantaged groups. This will be the effect of the increased financial returns for HHs consequent to Project interventions.

92. **Sensitivity Analysis.** The sensitivity analysis evaluated the robustness of the proposed interventions. Proxies analyzed were: reduction of project benefits (due, for example, to failure of the capacity building initiatives of the project), increase in project costs. The results of the analysis show that the reduction of project benefits of up to 30% do not endanger the economic suitability of the project, as ENPV remains positive, and IRR is still above the SDR.

93. An increase of project costs of a maximum of 30% would also not seriously imperil the project as ENPV would remain positive and EIRR well above the SDR. Finally, a delay in accrual of project benefits of 2 years would still not drop ENPV below zero (and IRR below the SDR), hence the project would remain profitable.

94. However, the sensitivity analysis showed that the project is particularly sensitive to decreases in the selling price of

fish and increases in fish feed prices: a 10% decrease in fish price would make the project marginally profitable, with EIRR at 10.3%, barely 0.3% above the SDR. A 20% increase in feed price would bring EIRR below the SDR, and the ENPV below zero, rendering the project no longer profitable.

e. Exit Strategy and Sustainability

95. The last year of operations will not involve the implementation of core investment activities, but rather ensure that the results of capacity building needs have been attained, establishing/strengthening linkages between players, updating databases and organizing sector documentation. The permanence of dedicated technical staff within the sector will have contributed, importantly to sector skills development. A specific exit plan (see Annex 15 for further reference) will guide the implementation of activities in year five to ensure that all PRODAPE “exit requirements” have been met.

96. The economic sustainability of aquaculture after PRODAPE closure will depend on the established enterprise budgets and their implementation. It is also assumed that both the input supply system, extension, marketing and distribution channels will be adequately established during the lifespan of the programme. Profit margins predicted by the project indicate that important benefits would be accrued by beneficiaries engaged at all levels of production in so far as supply and demand requirements are met. Additional issues supporting economic sustainability include the profitability and scalability of integrated small-scale aquaculture for small-scale fish farmers to be targeted by PRODAPE.

97. PRODAPE design was produced to ensure that environmental sustainability is warranted by: a) ensuring that aquaculture activities respect the ecosystem services and biodiversity, avoid any adverse environmental impacts and contribute to environmental improvements; b) contributing to the elaboration, establishment and use of adequate aquaculture sector regulations, standards and guidelines; and c) increasing environment and natural resource management capacity of the extension service and project beneficiaries. The integration of pond fish-culture with crop production systems is expected to contribute to the reduction of effluent disposal in lakes / rivers and provide both plant / animal-based nutrition to reduce fertilizer costs.

98. In terms of institutional sustainability, as with projects previously financed by IFAD in the small-scale fisheries sector, PRODAPE will be integrated into MIMAIP institutions, which are responsible for implementing project activities. The PRODAPE integrates institutional strengthening measures across all government agencies involved at all levels and constitute a fundamental pillar for the sector´s technical sustainability.

3. Risks

H. Project risks and mitigation measures

99. The PRODAPE design identified institutional, economic, social and environmental risks and relevant mitigation measures, outlined below in Table 6:

Table 6. Key PRODAPE Risks and Mitigation Measures

Activity	Risk	Risk rating	Mitigation
Human resource requirements for extension	The Government may not be able to allocate adequate funds in a timely manner, as required for the recruitment of the additional field agents and provide the logistical means required.	High	- Include salaries and living expenses as well as transport for the extension staff in PRODAPE budget.

Aquaculture production and water needs	There is a possibility that the expansion of aquaculture production goes beyond a level that is sustainable. While in the beginning the risk would be low, a continued expansion would represent an increased risk.	Medium-to-High	- The project will undertake surveys on water demand and availability as required for the expansion of production activities in target areas and ensure water management measures are in place under the supervision of local administrations. Water quality parameters will be regularly monitored for quality assurance.
Demand for tilapia in local market	Actual demand for tilapia in national markets needs to be ascertained to ensure that production matches demand.	Low-to-Medium	- Demand will be assessed through the market survey to be carried out at the start of the Project. Promotion activities (e.g. fairs, high-value product development) will be carried out through the project to promote tilapia.
Laboratory and quarantine services	No framework for laboratory and quarantine services; low capacity to guarantee biosecurity for live fish.	Medium	- Strengthen CEPAQ.
Depletion of local biodiversity	Local biodiversity could be affected by overpopulation and not following safety measures.	Medium	- Facilitate the production of adequate regulations and implementation / monitoring thereof.
Climate change related risks	Floods, cyclones, high temperatures and drought may affect water availability and infrastructures	High	- The CRA identifies specific mitigation measures including improvement on the design of aquaculture facilities to avoid mass scale fish escape.
Low uptake of financial services	Low uptake of project services by both financial service providers and project beneficiaries.	Medium	- Conduct intensive sensitization campaigns to stimulate interest and demand for project services. - Implement capacity building and technical assistance to enable financial service providers to develop appropriate products and delivery channels. - Conduct training and mentoring of farmers and related value chain actors to enhance the commercial viability.
Social issues being put aside during implementation	Targeting strategy may be simplified and thus not be inclusive. Addressing social risks may not be regarded as important.	High	- Integration of a sociologist in the PCU. - Production of manuals on social inclusion and social risks and training staff at all levels on these issues.

Payment delays	Delays in processing payments at sub-national level as a result of GoM decentralization following proposed constitutional amendment in 2018.	High	- Centralizing large payments through the PCU account for the first two years of programme implementation and the provinces execute only operational payments until payment systems at the provincial levels are fully functional.
Preparation of AWPBs	Delays in preparation and approval of PRODAPE AWPBs.	Low	- Provision of technical assistance to build capacity to management team
Project M&E	Limited capacity of DPMAIPs to assume M&E responsibilities.	Low-to-Medium	- Appointment of a fully dedicated Focal Point at DPMIAP and provision of training and technical assistance on M&E and KM approach adopted by the project
Staff capacity on procurement planning	Poor procurement planning and monitoring capacity could lead to significant delays in executing procurement actions.	High	- Training to be conducted jointly by IFAD, UFSA and Administrative Tribunal on IFAD procurement guidelines and the GoM Public Procurement Decree N. 5/2016. - The use of the Procurement Plan as a monitoring tool.
Contract and records management	Delays, cost overruns and lack of appropriate records.	High	- Provision of checklists of records that must be on each procurement file. - Required use of the electronic filing system (e-archive). - Provision of training on contract / project management. - Regular update of the contract register as a management and tracking tool.
Country debt distress levels	The Government is not able to meet its financial obligations under the project.	High	- Counterpart financing obligations by the Government which will be in-kind to be indicated in the financing agreement and enforce compliance during implementation

100. .

I. Environment and Social category

101. PRODAPE will use technologies and production methods adapted to local conditions and avoid operations located in fragile or environmentally sensitive areas, such as conservation areas and their buffer zones. PRODAPE will focus on the production of indigenous fish species, using locally adapted technologies where fish farming can be practised without significantly altering local ecosystems. Resilience-building measures will also be integrated into the programme (i.e., integrated farming, water harvesting and storage). As such, PRODAPE´s potential social and environmental impacts are considered manageable and/or reversible leading to being considered a **Category "B"**

project.

102. The ESMF confirmed the above categorization and established clear principles, rules and guidelines for specific site selection: activities must not take place in sensitive ecosystems and be limited to freshwater aquaculture. In addition, each “sub-project” must keep to a maximum of 74 ponds and two production cycles per year to generate not more than 100 tons of fish.[20] Higher production levels would imply becoming a Category A project. Cage production also must not exceed this limit, additionally they will be subject to the maximum carrying capacity of the particular water body which will be determined in each case. During implementation a number of assessments/studies and stakeholder engagement will be undertaken during implementation to provide recommended mitigation/monitoring measures to IFAD for no-objection, as appropriate and in accordance with the findings of such assessments/studies and consultation. These include strategic environmental and social impact assessment, and cumulative impact assessment.

103. ESMF constitute the basis for the development of site-specific ESMPs. When established, Water Resource Users’ Associations and other relevant entities should be engaged in the negotiation of access and use of water sources before new production technologies are constructed. For this project to remain a Category B, engagement in pond or cage culture in large dams/reservoirs is limited to the compliance with the criteria set out within the ESMF as well as to the development of guidelines for sustainable production and demonstration of best practices (especially in cage farming).

J. Climate Risk classification

104. The project’s climate risk classification is “High” requiring a detailed Climate Risk Analysis (CRA). Project investments will focus on aquaculture systems sensitive to climate change and will require measures to reduce vulnerability. More frequent and extreme weather events, combined with a slow onset sea level rise and increasing salinity, threaten aquaculture installations along coastal shorelines. Changing rainfall patterns and water scarcity may impact on river and water bodies where aquaculture is practiced. In addition, more erratic rainfall and extreme weather events may cause droughts and floods, modifying soil erosion and siltation processes, thus causing major negative changes in rivers and water bodies.

105. The project will promote locally suited climate smart aquaculture and adaptation practices as identified in the relevant CRA. It will, also take into consideration, when available, the Local Adaptation Plans (LAPs) elaborated within Mozambique´s National Climate Change Adaptation and Mitigation Strategy (NCCAMS) framework in order to align with national efforts, reduce vulnerability and increase the coping capacities of beneficiaries. The promotion of sustainable land and water management practices as well as capacity building at farm and institutional levels, will further reduce vulnerability.

106. Strong collaboration between relevant institutions such as IDEPA, IIP, the National Meteorological Institute (INAM), the National Institute for Disaster Management (INGC), MASA and the Ministry for Land, Environment and Rural Development (MITADER), relevant departments and provincial governments will harness synergies.

4. Implementation

K. Organizational Framework

a. Project management and coordination

107. Details are provided in Sub-component 3.1 dedicated to Project Management.

b. Financial Management, Procurement and Governance

108. **Financial management**.The financial management assessment showed that Government systems have the potential to provide adequate controls and ensure proper project fund management. Project planning and budgeting will be aligned to the government calendar with the objective of having quality annual work plans and budgets approved and uploaded in the e-SISTAFE by the beginning of each fiscal year[17].

109. Funding from IFAD will be administered through a separate designated account at the Bank of Mozambique (BoM) to receive project funds from IFAD. PRODAPE will maintain a local currency operating account in e-SISTAFE under the Single Treasury Account (CUT) for the PCU. At the provincial level, the funds will be disbursed to the DPMAIP Single Treasury Accounts for the project. It is recommended that processing of large payments be centralised at PCU level for the first two years of project implementation.

110. MIMAIP's Director of Finance and Administration will be responsible for ensuring existence of adequate financial management arrangements throughout PRODAPE implementation. The operational day-to-day financial management functions will be the responsibility of PRODAPE Finance Manager overseen by the Head of Finance, MIMAIP/IDEPA and assisted by project Accountant and those assigned at the provinces.

111. To provide assurance of strong internal controls, the Internal Audit department of MIMAIP is to include PRODAPE in its internal audit work plans with the submission of PRODAPE's reports to MIMAIP and the NPSC. Supervision missions will report on the activity of the internal audit with respect to PRODAPE. Internal controls will also be verified during the annual audit exercise by external audit and reported to IFAD in a management letter. In line with IFAD's General Conditions, PRODAPE financial statements shall be audited on an annual basis. Audit reports and management letters shall be submitted to IFAD no later than six months after the end of each fiscal year.

112. **Procurement**. The existing legal framework for public procurement in Mozambique is currently governed by the PPD N. 5/2016 that establishes the principles and procedures to be applied in any procurement by public authorities and institutions governed by public law, under public control or using public funds.

113. The PCU Procurement Officer will oversee and carry out PRODAPE procurement activities in coordination with specialized and technical units. At the provincial level, procurement will be limited to small works and locally available service providers subject to close supervision by the PCU. As required by the PPD, bidding documents will be submitted to MIMAIP for approval.

114. The PCU will also provide the necessary technical support in preparation of technical specifications, bills of quantities and terms of reference to the provinces, as required. While PCU staff is knowledgeable on national procurement procedures that would be used under PRODAPE, they would need to be trained on applicable IFAD procedures and guidelines to get acquainted with them. Induction training will be given by IFAD, UFSA and Administrative Tribunal to explain the different roles within the project and provide guidance for a smooth implementation. The UFSA should publish all PRODAPE calls for bidding and contract awards. Documentation will be stored in the e-archive system.

115. **Governance**. Project governance will be led by the NPSC as the governing body of the project. This set up will provide strategic guidance towards the achievement of project objectives and contribute to the higher-level sector policy and strategic goals.

116. Whilst the enforcement of good governance is the primary responsibility of the GoM, all project stakeholders will be made aware that IFAD applies a zero-tolerance policy towards fraudulent, corrupt, collusive or coercive actions in IFAD financed projects.

117. **Disbursement arrangements**

118. The disbursement plan for the project per year will be as per the below table:

Table 7. Disbursement by semesters and Government cash flow
(Thousands of United States dollars)

					Costs to be		
	Financing Available				**Financed**	**GoM**	
Semester	**IFAD Loan**	**IFAD Grant**	**Beneficiaries**		**Project**		**Cumulative**
	Amount	**Amount**	**Amount**	**Total**	**Costs**	**Cash Flow**	**Cash Flow**
1	978	3,913	78	4,970	5,248	-278	-278
2	978	3,913	78	4,970	5,248	-278	-557
3	1,080	4,321	476	5,876	6,229	-353	-910

4	1,080	4,321	476	5,876	6,229	-353	-1,263
5	1,007	4,027	432	5,465	5,810	-345	-1,608
6	1,007	4,027	432	5,465	5,810	-345	-1,953
7	663	2,653	446	3,762	4,098	-336	-2,289
8	663	2,653	446	3,762	4,098	-336	-2,625
9	572	2,290	13	2,875	3,123	-248	-2,873
10	572	2,290	123	2,875	3,123	-248	-3,121
Total	8,602	34,406	2,889	45,897	49,017	-3,121	-3,121

L. Planning, M&E, Learning, KM and Communication

a. Planning, M&E, Learning, Knowledge Management and Communication

119. The integrated participatory M&E, Learning and KM system, together with communication plans will be developed in accordance with GoM frameworks and IFAD guidelines. The system will seek to steer project implementation, support economic decisions and policymaking, share knowledge and scale up good practices and develop a good communication strategies / plan.

120. Detailed planning and budgeting of PRODAPE activities will be carried out based on the AWPB involving the PCU, MIMAIP/IDEPA and other implementing agencies / stakeholders in a participatory process with DPMAIPs, target communities and other relevant stakeholders. Learning and KM will be an integral part of PRODAPE to identify, test, learn, demonstrate and disseminate its results with the use of innovative approaches and technologies. The success of the KM strategy will rely on the existence of a knowledge-sharing environment within the PCU, IDEPA, DPMAIPs, and other implementing partners. In this regard, efforts will be made to ensure that the project is conducive to its establishment. Focal points / KM champions will be identified at all levels.

121. The project will establish linkages with the Brazilian aquaculture parks system (especially for cage culture) in the context of SSTC. This knowledge transfer could be achieved through technical assistance support from Brazil and/or organizing an exchange learning visit to the Brazilian aquaculture parks by a small team of MIMAIP experts and bring back the experience to the project.

122. The PRODAPE communication action plan will be an essential element of the M&E system. This will integrate good practices and an innovation tracking system, learning routes, documentation, dissemination and learning.

b. Innovation and scaling up

123. PRODAPE attaches great importance to innovation as a means to integrate new ideas, methods and business models to improve resilience, production efficiency and better services. Three areas of innovation are envisaged within PRODAPE: (i) Comprehensive targeting and social risk management approach – a robust targeting strategy has been developed for the project to ensure inclusive reach to different social and address key social risks identified among producers; (ii) Innovative business concepts – The project promotes innovative business partnerships and concepts to Mozambique´s aquaculture sector, including "aquaparks" and the organization of farmers into cluster models linked to players at other levels of the value chain; (iii) Seed quality improvement of the indigenous Mozambique tilapia (Oreochromis mossambicus) which is threatened by competition with the introduced and invasive Nile tilapia (Oreochromis niloticus). PRODAPE will support genetics improvement of this species through selective breeding and establishment of facilities for seed biosafety.

124. The scaling up strategy focuses especially on taking forward some of the knowledge, good practices, results and technologies from PROAQUA and PROPESCA for implementation in PRODAPE's 23 target districts, including: (i) farmers' input support mechanisms - with some modifications; (ii) the PCR model, including the method in their establishment and capacity building; and (iii) knowledge from studies conducted under PROAQUA, particularly on feed, seed and economic analysis of alternative models.

M. Implementation plans

a. Implementation readiness and start-up plans.

125. **Implementation Readiness and Start-up Plans.** As part of preparations for implementation readiness, a draft AWPB, Procurement Plan and Programme Implementation Manual have been prepared as part of the design for PRODAPE and submitted as part of this PDR. This is expected to save time at the beginning of PRODAPE implementation and allow for quick start up. The other steps to be taken to ensure a quick start up include: a) the PRODAPE PMU will, to a large extent, build on the existing structures and mechanisms of its predecessors PROPESCA and PROAQUA. This will contribute to a seamless transition by bringing into PROCAVA lessons, experiences and achievements of PROPESCA and PROAQUA; b) GoM undertaking to evaluate the performance of the PROPESCA and PROAQUA PMT staff at the closure of these two projects. On the basis of this evaluation and if the performance is established to be satisfactory, GoM would (at their discretion) make a recommendation to IFAD for appointing those staff to the PRODAPE PMU on 2-year performance-based contracts. This arrangement would ensure an effective and efficient start-up of project activities. Besides this arrangement, the recruitment for staff would have to be done on a competitive and transparent basis from the market.

b. Supervision, Mid-term Review and Completion plans.

126. **Supervision.** PRODAPE will be jointly supervised by IFAD and the GoM. The emphasis in all supervision missions will be learning and assessment of achievements and opportunities for scaling up vis-à-vis the overall objective of an effective project implementation. Implementation support missions will identify and address early emerging issues and build technical capacity for project implementation. To the extent possible, there will be continuity in the composition of the supervision and implementation support missions in order to increase mission effectiveness.

127. **Mid-Term Review (MTR).** In addition to the annual missions, a joint IFAD-GoM MTR will be undertaken in year three. The ‘forward looking review’ will assess target group perceptions of project processes, activities, impacts and benefits, especially for the smallholder farmers involved in aquaculture, the adequacy of targeting mechanisms and technical project strategies. The Joint Review will assess the project logical framework, objectives, assumptions and risks, and suggest needed adjustments to project strategies, approaches and methods, among others.

128. **Completion.** During the final year of project implementation, a review will be carried out to document project outputs, outcomes and progress towards the realisation of project goals. The relevance, effectiveness, efficiency and sustainability of interventions will therefore be reviewed, building on findings of the joint reviews over the course of the project lifetime. In particular, this will compare changes in the livelihoods of beneficiaries that are related to the implemented project activities against the situation documented in the baseline study. The issues of scaling-up, replication and sustainability of development results will be analysed to guide future interventions.

Footnotes

[1] World Bank, Country Partnership Framework for the Republic of Mozambique, March 30, 2017.

[2] Ministério de Economia e Finanças, October 2016. Pobreza e Bem-Estar em Moçambique. Quarta Avaliação Nacional, Inquérito ao Orçamento Familiar (IOF) 2014/15.

[3] INE, 2017. Censo 2017, Divulgação dos Resultados Preliminares. IV RGPH, 2017.

[4] Ministério de Economia e Finanças, October 2016. Pobreza e Bem-Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar IOF 2014/15.

[5]https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?view=map Accessed 22 June 2018.

[6] WB, 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.

[7] Ministério de Economia e Finanças, October 2016. Pobreza e Bem-Estar em Moçambique. Quarta Avaliação Nacional, Inquérito ao Orçamento Familiar (IOF) 2014/15.

[8] UNDP, 2016. Human Development Report 2016. Human Development for Everyone: Briefing Notes for Countries on the 2016 Human Development Report, Mozambique.

[9] CCMASA Partners Presentation on Nut Financial Investments, 2018. The Cost of Hunger in Africa Study. Mozambique Results.

[10] WB, 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.

[11] IDEPA, 2017. Annual Report.

[12] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.

[13] GoM Fisheries Master Plan 2010-2019.

[14] The Aquaculture Development Action Plan (PADA).

[15] (i) Nampula Artisanal Fisheries Project (NAFP), a loan approved in 1993 and completed in 2001; (ii) Sofala Bank Artisanal Fisheries Project (SBAFP), a loan approved in September 2001 and completed in March 2011; (iii) Artisanal Fisheries Promotion Project (ProPesca), a loan approved in December 2010 and completed in March 2018; (iv) Coastal HIV/AIDS Prevention and Nutrition Improvement Project (CHAPANI), a grant approved in May 2012 and completed in October 2015; (v) Project for Promotion of Small-scale Aquaculture (PROAQUA), approved in June 2013 as part of a larger EU-grant, and completed in September 2017; and (vi) Securing Artisanal Fishers' Resource Rights Project (ProDIRPA), a grant approved in December 2013 that reached completion in June 2018.

[16] See Impact Evaluation of the Sofala Bank Artisanal Fisheries Project in Mozambique (September , 2016) and the Country Strategy and Programme Evaluation (CSPE) (February 2017.

[17] For more details please refer to the project´s logical framework.

[18] Tilapia Niloticus should not be used north of the Zambezi river due to biosecurity concerns, or in coastal areas due to not being salt tolerant. A good performing *mossambicus* would address both limitations.

[19] The project will also need to take into account that: local population has preference for locally produced tilapia as there is perception that it is of better quality than imported fish, however imported tilapia especially from Asia is priced lower than locally produced species. The focus therefore is to lower the cost of local tilapia through lower costs of feed and the model of production/marketing. In this regard, one large tilapia producer in the country has demonstrated (with adequate cost-benefit analysis) that tilapia sold at smaller sizes (< 180 grams) can compete favourably with imported tilapia, selling at about MZN 100 per Kg (See the cost-price structures presented in Annex 6). This shows that there is adequate demand for this small size fish,especially among the low income consumers (explains why it is usually difficult to stop catching of "undersize fish"). The project will further test this marketing strategy, coupled with other measures to reduce the cost of production, to make fish more competitive. The project expects that aquaculture will take time to develop, hence fish imports will not be eliminated immediately but will gradually reduce through a mixture of increasing preference and demand for locally produced fish (food safety concerns) and interventions to lower the costs of production and prices of locally produced fish.

[20] This calculation is made by considering a 500 m^2 pond with a maximum capacity of 2,500 fingerlings (including 10% mortality rate) and a maximum fish unit weight of 300 gr per two production cycles per year thus to remain below the threshold of 100/tons per year, otherwise this would trigger a Cat. A project according to the Mozambique Environmental

Regulation.

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Small Scale Aquaculture Promotion Project

Project Design Report

Annex 1: Logframe

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Small Scale Aquaculture Promotion Project

Logical Framework

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
Outreach	1.b Estimated corresponding total number of households members				Fisheries records, Economic Surveys, Project reports, Baseline and impact studies	Annual	PCU	Economic recovery Political enabling environment
	Household members	0	50700	88900				
	1.a Corresponding number of households reached				Fisheries records, Economic Surveys, Project reports, Baseline and impact studies	Annual	PCU	
	Non-women-headed households							
	Women-headed households	0	2329	3560				
	Households	0	11645	17800				
	1 Persons receiving services promoted or supported by the project							
	Females	0	20280	35560				
	Males	0	30420	53340				
	Young	0	5067	8890				
	Not Young	0	15202	26670				
	Indigenous people							
	Non-Indigenous people							
	Total number of persons receiving services	0	50700	88900				

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
Project Goal Contribute to reducing poverty and enhancing food security and nutrition in the project Districts	% increase in annual fish consumption from aquaculture at national level (current national average kgs/capita)				Baseline and impact surveys, HH survey	Year 1, mid-term & year 5	PCU	Economic and weather conditions remain favourable
	% increase		15	30				
	Number of HHs with improved asset ownership compared to baseline				Baseline and impact surveys, HH survey	Year 1, mid-term & year 5	PCU	
	Males	0	30420	53340				
	Females	0	20280	35560				
	Households	0	11645	17800				
Development Objective To sustainably enhance the livelihoods of poor households for increased income from growth of economic activities in the aquaculture value chain and family nutrition	% of target HHs reporting increased annual net income (fish producers, processors, input suppliers)				National, statistics HH surveys including studies on poverty and gender survey	Baseline and mid-term	PCU and Bureau of Statistics	Existence of macroeconomics and climacteric conditions; Increased income at HH level from sales leads to investments in productive and domestic assets
	Males		13335	34671				
	Females		8890	23114				
	Young		2223	5334				
	Households		25	65				
	Proportion (%) of people who have adequate and diverse diets				National statistics, HH surveys, including studies on poverty and gender	Baseline survey and the end of Project	PCU and Bureau of Statistics	
	Males	0	13335	26670				
	Females	0	8890	17780				
	Young	0	2223	4103				
	Persons	0	25	50				
Outcome 1. Increased fish production and productivity of smallholder farmers in aquaculture	3.2.2 Households reporting adoption of environmentally sustainable and climate-resilient technologies and practices				Economic Surveys, Project reports, impact studies and specific surveys	Semi-annual and annual	Implementing partners and PCU	Favourable conditions for aquaculture farming
	Households		30	75				

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
	Total number of household members		26695	66737				
	Males		3204	8010				
	Females		2136	5340				
	Young		534	1335				
	Households		5340	13350				
Output 1.1.1 Quantity of quality of fish seed (fingerlings) production improved	# of aquaculture producers accessing fingerlings required				Project progress reports	Annual	PCU	Package of attractive incentives established
	Males	0	2659	8571				
	Females	0	1773	5714				
	Young	0	443	1428				
	producers	0	25	80				
Output 1.2.1 Quantity and quality of feed production improved	# of aquaculture producers accessing feed required				Project progress reports	Annual	PCU	Package of attractive incentives established
	Males	0	3204	6408				
	Females	0	2136	4272				
	Young	0	534	1068				
	producers	0	30	60				
Output 1.3.1 Income derived from aquaculture increased	% change in income				Project progress reports	Annual	PCU/ Imple-menting partners	
	Males							
	Females							
	Young							
	Percentage	0	70	146				

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
Output 1.4.1 Consumer awareness and basic knowledge on nutrition improved	# of persons provided with targeted support to improve their nutrition				Project progress reports; Survey on nutrition	Annual, Midterm and end of Project	PCU	Favourable policy environment; Nutrition interventions implemented in the country
	Young		5067	8890				
	Total persons	0	50700	88900				
	Males		30420	53340				
	Females		20280	35560				
Outcome 2. Improved efficiency of aquaculture production and market system	% of producers reporting increase in value of aquaculture production				Economic Surveys, Project reports, impact studies and specific survey	Semi-annual and annual	Implementing partners and PCU	Economic and weather conditions remain favourable; Favourable macro-economic indicators
	Males	0	4650	8370				
	Females	0	3100	5580				
	Young	0	775	1395				
	Producers	0	50	90				
Output 2.1.1 Aquaparks established	# of aquaparks established				Project progress reports	Annual	PCU/ Implementing partners	Favourable conditions for aquaparks
	Aquaparks	0						
Output 2.2.1 Market outlets for aquaculture fish operational	Functional retail outlets increase				Action plans	Baseline survey	PCU	Favourable conditions for domestic aquaculture fish farming and marketing
	Increase in retail outlets	0	35	75				
Output 2.2.2 Aqua business linkages established	# of small farmers in business relationship with input suppliers				Project progress reports	Annual	PCU/ Implementing partners	Favourable conditions for aquaculture farming
	Males	0	4800	7200				
	Females	0	3200	4800				
	Young	0	800	1200				
	Small farmers	0	8000	12000				

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
Output 2.3.1 Community-based Groups of savings and credit (PCR) in aquaculture assisted	Active PCR groups identified and assisted to access finance service				Supervision Mission reports, Project progress reports	On an annual basis	PCU/BNI	Groups of PCR willing and participate actively in saving and credit
	PCR groups	0	150	450				
Output 2.3.2 Line of credit (LoC) for aquaculture entrepreneurs established	Aquaculture entrepreneurs accessing targeted LoC (CI/ORMS)				Supervision Mission reports, Project progress reports	On an annual basis	PCU/BNI	Aquaculture entrepreneurs willing and attracted by the available LoC
	Males	0	120	300				
	Females	0	80	200				
	Young	0	20	50				
	Entrepreneurs	0	200	500				
Output 2.4.1 Youth aquapreneurships established	Youths in income generating activities				Project progress reports	On an annual basis	PCU/ Implementing partners	Favourable conditions for youth enterprises
	Males	0	180	360				
	Females	0	120	240				
	Young	0	300	600				
Outcome 3. The sector and project are better managed and strategic objectives are reached	Targeted farmers reporting having access to services from the ministry				Economic surveys, Project reports, impact studies and specific surveys	Semi-annual and annual	Implementing partners and PCU	Supportive policy and legal framework
	Males							
	Females							
	Young							
	Farmers increase		20	45				
Output 3.1.1 Project coordination systems in place and used	Disbursement and fund utilization				PCU and project reports	On an annual basis	PCU / MIMAIP	Development of aquaculture continues being a priority for the GoM
	Disbursement and fund utilization	0	50	100				
Output 3.2.1 Institutional capacity of MIMAIP strengthened	Persons benefiting from capacity building activities				PCU and project reports	On an annual basis	PCU / MIMAIP	
	Males	0	120	300				

Results Hierarchy	Indicators				Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Source	Frequency	Responsibility	
	Females	0	80	200				
	Young	0	20	50				
	Persons	0	200	500				
Output 3.3.1 Sector policy framework strengthened	Aquaculture sector strategies produced (strategic mapping, suitability map)				PCU and project reports	On an annual basis	PCU / MIMAIP	The GoM continues considering aquaculture as a priority.
	Strategies							

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Project Design Report

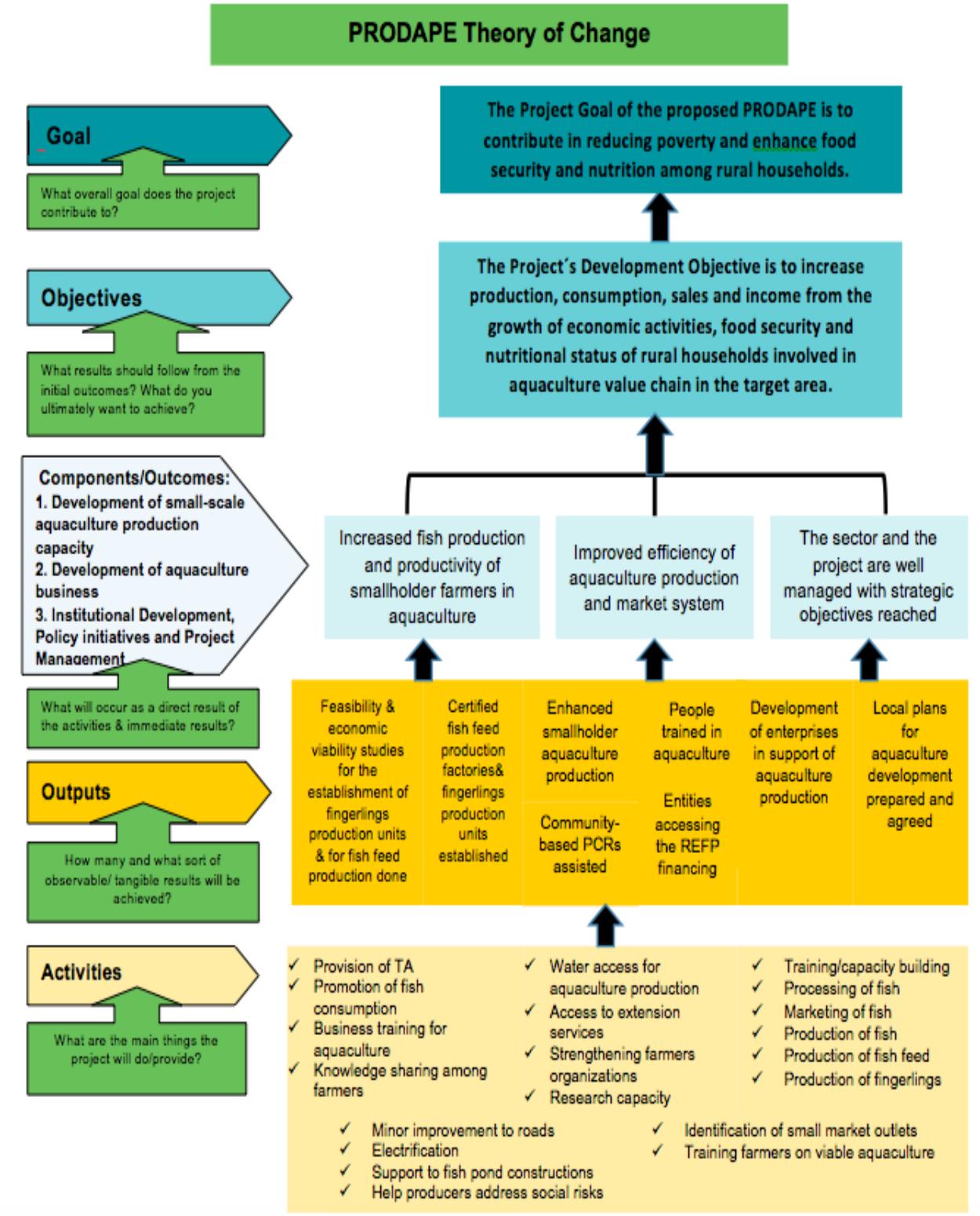
Annex 2: Theory of change

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 2: Theory of Change

PRODAPE Theory of Change



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Small Scale Aquaculture Promotion Project

Project Design Report

Annex 3: Project cost and financing: Detailed costs tables

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 3: Project cost and financing: Detailed costs tables

1. **Main Assumptions.** The Small-Scale Aquaculture Development Project (PRODAPE) will be implemented over a 5-year period. Project costs and financing were calculated based on consultations with relevant project sub-component leaders of the design team. All costs were produced using COSTAB32.

2. **Inflation.** Information on the current as well as projections on inflation were collected from the regular reports prepared by the Economist Intelligence Unit (EIU[4]). Local inflation (CPI) reached an average all-time high in 2016 of 19.9% and has steadily decreased ever since. Inflation has dropped to single digits in 2018 and the EIU expects the trend to remain for the year 2019. The decrease in inflation was be driven mainly by lower oil prices, and the stabilization of food prices following the recovery from shocks to internal production due to weather related events. The specific effects of the two cyclones that hit Mozambique in the first quarter of 2019 have not yet been taken into account in these forecasts. As the forecast does not go beyond 2023 (at 6%), we have set the inflation for project year 5 and equal to the forecasted inflation for 2023.

3. **Exchange rate.** After a of continuous depreciation of the Mozambican Metical against the US dollar in 2016, Bank of Mozambique has tightened fiscal policy in 2017 and 2018, establishing a single exchange rate system applicable by all banks. As at the first quarter of 2019 the official exchange rate for the USD was 1 USD = 60 MZN. Considering the volatile situation, the exchange rate forecast presented by the EIU was adjusted for the purposes of the project to 1 USD = 67.4 MZN in PY1 to 1 USD = 75.6 MZN for PY5 and beyond.

Table 1: Inflation and Exchange rates for COSTAB

Republic of Mozambique
PRODAPE - Small Scale Aquaculture Development Project
Inflation and Exchange Rates

	Up to Negotiation	Up to Project Start	2020	2021	2022	2023	2024
Inflation (in %'s) /a							
MOST							
Annual rates							
Local	0.0	0.0	5.1	5.4	5.9	6.0	6.0
Foreign	0.0	0.0	3.4	2.3	3.7	4.1	4.1
Compounded rates							
Local	0.0	0.0	2.6	7.9	14.0	20.8	28.1
Foreign	0.0	0.0	1.7	4.6	7.7	11.9	16.5
NONE							
Annual rates							
Local	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Compounded rates							
Local	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exchange rates (Local/Foreign) /b							
MOST							
Rates actually used	60.0	60.0	67.4	69.9	72.3	75.6	75.6
Constant purchasing parity rates	60.0	60.0	60.5	61.9	63.5	64.8	65.9
% deviation	0.0	0.0	11.4	12.9	13.8	16.7	14.6
NONE							
Rates actually used	60.0	60.0	67.4	69.9	72.3	75.6	75.6
Constant purchasing parity rates	60.0	60.0	60.0	60.0	60.0	60.0	60.0
% deviation	0.0	0.0	12.3	16.5	20.5	26.0	26.0

\a Yearly values are within Each Project Year
\b Yearly values are at Project Year Midpoints

[4] http://www.eiu.com/

4. **Physical contingencies.** A physical contingency of 5% has been applied to all goods (equipment, vehicles, etc.) and services. This measure will allow for fluctuations in the costs of these expenditure categories due to uncertainties not fully accounted for during design. No contingencies have been applied to the expenditure category for funds disbursed as part of grants or loans (for on lending) to project beneficiaries.

5. **Project Costs.** Total project costs including price and physical contingencies, duties and taxes are estimated at USD 49.0 million. Of this amount, USD 21.3 million is foreign exchange content, and around USD 3.7 million corresponds to duties and taxes.

6. Project components are (i) Component 1: Small-scale aquaculture productivity, totaling USD 19.3 million); (ii) Component 2: Development of aquaculture business, totaling USD 17.9 million and iii) Component 3: Project management, institutional development and policy, totaling USD 11.8 million. Furthermore, the project includes a Component 0: Disaster Risk Reduction and Response, to which no resources have currently been allocated.A summary breakdown of the Project costs by component and financier is presented below:

Table 2: PRODAPE breakdown components and financiers (`000 USD)

	IFAD Grant		Beneficiaries		GoM		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
A. Disaster Risk Reduction and Response	-	-	-	-	-	-	-	-
B. Small-scale aquaculture productivity								
1. Agribusiness - Fish input supply	7,989.2	76.1	262.3	2.5	2,249.5	21.4	10,500.9	21.4
2. Develop smallholder aquaculture production capacity	5,787.8	66.1	2,458.8	28.1	504.9	5.8	8,751.4	17.9
Subtotal	13,776.9	71.6	2,721.0	14.1	2,754.4	14.3	19,252.3	39.3
C. Development of aquaculture business								
1. Support to development of Aquaparks	1,090.5	100.0	-	-	0.0	-	1,090.5	2.2
2. Develop market linkages and business partnerships	16,624.7	99.7	-	-	51.3	0.3	16,676.1	34.0
3. Develop financial services	182.2	100.0	-	-	0.0	-	182.2	0.4
Subtotal	17,897.4	99.7	-	-	51.3	0.3	17,948.8	36.6
D. Project management, institutional development and policy								
1. Policy development	789.5	100.0	-	-	0.0	-	789.5	1.6
2. Institutional capacity building	717.1	69.5	-	-	315.1	30.5	1,032.1	2.1
3. Project management	6,762.5	100.0	-	-	0.0	-	6,762.5	13.8
4. Mainstreaming nutrition and addressing social risks	3,064.6	94.8	167.6	5.2	0.0	-	3,232.2	6.6
Subtotal	11,333.7	95.9	167.6	1.4	315.1	2.7	11,816.3	24.1
Total PROJECT COSTS	43,008.0	87.7	2,888.6	5.9	3,120.8	6.4	49,017.4	100.0

7. **Project Financing.** PRODAPE will be financed by: an IFAD grant (USD 43.0 million, 87.7% of total project costs) under the 2018-2021 PBAS cycle, Government of Mozambique (USD 3.1 million, 6.4% of total project costs), and the project beneficiaries (USD 2.9 million, 5.9% of total project costs). The IFAD financing may be provided either in USD or in Euros, subject to IFAD's acceptance of a formal request by Government of Mozambique. Finally, the IFAD financing will finance taxes.

8. The Government of Mozambique will finance the salaries of its own staff who will support the implementation of the project on a pro-rata basis, as well as the costs of the PMU office in Maputo.

Table 3: PRODAPE financing plan (`000 USD)

	IFAD Grant		Beneficiaries		GoM		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
Equipment & Materials	1,391.4	31.9	2,458.8	56.5	504.9	11.6	4,355.1	8.9
Works	24,761.9	100.0	-	-	0.0	-	24,761.9	50.5
Vehicles	266.5	100.0	-	-	0.0	-	266.5	0.5
Consultancies	5,380.7	94.5	-	-	315.1	5.5	5,695.8	11.6
Credit, Guarantee Funds	1,049.1	80.0	262.3	20.0	-	-	1,311.4	2.7
Training	4,942.1	96.7	167.6	3.3	-	-	5,109.7	10.4
Workshop	1,870.6	100.0	-	-	0.0	-	1,870.6	3.8
Salaries & Allowances	2,757.8	54.5	-	-	2,300.9	45.5	5,058.6	10.3
Operating Costs	587.8	100.0	-	-	0.0	-	587.8	1.2
Total PROJECT COSTS	43,008.0	87.7	2,888.6	5.9	3,120.8	6.4	49,017.4	100.0

Table 4: Expenditure accounts by financier

	IFAD Grant		Beneficiaries		GoM		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
I. Investment Costs								
A. Funds	1,049.1	80.0	262.3	20.0	-	-	1,311.4	2.7
B. Works	24,761.9	100.0	-	-	0.0	-	24,761.9	50.5
C. Consulting Services	711.2	100.0	-	-	0.0	-	711.2	1.5
D. Studies	1,733.4	100.0	-	-	0.0	-	1,733.4	3.5
E. Training	4,942.1	96.7	167.6	3.3	-	-	5,109.7	10.4
F. Equipment and materials	1,391.4	31.9	2,458.8	56.5	504.9	11.6	4,355.1	8.9
G. Workshops	318.5	100.0	-	-	0.0	-	318.5	0.6
H. Meetings	1,552.1	100.0	-	-	0.0	-	1,552.1	3.2
I. Vehicles	266.5	100.0	-	-	0.0	-	266.5	0.5
J. Technical Assistance	2,936.1	90.3	-	-	315.1	9.7	3,251.2	6.6
Total Investment Costs	39,662.5	91.4	2,888.6	6.7	819.9	1.9	43,371.0	88.5
II. Recurrent Costs								
A. Travel costs	681.6	100.0	-	-	0.0	-	681.6	1.4
B. Operation & Maintenance	355.6	100.0	-	-	0.0	-	355.6	0.7
C. Salaries	1,172.2	33.8	-	-	2,300.9	66.2	3,473.1	7.1
D. Allowances and Benefits	904.0	100.0	-	-	-	-	904.0	1.8
E. Office and general expenses	232.2	100.0	-	-	0.0	-	232.2	0.5
Total Recurrent Costs	3,345.5	59.3	-	-	2,300.9	40.7	5,646.4	11.5
Total PROJECT COSTS	43,008.0	87.7	2,888.6	5.9	3,120.8	6.4	49,017.4	100.0

Table 5: Project components and sub-components by year

	Totals Including Contingencies					
	2020	**2021**	**2022**	**2023**	**2024**	**Total**
A. Disaster Risk Reduction and Response	-	-	-	-	-	-
B. Small-scale aquaculture productivity						
1. Agribusiness - Fish input supply	3,778.8	3,679.8	1,988.0	625.7	428.6	10,500.9
2. Develop smallholder aquaculture production capacity	1,310.5	2,151.5	2,583.3	1,773.0	933.1	8,751.4
Subtotal	5,089.3	5,831.3	4,571.3	2,398.7	1,361.7	19,252.3
C. Development of aquaculture business						
1. Support to development of Aquaparks	346.2	-	358.9	-	385.5	1,090.5
2. Develop market linkages and business partnerships	1,733.3	3,924.2	4,777.2	3,470.4	2,771.0	16,676.1
3. Develop financial services	21.0	44.9	45.9	46.8	23.6	182.2
Subtotal	2,100.5	3,969.1	5,182.0	3,517.2	3,180.1	17,948.8
D. Project management, institutional development and policy						
1. Policy development	290.7	147.8	165.0	89.4	96.5	789.5
2. Institutional capacity building	218.9	528.0	112.3	84.2	88.8	1,032.1
3. Project management	2,426.3	1,106.0	1,046.2	1,175.9	1,008.1	6,762.5
4. Mainstreaming nutrition and addressing social risks	371.1	876.5	543.6	930.6	510.4	3,232.2
Subtotal	3,306.9	2,658.3	1,867.2	2,280.0	1,703.8	11,816.3
Total PROJECT COSTS	10,496.7	12,458.8	11,620.4	8,196.0	6,245.5	49,017.4

Table 6: Detailed cost table - sub-component 1.1

	Unit	Quantities						Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD)					
		2020	2021	2022	2023	2024	Total		2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Develop fish seed production capacity														
Design of hatchery unit & Technical Drawings /a	Lumpsum	1	-	-	-	-	1	100	99.8	-	-	-	-	99.8
Tendering Process /b	Lumpsum	1	-	-	-	-	1	5	5.0	-	-	-	-	5.0
Construction of ultra-modern fish hatcheries/commissioning /c	Number	2	2	2	-	-	6	392	806.8	826.1	848.6	-	-	2,481.5
Purchase of hatchery equipment /d	Lumpsum	1	1	1	1	-	4	40	41.8	42.9	44.1	45.6	-	174.3
Purchase of supplies /e	Lumpsum	1	1	1	1	-	4	30	31.3	32.1	33.1	34.2	-	130.7
Rehabilitation/ expansion of hatcheries co-financed by private hatchery operators /f	Number	3	3	-	-	-	6	250	771.8	790.3	-	-	-	1,562.1
Capacity building for seed production, management and distribution /g	Lumpsum	1	1	1	1	-	4	30	28.8	29.2	29.8	30.2	-	118.0
Development of fish seed standards and certification with the Mozambique National Standards Organization	Lumpsum	-	-	-	-	-	-		-	-	-	-	-	-
Subtotal									1,785.3	1,720.6	955.6	110.0	-	4,571.4
B. Develop fish feed production capacity														
Preparation of technical specification of fish feed machinery/housing /h	Lumpsum	1	-	-	-	-	1	8	8.0	-	-	-	-	8.0
Preparation of Tendering documents for feed machinery/housing /i	Lumpsum	1	-	-	-	-	1	5	5.0	-	-	-	-	5.0
Construction and installation/comissioning /j	Lumpsum	2	2	1	-	-	5	365	751.2	769.2	395.1	-	-	1,915.5
Tendering and supply of feed ingredients /k	Lumpsum	1	1	1	1	-	4	30	31.3	32.1	33.1	34.2	-	130.7
Supplies and expendable stores /l	Lumpsum	1	1	1	1	-	4	20	20.9	21.4	22.0	22.8	-	87.1
Development of fish seed standards and certification with the Mozambique National Standards Organization	Lumpsum	-	-	1	-	-	1	100	-	-	104.3	-	-	104.3
Development of cottage feed industries /m	Number	3	3	-	-	-	6	250	667.7	643.8	-	-	-	1,311.4
Capacity building for seed production, management and distribution /n	Lumpsum	1	1	1	1	-	4	30	28.8	29.2	29.8	30.2	-	118.0
Subtotal									1,512.8	1,495.7	584.3	87.2	-	3,680.1
Total Investment Costs									3,298.1	3,216.3	1,539.9	197.1	-	8,251.4
II. Recurrent Costs														
A. Support from IDEPA extension network /o	Number	70	70	70	70	70	350	7.5	467.4	450.6	435.7	416.7	416.7	2,187.0
B. Support from IIP extension network /p	Number	2	2	2	2	2	10	7.5	13.4	12.9	12.4	11.9	11.9	62.5
Total Recurrent Costs									480.7	463.5	448.1	428.6	428.6	2,249.5
Total									3,778.8	3,679.8	1,988.0	625.7	428.6	10,500.9

\a Technical and architectural design of the hatchery facility by consultants
\b Competetive bidding for construction and installation of hatchery facilities according to specifications
\c Each hatchery units would consist of a permanaent building to specification, two green houses for overwintering and nursery areas, water reiculation, electrical plumbing and quarantine facilities, fish biology, water quality and fish health laboratorie 睐
\d Hatchery equipment would consist of hatching jars, oxygen cylinders,assorted netting materials, fish graders, assorted fish containers
\e Fish feeds, assorted hormones such as overprim and MT for fish breeding and sex reversal, other chemicals such as disinfectants, lime, methylene blue and oxygen sypply for fish pakaging
\f Provision of matching grants and other financing mechanisms for purchase of new/modern equipment, machinery, expansion and supplies to expand the capacity for existing hatcheries co-financed by private-sector operators
\g Supports training of hatchery operators and value chain actors and developing seed distribution networks
\h Each feedmill will be established at the same locality as the hatchery for purposes of logistic support. Preparation of technical specifications including housing facilities
\i Each feedmill will be established at the same locality as the hatchery for purposes of logistic support. Preparation of technical specifications including housing facilities
\j Construction of husing and installation of feedmill machinery, testing and commissioning
\k The feed indgredients have to be supplied in bulk through competetive bidding for purposes of quality assurance
\l There would be need to provide packaging materials for manufactired fish feeds, branding and labelling services
\m Provision of matching grants and other financing mechanisms for purchase of new/modern equipment, machinery, expansion and supplies for existing fish feed manufactiring operations
\n Supports training of feed producer and value chain actors and developing feed distribution networks
\o Extensio workers supporting farmers in fish feed production - one officer for each 20 farmers
\p IIP - Institute for Fisheries Research. On fish seed development capacity - one extension officer for each of the 4 units to be established

Table 7: Detailed cost table - sub-component 1.2

	Unit	Quantities 2020	2021	2022	2023	2024	Total	Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD) 2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Training of extensionists	Session	2	-	2	-	2	6	26	49.8	-	51.7	-	55.5	157.0
B. Training of fish farmers and fish traders:														
Fish farmers: on pond/cage construction and fish production, fish handling and business development	Session	144	144	144	144	144	720	3.58	494.2	501.5	512.3	519.1	550.2	2,577.3
Follow-up of previous training	Session	-	-	144	144	144	432	1.551	-	-	221.9	224.9	238.4	685.2
Fish traders - Fish handling and business development	Session	24	-	24	-	24	72	3.37	77.5	-	80.4	-	86.3	244.2
Subtotal									571.7	501.5	814.6	744.0	874.9	3,506.7
C. Recovery support for aquaculture farmers /a	Lumpsum								686.0	702.5	721.6	-	-	2,110.1
D. Beneficiaries contribution for aquaculture production /b	Lumpsum	-	2,300	2,350	2,350	-	7,000	0.383	-	944.6	992.6	1,026.4	-	2,963.6
Total Investment Costs									1,307.6	2,148.6	2,580.5	1,770.4	930.4	8,737.5
II. Recurrent Costs														
A. Support from Government aquaculture experts /c	Number	10	10	10	10	10	50	0.333	3.0	2.9	2.8	2.6	2.6	13.9
Total Recurrent Costs									3.0	2.9	2.8	2.6	2.6	13.9
Total									1,310.5	2,151.5	2,583.3	1,773.0	933.1	8,751.4

\a For recontruction and recovery of assets for farmers affected by the IDAI storm
\b Purchase of first cycle inputs
\c in training of farmers

Table 8: Detailed cost table - sub-component 2.1

	Unit	Quantities 2020	2021	2022	2023	2024	Total	Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD) 2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Exchange visits/workshops - Regional														
For input suppliers	Session	1	-	1	-	1	3	12	11.5	-	11.9	-	12.8	36.2
For IDEPA staff	Meeting	1	-	1	-	1	3	12	11.5	-	11.9	-	12.8	36.2
For DPMAIP staff	Meeting	1	-	1	-	1	3	12	11.5	-	11.9	-	12.8	36.2
Subtotal									34.5	-	35.8	-	38.4	108.7
B. Exchange visits/workshops - Local														
For extensionists	Session	3	-	3	-	3	9	7.58	21.8	-	22.6	-	24.3	68.7
For fish farmers	Meeting	80	-	80	-	80	240	3.78	289.9	-	300.5	-	322.8	913.1
Subtotal									311.7	-	323.1	-	347.0	981.8
Total									346.2	-	358.9	-	385.5	1,090.5

Table 9: Detailed cost table - sub-component 2.2

	Unit	Quantities 2020	2021	2022	2023	2024	Total	Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD) 2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Market linkages and business partnerships														
1. Production of training material and organization of fish fairs	Lumpsum								-	30.5	15.7	16.0	16.9	79.1
2. Construction of water canals for aquaculture clusters	Km	25	25	25	-	-	75	4.583	117.9	120.7	124.0	-	-	362.7
3. Grid connection	Km	-	30	40	20	10	100	60	-	1,896.7	2,597.8	1,338.7	700.9	6,534.1
4. Renewable energy equipment	Number	30	30	30	30	-	120	3	94.0	96.4	99.2	102.5	-	392.1
5. Spot improvement of access road	Km	40	40	40	40	40	200	35	1,440.7	1,475.2	1,515.4	1,561.8	1,635.4	7,628.5
6. Improvement of fish markets	Number	-	3	6	6	9	24	38.333	-	121.2	249.0	256.6	403.0	1,029.7
7. Market and product development study and follow-up	Lumpsum								49.9	-	-	21.4	-	71.3
Subtotal									1,702.5	3,740.7	4,601.1	3,297.1	2,756.1	16,097.5
B. Support to youth aquapreneurship														
1. Business training	Number	-	7	7	7	-	21	14.29	-	97.3	99.4	100.7	-	297.4
2. International TA for business training in aquaculture	Number	-	1	1	1	-	3	50	-	50.9	52.2	53.4	-	156.5
Subtotal									-	148.2	151.6	154.1	-	453.9
Total Investment Costs									1,702.5	3,889.0	4,752.6	3,451.2	2,756.1	16,551.4
II. Recurrent Costs														
A. Support from ANE on road rehabilitation /a	Km	40	40	40	40	40	200	0.2	7.1	6.9	6.6	6.3	6.3	33.3
B. Support from District authorities on market rehabilitation/improvement /b	Lumpsum	40	40	40	40	40	200	0.2	7.7	7.8	7.9	8.1	8.5	40.0
C. Support from EDM on grid connection /c	Km	30	40	20	10	-	100	0.6	16.0	20.6	10.0	4.8	-	51.3
Total Recurrent Costs									30.8	35.3	24.5	19.2	14.9	124.7
Total									1,733.3	3,924.2	4,777.2	3,470.4	2,771.0	16,676.1

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\a Specifically on procurement and contract management for road construction - @1% of investment cost
\b Funds to cover support for procurement activities, as well as monitoring visits to work sites
\c For procurent k d

Table 10: Detailed cost table - sub-component 2.3

	Unit	Quantities 2020	2021	2022	2023	2024	Total	Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD) 2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Develop financial services														
Financial Services Specialist	Person-Month	6	12	12	12	6	48	3.5	21.0	42.8	43.8	44.8	23.6	176.0
Total Investment Costs									21.0	42.8	43.8	44.8	23.6	176.0
II. Recurrent Costs														
A. Support from FFP /a	Number	-	10	10	10	-	30	0.25	-	2.1	2.1	2.0	-	6.2
Total Recurrent Costs									-	2.1	2.1	2.0	-	6.2
Total									21.0	44.9	45.9	46.8	23.6	182.2

\a On the design of financial packages suitable for smallhoder aquaculture production

Table 11: Detailed cost table - sub-component 3.1

	Unit	Quantities 2020	2021	2022	2023	2024	Total	Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD) 2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Social inclusion														
Senior Sociologist	Person-Month	12	12	12	12	12	60	5.5	62.7	64.0	65.6	67.1	70.6	330.1
International trainer on social inclusion. /a	Day	20	-	-	-	-	20	0.85	17.0	-	-	-	-	17.0
Printing and distribution of Social Inclusion Manual	Number	120	-	-	-	-	120	0.03	3.8	-	-	-	-	3.8
Training of provincial and district level staff on Social Inclusion	Day	90	90	90	-	-	270	0.25	21.6	21.9	22.4	-	-	65.8
Consultant support /b	Day	-	-	12	-	12	24	0.85	-	-	10.1	-	10.9	21.1
Production and printing of technical briefs	Number	-	-	150	-	150	300	0.03	-	-	5.0	-	5.4	10.3
Stakeholder meetings at district, provincial and national level /c	Workshop	-	-	12	-	12	24	0.75	-	-	8.9	-	9.6	18.5
Special studies on social issues requiring further understanding for refining project strategies	Number	-	1	1	1	-	3	20	-	20.4	20.9	21.4	-	62.6
Implementation support on social issues	Day	-	1	1	1	-	3	0.85	-	0.9	0.9	0.9	-	2.7
Cost of engaging participants in Social Inclusion training	Session	150	-	-	-	-	150	0.25	35.9	-	-	-	-	35.9
Subtotal									141.0	107.1	133.7	89.4	96.5	567.7
B. Environment, climate change adaptation and mitigation														
Contribution to the development of climate adaptation and mitigation in agriculture decree	Lumpsum								49.9	40.7	31.3	-	-	121.9
Climate and weather information dissemination strategy	Lumpsum								99.8	-	-	-	-	99.8
Subtotal									149.7	40.7	31.3	-	-	221.7
Total									290.7	147.8	165.0	89.4	96.5	789.5

\a Outputs: 30 people trained and PRODAPE manual on Social Inclusion produced
\b To capture lessons learnt and best practices and produce technical briefs on social inclusion
\c to present and discuss social inclusion and social mentoring experience and results

Table 12: Detailed cost table - sub-component 3.2

	Unit	Quantities						Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD)					
		2020	2021	2022	2023	2024	Total		2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Environment, climate change adaptation and mitigation														
Training farmers, project staff, government on PICSA	Lumpsum	1	1	1	-	-	3	20	19.2	19.5	19.9	-	-	58.5
Training farmers, project staff, government on climate gaming tool	Lumpsum	1	1	1	-	-	3	10	9.6	9.7	9.9	-	-	29.3
Training aquaculture extension workers /a	Session	2	2	2	2	2	10	10	19.2	19.5	19.9	20.1	21.3	100.0
Establishment of Local Committees for Risk Management (CLGRC)	Session	5	5	-	-	-	10	5	24.0	24.3	-	-	-	48.3
Capacitation of existing Local Committees for Risk Management (CLGRC)	Trainings	10	10	-	-	-	20	3.5	33.5	34.0	-	-	-	67.6
Rehabilitation of 3 meteorological stations	Number	1	2	-	-	-	3	50	51.5	105.4	-	-	-	156.8
Capacitation of INAM (laptop, smartphone)	Lumpsum								2.1	-	-	-	-	2.1
Support from INAM /b	Lumpsum	12	12	12	12	12	60	5	59.9	61.1	62.6	64.1	67.4	315.1
Elaboration of a detailed AEZ map for aquaculture suitable areas	Study	-	1	-	-	-	1	250	-	254.5	-	-	-	254.5
Total									218.9	528.0	112.3	84.2	88.8	1,032.1

\a on environment and climate adaptation/mitigation best practices and dissemination of climate and weather info in aquaculture extension support
\b on diffusion of meteorological information, and management of met stations

Table 13: Detailed cost table – component 3.3

	Quantities						Unit Cost -	Totals Including Contingencies					
	2020	2021	2022	2023	2024	Total	Negotiation	2020	2021	2022	2023	2024	Total
I. Investment Costs													
A. Environment, climate change adaptation and mitigation													
Training project staff on applying, monitoring and reporting environment and social safeguards								-	77.8	-	-	-	77.8
Development of site or intervention specific EIAs and simplified EIA /a	14	-	-	-	-	14	50	698.6	-	-	-	-	698.6
Implementation oversight and monitoring of ESMPs and Monitoring plans by project staff /b	-	1	1	1	-	3	50	-	50.9	52.2	53.4	-	156.5
Seminars, workshops, learning routes for project environment officers								-	29.2	29.8	30.2	-	89.2
Subtotal								698.6	157.9	82.0	83.6	-	1,022.1
B. Planning , M&E, Learning and Knowledge Management													
1. Technical Assistance and studies to support P, M&E and KM at PMU													
Design of M&E and knowledge management systems	2	-	-	-	-	2	15	29.9	-	-	-	-	29.9
Creation of databases	-	2	-	-	-	2	7	-	14.3	-	-	-	14.3
Statistics	-	2	-	-	-	2	7	-	14.3	-	-	-	14.3
Household survey	2	-	-	2	-	4	7	14.0	-	-	14.9	-	28.9
Use of financial management software	1	-	-	1	-	2	7	7.0	-	-	7.5	-	14.5
ITA to support P,M&E and KM system set up	2	-	-	-	-	2	75	149.7	-	-	-	-	149.7
Short term NTA to carry out baseline study	1	-	-	-	-	1	50	49.9	-	-	-	-	49.9
Short term NTA to carry out Impact Assessment	-	-	1	-	1	2	30	-	-	31.3	-	33.7	65.0
Short term NTA to carry out Mid-term review and PCR	-	-	1	-	1	2	50	-	-	52.2	-	56.2	108.4
Subtotal								250.5	28.5	83.5	22.4	89.9	474.8
2. Strengthening the PMU Knowledge management System													
Develop and Implement KM and Communication Action Plan	-	1	-	-	-	1	25	-	25.5	-	-	-	25.5
Prepare, Package and Disseminate Knowledge products	2	2	2	2	2	10	10	20.0	20.4	20.9	21.4	22.5	105.0
Organise and conduct the Monitoring and Evaluation training workshops on M&E systems and procedures	2	2	2	2	2	10	15	28.8	29.2	29.8	30.2	32.0	150.0
Organise and conduct annual participatory planning workshop	2	2	2	2	2	10	15	28.8	29.2	29.8	30.2	32.0	150.0
Systematise procedures for baseline survey and impact studies data collection and analysis								5.0	-	5.2	-	5.6	15.8
Monitor and supervise KM and communication activities								20.0	20.4	20.9	21.4	22.5	105.0
Carry out some unspecified case studies	-	-	1	1	2	4	25	-	-	26.1	26.7	56.2	109.0
Provincial seminars on knowledge management	16	16	16	16	16	80	2	30.7	31.1	31.8	32.2	34.2	160.0
Subtotal								133.1	155.7	164.5	162.0	205.0	820.2
3. Strengthening of DNPEI/IDEPA HQ and DPMIMAIP on M&E and MIS													
Assess the M&E capacity of focal point								29.9	-	-	-	-	29.9
Develop M&E Database								29.9	-	-	-	-	29.9
Procure and Install Interactive Data Dashboard	1	-	-	-	-	1	50	52.2	-	-	-	-	52.2
Develop Capacity for utilisation of the database								-	14.6	-	15.1	-	29.7
Monitor the pefomance of the M&E system								-	-	-	-	16.9	16.9
Subtotal								112.1	14.6	-	15.1	16.9	158.7
Subtotal								495.7	198.8	247.9	199.6	311.7	1,453.7
C. Trainings													
Financial management and contracts								10.7	-	-	11.3	-	22.0
Monitoring and Evaluation								10.7	-	-	11.3	-	22.0
Other trainings								-	5.4	-	5.6	-	11.1
Exchange visitis	-	8	8	8	-	24	1.5	-	11.7	11.9	12.1	-	35.7
Subtotal								21.5	17.1	11.9	40.3	-	90.8

Table 14: detailed cost table - sub-component 3.3 (continued)

D. National Project Management Unit													
1. Vehicles													
Vehicle 4WD double cabin	1	-	-	-	-	1	40	41.8	-	-	-	-	41.8
Vehicle 2WD	1	-	-	-	-	1	15	15.7	-	-	-	-	15.7
Subtotal								57.5	-	-	-	-	57.5
2. Office and IT equipment, and software													
Desktop computer	11	2	-	11	-	24	1.5	17.2	3.2	-	18.8	-	39.2
Laptop computer	6	4	-	6	-	16	1.75	11.0	7.5	-	12.0	-	30.4
Personal Printer/Scanner /c	3	2	-	3	-	8	0.45	1.4	1.0	-	1.5	-	3.9
Multifunctional printer/copy machine/scanner	1	-	-	1	-	2	1.5	1.6	-	-	1.7	-	3.3
Scanner /d	-	2	-	-	2	4	0.3	-	0.6	-	-	0.7	1.4
Financial management software /e	1	-	-	-	-	1	55	57.4	-	-	-	-	57.4
File server /f	1	-	-	1	-	2	5	5.2	-	-	5.7	-	10.9
Office furniture /g	10	-	-	-	-	10	1	10.4	-	-	-	-	10.4
File cabinets /h	10	10	-	-	-	20	0.25	2.6	2.7	-	-	-	5.3
Photocamera	1	-	-	-	-	1	1	1.0	-	-	-	-	1.0
Videocamera	1	-	-	-	-	1	1.5	1.6	-	-	-	-	1.6
Subtotal								109.5	15.0	-	39.7	0.7	164.9
3. External audit	1	1	1	1	1	5	20	20.0	20.4	20.9	21.4	22.5	105.0
4. Steering committee meetings	1	1	1	1	1	5	0.833	0.8	0.8	0.8	0.8	0.9	4.2
Subtotal								187.8	36.2	21.7	61.9	24.1	331.6
E. Provincial Directorates /i													
1. Vehicles													
Vehicle 4WD single cabin	8	-	-	-	-	8	25	209.0	-	-	-	-	209.0
2. Office and IT equipment, and software													
Desktop computer	48	-	-	48	-	96	1.5	75.2	-	-	82.0	-	157.2
Laptop computer	8	-	-	8	-	16	1.75	14.6	-	-	16.0	-	30.6
Personal Printer/Scanner	16	-	-	16	-	32	0.45	7.5	-	-	8.2	-	15.7
Multifunctional printer/copy machine/scanner	8	-	-	8	-	16	1.5	12.5	-	-	13.7	-	26.2
Scanner	-	8	-	-	8	16	0.3	-	2.6	-	-	2.9	5.4
Scanner	-	8	-	-	8	16	0.3	-	2.6	-	-	2.9	5.4
Photocamera	8	-	-	-	-	8	0.3	2.5	-	-	-	-	2.5
Subtotal								112.4	5.1	-	119.9	5.7	243.1
3. Steering committee meetings	16	16	16	16	16	80	2	30.7	31.1	31.8	32.2	34.2	160.0
Subtotal								352.1	36.3	31.8	152.1	39.9	612.1
Total Investment Costs								1,755.7	446.3	395.3	537.4	375.7	3,510.4
II. Recurrent Costs													
A. National Project Management Unit													
1. Staff salaries													
Project Coordinator	1	1	1	1	1	5	54	48.1	46.4	44.8	42.9	42.9	225.0
Financial Manager	1	1	1	1	1	5	45	40.1	38.6	37.3	35.7	35.7	187.5
Procurement Officer	1	1	1	1	1	5	41.667	37.1	35.8	34.6	33.1	33.1	173.6
M&E and KM Officer	1	1	1	1	1	5	42	37.4	36.1	34.9	33.3	33.3	175.0
Financial Management Assistant	1	1	1	1	1	5	16.6/Person-Year	44.3	42.7	41.3	39.5	39.5	207.5
M&E and KM Assistant	1	1	1	1	1	5	16.6	14.8	14.2	13.8	13.2	13.2	69.2
Administrative Assistant	1	1	1	1	1	5	10	8.9	8.6	8.3	7.9	7.9	41.7
Driver	1	1	1	1	1	5	9.5	8.5	8.2	7.9	7.5	7.5	39.6
Subtotal								239.1	230.5	222.9	213.1	213.1	1,118.8
2. Incentives for national staff													
Incentives								9.3	9.0	8.7	8.3	8.3	43.7
3. Travel costs													
Perdiem	295	295	295	295	295	1,475	0.08	23.6	24.0	24.6	25.2	26.5	123.9
Ticket costs	31	31	31	31	31	155	1	30.9	31.6	32.3	33.1	34.8	162.8
Subtotal								54.5	55.6	57.0	58.3	61.4	286.7
4. Operating costs													
Fuel, maintenance and repair of vehicles	2	2	2	2	2	10	5	10.0	10.2	10.4	10.7	11.2	52.5
Office material and stationery								5.8	5.8	6.0	6.0	6.4	30.0
Maintenance of office equipment								3.0	3.1	3.1	3.2	3.4	15.8
Other administrative costs								0.5	0.5	0.5	0.5	0.5	2.5
Subtotal								19.2	19.6	20.0	20.4	21.5	100.8
Subtotal								322.1	314.7	308.6	300.2	304.4	1,550.0
B. Provincial Directorates /j													
1. Incentives for provincial staff													
Incentives								183.8	177.3	171.4	163.9	163.9	860.2
2. Travel costs													
Perdiem	100	100	100	100	100	500	0.07/Day	55.9	57.0	58.4	59.8	62.9	294.1
Ticket costs	4	4	4	4	4	20	0.6/Number	19.2	19.5	20.0	20.5	21.6	100.8
Subtotal								75.1	76.6	78.5	80.3	84.5	394.9
3. Operating costs													
Fuel, maintenance and repair of vehicles	1	1	1	1	1	5	5/Number	39.9	40.7	41.7	42.7	45.0	210.0
Office material and stationery	16	16	16	16	10	74	2	30.7	31.1	31.8	32.2	21.3	147.2
Maintenance of office equipment	16	16	16	16	10	74	1	16.0	16.3	16.7	17.1	11.2	77.3
Other administrative costs	16	16	11	10	10	63	0.2	3.1	3.1	2.2	2.0	2.1	12.5
Subtotal								89.6	91.3	92.4	94.0	79.7	447.0
Subtotal								348.5	345.1	342.3	338.2	328.1	1,702.1
Total Recurrent Costs								670.6	659.8	650.8	638.4	632.5	3,252.1
Total								2,426.3	1,106.0	1,046.2	1,175.9	1,008.1	6,762.5

\a according to the national regulation, and guidelines thus securing licences from MITADER/DPTADER
\b on environment and climate adaptation/mitigation best practices and dissemination of climate and weather info in aquaculture extension support
\c For Project Coordinator, Finance Manager and Procurement Officer
\d For scanning of accounting and procurement documentation for electronic archiving
\e Software should be usable for budgeting, IFAD reporting, preparation of Withdrawal Applications, and procurement management
\f To use the financial management software, and electronic archiving software
\g Set consists of one desk, chair, drawer, and lamp
\h For accounting and procurement documentation
\i 8 provincial directorates within DPMAIPs
\j of IDEPA responsible for project implementation at provincial level (total of 8)

Table 15: Detailed cost table - sub-component 3.4

	Unit	Quantities						Unit Cost - Negotiation (USD)	Totals Including Contingencies (USD)					
		2020	2021	2022	2023	2024	Total		2020	2021	2022	2023	2024	Total
I. Investment Costs														
A. Social behaviour change communication (SBCC) activities														
Nutrition SBCC, market place material development, production and TA	Lumpsum	-	1	-	1	-	2	400	-	407.3	-	427.1	-	834.4
Farmer clusters and/or the PCR group nutrition education sessions	Session	6	6	6	6	6	30	30	185.2	189.7	194.8	200.8	210.3	980.8
Market Place Support (Fish fairs , radio shows,radio , televison etc) including TA	Number	-	12	12	12	6	42	10	-	122.2	125.2	128.1	67.4	443.0
Subtotal									185.2	719.1	320.0	756.1	277.7	2,258.1
B. Capacity building on nutrition mainstreaming approaches														
Training of PRODAPE team(PCU, P/DMIMAIP, extension teams)	Session	3	4	4	4	-	15	10	28.8	38.9	39.7	40.3	-	147.7
Participation in CODSAN, COPSAN and SETSAN(P/DMIMAIP team)	Number	3	5	5	5	3	21	10	28.8	48.6	49.7	50.3	32.0	209.5
Subtotal									57.5	87.6	89.4	90.6	32.0	357.1
C. Nutrition asessments and evaluations														
Consumer awareness studies	Study	1	-	1	1	6	9	10	10.0	-	10.4	10.7	67.4	98.5
KAP, MDDW, MDDYC baseline,mideline,endline studies	Study	1	-	1	-	1	3	50	49.9	-	52.2	-	56.2	158.3
Subtotal									59.9	-	62.6	10.7	123.6	256.8
D. Nutrition Specialist	Person-Month	12	12	12	12	12	60	6	68.4	69.8	71.5	73.2	77.1	360.1
Total									371.1	876.5	543.6	930.6	510.4	3,232.2

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex 4: Economic and Financial Analysis

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 4: Economic and Financial Analysis

This Appendix presents the financial and economic analysis of the Small-scale Aquaculture Development Project (PRODAPE).

I. Project benefits and beneficiaries

1. **Project Benefits.** Financial benefits will be in the form of increased productivity of the farmers engaging in the aquaculture value chain, as well as increased financial returns of the HHs targeted by PRODAPE. Social benefits will include a reduction in poverty rates in the areas targeted by the Project, with special measures taken to ensure inclusion of disadvantaged groups. This will be the effect of the increased financial returns for HHs consequent to Project interventions.

2. Project benefits not quantified in this analysis will include a reduction in malnutrition as a result of increased levels of productivity of the farms and other economic activities engaged by the project beneficiaries. This shall also contribute to increased food security of the households, due to substantial increase of the produce that is kept by households for self-consumption.

3. **Project Beneficiaries.** The project aims to reach 88,900 people (17,800 households), of which 87,500 (17,500 households) are producers at the various levels of the aquaculture value chain. For the purposes of this EFA we shall consider the 87,500 producers. This EFA presents a few production models used as proxy to the actual activities that the target group will be engaging too. As such, we note that the model is a simplification of the actual dynamic and complex economic situation in the target areas.

4. For the purposes of this EFA we have computed the main economic benefits of the production models representing the above value chains as per the below incorporation matrix:

Table 7: Direct Beneficiaries of project activities and phasing

		2020	*2021*	*2022*	*2023*	*2024*	*Total*
#	*Activity*			*Phasing of beneficiaries*			
1	Farm 1 + New Pond		560	560	560		1,680
2	Farm 2 + Pond (Expansion)		750	750	750	750	3,000
3	Horticulture + Pond (Expansion)		750	750	750	750	3,000
4	Chicken farm + New Pond		470	470	470		1,410
5	Livestock +New Pond		370	370	370		1,110
6	Farm 3 + Cage		300	600	600		1,500
7	Horticulture + Cage		200	550	550		1,300
8	Market seller		250	500	500		1,250
9	Domestic ice production		250	500	500		1,250
10	Fishfeed production (enterprises)	2	2	2			NA
11	Fishseed production (enterprises)	3	2	1			NA
12	Road construction		1000	1000			2,000
	Total						17,500

5. The total period used for the analysis of the profitability of the project is 20 years. Considering the foreseen rate of uptake of the project by the beneficiaries, as well as the slow accrual of benefits, a 20-year lifespan allows us to better evaluate the impact of the project on farmers' livelihoods.

6. Costs and benefits have been evaluated at constant 2019 prices. The effects of inflation on prices and revenue have not been taken into account in the analysis. This is justified based on the overall difficulty in forecasting inflation for a period of time beyond 3 to 5 years.

II. Financial Analysis

7. **Objectives**. A financial analysis was carried out for each of the proposed interventions to assess their viability. Of particular importance, the analysis was needed to verify if the new activities would be profitable to the beneficiaries in the project areas. Based on the analysis, it was therefore possible to assess the level of increased cash-flow for beneficiaries participating in the project.

8. **Methodology and financial models**. The analysis was carried out based on production models which are typical of the ongoing IFAD project in Mozambique investing in the fisheries and aquaculture sector, specifically PROPESCA and PROAQUA. The analysis was needed to verify if there are indeed net increases in revenue as a result of PRODAPE, based on production model that takes into account the various forms of access to finance that will be available to project beneficiaries.

9. Market prices used to cost the activities were based on two sources of information: the prices recorded by project field staff throughout the country, made available by the project Coordinators, and the information on prices published regularly by the Ministry of Agriculture and Food Security on its platform for market prices of agricultural products[5]. Labour costs (and unemployment rate) were based on information published yearly by the National Institute of Statistics[6]. Furthermore, the design mission had the chance to verify in loco some of the applicable prices.

10. In order to better simulate the production cycle and livelihoods of the farmers to be engaged under PRODAPE, the analysis specifically considered farmers engaged in other production systems, who are become aquaculture farmers as part of the implementation of PRODAPE. This models allow us to better simulate the synergies between the various production systems, as some spill-over effects are bound to exist (for example, usage of agriculture by-products to feed the fish, or the use of the pond water fertilized by the fish for agricultural purposes).

11. **Financial Discount rate (FDR)**. The financial discount rate used in the financial analysis was based on information published by Bank of Mozambique[7] on the interest rates applicable in the country by Commercial Banks, and on long term Government bonds. Currently, the long-term Mozambican bond rate is 22.35%. For the purposes of the analysis of the financial suitability of each model, we have set the FDR to 22%.

12. **Credit analysis for production models.** Based on the assumptions made in the detailed description of the project, and where needed, we have assumed that farmers shall access loans through the ongoing IFAD project REFP (Rural Finance Enterprise Project). The current reference rate for loans is the Maputo Inter-Bank Offered Rate (MAIBOR), which has been set to 21.5% by Bank of Mozambique. For the purposes of our credit analysis we have used a proxy annual interest rate of 22.5% for the loans offered to the project beneficiaries (assuming that the Financial Institutions working with REFP shall apply a 1% spread to the MAIBOR for on-lending to farmers. In addition, we have assumed that loans to farmers will be seasonal, i.e. repayable in one instalment at the end of the production season.

13. **Family labour.** The cost of hired labour has been used as a proxy to estimate the cost of family labour, as the hired labour considered under this EFA is rural, unskilled labour.

14. **Assumptions for production models.** As PRODAPE will target several different kinds of enterprises, this analysis seeks to evaluate the profitability of modelled production models. Where deemed necessary, we considered the effects of access to

[5] http://www.masa.gov.mz/sima/
[6] http://www.ine.gov.mz/estatisticas/estatisticas-sectoriais
[7] http://www.bancomoc.mz/fm_pgTab1.aspx?id=106

credit in the production models, especially in view of the high annual interest rate charged by commercial banks and MFIs.

15. We have analysed a total of 9 production models (all profitability indicators are included in the tables attached to this EFA as appendixes):

a) Model 1: Farm 1 (cassava, maize and beans) + New Pond. This model captures the typical economic activities of some of the subsistence farmers in the target areas. Farmers produce 3 crops under an area of 1 ha with relatively poor revenues in the WOP scenario. The WP scenario shows a farmer that receives a pond built by PRODAPE along with inputs for the first production cycle. Land holding remains at 1ha, however there are some synergies between the two production systems as the farmer is able to use byproducts from his agriculture production to supplement the fish feeding. We assume also an initial low productivity for the pond as these farmers will still require substantial training on the novel production system. Revenue increase is mostly due to fish sales. A subsequent scenario, which shows farmers improving agriculture yields through increased revenue from fish sales was not explored, as it may be difficult to isolate the effects of the sole aquaculture activity. The financial analysis shows that the model is profitable, with NPV being positive and IRR above the opportunity cost of capital.

b) Model 2: Farm 2(legumes 1) + Pond (expansion): this model captures the activity of an economically active household that already owns a small, 300 m^2 pond. The farmer produces legumes (dry beans, soybeans and sesame), mostly for the market and maize as a staple food.. We assume furthermore that this farmer owns a small earthen pond of 300 square meters from which he generates extra income. Fish are fed a combination of household produced feed and other agricultural byproducts, generating low weights at the time of capture. In the WP scenario, PRODAPE supports the farmer in the expansion of his pond to 500 square meters and higher quality feed for the first cycle. We also consider a substantial increase in the stocking rate of the pond. The model also assumes that the farmer continues to supplement the feed from the produce of his legume farm, boosting the protein intake of the fish.

c) Model 3 - horticulture + Pond (expansion): under this model and in the WOP scenario the farmer cultivates tomatoes, lettuce and green peppers in a 0.5h plot, mostly for the market and also owns a small 300 m^2 pond.. Yields are still below optimal results if the farmer had access to an improved irrigation system. The productivity of the pond is also sub-optimal. Under the WP scenario, the project supports the farmer in expanding his pond to 500 m^2 and for the inputs for the first cycle. As we assume that the pond is located close to the cultivated plot, there are opportunities for synergies between the two production systems if the farmer is well trained by aquaculture extension services. The farmer uses part of the water drained from the pond for the plants. As this water is fertilized by the fish, this reduces marginally the use of purchased fertilizers by the farmer. Furthermore, the farmer also uses some byproducts of the cultivation to feed the fish, resulting in a slight decrease in the amount of purchased feed. The financial analysis shows that the model is profitable with positive NPV the IRR is above the opportunity cost of capital.

d) Model 4 – Poultry + New Pond – represents a rural entrepreneur engaged in the poultry value chain. The project supports the producer in opening a 500 square meters pond in the WP scenario. Furthermore, the producer exploits the synergies between the two productions systems: part of the fertilizer for the pond comes from the chicken house, and byproducts of the chicken house are also used as feed for the pond. As a consequence, there's a slight reduction in both the fertilizer and feed needs for the fish. The financial analysis shows that the model is profitable, that the IRR is above the opportunity cost of capital and financial NPV is positive.

e) Model 5 - livestock production + New Pond - this model simulates a livestock producer who enters into the aquaculture business. The WOP scenario considers a

small scale livestock producer, operating at a sub-optimal level. Under the WP scenario, the livestock producer yields the same benefits as the chicken producer: part of the fertilizer for the pond comes from the manure, and byproducts of the livestock production are also used as feed for the pond. There's a slight reduction in both the fertilizer and feed needs for the fish. The financial analysis shows that the model is profitable. The IRR is above the opportunity cost of capital and financial NPV is positive.

f) Model 6 - Horticulture + Cage: this model considers the same farm model as presented in the third model as the WOP scenario. Hence the WOP assumptions are similar, and we assume that the farmer's land holdings are located near a large body of water. For the WP scenario, PRODAPE finances 80% of the construction of a 120 cubic meter cage, while the farmer finances the remaining 20% and the costs of the feed for the cage. Cages yields are topically much higher than ponds, with productivity levels of up to 6 times those of ponds, however they also require a much higher level of management. As such, we have nonetheless assumed a conservative yield per cage of double the production of the ponds. The model under consideration is profitable, with positive NPV and IRR above the opportunity cost of capital.

g) Model 7 – Farm 3 (legumes) + Cage: this model considers the same farm model as presented in the second model as the WOP scenario. Hence the WOP assumptions are similar, and we assume that the farmer's land holdings are located near a large body of water. For the WP scenario, PRODAPE finances 80% of the construction of a 120 cubic meter cage, while the farmer finances the remaining 20% and the costs of the feed for the cage. Cages yields are topically much higher than ponds, with productivity levels of up to 6 times those of ponds, however they also require a much higher level of management. As such, we have nonetheless assumed a conservative yield per cage of double the production of the ponds. The model under consideration is profitable, with positive NPV and IRR above the opportunity cost of capital.

h) Model 8 – Market seller – this model capture the economic activities of producers engaged in other levels of the value chain. In this scenario, a producer purchases fish (from both fishermen and aquaculture farmers) and resells the produce at the market. Quality of the fish varies substantially with three existing category. In the WOP scenario we assume that the reseller only buys second and third grade fish to resell. As the reseller does not own any means of transport, and as recorded in field visits to PROAQUA/PROPESCA implementation areas, the reseller purchases the fish and keeps it in a simple basing full of ice and covered by cloth. Transport to market is through local buses. In the WP scenario, the producer acquires a loan (and contributes from his own savings) to purchase a bicycle and a cooler box. This increases the total volume of production that the producer is able to market, while also cutting drastically on transportation costs. Again, the model is profitable.

i) Model 9 – Domestic ice production – this is another model that presents economic activities of beneficiaries that derive their subsistence from other levels of the value chain other than production. A farmer that owns a small fridge produces and sells ice for a fee. However, we assume that in the WOP scenario the farmer uses an old freezer, and that under WP the farmer purchases a new freezer to increase his yearly output. A side effect of the purchase is also the lower electricity expenses as we assume that the new freezer has a much better energy management system.

j) Model 10 - fish feed production: this model presents the assumptions under one of the activities to be financed by PRODAPE, based on consultations with IDEPA experts during the mission. Under this model, the project shall establish a partnership with a private sector operator and builds and equips the facility for a small facility for the production of feed. The private sector operator enters with a matching contribution and also accesses a commercial loan (payable within a 3-year period) to finance the purchase of raw material for the first quarter of production. The overall model shows

this the enterprise is profitable, with positive financial NPV and IRR above the opportunity cost of capital.

k) Model 11 - fish seed production - PRODAPE will also finance investments in fingerling production. The design team had the opportunity to visit a fingerling facility which was rehabilitated under the IFAD project PROQUA. The data used for this model has been based extensively on the business plan submitted by the private sector provider for the rehabilitation of the facility. Under this model, and very similarly to the case of fish feed production, we assume that the project shall finance the construction and equipment of 4 modern fingerling production units. It is expected that the project enters into a partnership with a private sector operator to run the production unit and this operator that shall provide capital investments for the acquisition of the inputs for the production of fingerlings, as well as workforce. The overall model shows this the enterprise is profitable, with positive financial NPV and IRR above the opportunity cost of capital.

l) Model 12 – road rehabilitation - EFA models the benefits expected from the rehabilitation and or construction of 200 Km of roads by PRODAPE. Considering the country's population density (40 people/km^2), the average size of the households in Mozambique (5.1 people/household), and assuming a road catchment area with a of 5km around the road, it is possible to deduce that the road network may benefit around 80,000 people, or 15,686 households. As per the targeting working paper, this EFA has already modelled 15,500 households through economic models 1 to 11. As such, and to avoid double counting, the remaining 2,000 households have been simulated based on the road model, which analyses the typical benefits expected, linked to lowering of transport costs, reduction of post-harvest losses and increased marketed produce. Furthermore, the benefits from the model have been directly incorporated into the overall EFA. The calculations on NPV and IRR for this model have been made simply for the sake of completeness, and not to justify the economic feasibility of road construction/rehabilitation. Road investment and maintenance costs have been sourced directly from COSTAB.

16. **Results of the Financial Analysis.** The analysis of the proposed models shows that there's substantial increase in net revenue for smallholder farmers as show in the table below:

Table 8: Income analysis

		Yearly revenue stream before taxes (EBTDA)				
		WOP (MZN)	WP* (MZN)	WOP (USD)	WP* (USD)	% increase
#	**Activity**					
1	Farm 1 + New Pond	16,134	46,316	269	772	187.08%
2	Farm 2 + Pond (Expansion)	21,566	53,726	359	895	149.13%
3	Horticulture + Pond (Expansion)	27,841	55,657	464	928	99.91%
4	Chicken farm + New Pond	24,248	53,858	404	898	122.11%
5	Livestock +New Pond	37,031	51,566	617	859	39.25%
6	Farm 3 + Cage	16,009	58,579	267	976	265.91%
7	Horticulture + Cage	20,416	49,901	340	832	144.42%
8	Market seller	25,348	67,620	422	1,127	166.77%
9	Domestic ice production	7,643	19,362	127	323	153.34%
10	Fishfeed production	0	265,535	0	4,426	NA
11	Fishseed production	0	542,882	0	9,048	NA
	**at full WP*					

Average increase in revenue	146%

III. Economic Analysis

17. **Scope.** The economic analysis was carried on the project as a whole to evaluate its effect on the overall Mozambican economy.

18. **Methodology and assumptions.** An overall Project Economic Net Present Value (ENPV) and economic internal rate of return (EIRR) have been estimated by aggregating the net incremental benefits of all production models phased according to Project Years in which they are expected to be implemented. Benefit streams are analysed for a total period of 20 years. This is justified based on the rate of adoption of project interventions by farmers, in order to fully analyse the benefits that accrue once revenue streams are substantially equal for all project beneficiaries.

19. **Social Discount Rate (SDR).** As noted above, the FDR has been set to 22%, based on the yield of long-term Government bonds. However, it must be noted that this yield also reflects a significant default risk, taking into account that the most prominent rating agencies have rated the Mozambican bonds issued in international capital markets as highly speculative, with high default risk[8]. On the other hand, the most recently approved World Bank project (Mozambique Urban Sanitation Project, May 2019[9]) employed an SDR of 10%. As such, for the purposes of this EFA, the SDR has been set to 10%.

20. **Standard Conversion Factor (SCF).** The SCF was calculated based on the balance of payments information published by the Bank of Mozambique. Other sources of information were UNCOMTRADE international trade statistics database[10]. Data on subsidies (on the import of fuels, mostly) was obtained from IMF Country Report on Mozambique, detailing that subsidies on fuels have ranged between 1% to 1.4% of GDP between 2013 and 2015. Mozambique has removed the subsidies on fuel in July 2017, however, for the purposes of our analysis we have considered a subsidy equivalent to 1.2% of GDP for the period considered in the balance of payments. The SCF is thus 0.896 based on the available data.

Table 9: Trade data - Mozambique - 2012 – 2017 (in millions MZN)

Balance of payments (USD millions)								
year	imports	tax on imports	subsidies	exports	tax on exports	balance	GDP/a	average fuel subsidy (import)/b
2012	6,177	1,297	163	3,470	35	-2,707	14,534	163
2013	10,099	2,121	179	4,024	40	-6,075	16,019	179
2014	8,743	1,836	190	4,725	47	-4,018	16,961	190
2015	7,908	1,661	166	3,196	32	-4,712	14,798	166
2016	5,295	1,112	123	3,352	34	-1,943	11,015	123
2017	5,223	1,097	138	4,725	47	-498	12,334	138

Data on impots and exports from World Trade Yearbook (https://comtrade.un.org/pb/first.aspx)
/a GDP data from http://data.worldbank.org/country/mozambique
/b IMF estimates that import subsidy on fuel was on average 1.2% of GDP between 2013 and 2015

21. **Conversion factors and economic prices.** All prices used in the analysis were gathered at the domestic level. Mozambique applies import taxes ranging from 0% up to a maximum of 20% on most goods that cross the border[11]. Valued Added Tax (VAT) is 17%. For the commodities under analysis in our models, we note that the export tax applied is zero.

22. Based on the import tax for each of the project inputs as published by Mozambique's Customs Authority, as well as based on the VAT and export taxes it was

[8] https://www.moodys.com/credit-ratings/Mozambique-Government-of-credit-rating-806356928
[9] http://documents.worldbank.org/curated/en/556331558836037864/pdf/Mozambique-Urban-Sanitation-Project.pdf
[10] https://comtrade.un.org/
[11] http://www.at.gov.mz/por/Pauta-Aduaneira

possible to calculate specific Conversion Factors for each input and output related to the production models. These conversion factors are presented in the tables presented in the annexes to this working paper.

23. Economic prices were converted from financial prices per single input and output based on their classification as: tradable and exported goods/services, tradable and imported, non-tradable, and shadow wage. The production/revenue of all models was treated as tradable exported goods (label *Te* in the EFA models), and as such the economic prices were obtained as the market prices, free of VAT and free of export taxes, adjusted by the SCF. Regarding the inputs, the economic price for tradable national goods (*Tn*), was calculated as the market price free of VAT. The economic price for tradable imported goods (*Ti*) was to set to the market price, free of VAT and free of import duty, adjusted by the SCF. The economic price for non-tradable goods (NT) was set to the market price free of VAT.

24. **Shadow wage.** The unemployment rate in Mozambique, as published by National Statistics and recorded by Government of Mozambique was 24.5% in 2018. For the purposes of our analysis we have calculated the economic wage in the project areas using the unemployment rate as a proxy. As proposed in the IFAD Guidelines for EFA, we have set: EW = MW*(1-UR), where EW is the economic wage, MW the market wage and UR the unemployment rate. For the analysis carried in this EFA EW = 0.755*MW.

25. **Project costs.** Project economic costs were computed COSTAB. The economic costs of the project were obtained from COSTAB based on a standard conversion factor of 0.896 as discussed above. Where costs included in COSTAB were also computed in the activity models the same were deducted from the overall economic costs to avoid double-counting. As such, all project costs for the support to beneficiaries on opening ponds, purchasing cages, as well as for the construction of fish feed and fish seed facilities were deducted from the total costs used in this EFA.

26. **Project profitability indicators.** The overall Economic Internal Rate of Return (EIRR) of the Project is estimated at 26%. The Economic Net Present Value (ENPV) is MZN 4.4 billion, or USD 73.3 million. As ENPV is positive and EIRR is above the Social Discount Rate the project is deemed economically viable and acceptable for investment.

27. **Sensitivity Analysis**. The sensitivity analysis evaluated the robustness of the proposed interventions. Proxies analyzed were: reduction of project benefits (due, for example, to failure of the capacity building initiatives of the project), increase in project costs.

28. The sensitivity analysis also assessed the result in the delay of overall project benefits by one or two years (all production models). The results of the analysis are presented in the table below:

Table 10: Sensitivity Analysis

Sensitivity Analysis (Economic)									
	Base case	Reduction in project benefits			Increase in project costs			Delay in accrual of project benefits	
Indicator	10%	-10%	-20%	-30%	10%	20%	30%	1 year	2 year
ENPV (millions MZN)	4,398	3,652	2,758	1,863	4,383	4,219	4,055	3,501	2,550
ENPV (millions USD)	73	61	46	31	73	70	68	58	43
EIRR	26.0%	23.9%	21.0%	17.9%	25.3%	24.2%	23.2%	21.6%	17.8%

Table 11: Sensitivity analysis (continued)

	Base case	Decrease in fish prices		Increase in fingerling prices		Increase in feed prices	
Indicator	10%	-5%	-10%	10%	30%	10%	20%
ENPV (millions MZN)	4,398	2,239	79	4,058	3,377	1,982	-434
ENPV (millions USD)	73	35	1	68	56	33	-7
EIRR	26.0%	18.4%	10.3%	24.7%	22.3%	17.4%	8.3%

29. The results of the analysis show that the reduction of project benefits of up to 30% do not endanger the economic suitability of the project, as ENPV remains positive, and IRR is still above the SDR.

30. An increase of project costs of a maximum of 30% would also not seriously imperil the project as ENPV would remain positive and EIRR well above the SDR.

31. Finally, a delay in accrual of project benefits of 2 years would still not drop ENPV below zero (and IRR below the SDR), hence the project would remain profitable.

32. However, a 10% decrease in the fish price at the producer level would bring EIRR at only 0.3% above the SDR, which shows that the price of the fish applied by the producer is a variable that may affect the economic feasibility of the project. Furthermore, were fish feed prices to increase by 20%, the EIRR would drop below the SDR and the ENPV would be below zero, rendering the project economically unfeasible.

Table 12: PRODAPE Economic Analysis

Republic of Mozambique
PRODAPE - Small-scale Aquaculture Development Project
Production Models
Economc Budget (in MZN millions)

	Production Models	Without Project	With Project								
		1 to 20	1	2	3	4	5	6	7	8	9	10 to 20
1	Farm 1 + New Pond	21,398	0	-39,178	-14,564	34,634	123,855	149,284	150,130	150,130	150,130	150,130
2	Farm 2 + Pond (Expansion)	52,909	0	-17,064	19,260	88,224	158,322	245,483	279,257	280,390	280,390	280,390
3	Horticulture + Pond (Expansion)	72,710	0	-13,177	27,033	100,083	173,132	259,359	292,199	292,199	292,199	292,199
4	Chicken farm + New Pond	33,892	0	-48,241	-36,049	-2,644	51,973	154,831	197,255	218,468	218,468	218,468
5	Livestock + New Pond	39,122	0	-18,628	9,681	54,072	117,091	133,173	133,173	133,173	133,173	133,173
6	Farm 3 + Cage	18,733	0	-12,114	3,266	68,988	180,405	223,339	244,806	244,806	244,806	244,806
7	Horticulture + Cage	19,107	0	-7,280	-896	58,854	162,018	209,686	234,348	229,115	229,115	229,115
8	Market seller	58,591	0	9,663	35,740	71,226	91,809	101,546	106,859	107,749	106,859	106,859
9	Domestic ice production	7,798	0	-710	1,502	7,800	16,426	18,241	19,149	19,149	19,149	19,149
10	Fishfeed production (enterprises)	0	-598	156	1,100	2,831	3,209	3,398	3,398	3,398	3,398	3,398
11	Fishseed production (enterprises)	0	-30,606	-16,660	-2,984	10,094	11,071	11,396	11,396	11,396	11,396	11,396
12	Road construction	0	0	6,356	12,713	19,069	25,426	31,782	31,782	31,782	31,782	31,782
A	Total production models cash flows	324,258	-31,204	-156,877	55,801	513,231	1,114,737	1,541,520	1,703,753	1,721,756	1,720,866	1,720,866
B	Project Economic Costs (COSTAB)		401,875	501,439	502,119	417,275	315,200					
C	Maintenance Costs			4,349	8,967	13,874	19,162	24,700	24,700	24,700	24,700	24,700
D	Net cash flows (A-B)	324,258	-433,079	-662,665	-455,285	82,081	780,374	1,516,821	1,679,053	1,697,056	1,696,166	1,696,166
	Incremental Economic Benefits		-757,337	-986,923	-779,544	-242,177	456,116	1,192,562	1,354,795	1,372,798	1,371,908	1,371,908

	millions MZN	millions USD
ENPV (@10% SDR)	4,398.5	73.3
EIRR	26.0%	
ex.rate: USD/MZN	60.0	

Table 13: Complete sensitivity analysis

Republic of Mozambique
PRODAPE - Small-scale Aquaculture Development Project
Sensitivity Analysis (Economic)

	Base case	Reduction in project benefits			Increase in project costs			Delay in accrual of project benefits	
Indicator	10%	-10%	-20%	-30%	10%	20%	30%	1 year	2 year
ENPV (millions MZN)	4,398	3,652	2,758	1,863	4,383	4,219	4,055	3,501	2,550
ENPV (millions USD)	73	61	46	31	73	70	68	58	43
EIRR	26.0%	23.9%	21.0%	17.9%	25.3%	24.2%	23.2%	21.6%	17.8%

	Base case	Decrease in fish prices		Increase in fingerling prices		Increase in feed prices	
Indicator	10%	-5%	-10%	10%	30%	10%	20%
ENPV (millions MZN)	4,398	2,239	79	4,058	3,377	1,982	-434
ENPV (millions USD)	73	35	1	68	56	33	-7
EIRR	26.0%	18.4%	10.3%	24.7%	22.3%	17.4%	8.3%

Reduction in project benefits		**WO**	**WP**																			
	PY	**1 to 20**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10 to 20**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
	-10%	324,258.4	-429,958.4	-642,628.5	-451,898.2	44,632.3	688,062.8	1,387,368.1	1,533,377.6	1,549,580.3	1,548,779.1	1,548,779.1	1,549,580.3	1,548,779.1	1,548,779.1	1,549,580.3	1,548,779.1	1,548,779.1	1,549,580.3	1,548,779.1	1,548,779.1	1,549,580.3
			-754,216.8	-966,886.9	-776,156.6	-279,626.1	363,804.4	1,063,109.7	1,209,119.2	1,225,321.9	1,224,520.7	1,224,520.7	1,225,321.9	1,224,520.7	1,224,520.7	1,225,321.9	1,224,520.7	1,224,520.7	1,225,321.9	1,224,520.7	1,224,520.7	1,225,321.9
	-20%	324,258.4	-426,838.0	-626,940.8	-457,478.3	-6,690.7	576,589.1	1,233,216.1	1,363,002.3	1,377,404.7	1,376,692.6	1,376,692.6	1,377,404.7	1,376,692.6	1,376,692.6	1,377,404.7	1,376,692.6	1,376,692.6	1,377,404.7	1,376,692.6	1,376,692.6	1,377,404.7
			-751,096.4	-951,199.2	-781,736.8	-330,949.1	252,330.7	908,957.7	1,038,743.9	1,053,146.3	1,052,434.1	1,052,434.1	1,053,146.3	1,052,434.1	1,052,434.1	1,053,146.3	1,052,434.1	1,052,434.1	1,053,146.3	1,052,434.1	1,052,434.1	1,053,146.3
	-30%	324,258.4	-423,717.6	-611,253.1	-463,058.5	-58,013.8	465,115.4	1,079,064.1	1,192,627.1	1,205,229.1	1,204,606.0	1,204,606.0	1,205,229.1	1,204,606.0	1,204,606.0	1,205,229.1	1,204,606.0	1,204,606.0	1,205,229.1	1,204,606.0	1,204,606.0	1,205,229.1
			-747,976.0	-935,511.5	-787,316.9	-382,272.2	140,857.0	754,805.7	868,368.6	880,970.7	880,347.6	880,347.6	880,970.7	880,347.6	880,347.6	880,970.7	880,347.6	880,347.6	880,970.7	880,347.6	880,347.6	880,970.7
Increase in project costs																						
	10%	324,258.4	-473,266.3	-708,460.1	-496,530.0	54,227.9	768,016.4	1,541,520.1	1,703,752.9	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9
			-797,524.7	-1,032,718.5	-820,788.4	-270,030.6	443,758.0	1,217,261.7	1,379,494.5	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5
	20%	324,258.4	-513,453.8	-758,604.0	-546,742.0	12,500.3	736,496.4	1,541,520.1	1,703,752.9	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9
			-837,712.2	-1,082,862.4	-871,000.4	-311,758.1	412,238.0	1,217,261.7	1,379,494.5	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5
	30%	324,258.4	-553,641.3	-808,747.9	-596,953.9	-29,227.2	704,976.3	1,541,520.1	1,703,752.9	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9
			-877,899.7	-1,133,006.4	-921,212.3	-353,485.6	380,717.9	1,217,261.7	1,379,494.5	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5
Reduction in all benefits due to delays in implementation																						
	1 year	324,258.4	-401,874.9	-532,643.2	-658,996.1	-361,474.0	198,030.0	1,114,737.0	1,541,520.1	1,703,752.9	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7
			-726,133.3	-856,901.6	-983,254.5	-685,732.4	-126,228.4	790,478.5	1,217,261.7	1,379,494.5	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3
	2 year	324,258.4	-401,874.9	-501,439.3	-533,323.1	-574,151.9	-259,399.3	513,230.5	1,114,737.0	1,541,520.1	1,703,752.9	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7	1,720,865.7	1,721,755.9	1,720,865.7
			-726,133.3	-825,697.7	-857,581.6	-898,410.4	-583,657.7	188,972.1	790,478.5	1,217,261.7	1,379,494.5	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3	1,396,607.3	1,397,497.5	1,396,607.3

Table 14: Farm 1 + Pond – Financial Analysis

Model 4: rainfed cassava, maize and dry beans + cage		WOP	WP									
Farm:		Rainfed cassava + maize + beans = 1ha	Rainfed cassava + maize + beans = 1ha									
Aquaculture pond (m2)		0.00	500.00									
		WOP	WP									
		PY1-20	P1	2	3	4	5	6	7	8	9	10 to 20
Production pattern												
Crops												
Cassava		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Maize		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Dry beans		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total crop area		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ponds												
number of ponds		*0*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate of ponds		*0%*	*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)		**45,000**	**498,600**	**555,300**	**612,000**	**612,000**	**612,000**	**612,000**	**612,000**	**612,000**	**612,000**	**612,000**
Sales of Cassava		10,575	10,575	10,575	10,575	10,575	10,575	10,575	10,575	10,575	10,575	10,575
Sales of Maize		16,875	16,875	16,875	16,875	16,875	16,875	16,875	16,875	16,875	16,875	16,875
Sales of Dry beans		17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550
Sales of tilapia (liveweight)		0	453,600	510,300	567,000	567,000	567,000	567,000	567,000	567,000	567,000	567,000
Investment		**0**	**110,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Construction of ponds		0	100,000	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Inputs		**10,074**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**	**437,041**
Crops	*marginal effects*											
Cassava cuttings		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Maize seed		1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
Beans seed		2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Fertilizers		2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225
Other fertilizers (manure, domestic,etc)		0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides		2,049	2,049	2,049	2,049	2,049	2,049	2,049	2,049	2,049	2,049	2,049
Ponds												
Catfish fingerlings (hatchery raised) number/m2		0	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pelleted diet (reduction of costs due to supplementary feed @)	*3%*	0	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000
Supplementary feed (from maize brain, beans and vegetable material)/a		0	2,888	2,888	2,888	2,888	2,888	2,888	2,888	2,888	2,888	2,888
Fertilizer for pond		0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Domestic fertilizer for pond		0	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800
Agriculture lime		0	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280
Family labour		**11,777**	**17,777**	**17,777**	**17,627**	**17,627**	**17,627**	**17,627**	**17,627**	**17,627**	**17,627**	**17,627**
On-farm: cassava+maize+beans		11,777	11,777	11,777	11,777	11,777	11,777	11,777	11,777	11,777	11,777	11,777
On-pond: stock, feed, fertilize, harvest (economy of scale per pond @)/b	*3%*	0	6,000	6,000	5,850	5,850	5,850	5,850	5,850	5,850	5,850	5,850
Hired labour		**4,473**	**104,473**	**104,473**	**103,973**	**101,973**	**101,973**	**101,973**	**101,973**	**101,973**	**101,973**	**101,973**
On-farm: cassava+maize+beans		4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473
On-pond: Labor, levee repairs, after draining (economy of scale per pond	*3%*	0	20,000	20,000	19,500	19,500	19,500	19,500	19,500	19,500	19,500	19,500
Security personnel per month per pond (economy of scale per pond @)/b	*3%*	0	80,000	80,000	80,000	78,000	78,000	78,000	78,000	78,000	78,000	78,000
Other costs (water, fuel, bags, storage, etc)		**2,543**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**	**8,043**
Transport of farm products		2,075	2,075	2,075	2,075	2,075	2,075	2,075	2,075	2,075	2,075	2,075
Bags (50Kg)		468	468	468	468	468	468	468	468	468	468	468
O&M @ % of investment costs	5%	0	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
Total costs		**28,866**	**677,334**	**568,334**	**567,684**	**565,684**	**565,684**	**565,684**	**565,684**	**565,684**	**565,684**	**565,684**
Net Revenue Before Financing		**16,134**	**-178,734**	**-13,034**	**44,316**	**46,316**	**46,316**	**46,316**	**46,316**	**46,316**	**46,316**	**46,316**
Incremental net revenue before financing			-194,868	-29,168	28,183	30,183	30,183	30,183	30,183	30,183	30,183	30,183
Financing Analysis												
Financial inflows												
PRODAPE financing for pond + fingerlings + feed for 1st cycle			310,500									
Short term loan under REFP												
Contribution from own savings												
Transfer from previous period				131,112	118,001	118,001	118,001	118,001	118,001	118,001	118,001	118,001
Financial Outflows												
Short term principal												
Short term interest												
Transfer to next period (inputs for next period @ decreasing %)	30%		131,112	118,001	118,001	118,001	118,001	118,001	118,001	118,001	118,001	118,001
Net financing			***179,388***	***13,111***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Net Revenue AFTER financing			654	77	44,316	46,316	46,316	46,316	46,316	46,316	46,316	46,316
Incremental Net Revenue AFTER financing			-15,480	-16,056	28,183	30,183	30,183	30,183	30,183	30,183	30,183	30,183
Return of family labour		1.37	0.04	0.00	2.51	2.63	2.63	2.63	2.63	2.63	2.63	2.63
FIRR		69%										
NPV @	22%	509,749										
B/C ratio		1.06										

Table 15: Farm 1 + Pond – Economic analysis

Model 2: rainfed cassava, maize and dry beans + pond	WOP	WP
Farm:	Rainfed cassava + maize + beans = 1ha	Rainfed cassava + maize + beans = 1ha
Aquaculture pond (m2)	0.00	500.00

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	Beans, sesame, soybeans seeds	0.747	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	fertilizers, fungicides, (Ti)	0.747		
Import tax (soy, sesame, beans seed	2.50%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fertilizers, herbicides, fu	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	Dry beans, soybeans, sesame	0.766	MP - Market Price VAT - Valued Added Tax	IMPTAX - import Tax
import tax (feeds)	20%	live tilapia	0.766	EP - Economic Price EXPTAX - Export Tax	EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

		WOP	WP																			
		PY1-20	P1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Revenue (minus post-harvest loss and self-consumption)		**34,451**	**381,720**	**425,129**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**	**468,538**
Sales of Cassava		8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096	8,096
Sales of Maize		12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919	12,919
Sales of Dry beans		13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436
Sales of tilapia (liveweight)		0	347,269	390,678	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086
Investment		**0**	**71,217**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**
Construction of ponds		0	71,217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	7,122	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712
Inputs		**7,524**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**	**282,682**
Crops	*marginal effects*																					
Cassava cuttings		1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867	1,867
Maize seed		784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784	784
Beans seed		1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681
Fertilizers		1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662	1,662
Other fertilizers (manure, domestic,etc)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides		1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530
Ponds																						
Catfish fingerlings (hatchery raised) number/m2		0	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899
Pelleted diet (reduction of costs due to	*10%*	0	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933
Supplementary feed (from maize brain, beans and v		0	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842	1,842
Fertilizer for pond		0	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469
Domestic fertilizer for pond		0	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675
Agriculture lime		0	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339
Family labour		**8,892**	**13,422**	**13,422**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**	**13,308**
On-farm: cassava+maize+beans		8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892	8,892
On-pond: stock, feed, fertilize, harves	*10%*	0	4,530	4,530	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417
Hired labour		**3,377**	**78,877**	**78,877**	**78,500**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**	**76,990**
On-farm: cassava+maize+beans		3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377	3,377
On-pond: Labor, levee repairs, after d	*10%*	0	15,100	15,100	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723
Security personnel per month per pon	*30%*	0	60,400	60,400	60,400	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890
Other costs (water, fuel, bags, storage, etc)		**1,922**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**	**5,482**
Transport of farm products		1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589	1,589
Bags (50Kg)		333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333	333
O&M @ % of investment costs	5%	0	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561
Total costs		**21,714**	**451,680**	**381,175**	**380,685**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**	**379,175**
Net Economic Benefits		**12,737**	**-69,960**	**43,954**	**87,853**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**	**89,363**
Incremental Net Economic Benefits			-69,960	43,954	87,853	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363	89,363
Economic Return of family labour		1.43	-5.21	3.27	6.60	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71

ENPV @	10%	577,295	EIRR	95%	B/C	1.18

Table 16: Farm 2 + Pond (Expansion) – Financial Analysis

Model 2: Legumes + Maize + Expansion Pond		**WOP**	**WP**									
Farm:		Rainfed dry beans, soybeans, sesame and Soybeans = 1.0	Rainfed dry beans, soybeans, sesame and Soybeans = 1.0ha									
Aquaculture pond (m2)		300.00	500.00									
		WOP	**WP**									
		PY1-20	**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Production pattern												
Crops												
Dry beans		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Soybeans		0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Sesame		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Maize		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total crop area		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ponds												
Pond size (m2)		*300*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*
number of ponds		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate of ponds			*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)		**73,148**	**504,068**	**560,768**	**617,468**	**617,468**	**617,468**	**617,468**	**617,468**	**617,468**	**617,468**	**617,468**
Sales of Dry beans		17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550
Sales of Soybeans		20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250	20,250
Sales of Sesame		4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230
Sales of Maize		8,438	8,438	8,438	8,438	8,438	8,438	8,438	8,438	8,438	8,438	8,438
Sales of fish (liveweight)		22,680	453,600	510,300	567,000	567,000	567,000	567,000	567,000	567,000	567,000	567,000
Investment		**0**	**40,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Expansion of aquaculture pond (+construction of new pond in year 4)		0	30,000	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Inputs		**20,256**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**	**435,666**
Crops	*marginal effects*											
Seed (Dry beans)		2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Seed (Soybeans)		1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Seed (Sesame)		23	23	23	23	23	23	23	23	23	23	23
Seed (Maize)		525	525	525	525	525	525	525	525	525	525	525
Fertilizers		4,975	4,975	4,975	4,975	4,975	4,975	4,975	4,975	4,975	4,975	4,975
Other fertilizers (manure, domestic,etc)		0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides		5,029	5,029	5,029	5,029	5,029	5,029	5,029	5,029	5,029	5,029	5,029
Ponds												
Tilapia fingerlings (hatchery raised) number/m2		3,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pelleted diet (reduction of costs due to supplementary feed @)	*5%*	0	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000
Supplementary feed (from Soybeans brain, beans and vegetable material)/a		1,215	5,985	5,985	5,985	5,985	5,985	5,985	5,985	5,985	5,985	5,985
Fertilizer for pond		0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Domestic fertilizer for pond		1,440	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800
Agriculture lime		0	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280
Family labour		**18,759**	**21,159**	**21,159**	**21,009**	**21,009**	**21,009**	**21,009**	**21,009**	**21,009**	**21,009**	**21,009**
On-farm:		15,159	15,159	15,159	15,159	15,159	15,159	15,159	15,159	15,159	15,159	15,159
On-pond: (economy of scale per pond @)/b	*3%*	3,600	6,000	6,000	5,850	5,850	5,850	5,850	5,850	5,850	5,850	5,850
Hired labour		**11,053**	**105,053**	**105,053**	**105,053**	**103,053**	**103,053**	**103,053**	**103,053**	**103,053**	**103,053**	**103,053**
On-farm:		5,053	5,053	5,053	5,053	5,053	5,053	5,053	5,053	5,053	5,053	5,053
On-pond: /b	*0%*	6,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Security personnel per month per pond (economy of scale per pond @)/b	*3%*	0	80,000	80,000	80,000	78,000	78,000	78,000	78,000	78,000	78,000	78,000
Other costs (water, fuel, bags, storage, etc)		**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**	**1,513**
O&M @ % of investment costs	5%	0	2,000	2,000	2,000	2,000	1,500	1,500	1,500	1,500	1,500	1,500
Total costs		**51,582**	**605,392**	**566,392**	**566,242**	**564,242**	**563,742**	**563,742**	**563,742**	**563,742**	**563,742**	**563,742**
Net Revenue Before Financing		**21,566**	**-101,324**	**-5,624**	**51,226**	**53,226**	**53,726**	**53,726**	**53,726**	**53,726**	**53,726**	**53,726**
Financing Analysis												
Financial inflows												
PRODAPE financing for fingerlings + feed (1st cycle)			211,000									
Short term loan under REFP												
Contribution from own savings			25,000									
Transfer from previous period				130,700	117,630	117,630	117,630	117,630	117,630	117,630	117,630	117,630
Financial Outflows												
Short term principal												
Short term interest												
Transfer to next period (inputs for next period @ decreasing %)	30%		130,700	117,630	117,630	117,630	117,630	117,630	117,630	117,630	117,630	117,630
Net financing			***105,300***	***13,070***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Net Revenue AFTER financing			3,976	7,446	51,226	53,226	53,726	53,726	53,726	53,726	53,726	53,726
Incremental Net Revenue AFTER financing			-17,590	-14,120	29,660	31,660	32,160	32,160	32,160	32,160	32,160	32,160
Return of family labour		1.15	0.19	0.35	2.44	2.53	2.56	2.56	2.56	2.56	2.56	2.56
FIRR		70%										
NPV @	22%	544,170										
B/C ratio		1.03										

s

Amortization Schedule

No. Due Date		Payment Due	Additional Payment	Interest	Principal	Balance
						40,000.00
1	42370	49000		9,000.00	40,000.00	0.00

Table 17: Farm 2 + Pond (Expansion) – Economic Analysis

Model 2: rainfed cassava, maize and dry beans + pond	**WOP**	**WP**
Farm:	Rainfed cassava + maize + beans = 1ha	Rainfed cassava + maize + beans = 1ha
Aquaculture pond (m2)	0.00	500.00

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	Beans, sesame, soybeans , maize	0.747	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	fertilizers, fungicides, (Ti)	0.747		
Import tax (soy, sesame, beans, maize)	2.50%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fertilizers, herbicides, fungicides)	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	Dry beans, soybeans, sesame	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
import tax (feeds)	20%	live tilapia	0.766	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

		WOP	**WP**																				
		PY1-20	**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Revenue (minus post-harvest loss and self-consumption)		**56,001**	**385,906**	**429,315**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**	**472,723**
Sales of Dry beans		13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436	13,436
Sales of Soybeans		15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503	15,503
Sales of Sesame		3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238	3,238
Sales of Maize		6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460	6,460
Sales of tilapia (liveweight)		17,363	347,269	390,678	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086
Investment		**0**	**28,487**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**
Expansion/Construction of ponds		0	21,365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	7,122	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712
Inputs		**14,697**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**	**282,298**
Crops	*marginal effects*																					
Seed (Dry beans)		1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681
Seed (Soybeans)		1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344
Seed (Sesame)		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Seed (Maize)		392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392	392
Fertilizers		3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716	3,716
Other fertilizers (manure, domestic,etc)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides		3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756	3,756
Ponds																						
Catfish fingerlings (hatchery raised) number/m2		1,914	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899
Pelleted diet	*10%*	0	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192
Supplementary feed		775	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818	3,818
Fertilizer for pond		0	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469
Domestic fertilizer for pond		1,102	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675
Agriculture lime		0	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339
Family labour		**14,163**	**15,975**	**15,975**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**	**15,862**
On-farm:		11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445	11,445
On-pond: stock, feed, fertilize, harvest		2,718	4,530	4,530	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417	4,417
Hired labour		**8,345**	**79,315**	**79,315**	**79,315**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**	**77,805**
On-farm:		3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815
On-pond: Labor, levee repairs, after draining		4,530	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100
Security personnel per month per pond		0	60,400	60,400	60,400	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890	58,890
Other costs (water, fuel, bags, storage, etc)		**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**	**1,158**
O&M @ % of investment costs	5%	0	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424
Total costs		**38,364**	**408,658**	**380,883**	**380,770**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**	**379,260**
Net Economic Benefits		**17,636**	**-22,752**	**48,431**	**91,953**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**	**93,463**
Incremental Net Economic Benefits			-40,388	30,795	74,317	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827	75,827
Return of family labour		2.71	25.58	23.84	24.01	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91	23.91

ENPV @	10%	501,557	EIRR	125%	B/C	1.20

Table 12: Horticulture + Pond (Expansion) – Financial Analysis

Model 1: legume and Lettuce farm + ponds		**WOP**	**WP**									
Farm:		Irrigated Tomato, Lettuce and Green Pepper 0.5 ha				Irrigated Tomato, Lettuce, Green Pepper and Lettuce = 0.5ha						
Aquaculture pond (m2)		300.00				500.00						
		WOP	**WP**									
		PY1-20	**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Production pattern												
Crops												
Tomato		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Lettuce		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Green Pepper		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Total crop area		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Ponds												
Pond size (m2)		*300*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*
number of ponds		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate of ponds			*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)		**113,279**	**544,199**	**600,899**	**657,599**	**657,599**	**657,599**	**657,599**	**657,599**	**657,599**	**657,599**	**657,599**
Sales of Tomato		54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144
Sales of Lettuce		20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475
Sales of Green Pepper		15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980
Sales of fish (liveweight)		22,680	453,600	510,300	567,000	567,000	567,000	567,000	567,000	567,000	567,000	567,000
Investment		**0**	**40,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Expansion of aquaculture pond		0	30,000	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Inputs		**32,322**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**	**452,770**
Crops	*marginal effects*											
Seed (Tomato)		11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450
Seed (Lettuce)		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Seed (Green Pepper)		538	538	538	538	538	538	538	538	538	538	538
Fertilizers (% reduction due to use of pond water)	3%	9,660	9,419	9,419	9,419	9,419	9,419	9,419	9,419	9,419	9,419	9,419
Other fertilizers (manure, domestic,etc)		750	750	750	750	750	750	750	750	750	750	750
Pesticides, insecticides, fungicides and herbicides		2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269
Ponds												
Tilapia fingerlings (hatchery raised) number/m2		3,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pelleted diet (reduction of costs due to supplementary feed @)	*3%*	0	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000	351,000
Supplementary feed (from vegetable material)/a		1,215	2,265	2,265	2,265	2,265	2,265	2,265	2,265	2,265	2,265	2,265
Fertilizer for pond		0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Domestic fertilizer for pond		1,440	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800
Agriculture lime		0	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280
Family labour		**19,256**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**	**21,656**
On-farm:		15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656
On-pond:	*0%*	3,600	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Hired labour		**14,985**	**106,640**	**106,640**	**106,140**	**106,140**	**106,140**	**106,140**	**106,140**	**106,140**	**106,140**	**106,140**
On-farm:		8,985	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640
On-pond: (economy of scale per pond @)/b	*3%*	6,000	20,000	20,000	19,500	19,500	19,500	19,500	19,500	19,500	19,500	19,500
Security personnel per month per pond (economy of scale per pond @)/b	*3%*	0	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Other costs (water, fuel, bags, storage, etc)		**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**
O&M @ % of investment costs	5%	0	2,000	2,000	2,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Total costs		**85,438**	**641,942**	**602,942**	**602,442**	**601,942**	**601,942**	**601,942**	**601,942**	**601,942**	**601,942**	**601,942**
Net Economic Benefits		**27,841**	**-97,743**	**-2,043**	**55,157**	**55,657**	**55,657**	**55,657**	**55,657**	**55,657**	**55,657**	**55,657**
Incremental Net Economic Benefits			-125,584	-29,884	27,316	27,816	27,816	27,816	27,816	27,816	27,816	27,816
Financing Analysis												
Financial inflows												
PRODAPE financing for first production cycle			200,500									
Short term loan under REFP			40,000	0								
Contribution from own savings				0								
Transfer from previous period				135,831	122,248	122,248	122,248	122,248	122,248	122,248	122,248	122,248
Financial Outflows												
Short term principal				0								
Short term interest				0								
Transfer to next period (inputs for next period @ decreasing %)	30%		135,831	122,248	122,248	122,248	122,248	122,248	122,248	122,248	122,248	122,248
Net financing			***104,669***	***13,583***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Net Revenue AFTER financing			6,926	11,540	55,157	55,657	55,657	55,657	55,657	55,657	55,657	55,657
Incremental Net Revenue AFTER financing			-20,915	-16,301	27,316	27,816	27,816	27,816	27,816	27,816	27,816	27,816
Return of family labour		1.45	0.32	0.53	2.55	2.57	2.57	2.57	2.57	2.57	2.57	2.57
FIRR		56%										
NPV @	22%	462,972.61										
B/C ratio		1.07										

Table 18: Horticulture + Pond (Expansion) – Economic Analysis

Model 1: legume and Lettuce farm + ponds	**WOP**	**WP**
Farm:	Irrigated Tomato, Lettuce and Green Pepper 0.5 ha	Irrigated Tomato, Lettuce, Green Pepper and Lettuce = 0.5ha
Aquaculture pond (m2)	300.00	500.00

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	seeds	0.638	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	fertilizers, fungicides, (Ti)	0.747		
Import tax (tomato, lettuce, green pe	20.00%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fertilizers, herbicides, fu	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	seeds	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
import tax (feeds)	20%	live tilapia	0.766	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

Revenue (minus post-harvest loss and self-consumptio	**86,725**	**416,630**	**460,039**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**	**503,447**
Sales of Tomato	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452	41,452
Sales of Lettuce	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675
Sales of Green Pepper	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234	12,234
Sales of tilapia (liveweight)	17,363	347,269	390,678	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086
Investment	**0**	**28,487**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**	**712**
Construction of ponds	0	21,365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)	0	7,122	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712
Inputs	**22,185**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**	**292,974**
Crops *marginal effects*																						
Seed (Tomato)	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305	7,305
Seed (Lettuce)	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276
Seed (Green Pepper)	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343	343
Fertilizers	7,215	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035	7,035
Other fertilizers (manure, domestic,etc)	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560
Pesticides, insecticides, fungicides and herbicides	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695
Ponds																						
Catfish fingerlings (hatchery raised) number/m2	1,914	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899
Pelleted diet (reduction of costs due to *10%*	0	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933	223,933
Supplementary feed (from maize brain, beans and v	775	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445	1,445
Fertilizer for pond	0	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469	7,469
Domestic fertilizer for pond	1,102	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675	3,675
Agriculture lime	0	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339
Family labour	**14,538**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**	**16,350**
On-farm:	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820
On-pond: stock, feed, fertilize, harvest (economy of	2,718	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530
Hired labour	**11,313**	**80,513**	**80,513**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**	**80,136**
On-farm:	6,783	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013
On-pond: Labor, levee repairs	4,530	15,100	15,100	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723	14,723
Security personnel	0	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400	60,400
Other costs (water, fuel, bags, storage, etc)	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**
O&M @ % of investment costs 5%	0	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424
Total costs	**62,488**	**434,200**	**406,425**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**	**406,048**
Net Economic Benefits	**24,237**	**-17,570**	**53,614**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**	**97,400**
Incremental Net Economic Benefits		-41,806	29,377	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163	73,163
Return of family labour	1.67	-1.07	3.28	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.96

ENPV @ 10% 482,174 EIRR 118% B/C 1.20

Table 19: Chicken farm + New Pond – Financial Analysis

Model 5: chicken farm + pond		**WOP**	**WP**									
Production:		Chicken production	Chicken production + pond									
Aquaculture pond (m2)		0.00	500.00									
		WOP	**WP**									
Production pattern		**P1-20**	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Chicken												
number of batches		*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*	*4*
Mortality rate @		*10.0%*	*10.0%*	*7.5%*	*5.0%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*
Ponds												
Pond size (m2)		*300*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*
Nunber of ponds		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate @		*0%*	*70%*	*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)		**82,800**	**479,700**	**538,700**	**597,700**	**656,700**	**656,700**	**656,700**	**656,700**	**656,700**	**656,700**	**656,700**
Sales of Chickens		82,800	82,800	85,100	87,400	89,700	89,700	89,700	89,700	89,700	89,700	89,700
Sales of fish		-	396,900	453,600	510,300	567,000	567,000	567,000	567,000	567,000	567,000	567,000
Investment		**-**	**110,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Construction of aquaculture pond		-	100,000	-	-	-	-	-	-	-	-	-
Aquaculture kits (10% replacement each year)	10%	-	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Inputs		**43,052**	**451,922**	**451,980**	**452,037**	**452,095**	**452,095**	**452,095**	**452,095**	**452,095**	**452,095**	**452,095**
Chicken	*marginal effects at WP*											
1 day-old Chicks		16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Supplementary feed		25,160	25,160	25,160	25,160	25,160	25,160	25,160	25,160	25,160	25,160	25,160
Vaccines, Antibiotics and Vitamins		812	812	812	812	812	812	812	812	812	812	812
Consumables		1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080
Ponds												
Tilapia fingerlings (hatchery raised) number/m2		-	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pelleted diet (reduction due to use of chicken-house byproducts @)	5%	-	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000	342,000
Supplementary feed (from chicken byproducts @ % of sales)	3%	-	2,070	2,128	2,185	2,243	2,243	2,243	2,243	2,243	2,243	2,243
Fertilizer		-	14,800	14,800	14,800	14,800	14,800	14,800	14,800	14,800	14,800	14,800
Agriculture lime			8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280
Family labour		**14,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**
For chicken production		14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
On-pond: stock, feed, fertilize, harvest		-	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Hired labour		-	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
For chicken production		-	-	-	-	-	-	-	-	-	-	-
On-pond: Labor, levee repairs, after draining, security		-	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Other Costs												
Electricity (from main line)		-	-	-	-	-	-	-	-	-	-	-
Water (from EDM)		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Operation and maintenance (@5% of investment costs)	5%	-	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Subtotal other costs		**1,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**	**6,500**
Total Costs		**58,552**	**578,422**	**578,480**	**578,537**	**578,595**	**578,595**	**578,595**	**578,595**	**578,595**	**578,595**	**578,595**
Net Benefits BEFORE financing		**24,248**	**(98,722)**	**(39,780)**	**19,163**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**
Financing Analysis			**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows												
PRODAPE investment			271,000	-	-	-	-	-	-	-	-	-
Loan from REFP												
Transfer from previous period				180,792	144,652	144,670	144,670	144,670	144,670	144,670	144,670	144,670
Contribution from own savings												
Sub-Total financial inflows			271,000	180,792	144,652	144,670	144,670	144,670	144,670	144,670	144,670	144,670
Financial outflows												
Short term principal (under REFP @ 22.5% APR)			-									
Short term Interest												
Transfer to next period	40%		180,792	144,652	144,670	144,670	144,670	144,670	144,670	144,670	144,670	144,670
Sub-Total financial outflows			180,792	144,652	144,670	144,670	144,670	144,670	144,670	144,670	144,670	144,670
Net Financing			90,208	36,140	(18)	-	-	-	-	-	-	-
Net revenue AFTER financing			**(8,514)**	**(3,640)**	**19,145**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**	**78,106**
Incremental net revenue AFTER financing			**(32,762)**	**(27,888)**	**(5,103)**	**53,858**	**53,858**	**53,858**	**53,858**	**53,858**	**53,858**	**53,858**
Returns to family labour		1.73	-0.43	-0.18	0.96	3.91	3.91	3.91	3.91	3.91	3.91	3.91
FNPV @	22%		81,828									
IRR			46%									
B/C ratio			1.04									

Table 20: Chicken farm + New Pond – Economic Analysis

Enter **Fishfeed production unit - With Project**

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	chicks	0.638	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	vitamins, antibiotics, vaccines	0.747		
Import tax (chicks)	20.00%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (vitamins, antibiotics, vaccines)	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	chicken	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
import tax (feeds)	20.0%	live tilapia	0.766	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

	WOP	WP																			
	PY1-20	P1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Revenue (minus post-harvest loss and self-consumption)	**63,390**	**367,251**	**412,420**	**457,590**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**	**502,759**
Sales of Chickens	63,390	63,390	65,151	66,912	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673	68,673
Sales of fish	-	303,860	347,269	390,678	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086
Investment	**-**	**84,214**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**
Construction of aquaculture pond	-	76,558	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aquaculture kits (10% replacement each year)	-	7,656	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766
Inputs	**27,635**	**290,101**	**290,138**	**290,174**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**	**290,211**
Chicken																					
1 day-old Chicks	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208	10,208
Supplementary feed	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052	16,052
Vaccines, Antibiotics and Vitamins	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606	606
Consumables	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769	769
Ponds																					
Tilapia fingerlings (hatchery raised) number/m2	-	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899
Pelleted diet (reduction due to use of chicken-house byproducts @)	-	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192	218,192
Supplementary feed (from chicken byproducts @ % of sales)	-	1,321	1,357	1,394	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431	1,431
Fertilizer	-	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054	11,054
Agriculture lime		6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339	6,339
Family labour	**10,570**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**	**15,100**
For chicken production	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570
On-pond: stock, feed, fertilize, harvest	-	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530
Hired labour	-	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500
For chicken production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-pond: Labor, levee repairs, after draining, security	-	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500
Other Costs																					
Electricity (from main line)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water (from EDM)	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148	1,148
Operation and maintenance (@5% of investment cos 5%	-	3,827.92	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828
Subtotal other costs	**1,148**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**	**4,976**
Total Costs	**39,354**	**469,892**	**386,480**	**386,516**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**	**386,553**
Net Economic Benefits	**24,037**	**(102,641)**	**25,941**	**71,074**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**	**116,206**
Incremental Net Economic Benefits		**(126,678)**	**1,904**	**47,037**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**	**92,169**
Returns to family labour	2.27	-6.80	1.72	4.71	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70

ENPV @ 10% 477,230 EIRR 44% B/C ratio 1.20

Table 21: Livestock + Pond – Financial Analysis

Enter Cattle production, WP

		WOP	WP									
		PY1-20	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8	PY9	PY10
Production pattern		**P1-20**	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Livestock												
Variation of ideal weight of animal at sale		*80%*	*80%*	*80%*	*80%*	*80%*	*80%*	*80%*	*80%*	*80%*	*80%*	*80%*
Ponds												
Pond size (m2)		*300*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*
Nunber of ponds		*0*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate @		*0%*	*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)												
Sales of weaners		9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680	9,680
Sales of heifers		24,640	24,640	24,640	24,640	24,640	24,640	24,640	24,640	24,640	24,640	24,640
Sales of cows		30,800	30,800	30,800	30,800	30,800	30,800	30,800	30,800	30,800	30,800	30,800
Sales of fish		-	453,600	510,300	567,000	567,000	567,000	567,000	567,000	567,000	567,000	567,000
Total revenue		**65,120**	**518,720**	**575,420**	**632,120**	**632,120**	**632,120**	**632,120**	**632,120**	**632,120**	**632,120**	**632,120**
Investment		**-**	**110,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Construction of aquaculture pond		-	100,000	-	-	-	-	-	-	-	-	-
Aquaculture kits (10% replacement each year)	10%	-	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Operating costs		**5,409**	**402,637**	**402,637**	**402,623**	**402,623**	**402,623**	**402,623**	**402,623**	**402,623**	**402,623**	**402,623**
Livestock												
Supplementary Feeds		0	0	0	0	0	0	0	0	0	0	0
Veterinary cost (includes drugs, vaccines, fees)		5,409	5,409	5,409	5,395	5,395	5,395	5,395	5,395	5,395	5,395	5,395
Ponds												
Tilapia fingerlings (hatchery raised) number/m2		-	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pelleted diet (reduction due to use of livestock byproducts (	10%	-	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000
Supplementary feeds (from livestock by-products)	3%		1,628	1,628	1,628	1,628	1,628	1,628	1,628	1,628	1,628	1,628
Fertilizer (@ % reduction due to use of manure)	10%	-	13,320	13,320	13,320	13,320	13,320	13,320	13,320	13,320	13,320	13,320
Agriculture lime			8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280	8,280
Family labour		**22,680**	**28,680**	**28,680**	**28,620**	**28,620**	**28,620**	**28,620**	**28,620**	**28,620**	**28,620**	**28,620**
person-days per animal		22,680	22,680	22,680	22,620	22,620	22,620	22,620	22,620	22,620	22,620	22,620
On-pond: stock, feed, fertilize, harvest		0	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Hired labour		**0**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**
Hired labour (person-days per animal)		0	0	0	0	0	0	0	0	0	0	0
On-pond: Labor, levee repairs, after draining		0	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Other Costs		**0**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**	**11,280**
Water (from borehole)		0	2,520	2,520	2,520	2,520	2,520	2,520	2,520	2,520	2,520	2,520
Crush pen fees		0	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Transport to market		0	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Operation and maintenance (@5% of investment costs)		0	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Total Costs		**28,089**	**652,597**	**543,597**	**543,523**	**543,523**	**543,523**	**543,523**	**543,523**	**543,523**	**543,523**	**543,523**
Net revenue before financing		**37,031**	**-133,877**	**31,823**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**
Financing Analysis			**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows												
PRODAPE investment			272,000	0								
Disbursement of short term loan under REFP/a			0	0	0	0	0	0	0	0	0	0
Transfer from previous period			0	120,791	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787
Contribution from own savings (inputs for first cycle)			0									
Sub-Total financial inflows			272,000	120,791	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787
Financial outflows												
Short term principal (@22.5% APR, seasonal)												
Short term Interest												
Transfer to next period	30%		120,791	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787
Sub-Total financial outflows			120,791	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787	120,787
Net Financing			151,209	4	0	0	0	0	0	0	0	0
Net revenue AFTER financing			**17,332**	**31,827**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**	**88,597**
Incremental net revenue AFTER financing			**-19,699**	**-5,204**	**51,566**	**51,566**	**51,566**	**51,566**	**51,566**	**51,566**	**51,566**	**51,566**
Returns to family labour		1.63	0.60	1.11	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10

Total financing package	0	FNPV @	22%	133,444
Loan (Line of Credit)	0	FIRR	110%	
Contribution from farmer	0	B/C	1.07	
Grace period	0 months			
Interest rate (APR)	22.5%			

Table 22: Livestock + Pond - Economic analysis

Enter Livestock production unit - With Project

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	vitamins, antibiotics, vaccines	0.747	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	equipment	0.712		
Import tax (vitamins, antibiotics, vaccines)	2.50%	feeds	0.638	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (equipment)	7.50%	chicken	0.766	SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
import tax (feeds)	20.0%	live tilapia	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
CF (other costs)	0.766	*CF (labour)*	0.755	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax

	WOP	WP																			
	PY1-20	P1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Revenue (minus post-harvest loss and self-consumption)	**49,855**	**397,124**	**440,533**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**	**483,941**
Sales of Cattle	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855	49,855
Sales of fish	-	347,269	390,678	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086	434,086
Investment	**-**	**84,214**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**	**766**
Construction of aquaculture pond	-	76,558	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aquaculture kits (10% replacement each year)	-	7,656	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766	766
Inputs	**4,040**	**257,466**	**257,466**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**	**257,456**
Livestock																					
Supplementary Feeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Veterinary cost (includes drugs, vaccines, fees)	4,040	4,040	4,040	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029	4,029
Ponds																					
Tilapia fingerlings (hatchery raised) number/m2	-	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899	31,899
Pelleted diet (reduction due to use of chicken-house byproducts (	-	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708	206,708
Supplementary feed (from chicken byproducts @ % of sales)	-	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039	1,039
Fertilizer	-	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498	8,498
Agriculture lime		5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283	5,283
Family labour	**10,570**	**21,653**	**21,653**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**	**21,608**
For chicken production	10,570	17,123	17,123	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078	17,078
On-pond: stock, feed, fertilize, harvest	-	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530	4,530
Hired labour	**-**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**	**75,500**
For chicken production	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
On-pond: Labor, levee repairs, after draining, security	-	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500	75,500
Other Costs	0	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636	8,636
Water (from borehole)	0	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929	1,929
Crush pen fees	0	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965	965
Transport to market	0	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914	1,914
Operation and maintenance (@5% of investment costs)	0	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828	3,828
Total Costs	**14,610**	**447,470**	**364,021**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**	**363,965**
Net Economic Benefits	**35,245**	**(50,346)**	**76,511**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**	**119,976**
Incremental Net Economic benefits		**(85,591)**	**41,267**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**	**84,731**
Returns to family labour	3.33	-2.33	3.53	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55

ENPV @ 10% 530,606 EIRR 77% B/C ratio 1.26

Table 23: Farm 3 + Cage – Financial Analysis

Model 6: rainfed Dry beans, Soybeans and Sesame + cage		**WOP**	**WP**									
Farm:		Rainfed Dry beans + Soybeans + Sesame = 1h		Rainfed Dry beans + Soybeans + Sesame = 1ha								
Cage (125 m3)		0		1								
		WOP	**WP**									
		PY1-20		**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Production pattern													
Crops													
Dry beans			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Soybeans			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Sesame			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total crop area			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cages													
number of cages		*0*		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate of ponds				*70.0%*	*80.00%*	*90.00%*	*100.00%*	*100.00%*	*100.00%*	*100.00%*	*100.0%*	*100.0%*	*100.0%*
Revenue (minus post-harvest loss and self-consumption)			**62,280**	**856,080**	**969,480**	**1,082,880**	**1,196,280**	**1,196,280**	**1,196,280**	**1,196,280**	**1,196,280**	**1,196,280**	**1,196,280**
Sales of Dry beans			17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550	17,550
Sales of Soybeans			40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
Sales of Sesame			4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230
Sales of fish (liveweight)			0	793,800	907,200	1,020,600	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000
Investment			**0**	**137,150**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**
Purchase of cages			0	117,150	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)			0	20,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Inputs			**21,476**	**681,476**	**761,476**	**841,476**	**921,476**	**921,476**	**921,476**	**921,476**	**921,476**	**921,476**	**921,476**
Crops	*marginal effects*												
Seeds (Dry beans)			2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Seeds (Soybeans)			3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Seeds (Sesame)			23	23	23	23	23	23	23	23	23	23	23
Fertilizers			7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725
Other fertilizers (manure, domestic,etc)			0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides			7,879	7,879	7,879	7,879	7,879	7,879	7,879	7,879	7,879	7,879	7,879
Ponds													
Tilapia fingerlings (hatchery raised) number/m2			0	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Pelleted diet	*0%*		0	560,000	640,000	720,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000
Family labour			**17,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**	**137,869**
On-farm:			17,869	17,869	17,869	17,869	17,869	17,869	17,869	17,869	17,869	17,869	17,869
On-cage: stock, feed, harvest	*0%*		0	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
Hired labour			**5,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**	**47,956**
On-farm:			5,956	5,956	5,956	5,956	5,956	5,956	5,956	5,956	5,956	5,956	5,956
Security personnel per pond (economy of scale per pond @)/b	*0%*		0	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000
Other costs (water, fuel, bags, storage, etc)			**969**	**969**	**969**	**969**	**969**	**969**	**969**	**969**	**969**	**969**	**969**
O&M @ % of investment costs	20%		0	27,430	27,430	27,430	27,430	27,430	27,430	27,430	27,430	27,430	27,430
Total costs			**46,271**	**1,032,851**	**977,701**	**1,057,701**	**1,137,701**	**1,137,701**	**1,137,701**	**1,137,701**	**1,137,701**	**1,137,701**	**1,137,701**
Net Revenue Before Financing			**16,009**	**-176,771**	**-8,221**	**25,179**	**58,579**	**58,579**	**58,579**	**58,579**	**58,579**	**58,579**	**58,579**
Incremental net revenue before financing				-192,780	-24,230	9,170	42,570	42,570	42,570	42,570	42,570	42,570	42,570
Financing Analysis													
Financial inflows													
PRODAPE financing for cage construction + fingerlings + feed for 1st cycle				439,720									
Short term loan under REFP					0								
Contribution from own savings				27,430	0								
Transfer from previous period					282,000	266,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000
Financial Outflows													
Short term principal					0		0						
Short term interest					0								
Transfer to next period (inputs for next period @ decreasing %)	30%			282,000	266,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000
Net financing				***185,150***	***16,000***	***-4,000***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Net Revenue AFTER financing				8,379	7,779	21,179	58,579	58,579	58,579	58,579	58,579	58,579	58,579
Incremental Net Revenue AFTER financing				-7,630	-8,230	5,170	42,570	42,570	42,570	42,570	42,570	42,570	42,570
Return of family labour			0.90	0.06	0.06	0.15	0.42	0.42	0.42	0.42	0.42	0.42	0.42
FIRR			101%										
NPV @	22%		713,000.00										
B/C ratio			1.04										

Table 24: Farm 3 + Cage – Economic Analysis

Model 2: rainfed cassava, maize and dry beans + Cage	WOP	WP
Farm:	Rainfed cassava + maize + beans = 1ha	Rainfed cassava + maize + beans = 1ha
Aquaculture Cage (m3)	0.00	125.00

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	Seeds	0.747	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	fertilizers, fungicides, (Ti)	0.747		
Import tax (seeds)	2.50%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fertilizers, herbicides, fu	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	Dry beas, Soybeans, Sesame	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
import tax (feeds)	20.0%	live tilapia	0.766	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

		WOP	WP																				
		PY1-20	P1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Revenue (minus post-harvest loss and self-consumption)		**46,518**	**654,238**	**741,056**	**827,873**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**	**914,690**
Sales of Dry beans		13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108	13,108
Sales of Soybeans		30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250	30,250
Sales of Sesame		3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159	3,159
Sales of tilapia (liveweight)		0	607,721	694,538	781,355	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173
Investment		**0**	**97,674**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**
Purchase of cages		0	83,431	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	14,243	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424
Inputs		**16,041**	**437,112**	**488,151**	**539,190**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**	**590,229**
Crops	*marginal effects*																					
Seeds (Dry beans)		1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681	1,681
Seeds (Soybeans)		2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689
Seeds (Sesame)		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Fertilizers		5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770
Other fertilizers (manure, domestic,etc)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pesticides, insecticides, fungicides and herbicides		5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885	5,885
Cages																						
Catfish fingerlings (hatchery raised) number/m2		0	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799
Pelleted diet	*10%*	0	357,273	408,312	459,351	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390
Family labour		**13,491**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**	**104,091**
On-farm:		13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491	13,491
On-cage: stock, feed, harvest	*10%*	0	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600
Hired labour		**4,497**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**	**36,207**
On-farm:		4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497
Security personnel per month per pon	*30%*	0	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710
Other costs (water, fuel, bags, storage, etc)		**0**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**	**19,535**
O&M @ % of investment costs	20%	0	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535
Total costs		**34,029**	**694,619**	**649,408**	**700,447**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**	**751,486**
Net Economic Benefits		**12,489**	**-40,381**	**91,647**	**127,426**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**	**163,204**
Incremental Net Economic Benefits			-40,381	91,647	127,426	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204	163,204
Return of family labour		0.93	-0.39	0.88	1.22	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57

ENPV @ 10% 1,118,353 EIRR 259% B/C 1.18

Table 25: Horticulture + Cage –Financial analysis

Model: Horticulture farm + cages		**WOP**	**WP**																			
Farm:		Irrigated Tomato, Lettuce and Green Pepper 0.5 ha																				
Aquaculture pond (m2)		300.00																				
		WOP	**WP**																			
		PY1-20		**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Production pattern																							
Crops																							
Tomato		0.20		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Lettuce		0.20		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Green Pepper		0.10		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Total crop area		0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Cages																							
number of cages		*0*		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Productivity rate of cages				*70%*	*80%*	*90%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Revenue (minus post-harvest loss and self-consumption)		**90,599**		**884,399**	**997,799**	**1,111,199**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**	**1,224,599**
Sales of Tomato		54,144		54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144	54,144
Sales of Lettuce		20,475		20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475	20,475
Sales of Green Pepper		15,980		15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980	15,980
Sales of fish (liveweight)		0		793,800	907,200	1,020,600	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000
Investment		**0**		**137,150**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**
Construction of cage		0		117,150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0		20,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Inputs		**26,667**		**686,667**	**766,667**	**846,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**	**926,667**
Crops	*marginal effects*																						
Seed (Tomato)		11,450		11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450	11,450
Seed (Lettuce)		2,000		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Seed (Green Pepper)		538		538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538
Fertilizers	0%	9,660		9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660	9,660
Other fertilizers (manure, domestic,etc)		750		750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750
Pesticides, insecticides, fungicides and herbicides		2,269		2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269	2,269
Cages																							
Tilapia fingerlings (hatchery raised) number/m2		0		100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Pelleted diet (reduction of costs due to supplementary feed @)	*0%*	0		560,000	640,000	720,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000	800,000
Family labour		**15,656**		**75,656**	**75,656**	**75,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**	**69,656**
On-farm:		15,656		15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656	15,656
On-cage: (economy of scale per pond @)/b	*10%*	0		60,000	60,000	60,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000
Hired labour		**8,985**		**108,640**	**108,640**	**108,640**	**90,040**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**	**102,640**
On-farm:		8,985		6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640	6,640
On-cage: (economy of scale per pond @)/b	*10%*	0		60,000	60,000	60,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000	54,000
Security personnel per month per pond (economy of scale per pond @)/b	*30%*	0		42,000	42,000	42,000	29,400	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000
Other costs (water, fuel, bags, storage, etc)		**18,876**		**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**	**18,876**
O&M @ % of investment costs	20%	0		27,430	27,430	27,430	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860	54,860
Total costs		**70,183**		**1,054,418**	**999,268**	**1,079,268**	**1,162,098**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**	**1,174,698**
Net Revenue Before Financing		**20,416**		**-170,019**	**-1,469**	**31,931**	**62,501**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**	**49,901**
Incremental net revenue before financing				-190,436	-21,886	11,515	42,085	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485
Financing Analysis																							
Financial inflows																							
PRODAPE financing				489,720																			
Short term loan under REFP					0		0																
Contribution from own savings (first cycle feeds)				27,430	0																		
Transfer from previous period					336,000	333,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000
Financial Outflows																							
Short term principal																							
Short term interest																							
Transfer to next period (inputs for next period @ %)	40%			336,000	333,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000
Net financing				***181,150***	***3,000***	***-27,000***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Net Revenue AFTER financing				11,131	1,531	4,931	62,501	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901	49,901
Incremental Net Revenue AFTER financing				-9,286	-18,886	-15,486	42,085	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485	29,485
Return of family labour		1.30		0.15	0.02	0.07	0.90	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
FIRR		52%																					
NPV @	22%	470,180																					
B/C ratio		1.03																					

Table 26: Horticulture + Cage – Economic Analysis

Model: Horticulture farm + ponds		**WOP**	**WP**
Farm:		Irrigated Tomato, Lettuce and Green Pepper 0.5 ha	Irrigated Tomato, Lettuce, Green Pepper and Lettuce = 0.5ha
Aquaculture pond (m2)		300.00	500.00

Parameters for conversion from market to economic prices

SCF	0.90	CF(fingerlings)	0.638	**From financial to economic prices:**	
Unemployment rate	24.50%	*CF (inputs)*		Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	Cassava cuttings, maize, beans	0.747	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	fertilizers, fungicides, (Ti)	0.747		
Import tax (maize, beans, cassava)	2.50%	equipment	0.712	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (fertilizers, herbicides, fui	2.50%	feeds	0.638	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
Import tax (fingerlings)	20.0%	CF (outputs)		SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
Import tax (equipment)	7.50%	Cassava cuttings, maize, beans	0.766	MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
import tax (feeds)	20%	live tilapia	0.766	EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax
CF (other costs)	0.766	*CF (labour)*	0.755		

		WOP	**WP**																				
		PY1-20	**P1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Revenue (minus post-harvest loss and self-consumption)		**67,669**	**675,390**	**762,208**	**849,025**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**	**935,842**
Sales of Tomato		40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441	40,441
Sales of Lettuce		15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293	15,293
Sales of Green Pepper		11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936
Sales of tilapia (liveweight)		0	607,721	694,538	781,355	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173	868,173
Investment		**0**	**97,674**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**	**1,424**
Purchase of cages		0	83,431	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquaculture kits (10% replacement each year)		0	14,243	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424	1,424
Inputs		**19,918**	**440,989**	**492,028**	**543,067**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**	**594,106**
Crops	*marginal effects*																					
Seed (Tomato)		8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552	8,552
Seed (Lettuce)		1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494	1,494
Seed (Green Pepper)		401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401	401
Fertilizers		7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215
Other fertilizers (manure, domestic,etc)		560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560	560
Pesticides, insecticides, fungicides and herbicides		1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695	1,695
Cages																						
Catfish fingerlings (hatchery raised) number/m2		0	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799	63,799
Pelleted diet		0	357,273	408,312	459,351	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390	510,390
Family labour		**11,820**	**57,120**	**57,120**	**57,120**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**	**52,590**
On-farm:		11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820	11,820
On-pond: stock, feed, fertilize, harvest (economy of		0	45,300	45,300	45,300	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770
Hired labour		**6,783**	**82,023**	**82,023**	**82,023**	**67,980**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**	**77,493**
On-farm:		6,783	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013	5,013
On-pond: Labor, levee repairs, after draining (econc		0	45,300	45,300	45,300	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770	40,770
Security personnel per month per pond (economy o		0	31,710	31,710	31,710	22,197	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710	31,710
Other costs (water, fuel, bags, storage, etc)		**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**	**14,451**
O&M @ % of investment costs	20%	0	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535	19,535
Total costs		**52,972**	**711,793**	**666,582**	**717,621**	**750,086**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**	**759,599**
Net Economic Benefits		**14,697**	**-36,402**	**95,626**	**131,404**	**185,756**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**	**176,243**
Incremental Net Economic Benefits			-36,402	95,626	131,404	185,756	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243	176,243
Return of family labour		1.24	-0.64	1.67	2.30	3.53	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35

ENPV @	10%	1,213,324	EIRR	297%	B/C	1.19

Table 27: Market seller – Financial analysis

Enterprise	Market seller, WOP											
			WOP	WP								
Revenue			**P1-20**	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	% maximum weight purchased			70.0%	80.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Sales of fish		282,960	257,494	294,278	331,063	367,848	367,848	367,848	367,848	367,848	367,848	367,848
	Total revenue		**282,960**	**257,494**	**294,278**	**331,063**	**367,848**	**367,848**	**367,848**	**367,848**	**367,848**	**367,848**	**367,848**
Investment Costs			**-**	**23,000**	**-**	**-**	**5,000**	**-**	**-**	**5,000**	**-**	**-**	**5,000**
	Purchase of bycicle		-	18,000	-	-	-	-	-	-	-	-	-
	Purchase of coolerbox		-	5,000	-	-	5,000	-	-	5,000	-	-	5,000
Operating Costs			**237,612**	**193,381**	**220,836**	**248,290**	**275,744**	**275,744**	**275,744**	**275,744**	**275,744**	**275,744**	**275,744**
	Purchase of fish (first grade)		-	33,852	38,688	43,524	48,360	48,360	48,360	48,360	48,360	48,360	48,360
	Purchase of fish (second grade)		151,200	114,660	131,040	147,420	163,800	163,800	163,800	163,800	163,800	163,800	163,800
	Purchase of fish (third grade)		62,400	42,588	48,672	54,756	60,840	60,840	60,840	60,840	60,840	60,840	60,840
	Purchase of ice		1,320	1,081	1,236	1,390	1,544	1,544	1,544	1,544	1,544	1,544	1,544
	Trasport		21,492	-	-	-	-	-	-	-	-	-	-
	Market tax		1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Labour			**20,000**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**	**23,333**
	Faniily labour		20,000	3,333	3,333	3,333	3,333	3,333	3,333	3,333	3,333	3,333	3,333
	Assistant market seller		-	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Other costs				**1,150**	**1,150**	**1,150**	**1,150**	**1,150**	**1,150**	**1,150**	**1,150**	**1,150**	**1,150**
	Operation & Maintenance			1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,150
Total costs			**257,612**	**240,864**	**245,319**	**272,773**	**305,228**	**300,228**	**300,228**	**305,228**	**300,228**	**300,228**	**305,228**
Net Revenue Before Financing			**25,348**	**16,629**	**48,960**	**58,290**	**62,620**	**67,620**	**67,620**	**62,620**	**67,620**	**67,620**	**62,620**

Financing Analysis		**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows											
PRODAPE investment		-	-	-	-	-	-	-	-	-	-
Loan under REFP		23,000									
Transfer from previous period		-	66,251	74,487	82,723	82,723	82,723	82,723	82,723	82,723	82,723
Contribution from own savings		58,014									
Sub-Total financial inflows		81,014	66,251	74,487	82,723	82,723	82,723	82,723	82,723	82,723	82,723
Financial outflows											
Short term principal		23,000									
Short term Interest		5,175									
Transfer to next period	30%	66,251	74,487	82,723	82,723	82,723	82,723	82,723	82,723	82,723	82,723
Sub-Total financial outflows		94,426	74,487	82,723	82,723	82,723	82,723	82,723	82,723	82,723	82,723
Net Financing		-13,411	-8,236	-8,236	0	0	0	0	0	0	0
Net revenue AFTER financing		**3,218**	**40,723**	**50,054**	**62,620**	**67,620**	**67,620**	**62,620**	**67,620**	**67,620**	**62,620**
Incremental Net Revenue		**-22,130**	**15,375**	**24,706**	**37,272**	**42,272**	**42,272**	**37,272**	**42,272**	**42,272**	**37,272**
Return of family labour	1.27	0.14	1.75	2.15	2.68	2.90	2.90	2.68	2.90	2.90	2.68
FNPV @		22%	103,128								
FIRR		106%									
B/C ratio		1.19									

Amortization Schedule

No.	Due Date		Payment D	Additional Payment	Interest	Principal	Balance
							23000
1		42370	28175		5175	23,000.00	0

Table 28: Market seller - Economic Analysis

Enterprise **Market seller, WP**

Parameters for conversion from market to economic prices

SCF	0.90	*CF (inputs)*		**From financial to economic prices:**	
Unemployment rate	24.50%	live tilapia	0.638	Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	equipment	0.712	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	CF (outputs)			
Import tax (live fish)	20.0%	live tilapia	0.766	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (equipment)	7.50%	*CF (labour)*	0.755	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
CF (other costs)	0.766			SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
				MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
				EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax

		WOP	WP																			
Revenue		**P1-20**	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Sales of fish		216,630	197,133	225,295	253,457	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619	281,619
Total revenue		**216,630**	**197,133**	**225,295**	**253,457**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**	**281,619**
Investment Costs		**-**	**16,380**	**-**	**-**	**3,561**	**-**	**-**	**3,561**	**-**	**-**	**3,561**	**-**	**-**	**3,561**	**-**	**-**	**3,561**	**-**	**-**	**3,561**	**-**
Purchase of bycicle		-	12,819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Purchase of coolerbox		-	3,561	-	-	3,561	-	-	3,561	-	-	3,561	-	-	3,561	-	-	3,561	-	-	3,561	-
Operating Costs		**154,657**	**123,666**	**141,201**	**158,736**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**	**176,272**
Purchase of fish (first grade)		-	21,597	24,682	27,768	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853	30,853
Purchase of fish (second grade)		96,464	73,152	83,602	94,052	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502	104,502
Purchase of fish (third grade)		39,810	27,171	31,052	34,934	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815	38,815
Purchase of ice		1,011	828	946	1,064	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182	1,182
Transport		16,454	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Market tax		919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919	919
Labour		**15,100**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**	**17,617**
Faniily labour		15,100	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517	2,517
Assistant market seller		-	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100	15,100
Other costs			**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**	**819**
Operation & Maintenance			819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819	819
Total costs		**169,757**	**158,481**	**159,637**	**177,172**	**198,268**	**194,707**	**194,707**	**198,268**	**194,707**	**194,707**	**198,268**	**194,707**	**194,707**	**198,268**	**194,707**	**194,707**	**198,268**	**194,707**	**194,707**	**198,268**	**194,707**
Net Economic Benefits Before Financing		**46,873**	**38,652**	**65,658**	**76,285**	**83,351**	**86,911**	**86,911**	**83,351**	**86,911**	**86,911**	**83,351**	**86,911**	**86,911**	**83,351**	**86,911**	**86,911**	**83,351**	**86,911**	**86,911**	**83,351**	**86,911**
Incremental Net Economic Benefits Revenue			**-8,221**	**18,786**	**29,412**	**36,478**	**40,039**	**40,039**	**36,478**	**40,039**	**40,039**	**36,478**	**40,039**	**40,039**	**36,478**	**40,039**	**40,039**	**36,478**	**40,039**	**40,039**	**36,478**	**40,039**
Return of family labour		3.10	2.19	3.73	4.33	4.73	4.93	4.93	4.73	4.93	4.93	4.73	4.93	4.93	4.73	4.93	4.93	4.73	4.93	4.93	4.73	4.93

ENPV @ 10% 263,433 EIRR 270% B/C 8.55

Table 29: Domestic Ice production – Financial Analysis

Enterprise **Domestic ice production, WOP**											
	WOP P1-20	**WP PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Revenue											
Output level		80%	90%	100%	110%	110%	110%	110%	110%	110%	110%
Sales of Ice	16,500.00	*22,000*	*24,750*	*27,500*	*30,250*	*30,250*	*30,250*	*30,250*	*30,250*	*30,250*	*30,250*
Total revenue	**16,500.00**	**22,000.00**	**24,750.00**	**27,500.00**	**30,250.00**	**30,250.00**	**30,250.00**	**30,250.00**	**30,250.00**	**30,250.00**	**30,250.00**
Investment Costs	***0.00***	***17,500.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***
Purchase of fridge (500 lt)	*0.00*	*17,500.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Operating Costs	**6,857.45**	**6,790.31**	**7,197.92**	**7,605.53**	**8,013.14**	**8,013.14**	**8,013.14**	**8,013.14**	**8,013.14**	**8,013.14**	**8,013.14**
Water	2,445.65	3,260.87	3,668.48	4,076.09	4,483.70	4,483.70	4,483.70	4,483.70	4,483.70	4,483.70	4,483.70
Electricity	4,411.80	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44	3,529.44
Labour	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**	**2,000.00**
Family labour	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Assistant market seller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other costs		875.00	**875.00**	**875.00**	**875.00**	**875.00**	**875.00**	**875.00**	**875.00**	**875.00**	**875.00**
Operation & Maintenance (@ % of investment)	500.00	875.00	875.00	875.00	875.00	875.00	875.00	875.00	875.00	875.00	875.00
Total costs	**8,857.45**	**27,165.31**	**10,072.92**	**10,480.53**	**10,888.14**	**10,888.14**	**10,888.14**	**10,888.14**	**10,888.14**	**10,888.14**	**10,888.14**
Net Benefits before financing	**7,642.55**	**-5,165.31**	**14,677.08**	**17,019.47**	**19,361.86**	**19,361.86**	**19,361.86**	**19,361.86**	**19,361.86**	**19,361.86**	**19,361.86**

Financing Analysis		**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows											
PRODAPE investment		-	-	-	-	-	-	-	-	-	-
Loan under REFP		10,000									
Transfer from previous period		-	2,159	2,282	2,404	2,404	2,404	2,404	2,404	2,404	2,404
Contribution from own savings		10,000									
Sub-Total financial inflows		20,000	2,159	2,282	2,404	2,404	2,404	2,404	2,404	2,404	2,404
Financial outflows											
Short term principal		10,000									
Short term Interest		2,250									
Transfer to next period	30%	2,159	2,282	2,404	2,404	2,404	2,404	2,404	2,404	2,404	2,404
Sub-Total financial outflows		14,409	2,282	2,404	2,404	2,404	2,404	2,404	2,404	2,404	2,404
Net Financing		5,591	-122	-122	0	0	0	0	0	0	0
Net revenue AFTER financing		**425**	**14,555**	**16,897**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**
Incremental Net Revenue		**-7,217**	**14,555**	**16,897**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**	**19,362**
Return of family labour	3.82	0.21	7.28	8.45	9.68	9.68	9.68	9.68	9.68	9.68	9.68
FNPV @		22%	59,986								
FIRR		215%									
B/C ratio		2.01									

Amortization Schedule

No.	Due Date	Payment Da	Additional Payment	Interest	Principal	Balance
						10000
1	42370	12250		2250	10,000.00	0

Table 30: Domestic Ice production - Economic Analysis

Enterprise **Domestic ice production, WOP**

Parameters for conversion from market to economic prices

SCF	0.90	*CF (inputs)*		**From financial to economic prices:**	
Unemployment rate	24.50%	water, electricity	0.712	Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF
VAT	17.00%	equipment	0.712	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF
Export tax (all commodities)	0.00%	CF (outputs)			
Import tax (water, electricity)	7.50%	ice	0.766	Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF
Import tax (equipment)	7.50%	*CF (labour)*	0.755	NT - Non tradable	EP = MP/(1+VAT)=MP*CF
CF (other costs)	0.766			SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)
				MP - Market Price	VAT - Valued Added Tax IMPTAX - import Tax
				EP - Economic Price	EXPTAX - Export Tax EXPTAX - Export Tax

	WOP	WP																				
	P1-20	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Revenue																						
Sales of Ice	12,632	16,843	18,948	21,054	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159	23,159
Total revenue	**12,632**	**16,843**	**18,948**	**21,054**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**	**23,159**
Investment Costs	***0***	***12,463***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Purchase of fridge (500 lt)	*0*	*12,463*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Operating Costs	**4,884**	**4,836**	**5,126**	**5,416**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**	**5,707**
Water	1,742	2,322	2,613	2,903	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193	3,193
Electricity	3,142	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514	2,514
Labour	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**	**1,510**
Family labour	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510	1,510
Assistant market seller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other costs		875	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**	**623**
Operation & Maintenance (@ % of investment)	383	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623	623
Total costs	**6,394**	**19,684**	**7,259**	**7,550**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**	**7,840**
Net Economic Benefits	**6,238**	**-2,841**	**11,689**	**13,504**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**	**15,319**
Incremental Net Economic Benefits		**-9,079**	**5,450**	**7,266**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**	**9,081**
Return of family labour	4.13	-1.88	7.74	8.94	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15	10.15

ENPV @ 10% 56,435 EIRR 78% B/C 1.70

Table 31: Fishfeed production - Financial Analysis

Enterprise	**Fishfeed production unit - With Project**										
Revenue			**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	% production output		70.0%	80.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Sales of fishfeed		1,973,160	2,255,040	2,536,920	2,818,800	2,818,800	2,818,800	2,818,800	2,818,800	2,818,800	2,818,800
	Total revenue		**1,973,160**	**2,255,040**	**2,536,920**	**2,818,800**	**2,818,800**	**2,818,800**	**2,818,800**	**2,818,800**	**2,818,800**	**2,818,800**
Investment Costs			**851,698**	**35,085**	**35,085**	**35,085**	**35,085**	**35,085**	**35,085**	**35,085**	**35,085**	**35,085**
	Construction of workshop		150,000	0	0	0	0	0	0	0	0	0
	Equipment, assembled (@% replacement each year)	5%	701,698	35,085	35,085	35,085	35,085	35,085	35,085	35,085	35,085	35,085
Operating Costs			**1,310,071**	**1,497,224**	**1,684,377**	**1,871,530**	**1,871,530**	**1,871,530**	**1,871,530**	**1,871,530**	**1,871,530**	**1,871,530**
	Purchase of raw material (flours)		1,164,725	1,331,115	1,497,504	1,663,893	1,663,893	1,663,893	1,663,893	1,663,893	1,663,893	1,663,893
	Electricity		116,112	132,700	149,287	165,875	165,875	165,875	165,875	165,875	165,875	165,875
	Water		15,750	18,000	20,250	22,500	22,500	22,500	22,500	22,500	22,500	22,500
	Transport raw material		6,906	7,893	8,879	9,866	9,866	9,866	9,866	9,866	9,866	9,866
	Transport fishfeed to market		6,577	7,517	8,456	9,396	9,396	9,396	9,396	9,396	9,396	9,396
Labour			**390,000**	**390,000**	**390,000**	**390,000**	**390,000**	**390,000**	**390,000**	**390,000**	**390,000**	**390,000**
	Producers (5)		210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000
	Manager (1)		120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
	Administrative Assistant/Accountant (1)		60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Other costs			**17,542**	**17,542**	**17,542**	**17,542**	**17,542**	**17,542**	**17,542**	**17,542**	**17,542**	**17,542**
	Operation & Maintenance		17,542	17,542	17,542	17,542	17,542	17,542	17,542	17,542	17,542	17,542
Total costs			**2,569,311**	**1,939,851**	**2,127,004**	**2,314,157**	**2,314,157**	**2,314,157**	**2,314,157**	**2,314,157**	**2,314,157**	**2,314,157**
Net Revenue Before Financing			**-596,151**	**315,189**	**409,916**	**504,643**	**504,643**	**504,643**	**504,643**	**504,643**	**504,643**	**504,643**

Financing Analysis		**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows											
	PRODAPE investment (construction + equipment)	851,698	0	0	0	0	0	0	0	0	0
	Bank loan (commercial rate 60 months @ 30% APR)	582,363									
	Transfer from previous period	0	199,667	224,626	249,584	249,584	249,584	249,584	249,584	249,584	249,584
	Contribution from own savings	582,363									
	Sub-Total financial inflows	2,016,424	199,667	224,626	249,584	249,584	249,584	249,584	249,584	249,584	249,584
Financial outflows											
	Short term principal	64,399	83,718	108,834	141,484	183,929					
	Short term Interest	174,709	155,389	130,274	97,624	55,179					
	Transfer to next period	15% 199,667	224,626	249,584	249,584	249,584	249,584	249,584	249,584	249,584	249,584
	Sub-Total financial outflows	438,775	463,733	488,691	488,691	488,691	249,584	249,584	249,584	249,584	249,584
Net Financing		1,577,649	-264,066	-264,066	-239,107	-239,107	0	0	0	0	0
Net revenue AFTER financing		**981,498**	**51,123**	**145,850**	**265,535**	**265,536**	**504,643**	**504,643**	**504,643**	**504,643**	**504,643**

FNPV @	22%	1,943,011
FIRR	NA	
B/C ratio	1.11	

Amortization Schedule

No.	Due Date	Payment D	Additional Payment	Interest	Principal	Balance
						582362.7176
1		42370	239107.4	174,708.82	64398.57	517964.1476
2		42736	239107.4	155,389.24	83718.15	434245.9976
3		43101	239107.4	130,273.80	108833.59	325412.4076
4		43466	239107.4	97,623.72	141483.67	183928.7376
5		43831	239107.4	55,178.62	183928.74	-0.00242

Table 32: Fishfeed production – Economic Analysis

Enterprise **Fishfeed production unit - With Project**

Paramenters

SCF	0.90	***CF (costs)***		**From financial to economic prices:**			
Unemployment rate	24.50%	feeds	0.638	Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF		
VAT	17.00%	flours	0.638	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF		
Export tax	0.00%	equipment	0.712				
Import tax (feeds)	20.00%	***CF (outputs)***		Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF		
Import tax (water, electricity)	7.50%	fish feed	0.766	NT - Non tradable	EP = MP/(1+VAT)=MP*CF		
Import tax (flours)	20.00%	***CF (labour)***	0.755	SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)		
Import tax (equipment, construction material, tools)	7.50%	***CF (non tradable, national)***	0.855	MP - Market Price	VAT - Valued Added Tax	IMPTAX - import Tax	
CF(electricity, water)	0.712	***CF (skilled labour)***	1	EP - Economic Price	EXPTAX - Export Tax	EXPTAX - Export Tax	

Revenue	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Sales of fishfeed	1,510,620	1,726,423	1,942,226	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029	2,158,029
Total revenue	**1,510,620**	**1,726,423**	**1,942,226**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**	**2,158,029**
Investment Costs	**606,555**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**	**24,986**
Construction of building	106,826																			
Equipment, assembled (5% replacement from year 3)	499,729	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986	24,986
Operating Costs	**848,512**	**969,728**	**1,090,944**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**	**1,212,160**
Purchase of raw material (flours)	743,080	849,234	955,388	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542	1,061,542
Electricity	82,692	94,505	106,318	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131
Water	11,217	12,819	14,421	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024	16,024
Transport raw material	5,903	6,746	7,589	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432	8,432
Transport fishfeed to market	5,622	6,425	7,228	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031	8,031
Labour	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**	**342,051**
Producers (5)	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487
Manager (1)	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564	102,564
Administrative Assistant/Accountant (1)	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Other costs	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**	**12,493**
Operation & Maintenance (@2.5% of investment of equipment)	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493	12,493
Total costs	**1,809,612**	**1,349,259**	**1,470,475**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**	**1,591,691**
Net Revenue Before Financing	**-298,991**	**377,164**	**471,751**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**	**566,338**

ENPV @ 10% 3,807,483 EIRR 144% B/C ratio 1.28

Table 33: Fishseed production – Financial Analysis

Enterprise	Fishseed production unit - With Project										
Revenue			**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	% build output		70.0%	80.0%	90.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Sales of fingerlings		3,500,000	4,000,000	4,500,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
	Total revenue		**3,500,000**	**4,000,000**	**4,500,000**	**5,000,000**	**5,000,000**	**5,000,000**	**5,000,000**	**5,000,000**	**5,000,000**	**5,000,000**
Investment Costs			**15,732,810**	**112,328**	**112,328**	**112,328**	**112,328**	**112,328**	**112,328**	**112,328**	**112,328**	**112,328**
	Construction of building		4,500,000	0	0	0	0	0	0	0	0	0
	Equipment, assembled (@% replacement each year)	1%	11,232,810	112,328	112,328	112,328	112,328	112,328	112,328	112,328	112,328	112,328
Operating Costs			**585,112**	**668,700**	**752,287**	**835,875**	**835,875**	**835,875**	**835,875**	**835,875**	**835,875**	**835,875**
	Purchase of feed		367,500	420,000	472,500	525,000	525,000	525,000	525,000	525,000	525,000	525,000
	Vitamins and other organic chemicals		35,000	40,000	45,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
	Electricity		116,112	132,700	149,287	165,875	165,875	165,875	165,875	165,875	165,875	165,875
	Water		0	0	0	0	0	0	0	0	0	0
	Transport raw material		31,500	36,000	40,500	45,000	45,000	45,000	45,000	45,000	45,000	45,000
	Transport fishfeed to market		35,000	40,000	45,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Labour			**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**	**1,260,000**
	Workers (5)		210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000
	Manager (1)		480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000
	Aquaculture expert (1)		390,000	390,000	390,000	390,000	390,000	390,000	390,000	390,000	390,000	390,000
	Administrative Assistant/Accountant (1)		180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Other costs			**213,320**	**213,320**	**213,320**	**213,320**	**213,320**	**213,320**	**213,320**	**213,320**	**213,320**	**213,320**
	Operation & Maintenance		213,320	213,320	213,320	213,320	213,320	213,320	213,320	213,320	213,320	213,320
Total costs			**17,791,242**	**2,254,348**	**2,337,935**	**2,421,523**	**2,421,523**	**2,421,523**	**2,421,523**	**2,421,523**	**2,421,523**	**2,421,523**
Net Revenue Before Financing			**-14,291,242**	**1,745,652**	**2,162,065**	**2,578,477**	**2,578,477**	**2,578,477**	**2,578,477**	**2,578,477**	**2,578,477**	**2,578,477**

Financing Analysis		**PY1**	**PY2**	**PY3**	**PY4**	**PY5**	**PY6**	**PY7**	**PY8**	**PY9**	**PY10**
Financial inflows											
PRODAPE investment (construction and equipment of workshop)		9,439,686	0	0	0	0	0	0	0	0	0
Loan from Credit Institution (commercial rate 60 months @ 30% APR)		6,293,124									
Transfer from previous period		0	126,000	141,750	157,500	157,500	157,500	157,500	157,500	157,500	157,500
Contribution from own savings		0									
Sub-Total financial inflows		15,732,810	126,000	141,750	157,500	157,500	157,500	157,500	157,500	157,500	157,500
Financial outflows											
Short term principal		147,658	191,956	249,543	324,405	421,727	548,245	712,719	926,534	1,204,494	1,565,843
Short term Interest		1,887,937	1,843,640	1,786,053	1,711,190	1,613,869	1,487,350	1,322,877	1,109,061	831,101	469,753
Transfer to next period (@% of raw material cost for next year)	30%	126,000	141,750	157,500	157,500	157,500	157,500	157,500	157,500	157,500	157,500
Sub-Total financial outflows		2,161,596	2,177,346	2,193,096	2,193,096	2,193,096	2,193,096	2,193,096	2,193,096	2,193,096	2,193,096
Net Financing		13,571,214	-2,051,346	-2,051,346	-2,035,596	-2,035,596	-2,035,596	-2,035,596	-2,035,596	-2,035,596	-2,035,596
Net revenue AFTER financing		**-720,028**	**-305,693**	**110,719**	**542,882**	**542,882**	**542,882**	**542,882**	**542,882**	**542,882**	**542,881**

FNPV @	22%	1,671,385
FIRR	41%	
B/C ratio	0.87	

Amortization Schedule

No.	Due Date		Payment D	Additional Payment	Interest	Principal	Balance
							6293124
1		42370	2035596		1,887,937	147,658	6,145,466
2		42736	2035596		1,843,640	191,956	5,953,510
3		43101	2035596		1,786,053	249,543	5,703,967
4		43466	2035596		1,711,190	324,405	5,379,562
5		43831	2035596		1,613,869	421,727	4,957,835
6		44197	2035596		1,487,350	548,245	4,409,590
7		44562	2035596		1,322,877	712,719	3,696,871
8		44927	2035596		1,109,061	926,534	2,770,337
9		45292	2035596		831,101	1,204,494	1,565,843
10		45658	2035596		469,753	1,565,843	0

Table 34: Fishseed production – Economic Analysis

Enterprise **Fishseed production unit - With Project**

Paramenters

SCF	0.90	*CF (costs)*		**From financial to economic prices:**			
Unemployment rate	24.50%	vitamins	0.747	Te - Tradable, exported (for outputs)	EP= MP*SCF/(1+VAT+EXPTAX+VAT*EXPTAX) = MP*CF		
VAT	17.00%	feed	0.638	Tn - Tradable, national	EP = MP/(1+VAT)=MP*CF		
Export tax	0.00%	equipment	0.712				
Import tax (vitamins)	2.50%	*CF (outputs)*		Ti - Tradable, imported (inputs)	EP = MP*SCF/(1+VAT+IMPTAX+VAT*IMPTAX)=MP*CF		
Import tax (water, electricity)	7.50%	fingerlings	0.766	NT - Non tradable	EP = MP/(1+VAT)=MP*CF		
Import tax (flours)	20.00%	*CF (labour)*	0.755	SW - Shadow Wage	SW=MW*(1-UNEMPLOYMENTRATE)		
Import tax (equipment, construction material, tools)	7.50%	*CF (non tradable, national)*	0.855	MP - Market Price	VAT - Valued Added Tax	IMPTAX - import Tax	
CF(electricity, water)	0.712	*CF (skilled labour)*	1	EP - Economic Price	EXPTAX - Export Tax	EXPTAX - Export Tax	

Revenue	**PY1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Sales of fingerlings	2,679,545	3,062,337	3,445,129	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922	3,827,922
Total revenue	**2,679,545**	**3,062,337**	**3,445,129**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**	**3,827,922**
Investment Costs	**11,204,458**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**	**79,997**
Construction of building	3,204,772																			
Equipment, assembled (5% replacement from year 3)	7,999,687	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997	79,997
Operating Costs	**400,131**	**457,293**	**514,455**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**	**571,616**
Purchase of feed	234,460	267,955	301,449	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943	334,943
Vitamins and other organic chemicals	26,142	29,876	33,611	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346	37,346
Electricity	82,692	94,505	106,318	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131	118,131
Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transport raw material	26,923	30,769	34,615	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462	38,462
Transport fishfeed to market	29,915	34,188	38,462	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735	42,735
Labour	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**	**1,076,923**
Producers (5)	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487	179,487
Manager (1)	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256	410,256
Aquaculture Expert (1)	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333	333,333
Administrative Assistant/Accountant (1)	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846	153,846
Other costs	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**	**199,992**
Operation & Maintenance	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992	199,992
Total costs	**12,881,505**	**1,814,205**	**1,871,367**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**	**1,928,529**
Net Revenue Before Financing	**-10,201,960**	**1,248,132**	**1,573,763**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**	**1,899,393**

ENPV @	10%	4,386,491	EIRR	16%	B/C ratio	1.17

Table 35: Road model - Financial Analysis

Republic of Mozambique
PRODAPE - Small-scale Aquaculture Development Project
Financial Analysis - road rehabilitation

Aggregation by year		**2020**	**2021**	**2022**	**2023**	**2024**	**2025-2040**
Road rehabilitation		40	40	40	40	40	
Cumulative road rehabilitation		40	80	120	160	200	
Economic Benefits							
Traffic increase	MZN		5,724,780	11,449,559	17,174,339	22,899,119	28,623,898
Reduction in trasportation costs	MZN		1,371,625	2,743,250	4,114,874	5,486,499	6,858,124
Total benefits	MZN		7,096,404	14,192,809	21,289,213	28,385,618	35,482,022
Road Investment costs	MZN	97,102,794	103,115,494	109,564,084	118,075,344	123,634,938	-
Maintenance costs	MZN	-	4,855,140	10,010,914	15,489,119	21,392,886	27,574,633
Net Benefits**	MZN	-97,102,794	-100,874,230	-105,382,190	-112,275,249	-116,642,206	7,907,390

**Net benefits equals incremental net benefits for calculating ERR, against the "do nothing" scenario

NPV (MZN million)	(357.59)
NPV (USD million)	(0.48)
FIRR	-12%

Table 36: Road model - Economic analysis

Republic of Mozambique							
PRODAPE - Small-scale Aquaculture Development Project							
Economic Analysis - road rehabilitation							
SCF	0.896						
Aggregation by year		**2020**	**2021**	**2022**	**2023**	**2024**	**2025-2040**
Road rehabilitation		254	250	200	200	96	
Cumulative road rehabilitation		254	504	704	904	1000	
Economic Benefits							
Traffic increase	MZN		5,127,878	10,255,756	15,383,634	20,511,512	25,639,389
Reduction in trasportation costs	MZN		1,228,611	2,457,221	3,685,832	4,914,442	6,143,053
Total benefits	MZN	-	6,356,488	12,712,977	19,069,465	25,425,954	31,782,442
Road Investment costs	MZN	78,998,976	78,998,976	78,998,976	78,998,976	78,998,976	-
Maintenance costs	MZN	-	4,348,912	8,967,113	13,874,125	19,162,328	24,699,527
Net Benefits**	MZN	-78,998,976	-76,991,400	-75,253,112	-73,803,636	-72,735,350	7,082,915.19

**Net benefits equals incremental net benefits for calculating ERR, against the "do nothing" scenario

ENPV (MWK million)	(245.62)
ENPV (USD million)	(0.33)
EIRR	-10%

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex 5: Social Environment and Climate Assessment (SECAP) Review Note

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 5: Social Environment and Climate Assessment (SECAP) Review Note

Major landscape characteristics and Issues

a. Socio-cultural context

1. Despite considerable socio-economic development and investments over the past two decades, Mozambique still grapples with food insecurity today.[70] The Country's population of ~ 28 million people[71] are among the poorest and most climate-vulnerable in Africa.[72] The vast majority of the population (80%) cannot afford the minimum cost of an adequate diet, and the situation is exacerbated by inflation and a rise in food-prices.[73] The HDI ranks Mozambique as one of the lowest in Africa (0,481), placing the country among those with the most unfavourable conditions for human well-being and prosperity. High poverty rates are especially registered in Zambézia, Nampula and Sofala provinces. Key factors include low productivity, high-post harvest losses, lack of economic diversification among others. High incidence of water-borne and vector-borne diseases, such as malaria and cholera, associated with floods and high temperatures, are a concern.[74]

2. The agriculture sector is a mainstay of the country's economy, accounting for approximately 80% of total employment and contributing an annual average of 18% to the GDP.[75] Over 80% of the cultivated land is used for production of staple crops.[76] The majority of farmers are reliant on diverse forms of crops and/or livestock agriculture as well as fishing (mainly in the coastal zones) and other forms of natural resource-based livelihoods. In this context, the potential for aquaculture development in Mozambique is enormous, also given its generally favourable climatic conditions (tropical and sub-tropical climate, low population pressure) and plays an important role in the socio-economic development of the country. However, it is still practiced at a small-scale level with few exceptions, and the sector potential is not fully exploited. The culture of freshwater species such as tilapia has existed for many decades (since the 1950s), whereas the cultivation of marine species has emerged over the last five years. Aquaculture practices range from extensive farming (tilapia and seaweeds) with few inputs and modest output, to semi-intensive farming (shrimp) with high inputs and high output.[77]

3. Furthermore, all land in Mozambique is the property of the State, with use and benefit rights (known as DUAT) granted to land users.[78] Under a DUAT, land cannot be sold, mortgaged or alienated, but infrastructure and improvements made on it may be

[70] It is estimated that more than two-thirds of Mozambique population live on less than USD 1,90/day and 55% live below the national poverty line.
[71] In Mozambique, 68% of the population live in rural areas.
[72] In terms of GDP per capita, Mozambique's population are the 7th poorest nation in Africa with an average annual income of USD 382.
[73] Other factors, such as high rates of infectious diseases like malaria and poor access to health services, water and sanitation – poorly diversified diets lie at the root of persistently high malnutrition, which affects almost half of the children under five.
[74] Netherlands Commission for Environmental Assessment (2015). Climate Change Profile Mozambique. [ONLINE] Available at: https://ees.kuleuven.be/klimos/toolkit/documents/689_CC_moz.pdf. See also: World Bank (2015). Data bank retrieved from htttp://databank.worldbank.org/data/home.aspx. The incidence of malaria cases (298 per 1000 population at risk), rank Mozambique as 10 in Africa, with increase prevalence of water-borne diseases during flooding events, including diarrheal disease.
[75] World Bank. 2017. World Development Indicators. Washington, D.C.: World Bank. Available at: http://data.worldbank.org
[76] USDA. 2015. Global Agricultural Information Network Report. Mozambique Agricultural Economic Factsheet. United States Development Agency (USDA). Available at: http://gain.fas.usda.gov
[77] Technoserve. 2017. Aquaculture Industry Strategic Plan – Final Report. The sector could provide cheap source of protein, improve the population's diet, create jobs, generate income and promote regional development.
[78] Rural communities obtain perpetual DUAT for land occupied under customary systems. Farmers who can prove their use of land for ten years or more can get perpetual DUAT for residential and family use.

mortgaged and sold. Investors can apply for a DUAT of up to 50 years for the use of a land plot after the local community agrees to cede its rights in exchange for negotiated benefits.[79] Since 2014/2015 the GoM has been implementing the Programme "*Terra Segura*" through ITC (*Iniciativa de Terras Comunitarias*). However, a large part of the rural population remains unaware of their land rights and those aware mostly lack the financial and technical support necessary to assert their rights.[80] Regarding the water resources, it is worth mentioning that the water management and development at national level is the responsibility of the five Regional Water Administrations (ARAs) in their respective river basins. They control the irrigation systems, collect water fees and hydrological data.[81]

4. Since 2014 the Ministry for Land, Environment and Rural Development (MITADER) is the national responsible entity for environmental, natural resource management and climate issues.[82] Institutional capacity for effective implementation and monitoring of NR management interventions is however still low and needs to be enforced.

b. Natural Resource and NRM

5. Deforestation, degradation and fragmentation of ecosystems due to agricultural expansion, slash and burn cultivation, conversion of natural forests to industrial forest plantations of exotic species, unsustainable wood fuel collection, charcoal production and logging are among the main threats to the natural resource base of the country.[37]

6. Land degradation, driven by deforestation and poor land use practices, is a key challenge in Mozambique. Fire, used as the main tool to clear land for cultivation, frequently results in large extensions of forest burnt. Approximately 40,000 to 50,000 ha are burned each year, with the central area of the country being the most affected.[83] Additionally, stocks of small-scale fisheries are decreasing mainly due to overfishing, destructive fishing practices, habitat degradation, pollution from extractive industries, poor management and weak implementation of fisheries laws and regulations.[84] This is also linked to mangrove losses, with consequent negative effects on coastal erosion.[85]

7. Other environmental challenges include: pollution of river waters from industrial activities, agriculture, sewage and domestic waste, reaching coastal and marine environments; air pollution from wood fuel and mining activities.[86] Mining industries has to be considered as an emerging threat given its recent expansion.[87] Furthermore, in urban settings, rural sewage treatment is inadequate, exposing people to potential outbreaks of disease. Illegal or unregulated harvesting of economically valuable species, including over-extraction of high-value timber species, prawns and pelagic fish and

[79] Nielsen, R. L. et al. (2011). Mozambique's Innovative Land and Law. Available [ONLINE] at: http://www.focusonland.com/download/538ddd5cb3283/

[80] USAID (2010). Country Profile Property Rights and Resource Governance: Mozambique. [ONLINE] Available at: https://www.land-links.org/wp-content/ uploads/2016/09/USAID_Land_Tenure_Mozambique_Profile.pdf

[81] ARAs have administrative and financial autonomy but report to the National Directorate of Agrarian Services (DNSA). In areas not yet covered by an ARA, the Provincial Directorates of Public Works and Housing are the authority responsible for water resources management in the province.

[82] Other entities involved in NR management include: Ministry of Agriculture and Food Security (MASA), Mozambique Agriculture Research Institute (IIAM), National Council on Sustainable Development (CONDES), National Meteorological Institute (INAM) and National Institute of Disaster Management (INGC) and National Institute of Irrigation (INIR).

[83] Ministry for the Coordination of Environmental Affairs (2014). Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique. [ONLINE] Available at: https://www.cbd.int/doc/world/mz/mz-nr-05-en.pdf
See also: Wingqvist, G.Ö. (2011). Environment and Climate Change Policy Brief.

[84] USAID (2016). Fishing for Food Security: The Importance of Wild Fisheries for Food Security and Nutrition. [ONLINE] Available at: http://pdf.usaid.gov/ pdf_docs/PA00M1T3.pdf. See also: Wingqvist, G.Ö. (2011). Environment and Climate Change Policy Brief

[85] Wingqvist, G.Ö. (2011). Environment and Climate Change Policy Brief

[86] Ibid. USAID (2016).

[87] USAID (2013). Mozambique Environmental Threats and Opportunities Assessment. [ONLINE] Available at: http://pdf.usaid.gov/pdf_docs/pnaea332.pdf

unsustainable subsistence hunting (also of protected species) in or near conservation areas must also be considered as a major natural resource issue.[88]

c. Climate

8. Mozambique is among the most vulnerable and least prepared countries with regard to natural disasters, ranking 160 out of 181 nations on the Global Adaptation Index, with a score of 35.2.[89] The country's vulnerability is driven by an array of biophysical, climatic, and socio-economic factors. Over the period 1996-2015, climatic hazards such as droughts, floods, and cyclones generated economic losses of approximately USD 790 million.

9. The seasonal rainfall pattern coincides with the position of the Intertropical Convergence Zone (ITCZ), which is at the north of the country during the warmest months, bringing 150-300mm of rain/month, while southern areas receive 50-150 mm/month. Topography alters the general north-south rainfall gradient and the largest amounts fall at high elevations. El Niño Southern Oscillation (ENSO) causes drier than average conditions during the rainy season in its warm phase (El Niño) and relatively cold and wet conditions in its cold phase (La Niña).

10. Droughts have the largest impact of all climate-related disasters in Mozambique, with 17 million people affected since 1979. The southern and central regions have experienced 7 and 4 droughts per decade respectively.[90] Floods occur almost every year, causing multiple casualties and loss of economic assets. Tropical storms, originating in the south-west Indian Ocean basin, hit Mozambique at varying intensity at least once a year.[91]

11. Climate projections for the country indicated an expected change in mean annual temperature by up to +1,4°C by 2030 and by +2,2°C by 2070, with the Northeast experiencing the highest increase. Total precipitation is not likely to decrease significantly. However, negative impacts of climate change on agriculture will primarily be caused by the increased likelihood of extreme events such as cyclones and flooding.[92]

Potential project's social, environmental, and climate change impacts and risks

d. Key potential impacts

12. Mozambique's raw natural potential for aquaculture is often reported to be high: it has 8 main rivers, four large lakes, fiver reservoirs and numerous other smaller water bodies, 2,500 km if coastline and ideal temperature in most regions.[93] PRODAPE will

[88] Ibid. USAID (2013).
[89] https://gain-new.crc.nd.edu/ranking ND-GAIN ranks 181 countries based on their vulnerability to natural disasters (compiling indicators of exposure, sensitivity and adaptive capacity, each scored equally) and their economic, governance and social readiness to implement adaptation solutions.
[90] GFDRR (2012). Mozambique: Disaster Risk Financing and Insurance Country Note. [ONLINE] Available at: http://www.gfdrr.org/sites/gfdrr.org/files/ DRFICountryNote_Mozambique_Jan072013_Final.pdf
[91] Fitchett L. and Grab, S.W. (2014). A 66-year Tropical Cyclone Record for South-East Africa: Temporal Trends in a Global Context. International Journal of Climatology DOI: 10.1002/joc.3932 [ONLINE] Available at: http://www.aca-demia.edu/6278730/A_66-year_tropical_cyclone_record_for_south-east_Africa_temporal_trends_in_a_global_context
[92] Choudhary, V.; Suit, K.C. 2015. Mozambique – Agricultural sector risk assessment: risk prioritization. Agriculture global practice technical assistance paper. Washington, D.C.: World Bank Group. Available at: http://documents.worldbank.org
[93] There are two main natural lakes. Lake Niassa, shared with Malawi and the United Republic of Tanzania, is the southernmost of the large Rift Valley lakes with a surface area of 30 800 km², of which 21 percent belong to Mozambique. The second lake, Lake Chiura, has a surface area of 750 km² and is shared with Malawi. In addition, there are more than 1 300 small lakes, 20 of which have an area between 10 and 100 km², as well as 6 main artificial lakes. The total capacity of 27 dams with a height of 10 m or more is estimated at 74 137 million m³. The largest reservoir is the Cahora Bassa Lake created in 1973 on the Zambezi river, hosting the largest hydroelectric plant in southern Africa with an installed capacity of 2 060 MW. The Chicamba Real dam on the Revue river, the Massingir dams on the Elephants river, the Corumana dam on the Sabie river and the

invest in aquaculture development activities which entail a number of potential social and environmental impacts. Major areas of environmental concern are: i) biological pollution (both of inlet-outlet water) caused by poor/inadequate siting and monitoring, introduction of non-indigenous fish species and weak application of good environmental and biosecurity procedures which may lead to fish disease outbreaks; ii) eutrophication of water bodies due to the accumulation of nutrients from the release of uneaten food, faeces and metabolites that damage the water column and may generate algae bloom; iii) habitat degradation, especially lakes/dams water quality, due to unregulated cage culture[94]; iv) poor fish waste management; and v) adverse interaction and potential conflicts with wild animals (mainly predators).

13. Unauthorized water abstraction and diversion from natural water bodies with potential resource use conflicts with other users is also an adverse impact which must be avoided. On the same line, ensuring beneficiaries' access and use rights to NR assets such as land, will be of paramount importance for the sustainability of PRODAPE's interventions. Additional aspects related to social and health issues include: i) use of polluted water for agriculture purposes and disease outbreaks due to poor food safety standards; ii) poor safety measures around ponds; iii) risks associated with construction works; iv) loss of investment and physical and economic assets as a consequence of environmental and climate factors. Increased water borne disease (i.e. malaria) due to stagnating water could also be considered as an undesirable consequence of project's interventions.[95]

14. Overall, the strengthening of the national aquaculture regulatory framework is deemed necessary to ensure environmental and climate change concerns can be systematically included into the sector's development.

e. Climate change and adaptation

15. Mozambique is particularly prone to extreme climate events. The climate varies from tropical and subtropical in the north and central parts of Mozambique to dry semi-arid steppe and dry arid desert in the south. The hottest regions are located in the Zambezi basin, the coastline of Cabo Delgado, Nampula, Zambézia and Sofala. The south is the coolest part of the country, with an average maximum and minimum temperature of 30ºC and 19ºC respectively.

16. The annual average precipitation for the whole country is 1032 mm and the rainy season lasts from October to April. It varies widely from the coast to the inland areas and from north to south. Average annual precipitation ranges from 800 mm to 1000 mm along the coast, with values above 1200 mm between Beira and Quelimane. It decreases inland, reaching 400 mm at the border with South Africa and Zimbabwe. The north and central part of the country has annual precipitation from 1000 mm to over 2000 mm because of the northeast monsoon and high mountains. In the southern inland part of the country it ranges from 500 mm to 600 mm. Annual evapotranspiration varies between 800 mm in central Niassa and on the border with Zimbabwe to more than 1600 mm in the eastern and middle Zambezi basin. Along the coast it varies between 1200 mm and 1500 mm.

Pequenos Libombos dams on the Umbeluzi river, providing drinking water for Maputo, are other major dams (NEPAD, 2013).

[94] Cage farming is limited to lakes and reservoirs with specific conditions, such as depth, oxygen availability at certain depths, temperature fluctuations and water renewal/flow rate. Plus, none of the lakes has been fully assessed or had a complete baseline study for cage farming (An EIA is reported to be produced for specific areas of the Cahora Bassa dam, but was not available to the mission) hence the carrying capacity and suitability for sustainable fish farming in the lakes is not yet established.

[95] Fishponds are important breeding sites for anopheline larvae (*Anopheles darlingi*), and adequate/ proper management of fish-ponds, such as removal of border vegetation where larvae proliferate coupled with the number of larvae eaten by fish will limit their abundance and possibly reduce this risk.

17. The target districts are periodically hit by extreme weather events, such as drought, floods, and cyclones which are likely to affect PRODAPE's interventions and its proposed aquaculture models. High temperatures and evapotranspiration rates, dry spells and changes in rainfall patterns are also a concern. Project's activities are expected to be exposed to both direct and indirect impacts of climate change. These include: i) sea level rise and storms surges and increased run-off from inland; ii) changes in rainfall patterns and evaporation rates; and iii) increase in extreme weather events, including more frequent drought periods. Key potential impacts associated with PRODAPE and mitigation measures are outlined in Table 1 below.

Environmental and social category (A, B, C)

18. Small-scale aquaculture generally poses medium risks to the environment. However, it can also have significant impacts, especially if it is newly introduced and if the system of production has high demand of water in areas where freshwater is a scarce natural resource. In order to avoid these risks, the project will use technologies and production methods adapted to local conditions and avoid operations located in fragile or environmental sensitive areas, including natural reserves and parks. PRODAPE will focus on two main production models, namely ponds aquaculture and cage-culture of indigenous species, using locally adapted technologies where fish farming can be practised without significantly altering the local ecosystem. Integrated livestock – fish culture – crop production approaches will be promoted and, where appropriate, water harvesting, and storage will be adopted to increase resilience during the dry season. It can thus be concluded that the social and environmental impacts PRODAPE may have are manageable and/or reversible and it is therefore categorized as a **Category "B"** project.

19. An Environmental and Social Management Framework (ESMF) will be elaborated to set out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts of the Project. The ESMF will also serve as a basis to identify environmentally and socially suitable sites for aquaculture development in each target district providing specific social and environmental requirements for Category B projects in compliance with the National Environmental Regulation and IFAD's SECAP.[96] An analysis of natural resource uses, and access rights of project's beneficiaries will also be included as an integral part of the analysis. For this project to remain a Category B, engagement in pond or cage culture in large dams/reservoirs is limited to the compliance with the criteria set out within the ESMF as well as to the development of guidelines for sustainable production and demonstration of best practices (especially in cage farming).

20. There are social and environmental risk mitigation measures that can address raised concerns. These mitigation measures constitute the basis for the development of an Environment and Social Management Plan (ESMP) and provide guidance for Environmental Impact Assessment (EIA) if required. Both climate analysis and ESMF are recommended before implementation and in tandem with the ESMP. For sustainability of interventions, environmental education and climate adaptation measures will be a key output of training offered to extension workers and farmers.

Climate risk category (High, Moderate, Low)

21. The project's climate risk classification is "**High**" and a detailed Climate Risk Analysis is deemed necessary. Investments will focus on aquaculture systems sensitive to climate change and will require measures to reduce vulnerability. More frequent and extreme weather events, combined with a slow onset sea level rise and increasing salinity, threatens aquaculture installations along coastal shorelines. Changing rainfall patterns and water scarcity may impact on river and water bodies where aquaculture is practiced. In addition, more erratic rainfall and extreme events may cause droughts and

[96] Soil texture, water quality availability and access throughout the year etc.

floods, modifying soil erosion and siltation processes, thus causing major negative changes in rivers and water bodies.

22. The project will promote locally suited climate smart aquaculture and adaptation practices, also taking into consideration, when available, the LAPs elaborated within the NCCAMS framework in order to reduce vulnerability and increase the coping capacities of beneficiaries. The promotion of sustainable land and water management practices as well as capacity building at farm and institutional levels will further reduce vulnerability.

23. Finally, the Project proposes assessments and research into aspects such as carrying capacity, stocking densities, cage culture best practices, water quality and quantity requirements per region as a mean to making informed decisions on scaling up of interventions. Strong collaboration between relevant institutions such as IDEPA, IIP, INAM, INGC, MASA and MITADER's relevant departments, and provincial governments will harness synergies and focused interventions.

Recommended features of project design and implementation

f. Environment and social mitigation measures

24. PRODAPE will promote an ecosystem approach to aquaculture (EAA) ensuring adequate siting and avoiding any activity in fragile or protected ecosystems. In order to minimise potential adverse impacts a precautionary system will be in place to carefully ensure best environmental management practices are adopted through relevant guidelines and regulatory frameworks. Early stage consultation of interested communities will also guide the on-site implementation as specified in the ESMF, while relevant institutions for sustainable NRM (particularly water and land) such as INIR, ARAs, MITADER (DPTADER) etc. will play a key role during the site selection and implementation phases. This will also facilitate the formalisation of well-defined land and water user rights as appropriate.

25. Best Management Practices for aquaculture activities as well as good water management will be sought in all phases of the project to ensure adequate pond water exchange and flushing systems. In this regard, site selection criteria will be guided by the principles listed within the ESMF. Particular attention will be given to: (i) favourable environmental, climate and natural resource conditions for aquaculture (including aspects related to the environmental categorization of the selected sites thus also ensuring an analysis of potential cumulative impacts); and (ii) the existence of water bodies capable of providing sufficient water quantity and quality for aquaculture activity (including the avoidance of sites where conflicts may arise with other existing uses, especially during the dry season so that withdrawals do not exceed "safe yield" from surface and/or groundwater resources). Regular monitoring of effluents, ponds and dams/reservoirs' water quality will be also in place and supported by management protocols to mitigate risks and establish remedial actions.

26. The project will promote two main production models, namely ponds aquaculture and cage-culture of indigenous fish species, using locally adapted technologies where fish farming can be practised without significantly altering the local ecosystem. It is important to note that with aquaparks in environments where the water body is shared between producers/other users (including lakes), extra care will be necessary with biosecurity since the whole area may be quickly affected with potential issues such as disease, and over-stocking which may lead to collapse of the whole lake ecosystem. A baseline study to identify suitable area for cages will be conducted before activities start including potential cumulative impacts in the area of intervention. For large water reservoirs the elaboration of guidelines will cover important issues such as the introduction/testing of fingerlings providers, maximum stocking densities in cages, minimum distance between farms. Existence of the cultivated specie within the large lake/reservoir as well as sufficient depth to sustain environmentally sustainable operations will be a precondition for site selection.

27. The project will also secure clear water and land access and use rights. Hence, provisions will be made to strengthen the position of the individuals/groups that will be accessing and utilizing those resources both for cluster and aquaparks models. It will be necessary to either specify access and use rights to the pond in the lease or DUATs, and/or initiate a sub-lease agreement with the group. This in order to guarantee ownership over the pond infrastructure/s for the direct beneficiaries of the project activity for a period no shorter in time to that of the main operator/s in the aquapark/s.

g. Climate change mitigation measures

28. A detailed Climate Risk Analysis will help the project in avoiding improper site selection and chose appropriate technologies to mitigate adverse effects. PRODAPE will promote climate smart aquaculture practices and technologies to increase fish farmers resilience to climate related shocks. These include context specific interventions tailored to the current and projected weather patterns. Reference will be made, when available, to the Local Adaptation Plans (LAPs) developed within the NCCAMS framework to ensure alignment with national efforts in adapting to climate change.[97]

29. Climate-proof aquaculture production models will be established.[98] For instance, integrated aquaculture offers efficient water and land use as well as a balanced, mixed farm approach.[99] Upgrading pond dykes with nylon netting (or any other material serving the purpose) and dykes raising would be one of the possible solutions in flood prone areas to minimise mass escapes. Also, stocking bigger seed would shorten the farming period and thus reduce the risk of losing the crop.

30. In this regard, the project linkage with CEPAQ, which is investing in genetic enhancement of the *mossambicus* strains, will possibly guarantee availability in the medium-long term of fast-growing, salt/temperature tolerant species suited to brackish water conditions, particularly in disaster prone areas. At the same time, the use of flooded and /or salinized land for aquaculture systems may turn useful in rehabilitating degraded soils in the longer term and will therefore be promoted by PRODAPE.

31. On a final note, it is worth mentioning that the adoption of BPMs can play a key role in increasing farmers' creditworthiness and access to specific financial products (i.e. through REFP).[100] This will be coupled with the strengthening/equipment of the Local Committees for Risk Management (CLGRC) for early warning as well as with an improved climate information service and packaging system, thus increasing overall resilience of project's beneficiaries.[101]

h. Multi-benefit approaches

32. Major benefits will include the adoption of climate smart aquaculture approaches and technologies including Integrated Aquaculture (INTAQ) which is expected to: i) contribute to less effluent disposal in water bodies; ii) provide nutrition for crops thereby saving costs on fertilizers; iii) lead to a more efficient use of land and water resources; and iv) induce higher farm productivity and incomes per ha. The development of cage culture guidelines and the demonstration/ adoption of BMPs including bio-security standards will likely reduce the risk of environmental pollution, potential disease outbreaks, define and adhere to carrying capacity and reduce potential social conflicts.

[97] An updated map of LAPs elaborated or in the process of being elaborated is attached as an annex.
[98] For instance, depending on climate context, trenches along ponds to divert excess water during flooding into dry ponds or reservoirs to store excess water would be a solution. Efficient water uses and water conservation solutions will be also promoted for drought exposed areas.
[99] Integration of aquaculture and agriculture is increasingly attractive where water is a limited resource considering its potential to reduce water requirement for the production of quality fish protein and fresh vegetable products relative to both culture systems operated independently.
[100] Weather/climate index-based insurance products tailored for small-scale fish farmers can be accessed through REFP to cover against losses due to natural calamities (i.e. dyke breaking, floods etc.).
[101] An updated list of Local Committees is attached as an annex to this document.

The adoption of water management practices will ensure good water quality avoid health risks and benefit production and productivity. Environmental conservation activities (soil erosion control and afforestation) will mitigate the risk of siltation in ponds and trees planting will serve as carbon sinks. At the same time, clearer NR access and use rights will strengthen beneficiaries' ownership and security over their livelihood assets. Adequate capacity building at institutional level as well as knowledge production will benefit sustainability and scale-up of project's interventions while enhancing national's sector capacity. These benefits may be costed during the first/second year of implementation when evidence on the ground will start being clearer and quantifiable.

i. Incentives for good practices

33. The project will reward good practices through a recognition mechanism that provides exposure and learning experiences for outstanding farmers, processors and other value chain actors. The asset transfer will be combined with appropriate training on environmental management (i.e. BMPs in pond/cage culture and water management). The E&S Consultant hired within the PMU will be responsible for this.

j. Participatory processes

34. The project will ensure target beneficiaries and stakeholders participation and involvement in consultative and decision-making processes, especially on management and utilization of environmental, physical and cultural resources. This will be key in ensuring long-term sustainability of the interventions. The improvement of stakeholder awareness of the nature of environment, social and climate vulnerability and change will be necessary in all phases of consultative processes.

Institutional analysis

k. Institutional framework

35. Since the World Summit on Sustainable Development held in Rio de Janeiro in 1992, Mozambique has established institutions to address the need of protecting biodiversity and tropical forests. The MITADER is charged with preparing environmental and climate policies and coordinating their implementation. MITADER is the Government of Mozambique's focal point for all international 48 Mozambique Environmental Threats and Opportunities Assessment conventions related to biodiversity conservation (e.g., CBD, CITES), and it coordinates Mozambique's REDD+ preparations and the climate change adaptation strategy. MITADER is represented at provincial level by its Provincial Directorates (DPTADER). The latter ensure the execution of the EIA process at local level which is a legal requirement in Mozambique under the Environmental Law (Law no. 20/97) for any activities which may have direct or indirect impacts on the environment. The Environmental Law requires that activities (whether by their nature, location or dimensions) which are likely to cause significant environmental impacts need to be licensed by MITADER, based on the outcomes of the EIA process.[102] The National Environmental Policy (Resolution no. 5/1995) was established to manage natural and environmental resources so as to maintain their functional and productive capacity for current and future generations. The Regulation regarding the Environmental Auditing Process (Decree no. 25/2011) was established to regulate supervisory and auditing activities related to compliance with environmental protection standards at the national level. Mozambique has made progress in establishing institutions whose mandates

[102] The latest regulation was established in 2015 (Decree 54/2015). Article 8 of the Environmental Law requires that the Government create adequate mechanisms so as to involve the various sectors of civil society, local communities and environmental protection organizations in the preparation of policies and legislation for the management of the country's natural resources. Article 9 prohibits the production and deposit of any toxic and polluting substances on soils, subsoils, water or atmosphere as well as the conduct of activities that will tend to accelerate erosion and desertification, deforestation or any other form of environmental degradation beyond the limits established by law.

contribute to environmental protection, biodiversity conservation and forest management. However, some weaknesses remain in institutional capacity, organization and coordination. The various responsibilities concerning environmental protection are dispersed among several ministries. This renders the concentration of human and financial resources and equipment for the protection of the environment difficult. At the same time, the limits of responsibilities among institutions are not clear, which, when coupled with weak coordination, can result in the duplication or absence of efforts among institutions.

36. Other relevant institutions are the National Meteorology Agency (INAM) and the National Institute for Disaster Risk Management (INGC) which contribute in producing and distributing meteorological information and ensuring early risk reaction along the country. However, effective coverage of meteorological services is still weak and EWSs have to be strengthened.

37. At regional level, water management and development are the responsibility of the five Regional Water Administrations (ARAs) in their respective river basins. They control the irrigation systems, collect water fees and hydrological data. They have administrative and financial autonomy but report to the DNSA. In areas not yet covered by an ARA, the Provincial Directorates of Public Works and Housing are the authority responsible for water resources management.

38. Finally, it is worth mentioning that the project is consistent with Mozambique's National Determined Contribution (NDC 2015) and its priorities and will facilitate investments in the use of renewable energy technologies when necessary, thus contributing to low levels of greenhouse gas emissions. In this framework, the project is also congruous with the National Adaptation Programme of Action (2007), which is already factored in the NCCAMS and the NDC, which in turn sets the basis for the National Adaptation Plan (NAP).

l. Capacity building & Research

39. On the institutional support side, the elaboration and use of adequate policy and regulations as well as capacity building& research activities will be a key activity of the Project. The elaboration/adoption of Best Management Practices (BMPs) – such as: i) good water management standards; ii) water monitoring[103]; iii) protocols for feeding,[104] fish behaviour, as well as for risk mitigation and remedial actions; iv) bio-security procedures (including quarantine requirements)[105]; and v) waste management – will be part of this effort. Moreover, PRODAPE will ensure adequate advisory capacity for aquaculture extension workers thus revising extension training material to take into account environmental, social and climate change effects implications in aquaculture projects. Research activities will see the involvement of different actors (i.e. IPP) will concentrate on providing evidence base of good environmental and climate practices adoption, with attention to costs and benefits. The production of an Agroecological Map for Suitable Aquaculture Sites in Mozambique will also represent an important outcome in this regard.[106]

[103] The designed authority for water quality monitoring are ARAs.
[104] To use small portions of feed at timely intervals rather than a large portion at one time to avoid eutrophication.
[105] Currently there is limited control of biosecurity procedures for safety importing and producing brood stock in the country. The only bio-secure facility is CEPAQ which established collaboration with private labs and universities for screening diseases prior to shipment as well as during quarantine in Mozambique, thus significantly reducing the risk of disease (i.e. TiLV) entering the country. This facility can also train other private hatcheries. All hatcheries in PRODAPE will be required to follow these standards.
[106] Currently, some work in this direction has been done and the Project should integrate what has been already produced into this exercise.

m. Additional funding

40. Opportunities for additional financing can be identified, particularly in relation to adaptation and mitigation finance (i.e. GCF or AF). These resources may secure the efficient adoption of a climate information system and the strengthening of the current early warning capacities. Environmental conservation activities or risk mitigation measures such as soil erosion control and afforestation are likely to reduce siltation in ponds, thereby increasing production and incomes, and can thus be considered as potential activities to be financed through additional resources. Also, as a good environmental practice, the project may think to promote indigenous tree planting around ponds areas during implementation, selecting species which could provide additional economic/environmental benefits as for instance, the use of fruits/leaves into feed production techniques.

Monitoring and Evaluation

41. A log-frame for PRODAPE has been produced to assess progress and success. A specific indicator to measure the number of smallholder fish farmers whose climate resilience has been increased is included in the project's log-frame. In addition, guidance for monitoring and evaluation of the project's environmental and social performance should be detailed in the ESMF and Plan. The project M&E and KM officer should work in close collaboration with the Environmental and Social Consultant to assess the performance and progress of the project during implementation.

Budgetary resources and schedule

42. Budget resources are made available for the elaboration of an ESMF through the design allocated budget. The detailed Climate Risk Analysis will be co-financed with PROCAVA which is currently under design. The two studies will be produced during design and before the project is submitted for approval. TORs for the preparation of these studies, which will require roughly 3 months to be finalised, are attached to this report.

Table 1: PRODAPE Social, Environment and Climate Risks and Mitigation Measures[107]

Activity	**Social**		**Environment**		**Climate Change**	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
Pond culture & Cage culture	(H) Weak **Natural Resource** (land& water) **access and use rights** and potential **competition with other land/water users**	Ensure clear land access and use rights through DUATs (clusters) and lease agreements (in aquaparks) and assess pre-existing competition with other NR users before implementation	(H) **Poor** pond **location**/ **siting** (including adequate soil, water quality & quantity all year round)	Comply with the criteria set out within the ESMF thus excluding fragile ecosystems, protected areas (i.e. conservation areas, reserves, parks and their buffer zones) and ensuring adequate environmental conditions	(H) Variation in water levels caused by weather extremes (i.e. drought/ floods)	Improve planning and zoning to take into consideration climate change aspects.
						Integration of aquaculture with agriculture crop-livestock-fish integrated farming systems thus improving water efficient water use
						Water harvesting and tree planting nearby ponds to reduce drought impact
						Fast-growing fish species (also through research).
		Water abstraction or diversion should be permitted by the relevant ARAs/ Water management authority.		Ensure water availability and quality all-year-round. Preferably ponds location will exclude areas where water from natural bodies cannot flow-in through gravity for pond culture.		Upgrade aquaculture facilities to withstand extreme weather and disasters: i.e. higher dykes, lining ponds, features that minimise mass escapes of cultured fish during flooding such as nets.
				Baseline study to identify suitable areas for cage culture (i.e. depth and		Building trenches along ponds to divert excess water during flooding into dry

[107] (H) High, (M) Medium, (L) Low.

Activity	Social		Environment		Climate Change	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
				oxygenation)		ponds or reservoirs to store excess water
		Create Water Management Committees involving community groups/associations		Develop/improve AEZ map for Suitable Aquaculture Areas (including soil, water, NR uses, health and climate change factors) to guide aquaculture development and species selection		Promote brackish water aquaculture on flooded and/or salinized land and water bodies thus potentially rehabilitating the soil in the longer term
		Community participation and consultation in all stages including the establishment of a grievance/ complaints channelling mechanism				Ensure adequate capacity of extension workers to assess climate change risks and support adaptation measures suited to the local context
		Clear delimitation of cage culture farms				
	(M) **Lack of adequate support** to small scale fish-farmers	Provide adequate training module/s and material on best aquaculture social, environmental and climate adaptation/ mitigation practices within the extension workers curricula.	(M) **Water quality deterioration** of in-let effluent/water bodies during implementation	Regular monitoring of water quality by ARAs and/or water management authorities	(M) Higher incidence of disease due to climate change	Promote best management practices (BPMs) and biosecurity in all production models also to adapt to disease risk due to the impact of climate change
		Integrate environmental education and training for farmers within project training interventions including early		Good risk communication/ early warning system in place		

Activity	Social		Environment		Climate Change	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
		warning.				
	(M) **Investment loss**	Weather/climate index-based insurance products tailored for small-scale fish farmers can be accessed through REFP to cover against losses due to natural calamities (i.e. dyke breaking, floods etc.).	(M) **Pollution or eutrophication of water bodies** through effluent discharge including increase in harmful algal blooms **(HABs)**	Integrated farming approach	(H) Lack of weather information and disaster risk preparedness	Coordinate with INAM to improve climate information services through extension service training and rehabilitation of met stations.
				Regular monitoring of water quality by both farmers and ARAs/ water management authorities including good risk communication/ early warning system in place		Coordinate with INGC to create/ capacitate Local Committees for Disaster Risk Management as part of the National EWS.
				Adoption of a protocol for remedial actions		
				Avoid use of agrochemicals and antibiotics		
				Efficient feeding regimes and high feed quality (BMPs)		
				Farmers' trainings on water monitoring, good risk communication and awareness creation		
	(M) **Elite capture**	Ensure targeted groups have access to relevant info, are represented and actively participate in	(H) **Fish disease** outbreaks [108]	Follow correct biosecurity procedures and quarantine to better control import of brood stock		

[108] Following correct procedure and quarantine guidelines is particularly important in light of the recently discovered TiLV.

Activity	Social		Environment		Climate Change	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
		all Project's related processes, including monitoring		Ensure correct stocking density through the adoption of BMPs and aquatic animal health surveillance system – training		
				Good husbandry at farm level		
	(L) **Exclusive reliance on aquaculture** activities	Diversification of livelihoods and income sources including nutrition aspects	(M) **Introduction of exotic** species	Avoid introduction of any exotic species. The *Nile Tilapia* will be introduced exclusively below the Zambezi River		
	(M) Disease outbreaks due to **contaminants**/ **pollutants** release into common water bodies	Use of organic fertilizers. Avoid use of agrochemicals or antibiotics	(M) **Risk of predators** such as frogs, lizards, birds, crocodiles etc.	Good management practices (BMPs) to include adequate protection measures (i.e. fencing, clear bushes, netting against birds)		
		Integrated farming approach[109]				
		Adoption of a protocol for remedial actions				
		Adherence to BMPs and continuous monitoring of water quality in place				
	(M) Outbreak of **malaria** and other water borne diseases	Encourage clearance of bushes around ponds and use of mosquito nets or repellents	(H) Degradation of lake/large reservoirs water quality and environment due to unregulated	Development of cage culture best practices and environmental management guidelines including regulations (i.e. minimum distance		
		Involve public health and create awareness				

[109] Ensure avoidance of excessive levels of potentially hazardous elements (i.e. nitrogen).

Activity	Social		Environment		Climate Change	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
			cage culture with potential disease outbreaks	between farms)		
	(M) **Expensive, unreliable/unavailable electricity** for aquaculture activities	Opt for gravity solutions to fill the ponds. When not possible promote the use of green technologies (i.e. solar pumps, solar panels etc.)		Undertake studies and assessment on the viability of cage culture before implementation		
				Demonstration of best practices based on the outcomes of assessment studies		
	(L) Accidental falling and **drowning** in ponds (for example, by children)	Fencing off ponds and putting up warning signs		Ensure adoption of environmental monitoring /reporting plan and waste management plan		
		Public awareness				
	(L) Risks associated with **construction works**	ESMF to specify the ES management requirements that will be the responsibility of contractors and primary suppliers hired to this scope (including health and safety).		Ensure adoption of biosecurity procedures for fingerlings introduction, and carrying capacity guidelines to avoid overstocking		
Post-harvest	(H) Outbreak of **food borne diseases** due to **poor food safety** standards	Adoption and adherence to food safety standards	(H) **Post-harvest loss** and **poor waste management** contributing to **environmental pollution** / **GHG emissions**		Minimise waste by improving harvest and post-harvest technology, including improved fish storage, handling and processing equipment	
		Adoption of good food handling and preparation practices at farm level including labelling				
		Promotion of technologies for preservation (i.e. solar dryers)			Reuse fish waste (i.e. as manure for crops, for fish feed, as collagen etc.)	

Activity	**Social**		**Environment**		**Climate Change**	
	Risk	*Mitigation*	*Risk*	*Mitigation*	*Risk*	*Mitigation*
		Train farmers on good food safety standards and handling.				
	(H) **Poor access to higher value markets** and lower revenues due to low quality standards	Adopt good quality standards and promote technologies to preserve quality			(M) Lack of water in fish markets	Rooftop water harvesting in rehabilitation of markets/ selling points

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex 6: First Annual Work Plan and Budget (AWPB)

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 6: Annual Work Plan and Budget

PRODAPE Annual Work Plan and Budget for Project Year 1 and 2

Jan 2020 - Dec 2021

The Work plan for January 2020 to December 2021

1.1 Overall approach to planning process and coordination

1. During the implementation phase the approach to planning and coordination of the PRODAPE is designed to take into account four major guidelines namely:

- Project Design Report (PDR);
- Coordination of the actions of entities / agencies involved;
- Decentralization of planning and implementation activities by the implementing agencies;
- Maximization of accountability and transparency.

2. **Project Design Report (PDR) -** provides the general framework for Project implementation, hence the basic for the Annual Work Plans and Budget (AWPB) preparation.

3. ***Coordination*** of activities will be ensured through mechanisms that will operate at both the PCU and all other implementing agencies. Project resources (that is, money to pay for the purchase of goods and services) will released only against the approved Annual Work Plans and Budgets (AWPBs) that are built up from separate AWPBs prepared at different units of implementing agency and other levels. Flexibility will be ensured through annual reviews and adjustments and by greater decentralization and beneficiary participation in the preparation, management, monitoring and evaluation of the AWPBs.

4. **Decentralization** of operations will be guaranteed by devolving or delegating the responsibility for preparing provincial AWPBs to the DPMAIPs together with SIDAEs and for central AWPBs to the PCU/IDEPA and central agencies participating in the project. Allocation of funds for project implementation, based on approved provincial and central AWPBs, is then to project accounts held by the DPMAIPs and the central agencies. The current structure of Government in Mozambique is already decentralized and as such is clearly appropriate for the dispersed type of decision making and implementation authority of the PRODAPE. Responsiveness to beneficiary and needs will be ensured by supporting a participatory approach to extension and research and establishing a system of continuous evaluation of project activities in which beneficiary feedback will be an important element

5. **Accountability and transparency** will be ensured through allocation of funds against specified expenditures (from project accounts) which themselves are justified by reference to particular activities. Control and accountability at the level of implementing agency including the PCU will be ensured through capacity building, annual external audit as well as regular supervisions missions by the GoM and IFAD.

1.2 First Annual Work Plan Focus

6. Since this plan is being prepared before the approval and effectiveness of the grant is declared by both the IFAD and the Government, the plan should focus among other things on the following:

- The recruitment of the PCU key staff such as (i) Project Coordinator, (ii) a M&E/ Knowledge Management specialist, (iii) a finance manager, (iv) a procurement officer, (iii) an accountant and other supporting staff;

- Ensuring that the designated account shall have been opened;
- Concentrate effort mainly on consolidating and advancing in capacity building through creating awareness among staff, the public, stakeholders and beneficiaries about the project, including the start-up workshop activities
- Implement procurement plan

7. Nevertheless, an attempt has been made so as to avoid an ambitious plan. It is hoped that for the subsequent AWPB, the PRODAPE will work hard as to improve and move along with the implementation once the systems have been put in place.

1.3 Description of the Work Plan

Component 1: Development of small-scale aquaculture production capacity

8. The aim of this component is to increase the capacity for production and productivity of small-scale aquaculture. The component is served by four sub-components:

Subcomponent 1.1: Develop fish seed production capacity.

9. The sub-component aims to support upgrading and establishment of hatcheries in the project area, by targeting medium-level private enterprises and establishing, public private partnerships (PPPs), as relevant. Key activities include: conducting an inventory of existing fingerlings producers and determining the supply and demand for fingerlings, investor sensitization / exposure forums, building the capacity of small-and medium scale fingerling production enterprises, access to financial services and identifying the role to be played by CEPAQ and CEPAM in relation to fingerling production and related demand-driven research to support the aquaculture industry nationwide. In summary the following activities will be carried under this sub-component during the PY1 and PY2.

1.1.1 Carry out the recruitment of TA to design the hatchery unit & Technical drawings

1.1.2 Initiate the tendering process for a construction and installation of hatchery facilities

1.1.3 Carry out the civil works for construction of modern fish hatcheries units

1.1.4 Carry out the purchase of hatchery equipment

1.1.5 Carry out rehabilitation/ expansion of hatcheries co-financed by private hatchery operators

1.1.6 Carry out training of hatchery operators and value chain actors (capacity building for seed production)

Subcomponent 1.2: Develop fish feed production capacity.

10. The sub-component addresses the need to develop the fish feed production capacity at all levels and for different client needs in the project areas. Intervention on feed can have significant impacts on project's viability since fish feed constitutes between 60-70 per cent of total production costs. PRODAPE will support the development of "cottage" micro-enterprises and medium-scale enterprises in fish feed production, based on assessment of demand and supply for their services by smallholders. In summary the following activities will be carried under this sub-component during the PY1 and PY2.

1.2.1 Carry out the recruitment of TA for the preparation of technical specification of fish feed machinery/housing

1.2.2 Carry out the recruitment of TA for the preparation of tendering documents for feed machinery/housing

1.2.3 Carry out the civil work for the construction of housing and installation of feed mill machinery

1.2.4 Carry out the tendering and supply process of feed ingredients

1.2.5 Purchase of fish input supplies

1.2.6 Carry out a support for the provision of matching grants and other financing mechanisms for the development of cottage feed industries

1.2.7 Carry out training of feed producer and value chain actors (capacity building for seed production)

Sub-component 1.3: Develop smallholder aquaculture production capacity.

11. The sub-component aims to improve smallholder aquaculture production capacity with three production technologies: a) smallholder aquaculture production consisting of earthen ponds for low income beneficiaries organized in clusters; b) small-scale pond aquaculture producers linked to medium level private-sector entrepreneurs for inputs and market access e.g. in aqua-parks model; and c) cage culture systems in large inland water bodies that involve high level management of seeds and feeds. Key activities include: organizing farmers into clusters, training farmers on viable aquaculture technologies, facilitating access to quality extension services, sustainable access to inputs and adequate water for aquaculture investments. In summary the following activities will be carried under this sub-component during the PY1 and PY2.

1.3.1 Carry out the training of extension agents

1.3.2 Carry out training of fish farmers on pond/cage construction and fish production, fish handling and business development

1.3.3 Carry out training of fish traders on fish handling and business development

1.3.4 Carry out provision support for reconstruction and recovery of assets for farmers affected by the IDAI storm

Sub-Component 1.4: Mainstreaming nutrition and addressing social risks

12. The sub-component aims to contribute to good nutrition through consumption of fish and fish-based value-added products as an entry point to improved and diversified family diet. It addresses other social risks such as lack of adequate planning and use of resources at household level, gender inequality and HIV and AIDS. Key activities include: capacity building to mainstream nutrition along the aquaculture value chain, facilitate access to energy and labour-saving technologies and the provision of Social Mentoring support to rural aquaculture producer households organized in groups. In summary the following activities will be carried under this sub-component during the PY1 and PY2 within the output 1.4.1: Basic knowledge on nutrition education and consumer awareness improved

1.4.1 Carry out the recruitment of TA to produce the Social Mentoring Manual for PRODAPE on the basis of GALS, Stepping Stones and nutrition information from GoM

1.4.2 Carry out training sessions for farmer clusters and/or the PCR group nutrition education

1.4.3 Carry out the recruitment of TA on Social behaviour change communication (SBCC) to support market Place (Fish fairs, radio shows, radio, television etc)

1.4.4 Carry out training of PRODAPE team and other key stakeholders (PCU, P/DMIMAIP, extension teams (Capacity building on nutrition mainstreaming approaches, social inclusion)

1.4.5. Participation in CODSAN, COPSAN and SETSAN training (P/DMIMAIP team)

1.4.6 Undertake consumer awareness studies on nutrition assessment and evaluation

1.4.7 Undertake baseline studies (KAP, MDDW, MDDYC) on nutrition

Component 2: Development of aquaculture as a business.

13. Aims to nurture the entrepreneurial capacity of farmers and promote a conducive environment for the development of aquaculture as a business. The component is served by four sub-components:

Sub-component 2.1: Support to development of aqua parks:

14. Aims to support the Government's new aquaculture development strategy focused on consolidation and centrality of production through sustainable and business oriented small and medium scale aqua-parks. The project will support preparation of feasibility studies, business plans and Environmental and Social Management Plans (ESMPs) for aqua-parks; and the development of key infrastructure e.g. "last mile" feeder roads, small water canals, electricity supply (off-grid or connection to the main grid, whichever is cost-effective) and cold chain facilities. In summary the following activities will be carried under this sub-component during the PY1

2.1.1 Carry out Regional Exchange visits/workshops for input suppliers

2.1.2 Carry out Regional Exchange visits/workshops for IDEPA staff on aqua-parks

2.1.3 Carry out Regional Exchange visits/workshops for DPMAIP staff

2.1.4 Carry out Local Exchange visits/workshops for extension workers

2.1.5 Carry out Local Exchange visits/workshops for fish farmers

Sub-component 2.2: Develop market linkages and business partnerships.

15. Aims to develop market linkages for improved handling, collection, marketing and distribution of cultured fish and associated products (spinoffs of some interventions are expected to benefit retailers of non-cultured fish). A second focus is the creation of a conducive environment for aquaculture business to thrive, by linking smallholders organized in clusters or engaged in aqua-parks in business partnerships with private entrepreneurs. The sub-component will facilitate the development of frameworks for effective partnerships and the establishment of business partnerships between smallholders and private entrepreneurs to improve smallholder access to inputs, markets and other services. In summary the following activities will be carried under this sub-component during the PY1

2.3.1 Undertake market and product development study and follow-up

2.3.2 Carry out civil works for improvement of fish markets

2.3.3 Carry out spot improvement of access road

2.3.4 Carry out the process of purchasing renewable energy equipment

2.3.5 Carry out civil works for the construction of water canals for aquaculture clusters

2.3.6 Carry out the process of production of training material and organization of fish fairs

Sub-component 2.3: Develop financial services.

16. Aims to facilitate access to financial services in unserved target communities and to players across all levels of the aquaculture value chain, through the Rural Enterprise

Finance Project (REFP). This includes promotion of PCRs to raise smallholder capacity to invest in aquaculture, a Crowding in Fund (CiF) with co-participation from beneficiaries, a Line of Credit (LoC) and also produce, fund and deliver differentiated business development packages to PRODAPE beneficiaries across the value chain. In summary the following activities will be carried under this sub-component during the PY1

2.3.1 Carry out the recruitment of financial liaison officer who will link PRODAPE with REFP opportunities.

2.3.2 Carry out an assessment of PRODAPE beneficiaries requiring the access to financial services in the form either CIF or LoC from REFP

Sub-component 2.4: Support to youth aquapreneurship.

17. The sub-component enhances opportunities for youth through investments in business-oriented activities that match the interests; energy and skills of young people in, or linked to, the aquaculture value chain. It will support vocational training of youth, preparation of business plans and linking them with the REFP for tailored financing. In the first year of activities the following activity is envisioned: development of a Support Your Own Business Manual for PRODAPE by a specialist in the methodology.

Component 3: Project management, institutional and policy development.

18. The component aims to establish appropriate arrangements and support mechanisms for PRODAPE management, the development of relevant sector institutions for the assumption of their core mandates together with the development of the aquaculture sector policy and regulatory framework. This will include the provision of administrative and technical leadership to the planning of the above mentioned two technical components and Knowledge Management activities, reporting, financial management, and procurement support. These activities will be undertaken by the Project Coordination Unity (PCU) in collaboration with IDEPA that will be appropriately staffed to ensure that planned activities are timely and effectively undertaken. This will all be done under the oversight of the IDEPA and PSC; the PSC will also provide policy direction and coordination between key government institutions. Under this component, PRODAPE planned activities during the first (PY1) and second (PY2) Project Years are presented under the following subcomponents below:

Sub-component 3.1: Project management

19. The sub-component intends to establish appropriate project management structures, systems and procedures and support relevant institutions in the assumption of their roles. Key activities include: the establishment of a functional Project Coordination Unit (PCU), identification of focal points for PRODAPE subordinated to sector provincial directorates, together with the establishment of effective M&E and KM systems. Thus, in summary the following are main activities for year 1 and 2 under this sub-component:

3.1.1 Recruit all key PCU staff as specified in the PDR;

3.1.2 Identify office space for the PCU;

3.1.3 MIMAIP in coordination with IDEPA to appoint the Project Steering Committee;

3.1.4 organize a start-up workshops;

3.1.5 Undertake baseline survey;

3.1.6 Procure and install the Financial Management/Accounting software;

3.1.7 Fine tune the Project Implementation Manual (PIM);

3.1.8 Develop and set up M&E Systems;

3.1.9 Develop and set up Knowledge Management System;

3.1.10 Procure all first batch vehicles for the Project;

3.1.11 Procure furniture and equipment for the PCU and implanting agencies;

3.1.12 Preparation of implementation progress reports;

3.1.13 Fine tuning of the 2020 and 2021 AWPB;

3.1.14 Undertake at least two Project Steering Committee meetings;

3.1.15 Participate in the IFAD Regional Implementation Workshop;

3.1.16 Participation in/facilitation of the joint IFAD-GoM Supervision Missions;

3.1.17 Preparation of ToR for the TAs;

3.1.18 Hiring of Senior Sociologist;

3.1.19 Undertake Special Study Targeting, Gender and Youth;

3.1.20 Carry out "implementation support" to the process of building staff and partner capacity in the areas of targeting, gender and youth

3.1.21 Carry out "implementation support" for PPPs to help the project start developing specific strategies for this area.

20. Sub-component 3.2: Institutional capacity building. The sub-component aims to strengthen the institutional and technical capacity of IDEPA and other sector institutions involved in planning, implementation and monitoring of small-scale aquaculture, including bio-safety and bio-security. Key activities include: hiring, training of relevant technical and extension staff and provision of key resources, production and consolidation of training materials, the provision of support to planning, coordination, implementation and monitoring activities, as well as to priority research activities directly relevant to small-scale aquaculture; setting aquaculture statistical database and system for data collection. In summary the following are key activities to undertaken during year 1 and 2 under this sub-component:

3.2.1 Undertake the integration of the technical specialists in the departments of IDEPA;

3.2.2 Establish a small-scale aquaculture integrated into the SDAE/ district administration;

3.2.3 Production of Social Inclusion Manual and national level training;

3.2.4 Printing and distribution of PRODAPE Social Inclusion Manual;

3.2.5 Carry out training at sub-national level of relevant stakeholders on PRODAPE Social Inclusion (to be given by sociologist);

21. Sub-component 3.3: Policy development. The sub-component aims to strengthen the policy and regulatory framework governing aquaculture activity in Mozambique, including issues pertaining to environmental and social safeguards, operating guidelines for cage culture and for the establishment of PPPs, and set up for appropriate statistics systems, among others. Key activities include: the provision of technical support to relevant government authorities, facilitating workshops and other consultation processes; including the formulation of policy and related studies.

3.3.1 Preparations of ToR for the envisaged studies

3.3.2 Undertake a study on ESMF and detailed climate risk analysis, which includes, an agro-ecological map of suitable zones for aquaculture;

3.3.3 Undertake regulations studies on aquaculture and aquaculture produce, cage aquaculture, aqua-parks and development plans / projects on small scale aquaculture;

Budget ESTMATES AND FINANCING ARRANGEMENTS

2.1 Summary Annual Work Plan and Budget for year 1 (2020) and year 2 (2021)

22. Presented in this section are summary tables giving an overall picture of financial resources required and key summary activities for the 2020-2021 PRODAPE AWPB. The budget information is presented by component, financier and categories of expenditure. The first year of project implementation is 2020 and for the AWPB, the total budget is estimated at USD 8.9 million. The corresponding allocations by components are: USD 4.4 million (about 49% of the budget) allocated to Component 1; USD 1.5 million (17% of the budget) allocated to component 2; and USD 3 million (34% of the budget) allocated to Component 3. In year 2021, the total budget is estimated at USD 9.5 million. The corresponding allocations by components are: USD 5 million (54% of the budget) allocated to Component 1; USD 3.0 million (32% of the budget) allocated to component 2; and USD 1.4 million (14% of the budget) allocated to Component 3. For the two years (2020 and 2021) the total budget is estimated at USD 18 million. In terms of corresponding allocations by components are: USD 9.5 million (about 52% of the budget) allocated to Component 1; USD 4.5 million (25% of the budget) allocated to component 2; and USD 4.4 million (24% of the budget) allocated to Component 3. The total budget will be financed by IFAD grant.

Table 1: PRODAPE 2020 Annual Work Plan & Budget (US$) by Components and Subcomponents

Component & Sub-Component	Year 1 (2020) (USD)	%
Component 1: Development of small-scale aquaculture production capacity	**4,411,000.00**	**49%**
Sub-component1.1 (SC1.1). Develop Fish Seed Production Capacity	1,663,000.00	38%
Sub-component 1.2 (SC1.2). Develop Fish Feed Production Capacity	1,543,000.00	35%
Sub-component1.3 (SC1.3). Develop Smallholder Aquaculture Production Capacity	863,000.00	20%
Sub-component 1.4 (SC1.4). Mainstreaming nutrition and addressing social risks	342,000.00	8%
Component 2. Development of aquaculture as a business	**1,487,000.00**	**17%**
Sub-component 2.1 (SC2.1). Support to Development of Aquaparks	380,000.00	26%
Sub-component 2.2(SC2.2).Develop Market Linkages and Business Partnership	1,065,000.00	72%
Sub-component 2.3 (SC2.3). Develop financial services	42,000.00	3%
Sub-component 2.4 (SC2.4). Support to youth aquapreneurship	0.00	0%
Component 3: Project management, institutional development and policy	**3,014,443.00**	**34%**
Sub-component 3.1(SC3.1). Policy Development	259,100.00	9%
Sub-component 3.2 (SC3.2). Institutional Capacity Building	1,325,000.00	44%
Sub-component 3.3 (SC3.3). Project Management	1,430,343.00	47%
Grand Total	**8,912,443.00**	**100%**

Table 2: PRODAPE 2021 Annual Work Plan & Budget (US$) by Components and Subcomponents

Component & Sub-Component	Year 2 (2021)	
	(USD)	%
Component 1: Development of small-scale aquaculture production capacity	**5,062,000.00**	**54%**
Sub-component1.1 (SC1.1). Develop Fish Seed Production Capacity	1,650,000.00	33%
Sub-component 1.2 (SC1.2). Develop Fish Feed Production Capacity	1,530,000.00	30%
Sub-component1.3 (SC1.3). Develop Smallholder Aquaculture Production Capacity	955,000.00	19%
Sub-component 1.4 (SC1.4). Mainstreaming nutrition and addressing social risks	927,000.00	18%
Component 2. Development of aquaculture as a business	**3,007,000.00**	**32%**
Sub-component 2.1 (SC2.1). Support to Development of Aquaparks	0.00	0%
Sub-component 2.2(SC2.2).Develop Market Linkages and Business Partnership	2,965,000.00	99%
Sub-component 2.3 (SC2.3). Develop financial services	42,000.00	1%
Sub-component 2.4 (SC2.4). Support to youth aquapreneurship	0.00	0%
Component 3: Project management, institutional development and policy	**1,346,413.00**	**14%**
Sub-component 3.1(SC3.1). Policy Development	186,900.00	14%
Sub-component 3.2 (SC3.2). Institutional Capacity Building	245,000.00	18%
Sub-component 3.3 (SC3.3). Project Management	914,513.00	68%
Grand Total	**9,415,413.00**	**100%**

Table 3: PRODAPE 2020 and 2021 Annual Work Plan & Budget (US$) by Components and Subcomponents

Component & Sub-Component	Year 1 (2020)		Year 2 (2021)		Total (Yr1 & Yr2)	
	(USD)	%	(USD)	%	(USD)	%
Component 1: Development of small-scale aquaculture production capacity	**4,411,000.00**	**49%**	**5,062,000.00**	**54%**	**9,473,001.00**	**52%**
Sub-component1.1 (SC1.1). Develop Fish Seed Production Capacity	1,663,000.00	38%	1,650,000.00	33%	3,313,000.38	35%
Sub-component 1.2 (SC1.2). Develop Fish Feed Production Capacity	1,543,000.00	35%	1,530,000.00	30%	3,073,000.35	32%
Sub-component1.3 (SC1.3). Develop Smallholder Aquaculture Production Capaci	863,000.00	20%	955,000.00	19%	1,818,000.20	19%
Sub-component 1.4 (SC1.4). Mainstreaming nutrition and addressing social risks	342,000.00	8%	927,000.00	18%	1,269,000.08	13%
Component 2. Development of aquaculture as a business	**1,487,000.00**	**17%**	**3,007,000.00**	**32%**	**4,494,001.00**	**25%**
Sub-component 2.1 (SC2.1). Support to Development of Aquaparks	380,000.00	26%	0.00	0%	380,000.26	8%
Sub-component 2.2(SC2.2).Develop Market Linkages and Business Partnership	1,065,000.00	72%	2,965,000.00	99%	4,030,000.72	90%
Sub-component 2.3 (SC2.3). Develop financial services	42,000.00	3%	42,000.00	1%	84,000.03	2%
Sub-component 2.4 (SC2.4). Support to to youth aquapreneurship	0.00	0%	0.00	0%	0.00	0%
Component 3: Project management, institutional development and policy	**3,014,443.00**	**34%**	**1,346,413.00**	**14%**	**4,360,856.34**	**24%**
Sub-component 3.1(SC3.1). Policy Development	259,100.00	9%	186,900.00	14%	446,000.09	10%
Sub-component 3.2 (SC3.2). Institutional Capacity Building	1,325,000.00	44%	245,000.00	18%	1,570,000.44	36%
Sub-component 3.3 (SC3.3). Project Management	1,430,343.00	47%	914,513.00	68%	2,344,856.47	54%
Grand Total	**8,912,443.00**	**100%**	**9,415,413.00**	**100%**	**18,327,858.34**	**100%**

Table 4. Overall Budget for 2020 and 2021 by Components and Subcomponents by Financier

Component & Sub-Component	IFAD Grant (USD)	GoM (USD)	Beneficiaries (USD)	Total (USD)
Component 1: Development of small-scale aquaculture production capacity	**9,473,000.00**	**0.00**	**0.00**	**9,473,000.00**
Sub-component1.1 (SC1.1). Develop Fish Seed Production Capacity	3,313,000.00	0.00	0.00	**3,313,000.00**
Sub-component 1.2 (SC1.2). Develop Fish Feed Production Capacity	3,073,000.00	0.00	0.00	**3,073,000.00**
Sub-component1.3 (SC1.3). Develop Smallholder Aquaculture Production Capaci	1,818,000.00	0.00	0.00	**1,818,000.00**
Sub-component 1.4 (SC1.4). Mainstreaming nutrition and addressing social risks	1,269,000.00	0.00	0.00	**1,269,000.00**
Component 2. Development of aquaculture as a business	**4,494,000.00**	**0.00**	**0.00**	**4,494,000.00**
Sub-component 2.1 (SC2.1). Support to Development of Aquaparks	380,000.00	0.00	0.00	**380,000.00**
Sub-component 2.2(SC2.2).Develop Market Linkages and Business Partnership	4,030,000.00	0.00	0.00	**4,030,000.00**
Sub-component 2.3 (SC2.3). Develop financial services	84,000.00	0.00	0.00	**84,000.00**
Sub-component 2.4 (SC2.4). Support to to youth aquapreneurship	0.00	0.00	0.00	**0.00**
Component 3: Project management, institutional development and policy	**4,360,856.00**	**0.00**	**0.00**	**4,360,856.00**
Sub-component 3.1(SC3.1). Policy Development	446,000.00	0.00	0.00	**446,000.00**
Sub-component 3.2 (SC3.2). Institutional Capacity Building	1,570,000.00	0.00	0.00	**1,570,000.00**
Sub-component 3.3 (SC3.3). Project Management	2,344,856.00	0.00	0.00	**2,344,856.00**
Grand Total	**18,327,856.00**	**0.00**	**0.00**	**18,327,856.00**

Table 5: Overall PRODAPE Summary Procurement Plan for 2020 and 2021 by Planned Expenditure Categories

Procurement Categories	Planned budget in USD by Year		% by Year		Overall (2020 and 2021)	
	2020	2021	2020	2021	USD	%
I - Civil Works	3,987,000.00	4,152,000.00	45%	44%	8,139,000.00	44%
II - Vehicles	375,000.00		4%	0%	375,000.00	2%
III - Equipment and Material	453,310.00	1,941,680.00	5%	21%	2,394,990.00	13%
IV - Consultancies, TA and Studies	1,634,000.00	1,158,000.00	18%	12%	2,792,000.00	15%
V - Training & Workshops	1,171,933.00	924,733.00	13%	10%	2,096,666.00	11%
VI - Credit & Fund	750,000.00	750,000.00	8%	8%	1,500,000.00	8%
VII - Salaries & Allowances	403,500.00	403,500.00	5%	4%	807,000.00	4%
VIII - Operating Costs	107,700.00	115,500.00	1%	1%	223,200.00	1%
Grand Total	**8,882,443.00**	**9,445,413.00**	**100%**	**100%**	**18,327,856.00**	**100%**

Table 6: Overall PRODAPE Budget for 2020 and 2021 by Components and Subcomponents by Planned Expenditure Categories

Component & Sub-Component	Planned Expenditure Categories in USD								Grand Total
	I - Civil Works	II - Vehicles	III - Equipment and Material	IV - Consultancies,	V - Training & Workshops	VI - Credit & Fund	VII - Salaries & Allowances	VIII - Operating Costs	
Component 1: Development of small-scale aquaculture production capacity	5,839,000.00	0.00	240,000.00	737,000.00	1,157,000.00	1,500,000.00	0.00	0.00	9,473,000.00
Sub-component1.1 (SC1.1). Develop Fish Seed Production Capacity	3,105,000.00	-	140,000.00	8,000.00	60,000.00	-	-	-	3,313,000.00
Sub-component 1.2 (SC1.2). Develop Fish Feed Production Capacity	1,400,000.00	-	100,000.00	-	73,000.00	1,500,000.00	-	-	3,073,000.00
Sub-component1.3 (SC1.3). Develop Smallholder Aquaculture Production Capacity	1,334,000.00	-	-	-	484,000.00	-	-	-	1,818,000.00
Sub-component 1.4 (SC1.4). Mainstreaming nutrition and addressing social risks	-	-	-	729,000.00	540,000.00	-	-	-	1,269,000.00
Component 2. Development of aquaculture as a business	2,150,000.00	0.00	1,800,000.00	134,000.00	410,000.00	0.00	0.00	0.00	4,494,000.00
Sub-component 2.1 (SC2.1). Support to Development of Aquaparks	-	-	-	-	380,000.00	-	-	-	380,000.00
Sub-component 2.2(SC2.2).Develop Market Linkages and Business Partnership	2,150,000.00	-	1,800,000.00	50,000.00	30,000.00	-	-	-	4,030,000.00
Sub-component 2.3 (SC2.3). Develop financial services	-	-	-	84,000.00	-	-	-	-	84,000.00
Sub-component 2.4 (SC2.4). Support to to youth aquapreneurship	-	-	-	0.00	-	-	-	-	0.00
Component 3: Project management, institutional development and policy	150,000.00	375,000.00	354,990.00	1,921,000.00	529,666.00	0.00	807,000.00	223,200.00	4,360,856.00
Sub-component 3.1(SC3.1). Policy Development	-	-	-	342,000.00	104,000.00	-	-	-	446,000.00
Sub-component 3.2 (SC3.2). Institutional Capacity Building	150,000.00	-	70,000.00	1,150,000.00	200,000.00	-	-	-	1,570,000.00
Sub-component 3.3 (SC3.3). Project Management	-	375,000.00	284,990.00	429,000.00	225,666.00	-	807,000.00	223,200.00	2,344,856.00
Grand Total	8,139,000.00	375,000.00	2,394,990.00	2,792,000.00	2,096,666.00	1,500,000.00	807,000.00	223,200.00	18,327,856.00

3.1 Detailed Activities and Budget by Components/ Subcomponents and Category Indication

23. As it can be depicted below are the detailed cost tables presented in the form of landscape giving an overall picture of financial resources required for the 2020-2021 period and corresponding activities on which funds will be utilised.

Republic of Mozambique
PRODAPE - Small Scale Aquaculture Development Project
Component 1: Development of small-scale aquaculture production capacity

Detailed Annual Activity Plan & Costs by Subcomponent (USD)

Ref Code	Item / Activity	Unit	Qt	Unit Cost	Budget in USD Total Planned PY1 (2020)	PY2 (2021)	(PY1 & PY2)	Impl. Agency	Timetable for implementation by year and Quarter PY1 Q1	Q2	Q3	Q4	PY 2 Q1	Q2	Q3	Q4	ource of fundin IFAD	Categories
SC1.1	**Develop Fish Seed Production Capacity**																	
	Activities & Investment Costs																	
SC1.1	1.1 Carry out the recruitment of TA to design the hatchery unit & Technical Drawings	lump sum	1	8,000.00	8,000.00		8,000.00	PCU/IDEPA									8,000.00	TA
SC1.1	1.2 Initiate the tendering Process for a construction and installation of hatchery faciliti	lump sum	1	5,000.00	5,000.00		5,000.00	PCU/IDEPA									5,000.00	W
SC1.1	1.3 Carry out the civil works for construction of ultra-modern fish hatcheries units	number	2	400,000.00	800,000.00	800,000.00	1,600,000.00	PCU/IDEPA									1,600,000.00	W
SC1.1	1.4. Carry out the purchase of hatchery equipment process	lump sum	1	40,000.00	40,000.00	40,000.00	80,000.00	PCU/IDEPA									80,000.00	E&M
SC1.1	1.5 Purchase of fish input supplies	lump sum	1	30,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA									60,000.00	E&M
SC1.1	1.6 Carry out rehabilitation/ expansion of hatcheries co-financed by private hatchery o	number	3	250,000.00	750,000.00	750,000.00	1,500,000.00	PCU/IDEPA									1,500,000.00	W
SC1.1	1.7 Carry out training of hatchery operators and value chain actors (capacity building f	lump sum	1	30,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA									60,000.00	T&W
	Subtotal of Develop Fish Seed Production Capacity (SC1.1)				**1,663,000.00**	**1,650,000.00**	**3,313,000.00**										**3,313,000.00**	
SC1.2	**Develop Fish Feed Production Capacity**																	
	Activities & Investment Costs																	
SC1.2	2.1 Carry out the recruitment of TA for the preparation of technical specification of fis	lump sum	1	8,000.00	8,000.00		8,000.00	PCU/IDEPA									8,000.00	T&W
SC1.2	2.2 Carry out the recruitment of TA for the preparation of tendering documents for fee	lump sum	1	5,000.00	5,000.00		5,000.00	PCU/IDEPA									5,000.00	T&W
SC1.2	2.3 Carry out the civl work for the construction of husing and installation of feedmill m	number	2	350,000.00	700,000.00	700,000.00	1,400,000.00	PCU/IDEPA									1,400,000.00	W
SC1.2	2.4. Carry out the tendering and supply process of feed ingredients	lump sum	1	30,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA									60,000.00	E&M
SC1.2	2.5 Purchase of fish input supplies	lump sum	1	20,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA									40,000.00	E&M
SC1.2	2.6 Carry out a support for the provision of matching grants and other financing mech	number	3	250,000.00	750,000.00	750,000.00	1,500,000.00	PCU/IDEPA									1,500,000.00	F
SC1.2	2.7 Carry out training of feed producer and value chain actors (capacity building for see	lump sum	1	30,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA									60,000.00	T&W
	Subtotal of Develop Fish Feed Production Capacity (SC1.2)				**1,543,000.00**	**1,530,000.00**	**3,073,000.00**										**3,073,000.00**	
SC1.3	**Develop Smallholder Aquaculture Production Capacity**																	
	Activities & Investment Costs																	
SC1.3	3.1 Carry out the training of extensionists	Session	2	26,000.00	52,000.00		52,000.00	PCU/IDEPA									52,000.00	T&W
SC1.3	3.2 Carry out training of fish farmers on pond/cage construction and fish production, fi	Session	1	144,000.00	144,000.00	144,000.00	288,000.00	PCU/IDEPA									288,000.00	T&W
SC1.3	3.3 Carry out training of fish traders on fish handling and business development	Session	1	144,000.00		144,000.00	144,000.00	PCU/IDEPA									144,000.00	T&W
SC1.3	3.4. Carry out provision support for recontruction and recovery of assets for farmers a	lump sum	1	667,000.00	667,000.00	667,000.00	1,334,000.00	PCU/IDEPA									1,334,000.00	W
	Subtotal of Develop Smallholder Aquaculture Production Capacity (SC1.3)				**863,000.00**	**955,000.00**	**1,818,000.00**										**1,818,000.00**	
SC1.4	**Mainstreaming nutrition and addressing social risks**																	
	Activities & Investment Costs																	
SC1.4	4.1 Carry out the recruitment of TA on Social behaviour change communication (SBCC	lump sum	1	400,000.00		400,000.00	400,000.00	PCU/IDEPA									400,000.00	TA
SC1.4	4.2 Carry out training sessions for farmer clusters and/or the PCR group nutrition educ	Session	6	30,000.00	180,000.00	180,000.00	360,000.00	PCU/IDEPA									360,000.00	T&W
SC1.4	4.3 Carry out the recruitment of TA on Social behaviour change communication (SBCC	number	12	10,000.00		120,000.00	120,000.00	PCU/IDEPA									120,000.00	TA
SC1.4	4.4 Carry out training of PRODAPE team(PCU, P/DMIMAIP, extension teams (Cap	Session	4	10,000.00	40,000.00	40,000.00	80,000.00	PCU/IDEPA									80,000.00	T&W
SC1.4	4.5. Participation in CODSAN, COPSAN and SETSAN training (P/DMIMAIP team)	number	5	10,000.00	50,000.00	50,000.00	100,000.00	PCU/IDEPA									100,000.00	T&W
SC1.4	4.6 Undertake consumer awareness studies on nutrition assessment and evaluation	Study	1	15,000.00		15,000.00	15,000.00	PCU/IDEPA									15,000.00	TA
SC1.4	4.7 Undertake baseline studies (KAP, MDDW, MDDYC) on nutrition	Study	1	50,000.00		50,000.00	50,000.00	PCU/IDEPA									50,000.00	TA
SC1.4	4.8 Carry out the recruitment of Nutrition Specialist	P/Month	12	6,000.00	72,000.00	72,000.00	144,000.00	PCU/IDEPA									144,000.00	TA
	Subtotal of Mainstreaming nutrition and addressing social risks (SC1.4)				**342,000.00**	**927,000.00**	**1,269,000.00**										**1,269,000.00**	
	Total Component A: Development of small-scale aquaculture production capacity				**4,411,000.00**	**5,062,000.00**	**9,473,000.00**										**9,473,000.00**	

Key:
I - Civil Works (W)
II – Vehicles (V)
III - Equipment and Material (E&M)
IV - Consultancies, TA and Studies (C, TA & S)
V - Training & Workshops (T&W)
VI - Credit & Fund (C&F)
VII - Salaries & Allowances (S&A)
VIII – Operating Costs (OC)

Republic of Mozambique
PRODAPE - Small Scale Aquaculture Development Project
Component 2. Development of aquaculture business

Ref Code	Detailed Annual Activity Plan & Costs by Subcomponent (USD) / Item / Activity	Quantities & Unit Cost			Budget in USD Total Planned			Impl. Agency	Timetable for implementation by year and Quarter								Source of fundin	
									PY1				PY 2					
		Unit	Qt	Unit Cost	PY1 (2020)	PY2 (2021)	(PY1 & PY2)		Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	IFAD	Categories
SC2.1	**Develop business partnerships, eq. Aquaparks**																	
	Activities & Investment Costs																	
SC2.1	1.1 Carry out Regional Exchange visits/workshops for input suppliers	Trip	1	12,000.00	12,000.00		12,000.00	PCU/IDEPA									12,000.00	T&W
SC2.1	1.2 Carry out Regional Exchange visits/workshops for IDEPA staff on…	Visit	1	12,000.00	12,000.00		12,000.00	PCU/IDEPA									12,000.00	T&W
SC2.1	1.3 Carry out Regional Exchange visits/workshops for DPMAIP staff	Visit	1	12,000.00	12,000.00		12,000.00	PCU/IDEPA									12,000.00	T&W
SC2.1	1.4. Carry out Local Exchange visits/workshops for extensionistas	Trip	3	8,000.00	24,000.00		24,000.00	PCU/IDEPA									24,000.00	T&W
SC2.1	1.5 Carry out Local Exchange visits/workshops for fish farmers	Meeting	80	4,000.00	320,000.00		320,000.00	PCU/IDEPA									320,000.00	T&W
	Subtotal of Develop business partnerships, eq. Aquaparks (SC2.1)				**380,000.00**	**0.00**	**380,000.00**										**380,000.00**	
SC2.1	**Develop financial services**																	
	Activities & Investment Costs																	
SC2.2	2.1 Carry out the recruitment of a financial liaison officer link PRODAPE with REFP	lump sur	12	3,500.00	42,000.00	42,000.00	84,000.00	PCU/IDEPA									84,000.00	TA
SC2.2	2.2																	
	Subtotal of Develop financial services (SC2.2)				**42,000.00**	**42,000.00**	**84,000.00**										**84,000.00**	
SC3.3	**Develop market linkages**																	
	Activities & Investment Costs																	
SC3.3	3.1 Undertake market and product development study and follow-up	lump sur	1	50,000.00	50,000.00		50,000.00	PCU/IDEPA									50,000.00	TA
SC3.3	3.2 Carry out civil works for improvement of fish markets	number	3	40,000.00		120,000.00	120,000.00	PCU/IDEPA									120,000.00	W
SC3.3	3.3 Carry out spot improvement of access road	Km	40	20,000.00	800,000.00	800,000.00	1,600,000.00	PCU/IDEPA									1,600,000.00	W
SC3.3	3.4. Carry out the process of purchasing renewable energy equipment	number	30	60,000.00		1,800,000.00	1,800,000.00	PCU/IDEPA									1,800,000.00	E&M
SC3.3	3.5. Carry out civil works on grid connection	Km	30	3,000.00	90,000.00	90,000.00	180,000.00	PCU/IDEPA									180,000.00	W
SC3.3	3.6. Carry out civil works for the construction of water canals for aquaculture clusters	Km	25	5,000.00	125,000.00	125,000.00	250,000.00	PCU/IDEPA									250,000.00	W
SC3.3	3.7. Carry out the process of production of training material and organization of fish fa	lump sur	1	30,000.00		30,000.00	30,000.00	PCU/IDEPA									30,000.00	T&W
	Subtotal of Develop market linkages (SC3.3)				**1,065,000.00**	**2,965,000.00**	**4,030,000.00**										**4,030,000.00**	
	Total Component A: Development of small-scale aquaculture production capacity				**1,487,000.00**	**3,007,000.00**	**4,494,000.00**										**4,494,000.00**	

Key:
I - Civil Works (W)
II – Vehicles (V)
III - Equipment and Material (E&M)
IV - Consultancies, TA and Studies (C, TA & S)
V - Training & Workshops (T&W)
VI - Credit & Fund (C&F)
VII - Salaries & Allowances (S&A)
VIII – Operating Costs (OC)

Republic of Mozambique
PRODAPE - Small Scale Aquaculture Development Project
Component 3: Project management, institutional development and policy

Ref Code	Detailed Annual Activity Plan & Costs by Subcomponent (USD)	Quantities & Unit Cost			Budget in USD Total Planned			Impl. Agency	Timetable for implementation by year and Quarter								Success Indicators	Source of fundin	
									PY1				PY 2						
	Item / Activity	Unit	Qt	Unit Cost	PY1 (2020)	PY2 (2021)	(PY1 & PY2)		Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4		IFAD	Categories
SC3.1	**Policy Development**																		
	Output 1.1: Social Inclusion																		
	I. Activities & Investment Costs																		
SC3.1	1.1.1 Carry out the recruitment of Senior Sociologist	P/Month	12	5,500.00	66,000.00	66,000.00	132,000.00	PCU/IDEPA									Senior Sociologist recruited	132,000.00	T&W
SC3.1	1.1.2 Carry out 20 days trainning on social inclusion aspects by an international trainer	day	20	850.00	17,000.00		17,000.00	PCU/IDEPA									30 people trained and PRODAPI	17,000.00	T&W
SC3.1	1.1.3 Carry out provincial and district staff training on social inclusion during 90 days	day	90	250.00	22,500.00	22,500.00	45,000.00	PCU/IDEPA									Provincial and district staff traine	45,000.00	T&W
SC3.1	1.1.4. Carry out the elaboration, printing and distribution of Social Inclusion Manual	number	120	30.00	3,600.00		3,600.00	PCU/IDEPA									Manual printed and distributed	3,600.00	T&W
SC3.1	1.1.5 Undertake special studies on social issues requiring further understanding for refinir	number	1	20,000.00		20,000.00	20,000.00	PCU/IDEPA									1 study on social issues undertak	20,000.00	TA
SC3.1	1.1.6 Carry out implementation support on social issues	day	1	900.00		900.00	900.00	PCU/IDEPA										900.00	T&W
SC3.1	1.1.7 Carry out engagiment training of 150 parcipantes in social inclusion	session	150	250.00		37,500.00	37,500.00	PCU/IDEPA									150 parcipantes engaged & traine	37,500.00	T&W
	Output 1.2: Environment, Climate Change Adaptation and Mitigation																		
SC3.1	1.2.1 Undertake some studies of contribution to the development of climate adaptation ar	lump sum	1	50,000.00	50,000.00	40,000.00	90,000.00	PCU/IDEPA									Studies undertaken	90,000.00	TA
SC3.1	1.2.2 Undertake a study on Climate and weather information dissemination strategy	lump sum	1	100,000.00	100,000.00		100,000.00	PCU/IDEPA									Study on climate and weather inf	100,000.00	TA
	Subtotal of Policy Development (SC3.1)				**259,100.00**	**186,900.00**	**446,000.00**											**446,000.00**	
SC3.2	**Institutional Capacity Building**																		
	Output 2.1: Environment, Climate Change Adaptation and Mitigation																		
	I. Activities & Investment Costs																		
SC3.2	2.1.1 Carry out training of farmers, project staff, government staff on PICSA	lump sum	1	20,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA									Farmers, project and Gov. staff t	40,000.00	T&W
SC3.2	2.1.2 Carry out training of farmers, project staff, government staff on climate gaming tool	lump sum	1	10,000.00	10,000.00	10,000.00	20,000.00	PCU/IDEPA									Farmers, project and Gov. staff t	20,000.00	T&W
SC3.2	2.1.3 Carry out training of aquaculture extension workers on environment and climate ada	session	2	10,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA										40,000.00	T&W
SC3.2	2.1.4. Carry out the establishment of Local Committees for Risk Management (CLGRC)	session	5	5,000.00	25,000.00	25,000.00	50,000.00	PCU/IDEPA										50,000.00	T&W
SC3.2	2.1.5 Undertake capacitation of existing Local Committees for Risk Management (CLGR	trainigs	10	3,500.00	35,000.00		35,000.00	PCU/IDEPA										35,000.00	T&W
SC3.2	2.1.6 Carry out civil works for the rehabilitation of 3 meteorological stations	number	3	50,000.00	50,000.00	100,000.00	150,000.00	PCU/IDEPA									3 meteorological stations rehabili	150,000.00	W
SC3.2	2.1.7 Purcahse of office equipment (laptop, smartphone) for INAM to create capacity	lump sum	1	20,000.00	20,000.00		20,000.00	PCU/IDEPA										20,000.00	E&M
SC3.2	2.1.8 Carry out TA on diffusion of meteorological information, and management of met s	lump sum	12	5,000.00	60,000.00	60,000.00	120,000.00	PCU/IDEPA										120,000.00	TA
SC3.2	2.1.9 Undertake a study on elaboration of a detailed AEZ map for aquaculture suitable ar	study	1	250,000.00	250,000.00		250,000.00	PCU/IDEPA									1 study undertaken	250,000.00	TA
SC3.2	2.1.10 Undertake studies on development of site or intervention os specific EIAs and sim	lump sum	14	50,000.00	700,000.00		700,000.00	PCU/IDEPA									Different studies undertaken on E	700,000.00	TA
SC3.2	2.1.11 Recruitiment of TA on environment and climate adaptation to support the implem	lump sum	1	10,000.00	10,000.00	10,000.00	20,000.00	PCU/IDEPA									TA recruited for ESMPs	20,000.00	TA
SC3.2	**Output 2.2: Strengthening of DNPEI/IDEPA HQ and DPMIMAIP on M&E and MIS**																		
SC3.2	2.2.1 Recruitment of TA to assess the M&E capacity of focal point	lump sum	1	30,000.00	30,000.00		30,000.00	PCU/IDEPA									TA to assess the M&E capacity	30,000.00	TA
SC3.2	2.2.2 Undertake a study on M&E Database development	lump sum	1	30,000.00	30,000.00		30,000.00	PCU/IDEPA									Study on M&E database underta	30,000.00	TA
SC3.2	2.2.3 Carry out procurement of equipment and Install Interactive Data Dashboard	number	1	50,000.00	50,000.00		50,000.00	PCU/IDEPA									Data Dashboard equip procured	50,000.00	E&M
SC3.2	2.2.4 Carry out training to develop Capacity for utilisation of the database	lump sum	1	15,000.00	15,000.00		15,000.00	PCU/IDEPA										15,000.00	T&W
	Subtotal of Institutional Capacity Building (SC3.2)				**1,325,000.00**	**245,000.00**	**1,570,000.00**											**1,570,000.00**	
SC3.3	**Project Management**																		
	Output 3.1: Planning , M&E, Learning and Knowledge Management																		
	I. Activities & Investment Costs																		
SC3.3	3.1.1 Carry out the recruitment of TA to design the M&E and knowledge management sy	P/Month	2	15,000.00	30,000.00		30,000.00	PCU/IDEPA									TA to design the M&E recruited	30,000.00	TA
SC3.3	3.1.2 Carry out the recruitment of TA for the creation of databases	P/Month	2	7,000.00		14,000.00	14,000.00	PCU/IDEPA									TA for the database recruited	14,000.00	TA
SC3.3	3.1.3 Carry out the recruitment of TA on statistics	P/Month	2	7,000.00		14,000.00	14,000.00	PCU/IDEPA									TA to design the statistics recrui	14,000.00	TA
SC3.3	3.1.4 Carry out the recruitment of TA to undertakeh household survey study	P/Month	2	7,000.00	14,000.00		14,000.00	PCU/IDEPA									TA to undertake study recruited	14,000.00	TA
SC3.3	3.1.5. Carry out the recruitment of TA to set the use of financial management software	P/Month	1	7,000.00	7,000.00		7,000.00	PCU/IDEPA									TA to set the use of financia recr	7,000.00	TA
SC3.3	3.1.6 Carry out the recruitment of ITA to to support P,M&E and KM system set up	Lumpsum	2	75,000.00		150,000.00	150,000.00	PCU/IDEPA									ITA to support P,M&E and KM	150,000.00	TA
SC3.3	3.1.7 Carry out the recruitment of NTA to undertake baseline study	Study	1	50,000.00	50,000.00		50,000.00	PCU/IDEPA									NTA & Baseline study undertak	50,000.00	TA

Output 3.2: Strengthening the PMU Knowledge management System										
I. Activities & Investment Costs										
3.2.1 Carry out the recruitment of TA to Develop and Implement KM and Communicati	Lumpsum	1	25,000.00		25,000.00	25,000.00	PCU/IDEPA	TA to to Develop and Implemen	25,000.00	TA
3.2.2 Carry out the recruitment of TA to prepare, Package and Disseminate Knowledge p	Lumpsum	2	10,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA	TA to disseminate Knowledge pr	40,000.00	TA
3.2.3 Organise and conduct the Monitoring and Evaluation training workshops on M&E s	Number	2	15,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA	Workshop undertaken on M&E	60,000.00	T&W
3.2.4 Organise and conduct annual participatory planning workshop	Number	2	15,000.00	30,000.00	30,000.00	60,000.00	PCU/IDEPA	Workshop undertaken on impact	60,000.00	T&W
3.2.5. Carry out the recruitment of TA to systematise procedures for baseline survey and	Lumpsum	1	5,000.00	5,000.00		5,000.00	PCU/IDEPA	TA to systematise recruited	5,000.00	TA
3.2.6 Carry out the recruitment of TA to monitor and supervise KM and communication	Lumpsum	2	10,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA	TA to support KM recruited	40,000.00	TA
3.2.7 Carry out Provincial seminars on knowledge management	Number	16	2,000.00	32,000.00	32,000.00	64,000.00	PCU/IDEPA		64,000.00	T&W
Output 3.3: Trainings										
I. Activities & Investment Costs										
3.3.1 Carry out training on financial management and contracts	Lumpsum	1	11,000.00	11,000.00		11,000.00	PCU/IDEPA	training done	11,000.00	T&W
3.3.2 Participation of staff training on Monitoring and Evaluation	Lumpsum	1	11,000.00	11,000.00		11,000.00	PCU/IDEPA	training done	11,000.00	T&W
3.3.3 Participation in other training	Lumpsum	1	6,000.00		6,000.00	6,000.00	PCU/IDEPA	training done	6,000.00	T&W
3.3.4 Organise and carry out exchange visits	Number	8	1,500.00		12,000.00	12,000.00	PCU/IDEPA	training done	12,000.00	T&W
Output 3.4: Vehicles for NPMU										
3.4.1 Vehicle 4WD double cabin	Number	1	40,000.00	40,000.00		40,000.00	PCU/IDEPA		40,000.00	V
3.4.2 Vehicle 2WD	Number	1	15,000.00	15,000.00		15,000.00	PCU/IDEPA		15,000.00	V
Output 3.5: Office and IT equipment, and software										
3.5.1 Desktop computer	Number	13	1,500.00	16,500.00	3,000.00	19,500.00	PCU/IDEPA		19,500.00	E&M
3.5.2 Laptop computer	Number	10	1,750.00	10,500.00	7,000.00	17,500.00	PCU/IDEPA		17,500.00	E&M
3.5.3 Personal Printer/Scanner	Number	5	540.00	1,620.00	1,080.00	2,700.00	PCU/IDEPA		2,700.00	E&M
3.5.4 Multifunctional printer/copy machine/scanne	Number	1	1,500.00	1,500.00		1,500.00	PCU/IDEPA		1,500.00	E&M
3.5.5 Scanner	Number	2	300.00	0.00	600.00	600.00	PCU/IDEPA		600.00	E&M
3.5.6 Financial management software	Number	1	55,000.00	55,000.00		55,000.00	PCU/IDEPA		55,000.00	E&M
3.5.7 File server	Number	1	5,000.00	5,000.00		5,000.00	PCU/IDEPA		5,000.00	E&M
3.5.8 Office furniture	Set	10	5,000.00	50,000.00		50,000.00	PCU/IDEPA		50,000.00	E&M
3.5.9 File cabinets	Number	20	1,000.00	10,000.00	10,000.00	20,000.00	PCU/IDEPA		20,000.00	E&M
3.5.10 Photocamera	Number	1	250.00	250.00		250.00	PCU/IDEPA		250.00	E&M
3.5.11 Videocamera	Number	1	1,500.00	1,500.00		1,500.00	PCU/IDEPA		1,500.00	E&M
Output 3.6: External audit										
3.6.1 Carry out annual audit on PRODAPE by TA	Number	1	20,000.00	20,000.00	20,000.00	40,000.00	PCU/IDEPA		40,000.00	TA
Output 3.7: Project Steering committee										
3.7.1 carry out Annual Project Steering Committee meetings	Number	1	833.00	833.00	833.00	1,666.00	PCU/IDEPA		1,666.00	T&W
Support 8 provincial directorates within DPMAIPs										
Output 3.8: Vehicles for DPMAIPs										
I. Activities & Investment Costs										
3.8.1 Vehicle 4WD double cabin	Number	8	40,000.00	320,000.00		320,000.00	PCU/IDEPA		320,000.00	V
Output 3.9: Office and IT equipment, and software DPMAIPs										
3.9.1 Desktop computer	Number	48	1,500.00	72,000.00		72,000.00	PCU/IDEPA		72,000.00	E&M
3.9.2 Laptop computer	Number	8	1,750.00	14,000.00		14,000.00	PCU/IDEPA		14,000.00	E&M
3.9.3 Personal Printer/Scanner	Number	16	540.00	8,640.00		8,640.00	PCU/IDEPA		8,640.00	E&M
3.9.4 Multifunctional printer/copy machine/scanne	Number	8	1,500.00	12,000.00		12,000.00	PCU/IDEPA		12,000.00	E&M
3.9.5 Scanner	Number	8	300.00	2,400.00		2,400.00	PCU/IDEPA		2,400.00	E&M
3.9.6 Photocamara	Number	8	300.00	2,400.00		2,400.00	PCU/IDEPA		2,400.00	E&M
Subtotal of Project Management & DPMAIPS Investment costs (SC3.3)				**919,143.00**	**395,513.00**	**1,314,656.00**			**1,314,656.00**	
Total of Component C: I. Activities & Investment costs				**2,503,243.00**	**827,413.00**	**3,330,656.00**			**3,330,656.00**	

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex 7: Procurement Plan for first 18 months

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 7: First Procurement Plan for first 18 months

1. IFAD procurement guidelines require an assessment of national procurement systems as part of project design. During the project design mission, the IFAD team undertook a comprehensive assessment of: (i) the degree of practical implementation of the Mozambican public procurement framework, and (ii) the procurement capacity of the project implementing agency IDEPA, MIMAIP and other stakeholders (DPMAIP, oversight institutions: the General Inspection of Finance (IGF), UFSA). IFAD met with the World Bank (WB) and reviewed recent reports and assessments of the African Development Bank, the World Bank within the framework of their work in Mozambique in the procurement domain.

2. This Appendix outlines the results of the procurement assessment and presents an indicative procurement plan for the first 18 months of PRODAPE operations.

I. PROCUREMENT ASSESSMENT

a. Public Procurement Environment in Mozambique

3. Public procurement in Mozambique is regulated by Decree N. 5/2016 of 8th March (Regulations for Contracting of Public Works, Supply of Goods and Consultancy and Non-Consultancy Services). The Decree approves the regulations for public works contracts, supply of goods and consultancy and non-consultancy services, for all procurement using national budget funds. The decree is enshrined in the State Financial Management System (SISTAFE) Law. Two Ministerial Orders lay out the institutional arrangements following the Decree. Ministerial Order N. 141/2006 of 5th September establishes the Public Procurement Authority (UFSA) within the Ministry of Finance (MoF), while Ministerial Order N. 142/2006 of 5th September approves the structure of procuring units. Standard bidding documents were approved with ministerial orders. However, these documents are not updated to accommodate provisions of the new Decree.

4. The existing legal framework for public procurement in Mozambique is currently governed by the Public Procurement Decree (PPD) N. 5/2016 that establishes the principles and procedures to be applied in any procurement held by public authorities and institutions governed by public law, under public control or using public funds. The overriding principles stipulated by the legislation are: (i) legality; (ii) purpose; (iii) reasonableness; (iv) proportionality; (v) public interest; (vi) transparency; (vii) publicity; (viii) equality; (ix) competition; (x) fairness; (xi) good will; (xii) stability; (xiii) motivation; (xiv) responsibility; (xv) sound financial management; (xvi) diligence; and (xvii) other applicable principles of public law. The existing legal framework for public procurement in Mozambique is assessed to be broadly in compliance with international standards.

b. Donors and development partners' overall view of the current status of public procurement in Mozambique

5. According to an independent assessment of public procurement system carried out by the African Development Bank (AfDB), the public procurement system in Mozambique faces challenges both in terms of: i) national public procurement legal framework and regulatory institutions performance; and ii) procurement practices (assessment as a high risk).

c. Main findings of the procurement capacity assessment.

6. The capacity assessment conducted during PRODEPA design indicates that overall, the Mozambican public procurement system is deemed to be moderately

consistent with the IFAD's procurement guidelines, in particular, and with the international donor community requirements, in general. Hence, the national procurement system will be used to undertake the programme-funded procurement activities subject to the implementation of the risk mitigation plan detailed below.

7. It must however be noted that weaknesses that may negatively affect project efficiency, include the complexity of the GoM's electronic financial administration system e-SISTAFE and complex procedures for approving contracts and procurement-related activities and potential associated delays. Also, UFSA does not have the necessary resources to: (i) handle complaints; (ii) conduct or contract out annual independent procurement audits; and (iii) publish contract awards.

8. IDEPA has proven capacity to implement successful IFAD-funded projects. For the implementation of the latest PROPESCA project, IDEPA team demonstrates good knowledge of procurement for IFAD projects. Small procurement activities are handled by the (IFAD-funded) PROAQUA Project Coordination Unit (PCU). The contracts register shows good IDEPA follow up of execution, including contracts under the direct supervision of the Roads Administration Authority (ANE) within the Ministry of Public Works (MOPH).

9. The procurement capacity assessment identified overall procurement implementation risks/gaps and proposed the following mitigation measures:

Analysis of Procurement Capacity	Issues / Risks	Mitigation Measures
1. Organization Management of the project involves IDEPA. This unit will ensure the overall coordination of the project and assume PRODAPE fiduciary responsibilities	During the assessment, it was not possible to ascertain that IDEPA is committed for the PRODAPE the fiduciary responsibility and the tasks that it entails.	It is recommended to nominate the team members and to make the fiduciary arrangements clear in the legal agreement and in the Programme Implementation Manual (PIM) for IDEPA and the entities involved in the project at the provincial level.
2. Facilities, Support Capacity and Staff Experience The project implementation would involve, in addition to the PCU other structures/departments of the MIMAIP such as ANE and provincial entities	There are some doubts about the availability of support staff and capacity to undertake project-related procurement and produce adequate documentation in a timely manner.	(i) Conduct an induction training to brief and update MIMAIP/ IDPA staff who will be involved in project procurement on the main procurement procedures -- to be used in project implementation -- before the start of project operations; (ii) Hire a senior procurement specialist and a fiduciary officer to help in the preparation of the documents for procurement and selection of consultants; and (iii) Train staff and consultants involved in the project, on IFAD procedures and guidelines, as required.

Analysis of Procurement Capacity	Issues / Risks	Mitigation Measures
3. Record Keeping and Filing System Procurement records will be kept under the custody of the procuring entity with the ANE	It is not sure that the IDEPA will have the capacity to cope with the project volume of transactions since some procurement transactions are handled by other departments.	Ensure that instructions and training are given to ensure that project specific files are kept for all procurement and related transactions and recorded contract by contract. Storing documents using e-archiving system can ease access to documentation.
4. Procurement Planning	It is uncertain that IDEPA will update the project's Procurement Plan; it appears that the institution does not perceive the instrument as a management and monitoring tool. .	(i) Prepare a detailed Annual Work Plan and Budget (AWPB) with full costing consistent with an Annual Procurement Plan; (ii) Ensure proper coordination between IDEPA and other relevant units and departments at MIMAIP especially with respect to procurement planning; (iii) Use the procurement plan as a monitoring tool for processing timely activities, not only as a reporting tool.
5. Monitoring/Control Systems	While the existing legal framework for public procurement in Mozambique is deemed to be almost in compliance with international standards, it still presents certain shortcomings at operational level.	Update the procurement section in the IFAD "Code of Practice" to reflect new PPD provisions.
6. Capacity to meet IFAD's Reporting Requirements	Register of contracts and annual reports on statistics for the overall procurement transactions are not provided in a timely manner and in an adequate format.	(i) Ensure that the Project Coordinator is assigned with the responsibility of reporting; (ii) Clearly define the content of reports and contributions of all entities involved in the project; (iii) Involve UFSA in project supervision missions and associated reports.
7. Conclusions. The executing agency MIMAIP/IDEPA has the capacity to carry out and manage the procurement under this financing, provided that the above-recommended actions are effectively carried out. This does not apply to the Procurement Plan, which should be provided before the approval of the financing.		

B. Procurement arrangements under PRODAPE

10. **Institutional arrangements.** The PRODAPE will be integrated into the Ministry of Sea, Interior Waters and Fisheries (MIMAIP) that will be responsible for providing overall policy guidance and oversight. Day-to-day oversight will be assigned to IDEPA as the lead project agency implementing the project through a PCU. The Ministry´s Provincial Directorates (DPMAIPs) will coordinate, implement and monitor procurement activities at provincial level.

11. All procurement for the project will be under the oversight of the MIMAIP/IDEPA. The IDEPA Financial / Contracts Manager will oversee and carry out all PRODAPE procurement activities in coordination with specialised and technical units. At the provincial level, procurement would be limited to small works and locally available service providers for issues such as transport and subject to the close supervision by the IDEPA Fiduciary team. Procurement processes will be carried out as stated on the procurement manual, the procurement plan and monitor contracts using the e-archive and the contracts' register.

12. While MIMAIP/ IDEPA staff are knowledgeable on national procurement procedures to be used under PRODAPE, training will however be provided on applicable IFAD procedures and guidelines. A joint induction training should be conducted with IFAD, UFSA and staff from the Administrative Tribunal to explain the different roles within the project and provide guidance for smooth implementation. UFSA should publish all PRODAPE calls for tender and contract awards. All relevant documentation will be stored in the e-archive system. Joint annual audits will be planned with the participation of IFAD, UFSA and the IGF.

15. **Overriding procurement principles**. As provided in Section 7.05 of IFAD´s General Conditions, procurement of goods, works and services shall be carried out in accordance with the provisions of the Borrower/Recipient's procurement regulations, to the extent such are consistent with the IFAD Procurement Guidelines and by observing the following specific principles:

- Procurement will be carried out in accordance with Financing Agreement and any duly agreed amendments thereto;
- Procurement will be conducted within the project implementation period, except as provided under Article 4.10(a) (ii) of IFAD´s General Conditions;
- The cost of the procurement is not to exceed the availability of duly allocated funds established in the Financing Agreement;
- Procurement is to be consistent with the duly approved AWPB including a procurement plan;
- Procurement is to result in the best value of money and fit for purpose.

13. Public, open and competitive procurement processes will be used, as relevant, to warrant transparency and safeguard project resources. Templates will be provided for every step of the procurement cycle.

14. As required by the PPD, bidding documents will be submitted to the Administrative Tribunal for approval. The PCU will also provide the necessary technical support in the preparation of technical specifications, bills of quantities and ToRs to project participating provinces, as required.

15. **Procurement of goods**. The goods to be financed under the project include but are not limited to the following: office equipment (computers, printers, photocopiers and other equipment), accounting software and vehicles. Contracts for procurement of goods costing USD 200,000 or more will be awarded based on International Competitive Bidding (ICB); those costing USD 10,000 or more, but less than USD 200,000 will be

based on National Competitive Bidding (NCB); while those costing less than USD 10,000 will be based on National Shopping/Request for Quotations (RfQ).

16. **Procurement of works**. Works to be financed under the PRODAPE include, but are not limited to, the construction of irrigation schemes / ponds. The procurement of works estimated to cost more than USD 50,000 and less than USD 1 million will be carried out under NCB; ICB will be applied for contracts to cost USD 1 million and above. National Shopping/RfQ will be applied for contracts with values estimated at USD 50,000 or below, as long as they are clearly identified in the relevant AWPB and procurement plan.

17. **Procurement of consulting services**. The consulting services to be financed under the project include but are not limited to the following: the selection of individual consultants, a market study and other qualitative studies on social issues relevant to the project. These studies will be under the responsibility of MIMAIP/IDEPA, using one of the following methods:

(i) Quality and Cost Based Selections (QCBS);

(ii) Least-Cost Selection (LCS);

(iii) Selection Based on the Consultants' Qualifications (CQS);

(iv) Single Source Selection (SSS); and,

(v) Selection of Individual Consultants (SIC).

19. **Direct Contracting**. Direct contracting might be used, if duly justified, for some expenses, which could include hiring venues for training, community based events such as awareness raising and sensitization activities, beneficiary exchange visits and visits to demonstration sites.

20. **Prior Review Thresholds.** The following shall be subject to prior review:

(i) Award of any contract for goods and equipment to cost USD 50,000 or equivalent or more;

(ii) Award of any contract for works estimated to cost USD 100,000 or equivalent or more;

(iii) Award to a firm of any contract for consulting services estimated to cost USD 50,000 or equivalent or more;

(iv) Award to an individual of any contract for consulting services estimated to cost USD 30,000 equivalent and more;

(v) All contracts awarded through direct contracting and/or single source selection; and

(vi) Award of and the first two contracts regardless of the contract amount.

21. The above thresholds may be modified by IFAD unilaterally or upon MIMAIP request as a result of experience in the field during the course of PRODAPE implementation.

22. All contracts will be listed in the Register of Contracts maintained by the procuring entity with the date of IFAD approval, irrespective of the contract having been approved by IFAD or not. As this report facilitates the review and approval of payment requests for contracts, it is to be updated and submitted to the IFAD Country Programme Manager on a quarterly basis. It would also be necessary that the PCU at IDEPA prepare annual statistics for all procurement transactions carried out under the project.

23. **Bidding Documents**. All bidding documents for the procurement of goods, works and services will be prepared by IDEPA Procurement Officer as required. At the provincial

level, procurement assistants under the overall guidance of the IDEPA procurement officer. All procurement documents will be cleared by MIMAIP and IFAD before any action is taken. As per IFAD Procurement Handbook, where ICB is used, the World Bank ICB procedures, as set forth in their Procurement Guidelines, will apply.

II. PROCUREMENT PLAN

A. Procurement Plan.

24. A full version of the procurement plan covering the **first 18 months of operations** will be prepared by MIMAIP/IDEPA before project's effectiveness. The procurement plan will be updated at least semi-annually in agreement with IFAD or as required to reflect actual project implementation needs and progress.

A.1. Goods, Works and Non-consulting services

25. **Procurement methods and prior review thresholds.** Procurement decisions subject to Prior Review by IFAD are as follows:

	Procurement Method	Method Threshold	Prior Review Threshold
1.	ICB	≥ $200 000 – goods ≥ $1 000 000 – works	≥ $50 000 – goods ≥ $100 000 – works and first two contracts regardless of the contract amount
2.	NCB	< $ 200 000 – goods < $ 1 000 000 – works	≥ $10 000 – goods ≥ $50 000 – works and first two contracts regardless of the contract amount
3.	Shopping/RfQ	< $ 10 000 – goods < $ 50 000 - works	First two contracts regardless of the contract amount
4.	Direct Contracting	Not applicable	All

26. **Procurement items with methods and time schedule.** The following goods, works and non-consulting services will be procured in the first 18 months of PRODAPE operations:

Attached as a excel separate file

A.2 Selection of Consultants

27. **Selection methods and prior review thresholds**. Selection decisions subject to Prior Review by IFAD are as follows:

	Selection Method	Prior Review Threshold
1.	Competitive Methods (Firms)	≥ $50,000
2.	Single Source (Firms)	All
3.	Individual Consultant (IC)	≥ $30,000
	Single Source (IC)	All

28. **Consultancy assignments with selection methods and time schedule**. The following consulting services will be procured in the first 18 months of PRODAPE operations:

Attached as a separate Excel file

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex 8: Project Implementation Manual (PIM)

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Investing in rural people

Republic of Mozambique

Small-Scale Aquaculture Development Project (PRODAPE)

Project Implementation Manual (PIM)

May 2019

Table of Contents

Currency equivalents

Currency Unit	=	Mozambique Metical (MZN)
USD1.0	=	60.0

Weights and measures

1 kilogram	=	1000 g
1 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

Abbreviations and Acronyms

ADNAP	National Fisheries Administration
ANE	National Roads Administration
AWPB	Annual Work Plan and Budget
BNI	National Investment Bank
CEPAQ	Aquaculture Research Centre in Chókwè
CIF	Crowding In Fund
CODSAN	District Steering Committees for Food and Nutrition Security
COPSAN	Provincial Steering Committees for Food and Nutrition Security
CUT	Single Treasury Accounts
DEPI	Department for Studies, Planning and Infrastructure
DPMAIP	Provincial Directorates of Sea, Inland Waters and Fisheries
DSA	Daily Subsistence Allowance
EDM	Electricity of Mozambique
EP	Fisheries School
e-SISTAFE	State Financial Management Information System
ESAN II	National Strategy for Food Security and Nutrition Policy
FAO	Food and Agriculture Organisation
FFP	Fund for the Promotion of Fisheries
GALS	Gender Action Learning System
GIS	Geographic Information System
GoM	Government of Mozambique
HH	Household
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
ICB	International Competitive Bidding
IDEPA	National Institute for the Development of Fisheries and Aquaculture
IGF	The General Inspection of Finance
IIP	Institute for Fisheries Research
INAM	National Meteorological Institute
INGC	National Institute for Disaster Management
INIP	National Institute of Fish Inspection
INNOQ	National Institute for Normalization and Standards
INTOSAI	International Organisation of Supreme Audit Institutions
IPSAS	International Public Sector Accounting Standards
KM	Knowledge Management
LoC	Line of Credit
LPA	Lead Programme Agent
LTR	Letter to Recipient
M&E	Monitoring and Evaluation
MASA	Ministry of Agriculture and Food Security
MEF	Ministry of Economy and Finance
MIMAIP	Ministry of Sea, Inland Waters and Fisheries
MIREME	Ministry of Mineral Resources and Energy
MISAU	Ministry of Health
MITADER	Ministry for Land, Environment and Rural Development
MOPH	Ministry of Housing and Public Works

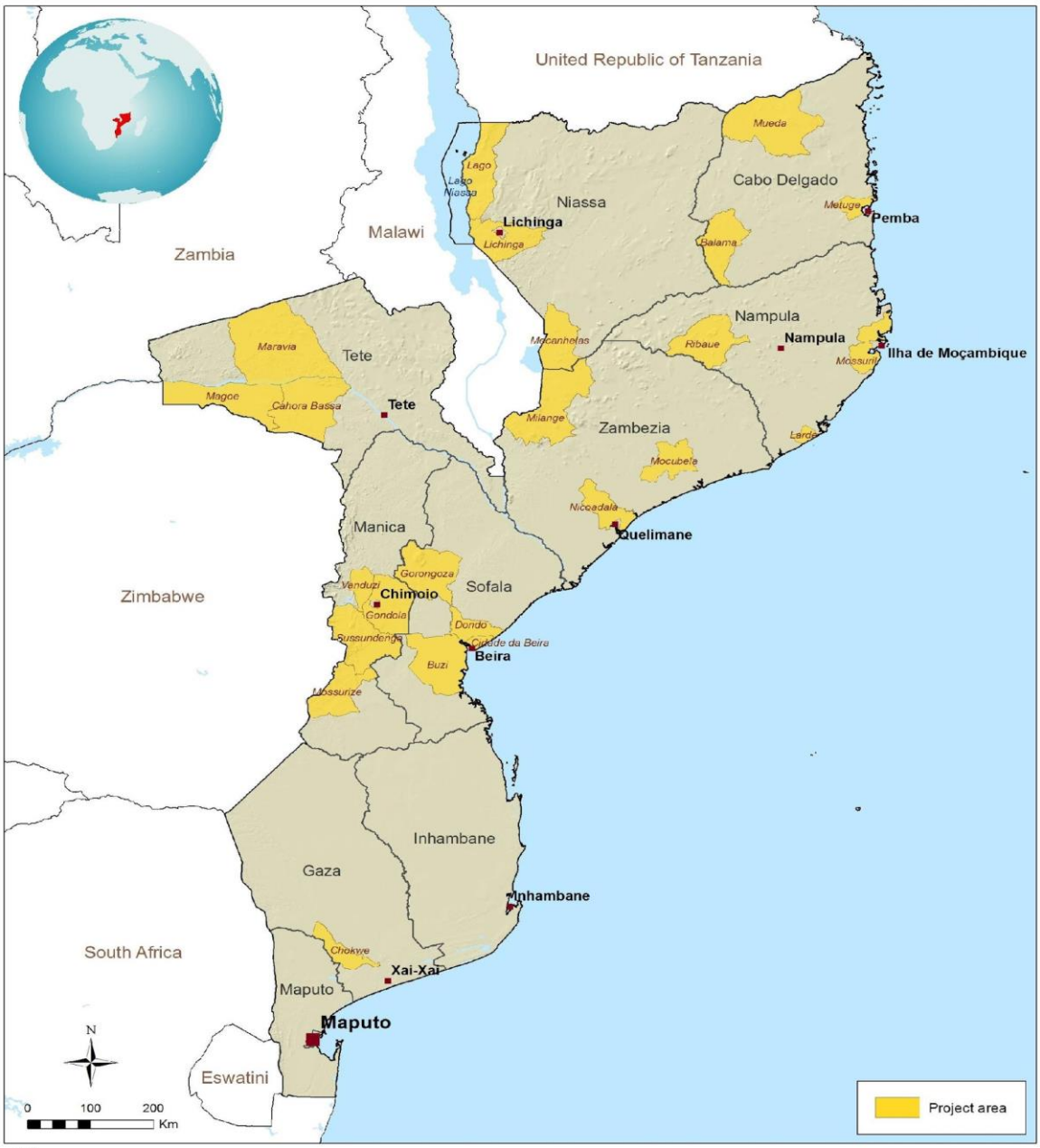
MoF	Ministry of Finance
MoU	Memorandum of Understanding
NCB	National Competitive Bidding
NPSC	National Project Steering Committee
NSB	Mozambique´s National Standards Body
PADA	Aquaculture Development Action Plan
PARMDC	Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique
PCRs	Community Level Savings and Credit Groups
PCU	Project Coordination Unit
PEFA	Public Expenditure and Financial Accountability
PPD	Public Procurement Decree
PTC	Permanent Tender Committee
REFP	Rural Enterprise Finance Project
RfQ	Request for Quotations
SBCC	Social Behaviour Change Communication
SDAE	District Services for Economic Activities
SETSAN	Technical Secretariat for Food Security and Nutrition
SISTAFE	State Financial Management System
SUN	Scaling Up Nutrition
UFSA	Public Procurement Authority
USD	United States Dollar
WATTS	IFAD's Withdrawal Application Tracking System
WHH	Woman Headed Household
WFP	World Food Programme

Map of the Project Area

Mozambique

Small Scale Aquaculture Promotion Project - PRODAPE

Design report



The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

Map compiled by IFAD | 23-07-2018

- **Introduction**

1. The Small-scale Aquaculture Development Project (PRODAPE) aims to contribute to poverty reduction and enhancement of food security and nutrition among rural households in the project area.

2. The project will do so by addressing supply and demands constraints encountered in Mozambique´s young aquaculture value chain. Given IFAD´s mandate of contributing to poverty alleviation, the project will strive to enable small-scale producers to increase the production, productivity and profitability of their aquaculture production activities from subsistence level to small-scale commercially viable enterprises. To reach this, PRODAPE design has integrated a number of strategies, which align with key Government of Mozambique (GoM) and sector plans, strategies and policies, including: the concept of centralities for focused aquaculture related investments and associated activities, the establishment of aquaparks (locations in which aggregated production units, required inputs and markets are located in proximity and linked). Also, the project integrates a robust social inclusion approach to ensure that community level beneficiaries targeted are not only those easiest to reach.

3. The Project Implementation Manual (PIM) sets forth the guidelines and procedures to guide project operations. The PIM complements PRODAPE´s Project Design Document (PDR), or other implementation guidelines issued by the International Fund for Agricultural Development (IFAD), such as the Procurement and Disbursement Guidelines, and implementation instructions as contained in the IFAD letter to the Borrower/Recipient. Because of its purpose, the PIM should be adapted to changes in circumstances over the course of PRODAPE implementation.

4. The primary target audience of this PIM is PRODAPE´s Project Coordination Unit (PCU) core team members and other long and short-term technical specialists to be financed by PRODAPE, who will be placed within the Ministry of Sea, Inland Waters and Fisheries (MIMAIP). The document will also be instrumental for the National Project Steering Committee (NPSC) to understand the implementation logic and mechanisms put in place for project implementation.

5. Users of this manual should refer to and use the following documents/guidelines (the generic IFAD documents listed below are available at http://www.ifad.org/pub/basic/index.htm):

- The PRODAPE Financing Agreement
- IFAD Disbursement Handbook
- Letter to the Borrower/ Recipient
- IFAD Guidelines on Project Audits
- Guidelines for Annual Work Plan and Budget (AWPB) and Progress Reporting (IFAD)
- GoM Finance and Audit Act and the related Treasury Instructions; and
- PRODAPE Project Design Report and corresponding appendices

6. The PIM is divided into four sections. **Part One** provides a brief description of the project. **Part Two** describes the implementation of PRODAPE technical components. **Part Three** provides step-by-step guidance on the implementation of PRODAPE´s targeting strategy. **Part Four** describes how supportive functions to the project will function.

a. PART ONE: BRIEF PROJECT DESCRIPTION

7. **Project Rationale**. A number of bottlenecks were identified during the design mission in the aquaculture value chain. PRODAPE design has benefitted from the lessons and experiences of PROPESCA and PROAQUA and aquaculture projects in other countries. The proposed design of PRODAPE aims to address these challenges to enable the engagement of commercial and smallholder producers, entrepreneurs and businesses to prove that aquaculture can be viable and sustainable. The project will stimulate production, the development of aquaculture as a business and the development of the aquaculture policy framework.

8. Inclusive poverty reduction, the promotion of food and nutrition security, transformative gender equality and women and youth´s empowerment interventions and building resilience towards climate change among smallholders are common threads in the GoM´s policy framework, IFAD´s corporate mainstreaming priorities towards inclusive and sustainable development and have been duly integrated in PRODAPE design.

9. **Approach.** The project will provide technical assistance and specific support packages to beneficiaries of different socio-economic groups to engage in aquaculture production activities, consisting of: (i) facilitating access to one earthen pond or cage; (ii) feed and seed for one entire production cycle; (iii) technical mentoring; and (iv) facilitating access to markets. It will also provide support to input producers. Core aquaculture interventions will be complemented by: (i) financial inclusion services; (ii) participatory processes to empower beneficiaries throughout the project cycle; (iii) the establishment of water resource management structures and systems governing aquaculture pond and cage transfer conditions and ownership / use rights and obligations; (iv) interventions to address common social risks faced by small-scale producers; and (v) the integration of an effective community grievance mechanism.

10. **Partnership with the Rural Enterprise Finance Project (REFP).** To address financial inclusion gaps faced in the aquaculture value chain, the PRODAPE will work together with the Rural Enterprise Finance Project (REFP). The range of financial services to be offered by REFP to PRODAPE have been integrated in PRODAPE´s Component 2.

11. Private sector players have been contemplated in PRODAPE design and integrated in the "rural entrepreneurs" group of beneficiaries along with smallholders that wish to engage in activities along the aquaculture value chain beyond fish production. All private sector players benefiting from PRODAPE support will be subject to stringent due diligence prior to final approval (as part of components 1 and 2). Finally, the project will also remain open to the possibility of employing financing mechanisms beyond those offered by REFP, under models such as those used by the International Finance Corporation (yet to be determined).

12. **Project Goal.** The Project Goal is to contribute to poverty reduction and enhancement of food security and nutrition among rural households in the project area.

13. **Project Development Objective.** The specific Project Development Objective (PDO) is to increase production, consumption, sales and income levels of rural households and other actors involved in the aquaculture value chain in the target area.

14. The PDO will be achieved through two interlinked investment components and a third component of project management, institutional and policy development. A Component 0 has been integrated in PRODAPE design as a response to the proved vulnerability of the country to climatic hazards. The component does not include any budgetary allocations at design.

15. **Component 0: Disaster risk reduction and response**. The component will aim to reduce project and beneficiary vulnerability to climatic hazards. The Component recognises that different PRODAPE target areas are – as is much of the country – to the advent of cyclones, floods and droughts. Also, temperatures are expected to continue rising. The component constitutes a programmatic window for the integration of preventive and response measures, yet to be defined and corresponding allocation of additional dedicated funding.

16. **Component 1: Development of small-scale aquaculture production capacity**. Aims to sustainably increase small-scale aquaculture production and productivity using climate smart technologies, best practices and environmentally sustainable forms of production. Particular attention will be given to water needs and quality, as well as to the suitability of different agro-ecological zones for different aquaculture technologies. The component is served by four sub-components:

17. *Subcomponent 1.1: Develop fish seed production capacity.* Aims to upgrade and establish hatcheries by targeting medium-level private enterprises.

18. *Subcomponent 1.2: Develop fish feed production capacity.* Addresses the need to develop fish feed production capacity at all levels for different clients. It will encourage the development of industrial fish feed production lines, support the development of "cottage" industries, as needed and on-farm feed formulation, based on demand from smallholders.

19. *Sub-component 1.3: Develop smallholder aquaculture production capacity.* Aims to improve smallholder production and productivity using climate smart aquaculture technologies and practices: earthen ponds, ponds integrated with livestock and crops, and cage culture in large inland water bodies. Small-scale producers will be organized in clusters or integrated in aquaparks. Comprehensive support will be provided to smallholder beneficiaries meeting pre-established criteria in line with their needs.

20. *Sub-component 1.4: Mainstreaming nutrition and addressing social risks.* Aims to enhance nutrition through consumption of fish and fish-based products to improve and diversify the HH diet. The sub-component also addresses pressing social risks such as lack of adequate planning and use of resources at HH level, gender inequality and HIV and AIDS.

21. **Component 2: Development of aquaculture as a business**. Aims to nurture the entrepreneurial capacity of farmers and promote a conducive environment for the development of aquaculture as a business. The component is served by four sub-components:

22. *Sub-component 2.1: Support to development of aquaparks:* Aims to support the Government's new aquaculture development strategy focused on consolidation and centrality of production through sustainable and business oriented small and medium scale aquaparks. The project will support preparation of feasibility studies, business plans and Environmental and Social Management Plans (ESMPs) for aquaparks; and the development of key infrastructure e.g. "last mile" feeder roads, small water canals, electricity supply (off-grid or connection to the main grid, whichever is cost-effective) and cold chain facilities.

23. *Sub-component 2.2: Develop market linkages and business partnerships.* Aims to develop market linkages for improved handling, collection, marketing and distribution of cultured fish and associated products (spinoffs of some interventions are expected to benefit retailers of non-cultured fish). A second focus is the creation of a conducive environment for aquaculture business to thrive, by linking smallholders organized in clusters or engaged in aquaparks in business partnerships with private

entrepreneurs. The sub-component will facilitate the development of frameworks for effective partnerships and the establishment of business partnerships between smallholders and private entrepreneurs to improve smallholder access to inputs, markets and other services.

24. *Sub-component 2.3: Develop financial services.* Aims to facilitate access to financial services in unserved target communities and to players across all levels of the aquaculture value chain, through the Rural Enterprise Finance Project (REFP). This includes promotion of PCRs to raise smallholder capacity to invest in aquaculture, a Crowding in Fund (CiF) with co-participation from beneficiaries, a Line of Credit (LoC) and also produce, fund and deliver differentiated business development packages to PRODAPE beneficiaries across the value chain.

25. *Sub-component 2.4: Support to youth aquapreneurship.* The sub-component enhances opportunities for youth through investments in business-oriented activities that match the interests, energy and skills of young people in, or linked to, the aquaculture value chain. It will support vocational training of youth, preparation of business plans and linking them with the REFP for tailored financing.

26. **Component 3: Project management, institutional and policy development**. Aims to establish appropriate arrangements and support mechanisms for PRODAPE management, support sector institutions in the assumption of their mandates, together with the development of sector policies and associated regulatory framework, to create the foundations for the aquaculture value chain in Mozambique. The component is served by three sub-components:

27. *Sub-component 3.1: Project management.* Aims to establish appropriate project management structures, systems and procedures for the effective development of the aquaculture value chain in line with project targets.

28. *Sub-component 3.2: Institutional capacity building.* Aims to strengthen the institutional and technical capacity of sector institutions (the National Institute for the Development of Fisheries and Aquaculture (IDEPA), and others) as well as staff involved in planning, implementation and monitoring of small-scale aquaculture in the assumption of their roles, including issues related to adequate environmental & climate adaptation and mitigation practices, biosafety and biosecurity. Linkages will be established with the Brazilian Aquaculture Parks system to learn from their long experience with establishment and management of environmentally sustainable aquaculture parks.

29. *Sub-component 3.3: Policy development.* Aims to strengthen the policy and regulatory framework for the aquaculture sector, including aspects related to environmental and social safeguards. Specific activities include the production and adoption of operating guidelines for pond and cage culture as well as PPPs and the establishment of an appropriate aquaculture data system and management, among others.

30. **Project Area / Geographic Targeting**. The project area is defined by the project´s geographic targeting strategy. The project will be implemented in 23 districts of the country, as follows:

- Niassa Province: **Lago**, Lichinga and Mecanhelas Districts.
- Cabo Delgado Province: Metuge, Mueda and **Balama** Districts.
- Nampula Province: Mossuril, **Ribáue** and Larde Districts.
- Zambézia Province: **Milange**, Nicoadala and Mocubela Districts.
- Tete Province: **Cahora Bassa**, Magoé and Marávia Districts.
- Manica Province: **Sussundenga**, Vanduzi, Gondola and Mossurize Districts.
- Sofala Province: **Beira**, Dondo, Gorongosa and Buzi Districts

31. The project will adopt a progressive implementation approach, whereby operations will start in key locations established by sector authorities (in bold above) chosen as strategic to enhance the aquaculture value chain performance. Interventions in all of the seven districts except Beira will aim to strengthen all value chain levels, while in principle, the focus in Beira will be placed on stimulating fish feed production. Expansion to other target districts will only occur if and when the value chain is fully operational in these districts and will be determined by demand.

32. It is possible that targeting locations and interventions undergo modifications once the full impacts of cyclones Idai and Kenneth in the central and northern regions of the country on the aquaculture value chain are known.

33. Activities will be implemented only in locations with the right conditions for aquaculture of each target district. Lessons will inform demand driven expansion. The implementation of activities at community level will also follow a progressive approach through the incremental reach of beneficiaries in communities targeted. The first round of support in each target community will include financial inclusion activities and engagement of easier to reach beneficiaries.

34. **Target Groups.** The project aims to reach 88,900 people within communities, along the aquaculture value chain and in relevant sector institutions. PRODAPE was designed under an inclusive targeting approach. Specific measures were integrated to ensure that poor and vulnerable groups, such as HHs severely affected by HIV and the disabled can access project opportunities. At community level, beneficiaries will participate in project activities based on self-selection within project-supported areas, based on pre-established eligibility criteria.

35. Project target groups include smallholder aquaculture farmers and rural entrepreneurs – including private sector businesses; a special window will be offered to youth entrepreneurs based on best practices with a Sustain Your Own Business coaching model used by the International Labour Organization (ILO). The project will also target extensionists and young graduates. Finally, project interventions will also reach broader community members in target communities. Targeting quotas have been established to ensure that women are granted the opportunity to participate.

36. **Social and Environmental Impacts**. The PRODAPE is expected to provoke manageable and/or reversible social and environmental impacts. As such, the project is classified as Category "B" both by the GoM and IFAD´s Social, Environmental and Climate Assessment Procedures (SECAP). Activities will be limited to freshwater and will exclude operations on sensitive ecosystem areas (i.e. special reserves, conservation areas, wetlands, reserves and/or their buffer zones). An Environmental and Social Management Framework (ESMF) has been prepared, which sets out relevant criteria to be used during implementation. The Project will also ensure the timely elaboration of site-specific Environmental Impact Assessments (EIAs) thus adopting a precautionary approach for activities requiring attention (i.e. cage culture). In addition, adequate resources will be available to: i) develop / strengthen national regulations and guidelines to reduce potential negative impacts of aquaculture activity (particularly cage culture); ii) elaborate site specific studies required to comply with national environmental regulation and IFAD's SECAP; and iii) monitor the implementation of the latter. The SECAP review note integrated in this Project design identifies several potential risks and proposes corresponding mitigation measures.

37. **Organizational Framework.** PRODAPE will be integrated into MIMAIP with a dedicated Project Coordination Unit (PCU). The Ministry´s Provincial Directorates (DPMAIPs) will coordinate, implement and monitor PRODAPE activities in close

collaboration with the district services for the promotion of economic activities (SDAEs) and relevant service providers.

38. **Financial Management.** Financial management arrangements will, to the extent feasible, be mainstreamed within GoM systems providing adequate controls and ensuring proper management of funds. The PRODAPE will capitalize on significant progress made in recent years in the development and rollout of sub-systems within the integrated State Financial Management Information System (e-SISTAFE).

39. **Procurement.** Robust procurement systems and procedures will be put in place and used at all times during project implementation. Public, open and competitive procurement processes will be used, as relevant, to warrant transparency and safeguard project resources.

40. **Project Financing.** PRODAPE will be financed by: an IFAD loan on highly concessionary terms (USD 8.6 million, 17.5% of total project costs), an IFAD grant (USD 34.4 million, 70.2% of total project costs) under the 2018-2021 PBAS cycle, Government of Mozambique (USD 3.1 million, 6.4% of total project costs), and the project beneficiaries (USD 2.9 million). Additional resources will be made available by the REFP for the promotion of financial inclusion. Possibilities for co-financing by other development partners are being explored so as to have greater outreach and impacts.

b. PART TWO: IMPLEMENTATION OF PRODAPE TECHNICAL COMPONENTS

41. This section of the PRODAPE PIM provides basic information to guide implementation of project components and sub-components. The structure of the project follows four components, namely, a Component 0 which leaves a window open to address issues related to the climatic vulnerability faced by Mozambique, in support of project aims to develop a robust aquaculture value chain. The component has not been designed. This section of the PIM will focus on the two technical components of the PROJECT and a third component dedicated to PRODAPE management, and institutional and policy development.

42. Implementation and coordination of all project activities will be underpinned by the establishment of a robust management structure (Project Coordination Unit, PCU), PRODAPE provision of financial, material and training support to sector and other relevant staff, integrating senior specialists into relevant sector departments and the provision of implementation support in areas required, among others. The project will also be overseen by IFAD, the MIMAIP and Steering Committees at different levels.

Component 1: Development of small-scale aquaculture production capacity.

43. **Objectives**. The objective of Component 1 is to: a) develop the capacity of private sector to produce high quality fish seeds in enough quantities to meet the demand of small, medium and large scale fish production; b) develop fish feed capacity among large scale and cottage industries; and c) develop the capacities of small holder aquaculture producers.

44. The implementation of Component 1 will entail building the capacity of MIMAIP / IDEPA and relevant partners on project management, development quality standards, standard operating procedures, policy formulation and strengthening the sector´s regulatory framework.

45. **Organization and Coordination for Implementation**. The PRODAPE PCU will be responsible for the overall organization and coordination of component 1 at national level. Respective provincial directorates (DPMAIPs) will operationalize and coordinate interventions in the respective target provinces. This will include the

identification and selection of service providers, training of all relevant implementing agencies, supportive supervision and oversight.

Table 1: Matrix of key players involved in the implementation of PRODAPE Component 1.

Area of Intervention	Implementing Leader	Implementing partners
Production of fish seed	IDEPA	• CEPAQ • DPMAIP • SDAEs • MFIs / FFP
Production of fish feed	IDEPA	• IDEPA • INNOQ • DPMAIPs • SDAEs • NSB • MFIs / FFP
Facilitation of PPPs (likely for feed production)	IDEPA	• DPMAIPs
Smallholder fish production through aquaparks / clusters	SDAEs	• DPAMAIPs • MFIs • Local district administrations • DNGRH / ARAs • Cadastre representations at sub-national level • Private sector operators present in the aquaparks / aquaparks near clusters • Other private sector operators supporting input provision, technical assistance or access to markets • INAM • INGC
Nutrition and social risks	IDEPA	• Service Providers implementing Social Mentoring intervention • DPMAIPs • SDAEs • CODSANs and COPSANs

46. ***Subcomponent 1.1: Develop fish seed production capacity.*** Fish seed production capacity will be enhanced by the project by encouraging private sector investment with matching project financial and technical support. The aim would be to strengthen fish seed production capacity in all project target provinces, as required, aiming for one player per target province. In line with sector vision, fish seed will strive to follow quality standards for certification.

47. It will be important that the Project establishes the degree to which the Aquaculture Research Centre in Chókwè would be able to assume the role of primary research and broodstock producer to feed the growing aquaculture value chain.

48. Activities and associated expenditures under this sub-component could include: a) pre-selection by PRODAPE and micro-finance institution, and screening of private sector players; b) due diligence of pre-selected candidate; c) production of strong but

realistic business plans and layout specifications; d) design, tendering and award of contracts for construction new / rehabilitation of existing hatcheries and civil works; e) acquisition of equipment for constructed / rehabilitated hatcheries; f) technical assistance to train hatchery owners / staff; g) certification costs; and h) the establishment of linkages between fish seed producers existing / emerging clients; and i) establishment of simple and viable logistical distribution systems.

49. Criteria for the selection of private sector players will be based on existing operations for fish seed production, the selection of suitable species and the use of production processes that ensure safety, environmental safeguards and capacity to provide matching grants. Existing microfinance institutions will be used for administering suitable credit and grants products to private hatchery operators. Some of the existing Microfinance Institutions to engage will include the Fisheries Development Fund (*Fundo de Fomento Pesqueiro*) (FFP), Small Industry Development Fund (*Fundo de Fomento de Pequena Industria*) (FFPI) and Sociedade de Gestão e Financiamento para a Promoção de Pequenos Projectos de Investimento Sarl (GAPI). There are a number of other Micro Finance Institutions (MFIs) with potential to provide financial services to aquaculture value chain actors, some of which will be engaged by BNI under the REFP to serve PRODAPE clients.

50. Financial products will be developed especially for the aquaculture value chain in close coordination between REFP/BNI/MFIs and PRODAPE. Support to private hatchery operators will involve: a) provision of matching grants for machinery; and b) operational costs. Private sector operators qualifying for this support would be expected to provide at least 20% of the costs of establishing the hatcheries as cost share or matching grants.

51. In all cases, PROPADE will provide technical assistance for private hatchery operators to assist to strengthen the operational capacity and quality of hatcheries where they exist and to establish new ones where they do not exist. Support to expansion, operations and improvement of exiting private hatcheries will be based on a sound business plan while new installations will be based on adequate proof of matching financial resources to access matching grants. Private sector hatchery operators will be expected to provide evidence of land ownership or lease in order to qualify for assistance. IDEPA will oversee the activities of the private hatchery operators and provide both regulatory services and quality control of the fingerling produced.

52. PRODAPE / IDEPA will develop both guidelines and standard operating procedures for all private hatcheries.

53. The project will use criteria for identification of new suitable hatchery sites the availability of water in enough quality and quantity to serve the facility, access to infrastructure such as electricity, road network and other services.

54. ***Subcomponent 1.2: Develop fish feed production capacity.*** The development of fish feeds will be based on both Public-Private Partnerships (PPP) and on private sector driven initiatives. The project will meet the costs of the design and construction of feed mills in strategically located areas.

55. The private sector operators who wish to engage in fish feed production will be required to have existing animal feed production business and install additional lines of production for fish feeds or to be located in aquaparks. In the first case, they will be supported by matching grants and credit lines based on their existing capacity, sound business plans and their ability to supply a given number of farmers in specified areas. For feed producers wishing to establish themselves in aquaparks, the running of such facilities will be leased to private sector operators in order to guarantee mutual benefits to local producers. The centrality and concentration of aquapark-based feed mills could also service small-scale producer clusters within their catchment areas. As a

complement to seed production facilities, the initial construction of feed mills will be located at the sites already earmarked for aquapark development. In both cases, matching grants will be offered through the partnership between PRODEPA and REFP.

56. When necessary, IDEPA will lease facilities through competitive bidding processes but provide both regulatory and quality assurance services either individually or in association with competent authorities for quality control in Mozambique´s National Standards Body (NSB), and the National Institute for Normalization and Standards (INNOQ).

57. Cottage industry feed producers will be supported by the project in areas not reached by the private sector with the use of simple technologies. These producers will be provided with technical support to meet target production volumes and established quality standards. It is recognised that the feed produced by these local players is likely to be inferior to the one produced by medium / industrial ones. However, both are expected to feed the local market and its diverse clientele with different economic capacity.

58. PRODAPE will meet the costs of developing National Fish Feed Quality Standards (NFFQS) and publication of such standards for public use. The project will further enhance the capacity of INNOQ to conduct fish feed proximate analysis and nutrient profiles to support extension and also for regulatory purposes.

59. ***Subcomponent 1.3: Develop smallholder aquaculture production capacity.*** PRODAPE will meet the cost of construction of fish earthen ponds and fish farming cages among smallholders. The establishment of small-scale aquaculture production in earthen ponds will be supported by PRODAPE through the construction of one 500m^3 earthen pond per beneficiary with different levels of co-participation of project beneficiaries in pre-determined locations suitable for farmer clustering or in the context of aquaparks, as outlined in part three of this document (operationalization of the targeting strategy). In the case of aquaculture farmers supported to establish earthen ponds technical support will be provided both to integrated smallholder and non-integrated smallholder ponds.

60. Small-scale cage farming will be supported by the project by providing the funds to construct a standard cage of 125m^3 for organized members of groups who can provide labour, security and management of the cages. Suitable water bodies to be considered will include Cahora Bassa, Niassa Lake and other smaller water bodies meeting pre-defined technical criteria and any additional requirement established by the national legislative framework. This will include the elaboration of carrying capacity studies and site-specific guidelines for cage-culture to be elaborated prior to the activities to commence.

61. Both cage and pond construction and siting should be guided by the criteria specified within the ESMF as well as by the adaptation practices and solutions identified within the Climate Risk Analysis (CRA) study undertaken during design phase. Adequate adaptation solutions will be established and construction methods will be adopted according to site-specific climate challenges. To further improve the resilience of PRODAPE beneficiaries, the PCU will liaise with both the National Meteorological Institute (INAM) and the National Institute for Disaster Management (INGC) to guarantee the effective delivery of climate and weather information and early warning systems through the existing channels, thus strengthening and improving the climate and weather information packaging and delivery as required by the project's interventions and needs. Climate and weather services are intended to support the decision-making process by providing farmers with information on the upcoming season accompanied by advisories for their livelihood decision-making.

62. The provision of weather/ climate services to inform livelihood decision-making among smallholder fish-farmers is intended to: (i) support the development of advisories to accompany the dissemination of the seasonal forecasts; (ii) support extension officers to access, interpret, and disseminate the climate services; and (iii) disseminate climate services through telephone SMS and radio platforms. Besides working on the basis of a seasonal forecast, in-season updates will be provided to further inform the fish-farmers. To optimize the use of the climate information in decision-making, the provision of climate services will be integrated into the extension support offered at the district level. In this context, the training manual for extension officers will be integrated with a module on collection, interpretation, and dissemination of climate services. The use of SMS and radio platforms used to disseminate market information will be instrumental to also broadcast updated weather information and allow to reach farmers beyond the extension services.

63. In all cases, producers will receive project support through the supply of fish seeds and feed to support one production cycle. Integrated smallholder farmers will be expected to meet the costs of other inputs in the farm beyond fish farming.

64. The project will provide extension services and necessary training to effectively carry out fish farming activities in integrated systems. In such cases, extension staff will work closely with both livestock and agriculture extension service providers to ensure that the systems complement each other and become more efficient. Integrated smallholder beneficiaries will be selected on the basis of possessing at least 20-30 local poultry (birds), sheep, cows, goats or pigs to provide manure to fertilize the ponds (to be confirmed in each target district). Integrated small-holder farmers must also be growing one of the high value and nutritious horticultural crops such as tomatoes, kales, spinach, onions, cabbage, carrots so as to benefit from nutrient rich effluent waters from the fish ponds.

65. It is expected that approximately 40% of already existing or new small-scale aquaculture farmers will expand their production capacity to 2-3 ponds at their own cost or by accessing financial services over the life of the project. In those cases and beyond, beneficiaries will be assisted by PRODAPE to expand their production capacity by providing technical support.

66. PRODAPE will meet the costs of water reticulation in designated aquapark sites. With adequate water reticulation, the aquapark model will be used to extend the production to small-scale agricultural and aquaculture farmers in the surrounding vicinity so as to benefit from the common public services such as water, electricity, roads network, marketing infrastructure and extension services.

67. The PRODAPE will procure motorcycles for extension staff, provide equipment for water quality assessment and facilitate accurate collection of data on inputs, smallholder management and production levels in order to determine the economic returns from fish farming at individual, local, regional and national levels. The project will provide the necessary technical assistance to assist in capacity building for production. Specifically ensuring the aquaculture extension workers are adequately trained on both climate smart aquaculture technologies and good environmental practices for aquaculture production. Also, the PCU in coordination with INAM and INGC will address extension service training needs on climate and weather information packaging and dissemination for PRODAPE's beneficiaries needs.

68. The choice of location for the establishment of both ponds and cages will determined by compliance with criteria already established in the PDR and the ESMF.

69. ***Subcomponent 1.4: Mainstreaming nutrition and addressing social risks***

70. **Mainstreaming nutrition.** The PRODAPE will improve nutrition outcomes by using nutrition-sensitive impact pathways and nutrition-sensitive strategies that increase supply, add nutritional value and increase demand of aquaculture fish and associated products. Social behaviour change communication (SBCC) and consumer awareness activities will be designed in coordination with national level players working on nutrition and implemented at different levels. Institutional capacity building activities on nutrition mainstreaming approaches will also be implemented in the context of PRODAPE, as well as activities to support to food and nutrition security policy, as relevant.

71. The project will also use the nutrition governance structures in place to engage in sector coordination and collaboration with the health, education, agriculture sectors and relevant programmes implemented by the Nutrition Partners Forum (NPF) implementing agencies. The PRODAPE will provide 2,000 women, youth and men at community level with targeted support to improve their nutrition. Overall however, it is expected that 13,000 beneficiaries from the 23 target districts benefit from nutrition related activities.

72. SBCC activities will be implemented across the different impact pathways embedded in PRODAPE, as follows:

(a) Consumption pathway (among producers). The PRODAPE will introduce nutrition and consumer awareness around fish as a driver for diet diversity among producers (individually or organized in groups constituted in clusters / aquaparks and encourage fish consumption planning among smallholder fish farmers vis-à-vis channelling fish into markets. Also, diversified production systems will be encouraged among beneficiaries engaged in aquaculture (fish production and agriculture activities) to increase the quantity and nutrient-rich quality of diverse foods available to the HH year-round. The intention is for them to also become change agents within their communities and use the marketing of their produce to increase demand, consumption and utilisation of fish at community level. This will be done by extension workers already interacting with smallholder farmers.

(b) Income pathway. The PRODAPE will support the strengthening / emergence of credit and savings groups (PCRs) in all communities targeted by aquaculture production activities. These activities will also include HH budgeting and business planning. The project will encourage use of associated profits to address malnutrition by addressing health, nutrition and care necessities. This activity will be done in the context of REFP supported PCRs in PRODAPE target communities.

(c) Market pathway. The PRODAPE will work all across the aquaculture value chain to address supply and demand constraints. This is expected to increase availability of and access to aquaculture fish in markets. A consumer awareness study on cultured fish and other products will be conducted as part of the initial market survey to establish consumer awareness levels. On the basis of that, the project will delineate effective strategies for demand creation for the purchase of aquaculture fish in the target districts.

The project team shall develop linkages with the World Food Programme (WFP) for the fish farmers and cottage fish industries to explore the possibility of tapping into the *diversified diets food baskets e-voucher scheme* for emergency response and school feeding programs, so create yet another market for aquaculture producers.

In addition, fish farmers with support from the project can benefit from the Mozambique Scaling-Up Nutrition Business Network platform to access technical assistance / services on nutrition marketing including safe food handling and

packaging that preserves the nutritional value of fish, frameworks for adherence to mandatory minimum requirements for nutrition labelling and market place support activities for demand generation.

73. SBCC content to be used at producer and PCR level could include: a) nutritional value of fish; b) fish safety; c) fish benefits for the family, especially for the 1,000-days group[1]; and d) demonstration of improved recipes for preparing cultured fish[2].

74. Marketplace awareness and communication content and materials, on the other hand, should consider issues related to aquaculture fish acceptability in coastal areas and address cultural habits that inhibit the consumption of fish in inland areas, as well as promote fish production and overall fish consumption. In this context, the project will:

(a) Develop, multimedia messages, creative print materials such as scripts, stories, lyrics, agendas, discussion guides and slide shows tailored to rural communities;

(b) Take advantage of local fish fairs to promote tilapia and establish promote fish processing and value addition;

(c) Add to the on-going marketplace communication activities to emphasize the prevention of chronic malnutrition through community drama / theatre, interactive storytelling, music and road shows. National events such as health and nutrition weeks and the SETSAN "Month Dedicated to Feeding" *(Mês da Alimentação)* offer a wider geographical and thematic focus opportunity for community awareness on the use of aquaculture fish and associated products to improve HH diet. The project team will contribute on the production of content and the social mobilization activities for the events in target districts;

(d) Explore use of the district and provincial community radios that benefited from the Millennium Development Goals program (MDG1c)[3] radio station training support and the MISAU "One Minute on Nutrition" (*Um Minuto de Nutrição*) initiatives to convey the fish-related nutrition messages.

75. To support wider coverage and dissemination of information on aquaculture fish consumption, the project team could explore the provision of tilapia and catfish related content on production, consumption and marketing to community mother, infant and young child nutrition extension teams at the District Services for Women and Social Action (SDMAS) to use during home visits and to the Nutrition Partners Forum (NPF) organisation working on nutrition-specific and nutrition-sensitive intervention in the districts to integrate health, school and community nutrition activities.

76. To facilitate quality extension services within the sector a nutrition specialist will be hired to support the PCU in planning, implementing and monitoring nutrition outcomes within PRODAPE. An overall capacity assessment planned for the extension team and provincial and district directorates will also elaborate on the nutrition capacity gaps. In collaboration with SETSAN, Ministry of Agriculture National Directorate for Agriculture Extension Department of (DNEA), and MISAU, specific content for the aquaculture sector will be developed and included in the overall aquaculture extension services training plans. A nutrition focal point will join the extension master training team that will train target DPMAIPs and extension staff at district levels and the project team. The training will be done at the district level to avoid the cascading training of trainer model to avoid the potential loss of technical knowledge and skills along the training chain.

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[1] Adolescents, pregnant, lactating women and children 6-23 months.

[2] Nutrient-dense recipes that use fish as base ingredient and or fish value added products.

[3] Accelerating progress towards the achievement of the Millennium Development Goals1c in Mozambique (MDG1c) 2013-2018.

77. Food and nutrition policy support. The DPMAIPs and district level nutrition focal points will monitor and manage the data collection and utilisation of the routine nutrition outcome data. The data will then be reported and monitored against the aquaculture planned activities within the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PARMDC) at district, provincial and national level. In this regard the project will support districts and provincial directorates to engage in the food and nutrition policy alignment. This is in line with planning and monitoring activities stipulated for the recently decreed provincial and district steering committees for food and nutrition security (CODSAN and COPSAN)[4]. The project will also engage with the food and nutrition evaluation assessment and surveys working group chaired by SETSAN department of evaluation.

78. Do no harm considerations. The time spent by women participating in project activities could have a negative effect on breastfeeding and other childcare responsibilities assumed by women. The project will mitigate these harms by ensuring that the organisation of the PRODAPE activities are well coordinated and take place at times which are convenient for women. In addition, the introduction of timesaving technologies for food processing, such as solar dryers and cool boxes, as well as for marketing, including mobile phone marketing, will be explored by PRODAPE.

79. The contributions of PRODAPE interventions will be monitored through periodic project-specific monitoring activities as well as SETSAN biannual surveys. The baseline survey on knowledge, attitudes and practices and diet diversity surveys will provide benchmark data to measure changes related to nutritional outcomes in the project target areas. IFAD Mozambique´s Nutrition Community of Practice will enable sharing information, best practices and networking within IFAD funded programs (PROMER[5] and PROCAVA[6]) as well as establishing linkages with nutrition specific / sensitive programmes.

80. Planning, implementation and monitoring of social behaviour change from the multimedia and marketplace campaigns will be done in collaboration with the Ministries of Health, Agriculture, Education, Commerce and Industry, SETSAN, SUN business network and community activists.

81. **Addressing Social Risks.** Information collected during the PRODAPE design mission indicated that potential project beneficiaries face two distinct sets of social challenges that, if unaddressed, will limit impact at HH level and maintain weak cohesion among smallholder aquaculture farmers. Concretely, social risks which could undermine primary beneficiary engagement in project supported activities and/or limit beneficiary HH socio-economic progression led the identification of the following:

(a) Individual HHs seek individual solutions to common problems;

(b) Lack of joint planning at HH level;

(c) Potential increase of HH tensions and gender inequality with increased income flows among married beneficiaries;

(d) Increased risk of HIV acquisition by women; limited health seeking behaviour among HIV positive pregnant women, youth and men. Threat of poor health with deteriorating health if treatment is not initiated and sustained;

(e) Food insecurity and malnutrition associated with lack of production of food for consumption by participating households and an increase in food prices.

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[4] December 6th, 2017, the Council of Ministers (through Decree No. 69/2017) approved the creation of the National Council for Food and Nutrition Security (CONSAN).

[5] The Rural Markets Promotion Programme.

[6] Inclusive Agri-food Value-chains Development Programme.

82. Whether organized under cluster models or around aquaparks, smallholder aquaculture farmers face greater challenges than the rest of the actors in the value chain due to their socio-economic vulnerability. Engagement in aquaculture will require organization to address challenges and take advantage of opportunities. The *Social Mentoring* intervention aims to support farmers in this respect by working at two levels:

(i) Aquaculture producer groups (in clusters or aquaparks). Activities will instil joint planning, collaboration and equip them to identify common problems and joint solutions.

(ii) Individual aquaculture producers receiving PRODAPE support. Activities would aim to address social risks that could hinder beneficiary ability to sustain engagement and limit socio-economic progression: (a) absence of joint HH plans; (b) gender inequality; (c) malnutrition; and (d) HIV and AIDS.

83. Whether organized under clusters or around the aquapark model, smallholder aquaculture farmers face greater challenges than the rest of the actors in the value chain due to their socio-economic vulnerability. Engagement in aquaculture will require organization to address challenges and take advantage of opportunities. The *Social Mentoring* intervention aims to support farmers in this respect by working at the two levels. The S*ocial Mentoring* package to be produced by PRODAPE will be based on different sources, namely, the Gender Action Learning System (GALS) successfully used by IFAD[7] and other agencies with inspiring results. This methodology will be merged with best Stepping Stones practice, also widely used at international level – including Mozambique in the context of HIV / AIDS interventions implemented at community level. Finally, the *Social Mentoring* package will include relevant nutrition messages disseminated in the country under nutrition related authorities.

84. It is important to note however, that the overall approach to be used in the *Social Mentoring* intervention will be that guiding GALS. As such, the Social Mentoring intervention could be regarded as being an expanded version of GALS including issues related with HIV/AIDS and nutrition. (All information related to the prevention, treatment and discrimination of HIV, as well as nutrition included in *Social Mentoring* activities will be aligned with GoM guidance documents and duly coordinated at local level with other players working towards common goals.)

85. PRODAPE will contract an independent consultant to produce the project´s *Social Mentoring* manual and train key staff. Together with the PRODAPE PDR and this PIM, the *Social Mentoring* manual will guide trainings at various levels and the implementation of activities among smallholder aquaculture farmers in line with yearly implementation plans.

86. Table 19 outlines what have been identified as key social challenges and opportunities in relation to the main risks and opportunities identified at design for the project.

[7] IFAD, October, 2014. Case Study: Gender Action Learning System in Ghana, Nigeria, Rwanda, Sierra Leone and Uganda. Gender, Targeting and Social Inclusion.

Table 2: Key information in relation to four key social risks faced by project beneficiaries at HH level to be addressed by the Social Mentoring intervention

	Lack of joint household plans	Gender inequality	HIV and AIDS[8]	Malnutrition
CHALLENGES	-	-	% HIV prevalence[9] Challenges: Enrolment in and adherence to treatment Stigma / discrimination Vulnerability of women, and children HIV disclosure affects women Food availability and consumption patterns	43% chronic malnutrition 54% maternal anaemia, iron, iodine and vitamin A[10] Challenges: Limited physical and economic access to diverse, nutritious diets Limited diversified protein and micronutrient Cultural influence on diets/caring practises High disease burden
	-	-		

[8] Instituto Nacional de Saúde, Instituto Nacional de Estatística (INE), ICF Internacional, 2015. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique 2015. Relatório Preliminar de Indicadores de HIV.

[9] Mozambique recently adopted the HIV Test and Treat Strategy, which entails getting HIV positive patients into anti-retroviral treatment as soon as diagnosed. As is the case in other HIV high-burden countries, treatment is considered to be the prime prevention strategy.

[10] In-Depth Review 2018 of the 'Multisectoral Action Plan for the Reduction of Chronic Under-nutrition in Mozambique 2011 – 2015 (2020)'.

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P	- Empower HHs to produce HH plans and identifying solutions to the four social risks identified herein (and others)	- HH members analyse the impacts of gender inequality on individual benefits and HH progression and identify corrective measures to issues deemed relevant	- Sensitization on HIV testing, treatment and adherence - Sharing information on existing HIV services - Tearing down barriers to disclosure / discrimination - HIV/AIDS & gender inequality - Nutrition in the context of HIV and AIDS	- Targeted nutrition education on nutritional value of fish, fish safety, consumption benefits especially the 1,000 days group[11] - Demonstration of improved aquaculture fish recipes[12] - Partnerships with relevant sectors

87. Issues to be included in the *Social Mentoring* intervention will include:

a. Development of joint HH / producer group vision;

b. HH / producer group planning making effective use of resources and opportunities available;

c. Identifying and addressing common barriers for progress (including common areas of gender inequality);

[11] Adolescents, pregnant and lactating mothers and children aged 6-23 months.

[12] Nutrient dense recipes that use fish as base ingredient and or fish value added products.

d. Provision of basic information on HIV prevention and clinical HIV services close to communities, including, as relevant: HIV testing and counselling, HIV care and treatment, community services and support groups (if any), and use of services;

e. Importance of pregnant women, youth and men testing and using clinical HIV services and adhering to anti-retroviral treatment;

f. Couple disclose of sero-prevalence; overcoming HIV stigma and discrimination;

g. Provision of basic information to prevent malnutrition and linkages, as appropriate.

88. *Social Mentoring* activities will be implemented by trained Mentors. *Social Mentoring* activities will be imparted to smallholder farmers receiving project support to establish their production units, through the producer groups into which they are organized for the purposes of accessing project opportunities related to fish production. It is expected that groups will consist of 20-25 members. However, more focused attention will be given to "more at risk beneficiaries", considering that these will primarily be the poorest HH (those receiving the highest level of support to engage in fish production), but it could also include beneficiaries that are not among the poorest but require additional assistance in overcoming challenges and capitalizing opportunities due to enhanced exposure to (a) given social risk(s). These beneficiaries will receive additional support, which will be provided at HH level. It is expected that the proportion of beneficiaries requiring this level of additional support will represent approximately 20% of the total number of beneficiaries targeted by the *Social Mentoring* package.

89. Service providers will be contracted to implement all Social Mentoring activities. These service providers must be experienced in facilitating empowerment processes in poor rural communities. The service providers will be selected according to pre-established criteria and trained, in the use of delivery of the *Social Mentoring* intervention, as relevant. The Sociologist / Social Inclusion Specialist at the PRODAPE PCU will play an important role in selecting, supporting and overseeing the technical performance standards and ensuring that expected results are met among those targeted with the intervention. Additional expertise will be brought in by PRODAPE, as required, through targeted implementation support.

90. Evidence shows that when GALS is implemented correctly, the impact is such that there is a multiplier effect at community level as beneficiaries themselves target others community members spontaneously. As such, the project will target all producer groups in each community to work on group level issues (see above), and 50% of individual beneficiaries within these, including those requiring additional support at HH level. The idea is for beneficiaries targeted directly by Mentors until they "graduate". Then, these “Social Mentoring graduates” will be asked to replicate the same process among the remaining 50% of PRODAPE beneficiaries within their organised producer groups and any other community members they wish to share their experience with.

91. Activities at group and HH level will be implemented for a period of 12 months. It is expected that after this time groups and individuals targeted will "graduate" out of *Social Mentoring*. Each Mentor will cover three groups (and the estimated 20% of group members requiring HH level support, i.e., five people in each group, totalling 15 HHs) in this 12-month period.

Component 2: Development of aquaculture business

92. **Objectives**. The component will focus on addressing needs to ensure that all participants in the aquaculture value chain – including smallholders - can do so under commercial terms. As such, the component will work on: (i) supporting the

development of aquaparks; (ii) improving practices for aquaculture products to maintain their value in markets and supporting an environment that facilitates business partnerships, especially PPPs / outgrower schemes; (iii) promoting financial inclusion; and (iv) supporting the engagement of youth as aquapreneurs. Some of the key activities to be implemented include market surveys, training, technical assistance, demonstrations, exchange visits, the provision of equipment, the improvement of market facilities and the provision of financial services.

93. **Organization and Coordination for Implementation**. The overall organization and coordination of this multi-faceted component will be assumed by the PCU, who will liaise and coordinate closely / support the respective DPMAIPs. The component will entail the establishment of numerous innovative linkages and partnerships, commercial in nature, with public and community partners, and potentially between private sector players. The DPMAIPs will oversee service providers engaged in the context of related activities and support a conducive environment for the development of aquaculture as a commercial activity in their province.

Table 3: Matrix of players involved in the implementation of PRODAPE Component 2.

Area of Intervention	Implementing Leader	Implementing partners
Support to the physical development of aquaparks	DPMAIPs	● SDAEs ● Cadastre ● DNAs / DNGRH / ARAs ● Existing / emerging private sector players producing feed, seed or fish ● ANE ● FUNAE
Establishment of PPPs in the context of aquaparks	IDEPA	● DPMAIPs ● MFIs / FFP ● Private sector operators
Provision of financial services to relevant players in the aquaculture value chain	BNI	● MFIs ● DPMAIP ● SDAEs
Development of other market linkages across the aquaculture value chain	DPMAIPs	● SDAEs
Implementation of aquapreneurship activities with youth (“Start Your Own Business”)	DPMAIPs	● Specialised service providers ● Existing businesses ● SDAEs

94. ***Subcomponent 2.1: Support the development of aquaparks***. The PRODAPE is interested in supporting the development of aquaparks, as a vehicle to integrate smallholder farmers in rural communities to the aquaculture value chain.

95. The concept of aquaparks has been and is likely to continue evolving with experience and exposure to the experience and success stories of other countries, such as Brazil, with which PRODAPE intends to carry out an exchange / learning visit. At present, the sector considers two models of aquapark: industrial aquaparks (of which there are none in the country as of yet) and small / medium sized aquaparks (of which 2 are functioning in Inhambane and over a dozen others underway / in construction / close to becoming operational. The PRODAPE will not to engage in the development of

industrial aquaparks, but to plan investments in support of smaller aquaparks in the targeted districts.

96. The PRODAPE will provide support for the development of aquaculture parks through mainly: (i) carrying out public awareness campaigns to alert potential investors and entrepreneurs and negotiating with the public and private sectors to establish funding commitments; (ii) provision of technical assistance (assessment of sites suitability for aquaculture, development of site specific ESMP/ESIAs, carrying capacity, biosecurity planning and disease control, business plans, etc., as required); (iii) facilitate the identification of sources of finance and the arrangements for acceptable PPPs; and (iv) the provision of enabling and critical key infrastructure including feeder roads, water canals, hatcheries/nurseries canals, electricity systems and markets, warehouse with cold storage and ice production at key marketing points.

97. ***Subcomponent 2.2: Develop market linkages and business partnerships.*** The general approach of the sub-component is to develop market linkages oriented towards improving fish handling; the establishment of fish collection systems and centres; marketing and distribution within the context of the overall development of target communities; and the establishment of business partnerships between smallholder farmers and private sector players under what in agriculture are considered "outgrower schemes".

98. This sub-component will complement component 1, through the following activities: a) carry out a detailed market and product development study; b) provide training / technical assistance on good practices for fish handling / processing preservation / marketing; c) product and business development, for both fish farmers and technical staff; d) facilitate proper equipment (drying racks; cool boxes and bicycles / motorcycles for small-scale processors and traders in rural areas; e) small-scale market outlet or "*peixarias*" ; f) improve some fish markets at district and provincial level by setting up minimal hygiene requirements (tap water and toilets); g) sensitization of sellers and buyers / consumers on hygiene and nutrition; h) facilitate spot improvement of access roads; and i) facilitate acquisition of some solar equipment.

99. Finally, the subcomponent would entail sensitization activities of existing private sector operators engaged in aquaculture production to work with local smallgrower farmers to create win-wins for the operators and smallholders. Such arrangements enable smallholders to access inputs, technical assistance (as needed) and markets for their fish and supports private sector operators in increasing their production capacity without substantial additional investment.

100. Business partnership between commercial fish farms and small-scale fish producers will be enhanced through: i) the provision by the former of quality inputs (fingerlings and feed) and technical assistance (pond / cage construction and management); and ii) the purchase by the former of fish produced by small-scale farmers.

101. Business partnerships will be promoted through exchange visits, carried out for fish farmers, technical staff and input suppliers both at regional level (e.g. Kenya and / or Uganda) and local level (within the same province or in other provinces). These exchange visits (group composition, frequency, places and costings) are detailed in the PROPADE Cost Tables.

102. ***Subcomponent 2.3: Develop financial services.*** The goal of this subcomponent is to contribute to rural HH livelihood improvements by facilitating access to appropriate, affordable and sustainable financial and business development services that enable HHs to start / strengthen engagement in aquaculture activities. Expected outcomes of the sub-component include: (i) increased savings by beneficiaries; and (ii) increased income and assets through the establishment of profitable enterprises facilitated by access to

financial services. The project also aims to demonstrate that aquaculture has commercial potential, which should attract mainstream financing instruments including venture capital, working capital loans, asset financing, insurance, etc. Specific funds will be ring-fenced in the context of this sub-component to support youth entrepreneurship intervention (sub-component 2.4) based on the successful experience of the ILO (*Support Your Own Business*).

103. Financial services to PRODAPE beneficiaries will be made available through REFP and the BNI, who will engage MFIs as financial service providing agencies and other specialised service providers to reach PRODAPE beneficiaries. Financial services will be designed to meet the needs of various existing and incoming actors in the aquaculture value chain. Activities will start at community level with the establishment of PCRs; this will be one of the first activities that will be implemented in target communities as, the experience of previous IFAD-supported projects shows, it provides rural dwellers the opportunity to accumulate small sums of money for productive investment purposes.

104. Other financial products to be made available through the collaboration of PRODAPE and REFP are the mixed grant-based product called Crowding in Fund (CIF) and the Line of Credit (LoC). These products will be made known in community and wider project mobilization processes on aquaculture value chain development, so that smallholders, emerging rural entrepreneurs and local / aspiring business people know of their existence and the possibilities conferred to participating in it.

Table 4: Financing to be made available through PRODAPE and REFP for the aquaculture value chain

Enterprise activity	ancing requirements	alue of financing (min)	Financing instrument	ovider
eed producers	• Machinery • Raw materials for fish feed • Packaging materials • Storage material / equipment • Labour		• Full grant to experiment in formulation and production of fish feed (cottage industry)	t
			• CIF for scale up	
rling producers	• Hatchery equipment • Fish Feeds • Labour		• Full grant towards the establishment of small-scale community level producers	t
			• CIF for producers who want to scale up	
-scale ulture farming (Earthen Pond)	• Labour or hiring machinery for pond construction • Purchase of fingerlings • Purchase of fish feed • Labour for stocking, feeding & harvesting fish • Security services	,000	• Different levels of support for investment costs and 100% project support for inputs needed for the first production cycle	t
			• LoC for inputs for second production cycle	
			• CIF for opening new ponds (maximum 3)	
			• After the second	

			cycle, the farmer should graduate to the normal loans under the LoC	
-scale ulture farming (Cage Farming)	● Purchase of cage ● Purchase of fingerlings ● Purchase of fish feed ● Labour for stocking, feeding & harvesting fish ● Security services	.2,000	● CiF for investment and the first cycle	
			● LoC for inputs for second production cycle	
			● CIF for the establishment of new cages (maximum 3)	
			● After the second cycle, the farmer should graduate to the normal loans under the LoC	
butors	erated truck		● LoC	
rs	Motor cycles Cooler boxes		● CIF	
rocessors	scale processing units		● LoC	

105. Table 21 illustrates the steps to be followed by PRODAPE beneficiaries to access financial services made available through REFP.

Table 5: Institutional framework to link PRODAPE beneficiaries to the REFP

Targeting and Selection
Step 1: Targeting, selection and profiling of PRODAPE beneficiaries undertaken by PRODAPE project staff.
Step 2: Information on beneficiary location and profiles and funding requirements is sent to Regional REFP project management unit.
Step 3: Regional REFP project management unit provides information to business development and participating financial service providers.
Step 4: On the basis of the information provided the participating business development and financial service providers prepare work plans for providing services to PRODAPE beneficiaries.
Phase 2: Financing Process
Step 1: Participating business development service providers and financial service providers conduct outreach and sensitization campaigns in project areas.
Step 2: Business development service providers provide training to PRODAPE beneficiaries and assist to prepare business plans and funding proposals for submission to financial service providers.
Step 3: Financial service providers receive loan applications from beneficiaries.
Step 4: Financial service providers appraises applications using its internal criteria.

Step 5:	Financial service providers disburse funds to successful applicants.
Step 6:	Loan beneficiaries repay loan-using modalities established by financial service providers.

106. ***Subcomponent 2.4: Support to youth aquapreneurship***. The sub-component will integrate into PRODAPE a specific methodology to use with youth in target communities, targeted through component one, or who wish to engage in other activities in support of the aquaculture value chain. The approach involves a comprehensive package involving the provision of technical assistance, support to prepare business plans and support in establishing linkages with the REFP for tailored financing and others, in pursuit of their business endeavours. In the process, youth champions inspire and support other peers in their communities through coaching. The methodology is expected to play an important element in the transformative approach to youth involvement integrated in PRODAPE.

107. The methodology has been successfully used by the ILO. The PRODAPE will contract a consultant to develop a Youth Aquapreneurship Manual for the project and train key staff at national, provincial and district level in its use. It is envisaged that implementation will start with a couple of pilots from which to learn, identify best practices and use as a basis for roll out to other target locations in subsequent years.

Component 3: Project management, institutional and policy development

108. **Objectives.** The component provides the overall framework for project management, strengthening sector institutions responsible for small-scale aquaculture in the country to fulfil their roles, as well a support sector policy and regulatory development.

109. **Organization and coordination for implementation.** The component will be led by the PCU. While requiring the participation of players at sub-national level, this is the component in which the PCU will assume most responsibilities given the nature of the issues it encompasses. It will be important however,

Table 6: Matrix of players involved in the implementation of PRODAPE Component 3.

Area of Intervention	Implementing Leader	Implementing partners
Project management	MIMAIP	• PCU
Institutional capacity building at national level	PCU	• Selected service providers • Consultants
Institutional capacity building at sub-national level	PCU	• PCU staff • Selected service providers • Consultants • DPMAIPs
Development of policy and regulatory framework for aquaculture	PCU	• Relevant sector departments (depending on specific topic) • PCU staff • Selected service providers • Consultants • DPMAIPs

110. ***Subcomponent 3.1: Project management.*** MIMAIP and IFAD are committed towards the establishment of a dedicated PCU that can implement and assume full responsibility for all management functions of the project and deliver expected results.

The PCU will be staffed by a core management team comprising a coordinator, a financial manager, a procurement officer, financial assistants, an M&E specialist and a KM and communications specialist. In addition, the PRODAPE will hire senior specialists who will be integrated in relevant sector departments to strengthen institutional capacity, by means, especially, of supporting technical project management. Specialists will be integrated in the areas of aquaculture, value chain development, nutrition, social inclusion as well as a financial liaison officer.

111. All central level specialists will work closely with sector staff at central level to ensure that project objectives are met. Given that a large majority of activities will be implemented at sub-national level, a focal point for the project will be assigned within DPMAIPs in target provinces. The national level specialists will support and oversee progress and results in activities implemented at sub-national level, primarily under the responsibility of DPMAIPs. In turn, DPMAIPs will plan, liaise, coordinate, support, monitor and evaluate the extension service (SDAEs) in target districts, contract and manage local service providers and seek partnerships / synergies which could enhance project progress and results. The DPMAIP will also be responsible for liaising with other government institutions at provincial level.

112. In addition, best IFAD and GoM management practices and procedures will be used for in all project management aspects (some of which will be covered in part four of this document, namely, those dedicated to support functions).

113. Steering Committees will be created for the project at National, Provincial and District levels and will have representatives from relevant sector institutions and other sectors as well as civil society representatives. Steering Committees play a key role in "steering" project direction, in this case, to ensure that PRODAPE remains loyal and relevant to its purpose and at the same time adapt to any emerging circumstances.

114. The project will also be jointly supervised on a regular basis (at least once per year) by IFAD and sector representatives. Mid-term review will provide an opportunity to assess progress made towards results and integrate any additional strategy changes to increase the possibility of project success. A Project Completion Report will document degree of success achieved by the project.

115. ***Subcomponent 3.2: Institutional capacity building.*** To support aquaculture production and the fish value chain in the areas covered by PRODAPE, the project envisages the following activities to contribute to building sector capacity towards quality project management, overall sector performance improvement and sustainability of project interventions:

- Setting up of a dedicated project PCU;
- Integration of relevant technical specialists in IDEPA departments;
- The provision of implementation support;
- Increasing the number of extension agents in target districts, as required, adequately training them in relevant topics and ensuring that their resource requirements are met to effectively carry out planned activities at desired frequency, timing and quality;
- Training of provincial-based technical staff in business / marketing / value chain / nutrition / targeting, social analysis and social risk management;
- Improving institutional systems in the aquaculture sub-sector (specific activities include: provision of assistance to institutions engaged in aquaculture through the establishment of licensing and enforcement functions at SDAE level, reviewing the role of institutions involved in small-scale aquaculture, including their organic statutes and regulations, staff tables and professional progression; together with

the design of a pilot statistical system for small-scale aquaculture to be tested and scaled up in the project area and subsequently rolled out to the rest of the country).

116. ***Subcomponent 3.3: Policy development.*** Subcomponent 3.3 aims to contribute to the improvement of the policy / legislative / regulatory framework, advocacy and governance efforts in support of aquaculture, with a specific focus on the involvement of small-scale producers. To achieve this, the sub-component has considered the following areas of intervention:

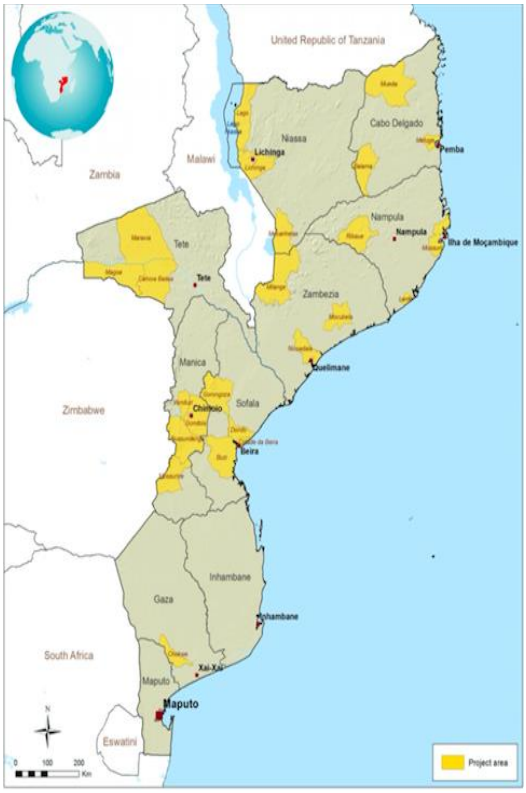
- The development of frameworks towards climate smart aquaculture, including:
  - Detailed agro-ecological map (supported by the findings of the ESMF and CRA developed during design) of suitable zones for aquaculture production that provides the basis for the identification of areas which could be considered by the project in (target) districts identified at design stage;
  - Specific guidelines for cage culture to be elaborated before activities to commence;
  - Specific guidelines for biosecurity
  - Protocols to mitigate risks and establish appropriate remedial actions
- Strengthening the policy / legislative framework, including:
  - Regulations on aquaculture production and aquaculture produce and aquaparks)
  - Update and improvement of the small-scale aquaculture policy, strategy and plan

117. The project will consider carrying out additional studies and initiatives to strengthen the policy / legislative / regulatory environment for aquaculture to meet needs identified over the project´s lifetime. Also, a relevant output for planning purposes, will be the elaboration of a detailed map (i.e. GIS) identifying the location, size and typology of aquaculture activities in Mozambique. This will be an evolving map which will serve IDEPA, both at central and provincial level, to immediately identify the various actors operating in the sector, the operation areas, the size of investments and detailed characteristics for each aquaculture activity. At the same time, the Project will support a KM database which will include all relevant studies produced under PRODAPE as well as similar projects both public and private. The database will possibly include a set of useful documentation to be used by IDEPA to simplify both public and private investments in the sector such as guidelines, environmental and social assessments, productivity studies etc.

c. PART THREE: IMPLEMENTATION OF PRODAPE TARGETING STRATEGY

118. This section of the PRODAPE PIM provides step- by- step information on how to implement the project´s targeting strategy as considered at project design. It starts by laying out the overall logic of the targeting strategy. Derails are then provided to understand rural community level beneficiaries, i.e. the largest number of PRODAPE beneficiaries, especially in respect to fish production activities. Understanding the diversity of this group and the different sub-groups that configure it is important to warrant the intended social inclusion. Finally, this part of the PIM presents information related to the procedures to be put in place to mobilize, select and organize beneficiaries at community level.

Figure 1: Map of Mozambique indicating PRODAPE target districts



A. Logic of PRODAPE´s Targeting Strategy

119. The implementation of PRODAPE´s targeting strategy will follow a two level logic: (i) selecting the geographic locations in which the project will be implemented over time (provinces, district and specific communities / sites within these); and (ii) selecting actual project beneficiaries.

120. **Geographic Targeting.** PRODAPE interventions towards the development of the aquaculture value chain are expected to be implemented in 23 districts. Figure 10 illustrates the location of target districts throughout the country. The choice of target districts and locations within these was defined by the sector following pre-defined technical criteria, namely: (i) favourable natural conditions for aquaculture in ponds; (ii) the existence of water bodies capable of providing sufficient water for aquaculture activity; (iii) the existence of potential markets; (iv) unfavourable socio-economic conditions among local populations (high poverty levels), food and nutrition insecurity; and (v) the existence of access roads, which could be subject to improvements to warrant access throughout the year. Excluding criteria were also included to ensure that inappropriate sites are ruled out, with prominence to areas with marine water and "protected areas".

121. The districts chosen in which to initiate activities chosen by the sector being: Lago, Baloma, Ribaue, Milange, Cahora Bassa, Sussundenga and Beira. Interventions in six of the seven initial districts (all except Beira, will include a fish production component). Expansion into other districts listed herein will occur once the aquaculture value chain in these districts is operational. Lessons drawn in these districts will inform expansion on the basis of local demand.

122. However, once the results of final assessments of damage caused by cyclones Idai and Kenneth to aquaculture infrastructure are available, target areas of intervention could be adjusted.

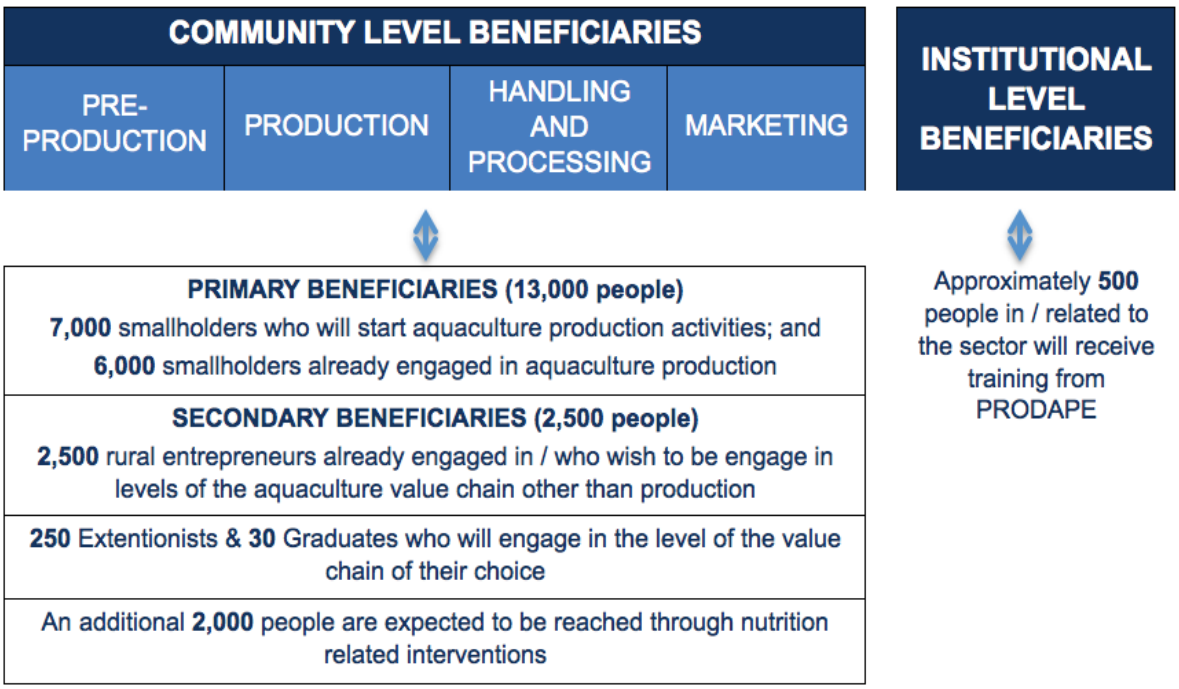
123. Also, in the event that communities affected by large scale economic activities, including extractive industry projects, whose livelihood strategies have largely deteriorated as a result of these projects, and in so far as such communities also comply with all technical criteria stipulated above, they will be given priority over other communities in target districts.

124. Implementation will be guided by a phased geographic implementation approach aiming to consolidate supply and demand factors towards effective and efficient production and market functionality of the aquaculture value chain in strategically identified locations of the country. The selection of districts to be targeted each year will be determined by IDEPA / PCU taking into consideration demand from target provinces.

125. **Direct Targeting of Beneficiaries.** The project will be reaching 88,900 beneficiaries along the entire value chain in target geographic locations (individuals directly targeted and their direct family units). Project support will span from the establishment of conditions for aquaculture production to marketing of cultured fish. The comprehensive approach adopted by PRODAPE aims to address supply and demand constraints towards value chain functionality, competitiveness and profitability with the engagement of smallholders and rural entrepreneurs. Staff from government institutions will also benefit from capacity building activities (for a summarised description of the different types of project beneficiaries refer to Figure 2 below).

126. Consistent with IFAD and GoM poverty alleviation objectives, smallholder aquaculture farmers constitute the largest group of PRODAPE beneficiaries (13,000). Of these, the majority will be receiving direct support to initiate fish production activities (7,000), 60% will do so with recourse to earthen ponds and 40% to cages introduced in suitable large water bodies. PRODAPE will also support players engaged / to be engaged at other levels of the aquaculture value chain (2,500). Young aquapreneurs will be chosen from all levels of the value chain. The PRODAPE will also target young graduates and extensionists wishing to become active commercial players in the aquaculture value chain (280 people). Finally, community members in which direct project beneficiaries live will also benefit from PCR promotion and nutrition education activities project (approximately 2,000 people).

Figure 2: Summary of PRODAPE beneficiaries at community and institutional level



B. Socially Inclusive Targeting

127. PRODAPE was designed under a comprehensive socially inclusive approach to enable people of different socio-economic characteristics, gender and age to have access to project opportunities. Understanding these specific groups and how to target them deserves specific attention and will be expanded on in the paragraphs that follow.

128. Understanding the diverse characteristics of beneficiaries to receive PRODAPE support to engage in aquaculture production is paramount for the project to be socially inclusive. Failing to do so will result in the project only targeting the "low hanging fruit", many of which do not actually require the level of support that has been contemplated for poor people.

129. Secondly, failing to recognise that community members have different socio-economic condition often results in projects claiming that they have lifted people out of poverty, when in fact many beneficiaries did not live under the poverty line. PRODAPE aims to be socially transformative, to effectively reach poor HHs out of poverty, to enable women and youth, who generally do not partake in equal terms in development processes or enjoy the benefits of development in terms equal to men, to progress. Table 11 below provides key characteristics of the different types of smallholder farmers identified in rural Mozambique during the PRODAPE design mission, according to their socio-economic condition. Understanding the differences between them is necessary to understand the logic driving the selection of beneficiaries and their characteristics.

Table 11: Characterization of rural smallholder HHs in Mozambique

Poorest			Wealthiest
Very poor subsistence smallholders	Smallholders battling to make ends meet	Entrepreneurial smallholders	Economically stable rural dwellers
-Reliance on agriculture (most less than 1 ha of land, other 1-2 ha), selling at times some of the harvest to meet immediate needs; provide labour to others -Income is insufficient to meet basic needs, including food for consumption -Regularly food insecure -Are headed by people aged >35 -High dependency ratios (large number of children) -Includes single headed HHs that have been severely affected by an internal shock, including HIV/AIDS -Include illiterate and low HH heads with very low education -Tend to not participate in community groups -This group constitutes a high proportion of subsistence rural HHs	-Involved in agriculture (<2 ha) or fisheries and other natural resource based livelihood activities -Some of these HHs are engaged in small scale fish farming -Generate income from more than one income stream including agriculture (<2 ha) / fisheries / aquaculture but cannot meet all basic needs -Are the group most affected by shocks -Can experience acute food insecurity -Generally headed by people >35 -HH size is smaller -Participation in traditional community savings and credit groups	-Engagement in agriculture for 6-10 years with largest size plots among smallholders (most <3 ha) -Can hire outside labour - Have 3+ livelihood activities, including aquaculture -Are generally headed by younger people (<35) -More favourable dependency rations -30-40% have secondary education -Generally capable of spreading and dealing with risks	-Have steady income streams and assets -Income derived both from farm and off-farm activities -Low dependency ratios -Most have secondary education

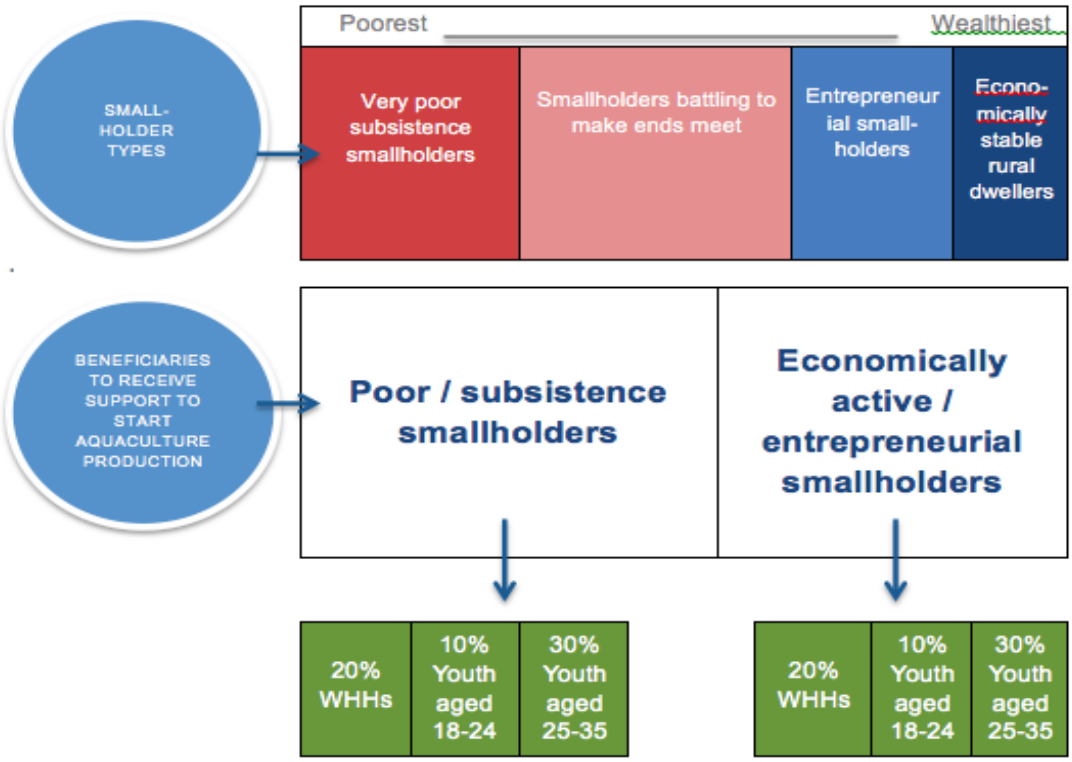
Source: developed by PRODAPE design mission member on the basis of broad bibliographic consultation and information obtained from interviewees

130. In further analysing these four (socio-economic) categories of smallholders from the perspective of their capacity to engage in aquaculture farming, it was possible to establish two distinct groups of smallholders to receive project support to engage in aquaculture production activities:

- **Poor subsistence smallholders** who would NOT be able to open an earthen pond by their own means, but who are interested and able to engage in fish production. By the same token, given that engagement in cultured fish with cages is more costly than in ponds because of the higher volume of fish one production unit as considered in PRODAPE design involves (approximately 2.5 times more in a cage than in an earthen pond), poor subsistence farmers have not been considered as PRODAPE beneficiaries for the establishment of cages in large water bodies.
- **Economically active / entrepreneurial smallholders**. These are people who are capable of opening earthen ponds to engage in aquaculture production but require additional support to ensure that their investments in pond construction actually results in actual production of fish for consumption and sale. Economically active / entrepreneurial smallholders will also be able to put together the 20% contribution required to access the REFP supported CIF for PRODAPE beneficiaries that will enable access to cages fish production.

131. Figure 8 below shows how the smallholder types identified based on socio-economic characteristics actually translate into PRODAPE beneficiary groups.

Figure 3: Primary beneficiaries to receive PRODAPE support to start aquaculture production activity vis-à-vis smallholder categories



132. Reaching out to poor / subsistence smallholders and economically active / entrepreneurial smallholders to engage in aquaculture farming will not be done arbitrarily, but rather following the targeting quotas that follow:

- 40% of all individuals supported to establish aquaculture production ponds will be poor / subsistence smallholders and 60% economically active / entrepreneurial smallholders.

- Also, within each of the two groups and also among all beneficiaries using cages for fish production:
    - 20% of beneficiaries will be women headed households (WHHs)[13];
    - 10% youth aged 18-24; and
    - 30% youth aged 25-35.

  The targeting quota thus comes to a total of 60%. Quotas were established especially for youth and WHHs as experience shows that without such measures these specific groups are likely to be left out or only marginally targeted in beneficiary selection processes. The remaining 40% of beneficiaries to be reached can be either married men **or** women over 35 years of age.

133. Table 13 provides details of the number of people that each group translates into for earthen ponds and aquaculture cage farming.

Table 13: Number of beneficiaries to be targeted with PRODAPE support to engage in fish production, by targeting quotas

Type of aquaculture producer	Total Target	Poor / subsistence smallholders	Economically active / entrepreneurial smallholders	Female Headed HHs 20%	Youth 18-24 10%	Youth 25-35 30%
Pond-based	4.200	1.680	2.520	840	420	1.260
Cage aquaculture	2.800	-	2.800	560	280	840
TOTAL	**7.000**	**1.680**	**5.320**	**1.400**	**700**	**2.100**

134. Further, to ensure that poor / subsistence smallholders and the economically active / entrepreneurial smallholders receive the support they need to establish a fish pond, irrespective of their age or gender, specific support packages were produced to cater to their specific socio-economic capacities, as illustrated in Table 14.

Table 14: Packages developed for HHs of different socio-economic conditions to enable engagement in aquaculture production in earthen ponds

	SUPPORT PACKAGE FOR 1ST POND		SUPPORT AVAILABLE BEYOND THE FIRST POND
	POOR / SUBSISTENCE SMALLHOLDERS	ECONOMICALLY ACTIVE / ENTREPRENEURIAL SMALLHOLDERS	
Characteristics	• Food insecure; only 1-2 meals a day • Provide labour to others and engage in agriculture / fisheries / aquaculture marginally • ATT: some of these HHs could be labour constrained. • Have fewer assets and worst living conditions than the rest of the community	• Mostly food secure 2-3 meals / day • Have some surplus which is channelled to markets • Have various income generating activities	Beneficiaries of any socio-economic background, who already have one aquaculture pond and wish to expand their activity.
Support available	PACKAGE INCLUDES: • Participation in PCR group required • Provision of an aquaculture pond; if no labour constraints are faced, beneficiary must participate actively in the digging of the pond as part of the team provided by a private sector service provider **AND BE PAID FOR IT** (*Exception: HH head is affected by illness, disability, is a women-headed HH or headed by person >50. These HHs will not provide labour*) • Fingerlings for first cycle • Feed for first cycle	PACKAGE INCLUDES: • Participation in PCR group highly recommended • Provision of tools for the construction of aquaculture ponds. • Fingerlings for first cycle • Feed for first cycle	**RESOURCES AVAILABLE INCLUDE:** • Technical assistance • Aquaculture feed • Fingerlings • Financial products specific for the aquaculture value chain

13 In the context of PRODAPE, WHHs are defined as HHs in which a woman is solely responsible for the sustenance of the HH. As such this could include unmarried women, widows and also women who are married but whose husbands do not live with them and do not provide any resources for sustaining the HH.

C. Implementation of the Targeting Strategy among new aquaculture farmers

135. Given the large number of beneficiaries to be targeted to engage in aquaculture production, it is important to stagger them across the operational lifetime of the project. Table 15 illustrates the expected number of individuals to be reached per year. It must be noted that PRODAPE will only start support to production activities in the second year of operations, as conditions for production need to be established in year one, at a minimum, fish and feed need to be available, and robust mobilization and participatory selection processes used to identify beneficiaries. All of this requires time. By the same token, no activities of this type are expected to be implemented in the last year of operations given that activities in year five should be focused on approaching closure and handover, not construction.

136. At design, it is expected that approximately 1,900 people will be supported to start aquaculture farming in year 2; 2,550 in year 3; and another 2,550 in year 4.

Table 15: Beneficiaries who will receive PRODAPE support to open earthen ponds or establish cages for aquaculture production, per year

Type of aquaculture producer	Total Target	Yr1	Yr2	Yr3	Yr4	Yr5
Pond-based	4.200	-	1.400	1.400	1.400	-
Cage aquaculture	2.800	-	500	1.150	1.150	-
TOTAL	**7.000**	-	1.900	2.550	2.550	-

137. **Identifying smallholder beneficiaries to receive PRODAPE support to establish aquaculture-farming units**. Poor / subsistence smallholders and economically active / entrepreneurial smallholders will be selected through previously established and agreed criteria. The criteria will enable project implementers and community members alike, to "recognize" if a given beneficiary falls in one category or the other or if he / she is not eligible. Correctly identifying beneficiaries in line with PRODAPE criteria is especially important to avoid any risk of people categorizing themselves or being categorised as poorer to access higher project support packages offered by PRODAPE. The criteria presented in Table 16 should be considered after consultation with a few potential communities upon project launch.

Table 16: Criteria for identification of poor / subsistence smallholders and economically active / entrepreneurial smallholders

Poor / subsistence smallholders	Economically active / entrepreneurial smallholders
- Regularly food insecure - Not all children are enrolled at school even if they could - Livelihood activities are not stable and can include a range of activities including providing labour to others to meet minimal food needs on a daily basis - Has access to land for aquaculture farming - Aquaculture constitutes an opportunity to engage in a stable and profitable farming activity and move away from reliance on livelihood activities that rely on the provision of labour to	- Can meet basic HH food consumption needs, but not necessarily all other HH needs - All children in primary school age are enrolled in schools (up to the grade available to the community) - Livelihood activities are relatively stable – even if not very profitable, which can include agricultural production. In the case of the latter, the beneficiary has surplus which is regularly sold to markets / intermediaries / others - Has access to land for aquaculture farming

others / high levels of vulnerability - Commitment to dedicate the necessary effort for success - Resident in the community for at least five years, with no plans to leave[14] - Applicant age is between 18 and 55	- Aquaculture production constitutes a means to diversify livelihood activities and improve livelihood outcomes - Commitment to dedicate the necessary effort for success - Resident in the community for at least five years, with no plans to leave - Applicant age is between 18 and 55

138. **Progressive outreach.** The number of beneficiaries / HHs to be targeted in each district should be relatively consistent, so as to build a critical mass of producers to channel fish to markets in each location. PRODAPE recognizes that this could differ slightly between districts due to the characteristics of each location. For planning purposes, it is expected that between 250 – 400 beneficiaries be reached in each district.

139. Outreach to beneficiaries could be done in two ways either by increasing the number of communities within a given district over the project´s lifetime or expanding the number of beneficiaries in each community targeted over time. The choice over how to approach this should be made at local level according to what works best in each district. Table 17 provides an example of how the progressive beneficiary outreach could be implemented. Final decisions in this respect should be made at the start of the project and confirmed on a yearly basis.

Table 17: Potential outreach approach for PRODAPE beneficiaries at district level

Stages of Geographic Expansion	District N. x/24	N. Beneficiaries per District	Yr1	Yr2	Yr3	Yr4	Yr5
BATCH 1 (Start YR2)	1	400	0	133	133	134	0
	2	400	0	133	133	134	0
	3	250	0	83	83	84	0
	4	250	0	83	83	84	0
	5	250	0	83	83	84	0
	6	250	0	83	83	84	0
	7	250	0	83	83	84	0
	8	250	0	83	83	84	0
	Subtotal Batch 1	2300	0	764	764	772	0
BATCH 2 (Start YR3)	9	400	0	0	200	200	0
	10	400	0	0	200	200	0
	11	260	0	0	130	130	0
	12	260	0	0	130	130	0
	13	260	0	0	130	130	0
	14	260	0	0	130	130	0
	15	260	0	0	130	130	0
	16	250	0	0	125	125	0
	Subtotal Batch 2	2350	0	0	1175	1175	0
BATCH 3 (Start YR4)	17	400	0	0	0	200	200
	18	400	0	0	0	200	200
	19	260	0	0	0	130	130
	20	260	0	0	0	130	130
	21	260	0	0	0	130	130
	22	260	0	0	0	130	130
	23	260	0	0	0	130	130
	24	250	0	0	0	125	125
	Subtotal Batch 3	2350	0	0	0	1175	1175
TOTAL		7.000	-	764	1.939	3.122	1.175

[14] The exception to this criteria is having been relocated through a resettlement scheme or relocation due to family reasons. Seasonal workers or people who are not permanent residents of the community cannot apply for project support for engagement in aquaculture farming.

140. **Determining the number of beneficiaries at community level.** At community level PRODAPE targeting efforts will be operationalized as follows:

141. The number of beneficiaries to be supported in each community will be determined at district level on the basis of the total number of beneficiaries to be reached in the district, the number of HHs in the community interested in participating in the project and stipulated technical criteria already referred to in this document.

142. Table 18 provides easy to follow formulas to determine the number of people to be chosen in each community from each socio-economic category. It also indicates the age and gender that these beneficiaries need to align with for the PRODAPE targeting approach to be effectively implemented.

Table 18: Number of new fish farmers to be reached by group, gender and age per community

POOR / SUBSISTANCE SMALLHOLDERS Total beneficiaries in community *40% = **a**			**ECONOMICALLY ACTIVE / ENTREPRENEURIAL SMALLHOLDERS** Total beneficiaries in community *60% = **b**			
WHHs	**Youth aged 18-24**	**Youth aged 25-25**	**WHHs**	**Youth aged 18-24**	**Youth aged 25-25**	**TOTAL**
a*20%	**a***10%	**a***30%	**b***20%	**b***10%	**b***30%	

143. No quotas as such have been established for people with disabilities; rather than establishing a rigid number or proportion, PRODAPE will ensure that people with disabilities who would have the necessary cognitive and physical capacity to engage in activities supported by the project are considered and given priority in the beneficiary selection process.

D. Community mobilization and beneficiary selection.

144. The information presented up to now constitutes the basis to implement the targeting strategy. This section presents information in relation to community mobilization and the process of implementing actually selecting beneficiary, highlighting the important role played by community members in the process.

145. Community mobilization. A selected team comprised of PRODAPE representatives authorised to work in each specific district will be in charge of the initial community mobilization activities. Project related mobilization activities will be implemented in close coordination with local and sector authorities, as well as the PCU. The mobilization phase will start with community meetings with leaders and will be followed by large community meetings, and the establishment of "PRODAPE Community Committee", as described below:

- *Meetings with community leaders.* Information is disseminated among community structures and other influential people within the community, with the objective getting buy-in is for the project, its strategies and inclusive and participatory management approaches (this will include agreeing on the process to be followed to establish a "PRODAPE Community Committee";
- *Large community meetings.* Community meetings will be held in target

communities to disseminate information about:

- Project objectives, targets, strategies and activities
- Project socially inclusive targeting strategy
- Number of people to be targeted in the community
- Details related to sub-groups to be targeted and associated targeting quotas
- Application process and selection criteria
- Participatory management approach
- PRODAPE grievance mechanism[15]
- The establishment of a Community Committee for PRODAPE with wide social representation
- Identifying mechanisms to ensure that project related information reaches people who do not usually participate in community meetings (likely to include people who are ill, older people, people with disabilities and the poorest members of the community)
- Clarify any questions arising in relation to the project

146. Establishment of PRODAPE Community Committees**.** PRODAPE Community Committees will be established in each community in which ponds are built or cage farming promoted. The Committee will be established at the beginning of the project under the facilitation of project staff, ensuring that those elected represent the interests of all social groups and that people are selected truly represent their peers. The Committee will host an uneven number of members (to facilitate decision-making), between 9 to 15 people, of which half should be men and half women and roughly 40% should be aged 18-35. Box 1 provides some guidance on how the group could be structured.

147. The Community Committee will be the point of contact between the project and the community and will represent community interests through the project´s participatory management approach. Concretely, the Committee will: receive individual applications for project support, assess and select applications, announce results to the wider community, participate in regular PRODAPE planning and reporting meetings organized at local level. Additional mandates can be established on a case by case basis.

148. The Committee will receive special guidance and any required clarifications in relation to the project´s inclusive targeting approach, will be sensitized on the benefits of a socially inclusive project and the need for proportionate representation and participation of all social groups in the Committee. Committee members will be selected with the frequency deemed convenient by the group.

[15] In addition to existing grievance mechanisms, which may be in place in the community, it is beneficial for a formal Project grievance mechanism to be in place, functioning and known by all. Generally, this would entail presenting a concern / grievance to the PRODAPE Community Committee or one of its representatives under clauses of confidentiality. Should this mechanism prove ineffective for the person submitting the grievance, a second level should be involved, which could be a contact person at district, provincial or national level. The PCU should constitute the third level of recourse. All communities targeted will be made aware of the existence and functioning of this grievance mechanism.

149. Submission of applications from community members and selection of actual beneficiaries. Following mobilization, community members of all social groups will be asked to submit their applications for participation in the project in line with agreed eligibility criteria, within the specified timeframe. Applications will be submitted to the PRODAPE Community Committee.

150. Once the application period has closed, an after an initial screening of all applications received by the PRODAPE Community Committee, a list of all applications processed will be produced, classifying the applications in line with established groups (a. poor / subsistence smallholders; b. economically active / entrepreneurial smallholders; and c. not eligible applications). The list will be shared in a community meeting to establish if all applications were indeed duly considered and any omissions or misclassifications addressed.

151. Following, the PRODAPE Community Committee will attribute points to each application in line with the degree of compliance with established criteria and proceed with actual beneficiary selection.

152. The participation of trusted community leaders and representatives of all social groups in this process is expected to be the primary pillar for transparency. The establishment and sensitization of a formal "Grievance Mechanism" will enable applicants to voice any concerns related to the way in which the process is conducted.

153. The list of selected beneficiaries will be announced publicly and posted in visible locations within the community. Once announced, beneficiaries will be asked to constitute groups of approximately 15-25 people, in line with local preferences (i.e. mixed groups, youth specific groups, gender-segregated groups) and model to be used locally (cluster or aquaparks).

154. The same cycle will be repeated in the event that the progressive beneficiary outreach mechanism of progressive beneficiary outreach chosen to be of incremental support to beneficiaries in the same community (as opposed to targeting all beneficiaries in a given village and then moving to the next one.

155. Screening and approval of potential private sector beneficiaries. Private sector players participating as PRODAPE beneficiaries will be dealt with in completely separate fashion and through different processes that will be defined in the course of project implementation. What is important to highlight here is that private sector players applying for PRODAPE support will be subject to an initial project screening process and once pre-selected in line with pre-established criteria, undergo a stringent due diligence process which for final project approval. The due diligence process will involve the assessment of issues such as professional trajectory and reputation; institutional capacity and commitment to reach stipulated objectives; financial trajectory, capacity and integrity, among other issues. PRODAPE reserves the right to refuse any private sector players suspected of or actually found to be engaged in suspicious, unethical or illegal practices or whose commitment to abide to pre-determined technical, environmental and social standards cannot be assured.

d. PART FOUR: PRODAPE SUPPORTIVE FUNCTIONS

A. Planning, Monitoring & Evaluation, Learning and Knowledge Management

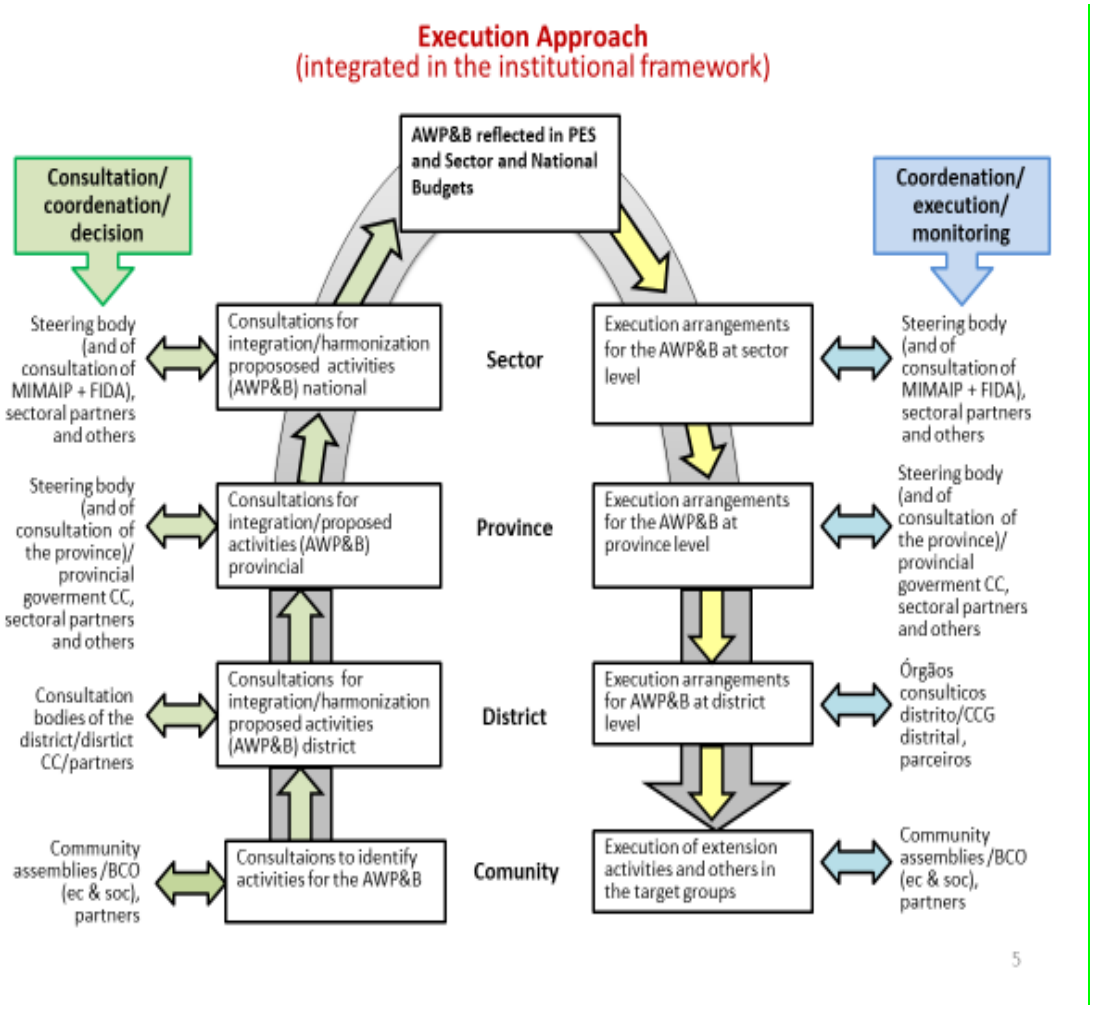
156. The PRODAPE integrates participatory M&E processes, learning and KM systems and the development and use of communication plans in accordance with government frameworks and IFAD guidelines. Through these, PRODAPE will seek to steer project implementation; support economic decisions; contribute to policy development; share knowledge and scale up good practices; and implement communication strategy / plans that cater to the needs of project audiences.

157. Planning and production of AWPBs**.** Planning is necessary for good management. The PRODAPE AWPBs are the outcome of the planning process to be carried out by the project on a yearly basis. Through annual work planning, the project decides what activities will be carried out over a period of 12 months, attribute specific responsibilities for implementation, allocate resources and determine the timeframes within which they will be implemented. The AWPB is therefore a planning and management tool that specifies what should be done during a project year, how they should be implemented and costs involved. It is also an essential tool to guide and coordinate interventions between various institutions and stakeholders. The AWPBs are also useful for monitoring and evaluation, as well as reporting purposes.

141. The PRODAPE AWPBs will be produced through participatory processes that start at the level of target communities, moving up to the district level, then provincial level and finally to national level. In preparing the AWPB the Project will ensure that enough time is planned for consultation of relevant stakeholders at all levels**.**

142. A draft consolidated AWPB will be prepared by the PCU based on district and provincial level plans for each fiscal year. AWPBs will be prepared by each DPMAIP, Focal Point and service providers. In preparing AWPBs, narrative descriptions should be concise and precise; spreadsheets, tables and figures should be used to illustrate targets, achievements, costs and financing. In producing the overall AWPB each year, the PRODAPE PCU will ensure coordination between government agencies, IFAD funded projects, and other externally financed projects in the project´s target area.

Figure 4: Process for the production PRODAPE AWPBs and reports



143. In preparing the AWPB, the PRODAPE PCU should:

- Be aware of the budget available to identify and prioritize critical investments;
- Anticipate the following project fiscal year's budget to avoid a shortage of funds for the succeeding year;
- Use the Project Logical Framework a key reference, to create clear linkages between planned activities, proposed budgets, expected outputs, outcomes and impacts (annual targets vs. achievements);
- Consider other PRODAPE resource documents, including the detailed project cost tables, financing rules - as defined in the financing agreement, together with annual progress and outcome reports;
- Include a detailed description of planned activities and an updated procurement plan, which clearly identifies the respective funding sources and categories.

144. An AWPB primarily consists of the following chapters, which first update the past achievements in the preceding year, then address the projections for the upcoming fiscal year:

- Introduction, background and summary with projections for the upcoming fiscal year;
- Summarized project description, including implementation arrangements;

- Summary of physical and financial achievements / progress (not applicable for the AWPB to be produced for the first year of project operations);
- Assessment of the degree of implementation of the precedent AWPB, indicating proposed implementation focus for the upcoming year;
- Outline of the project´s strategic direction for the year, activities planned by component and resources required;
- Implementation schedule; activities should be presented in a logical manner;
- Implementation support needs, and summarised information on training and technical assistance schedules;
- Budget and financing plan;
- Annual procurement plan;
- Summarised information on expected benefits and project outreach for the year;
- M&E plan.

145. Overall, the project planning cycle and calendar will be led by the PCU hosted in the MIMAIP in collaboration with the IDEPA as the Lead Implementing Agency in coordination with relevant DPMAIPs. The planning cycle will follow the GoM´s planning and budgeting cycle. Table 3 provides indicative information on the planning calendar to be followed to ensure that AWPBs can be approved both the GoM and IFAD within expected timeframes.

Table 19: Schedule to guide PRODAPE planning towards AWPB production and approval

No	Planning Activity	Participation / Responsibility	Completion Date	Remarks
1	Needs assessment and selection of activities with reference to preceding AWPB, overall project plans and expected outputs / outcomes, progress made and trends observed at the level of implementing agencies	Beneficiaries and participating agencies	**1st to 15th May** (of current year to plan for following year)	Allows for proper consultation with target communities, relevant institutions at district, provincial and national level.
2	Production of broad planning based on activities identified and cost estimates	Participating agencies and PCU	**16 to 30th May**	Provides time for the plans to be aggregated and presented in the required format. (**District/SDAEs + DPMAIP/FP, DEPA/PCU**).
3	Preparation and drafting of AWPB by implementing institutions and agencies	Participating agencies and PCU	**1st to 7th June**	Provides time for the plans to be produced and presented in the required format (**District/SDAEs + DPMAIP/FP, IDEPA/PCU**).

No	Planning Activity	Participation / Responsibility	Completion Date	Remarks
4	Consolidation of PRODAPE AWPB	PCU – PC, M&E Specialist / IDEPA, Department for Studies, Planning and Infrastructure, (DEPI)	**8th to 21st June**	During this two-week period, the PCU consolidates the AWPB.
5	Presentation of consolidated PRODAPE AWPB in the Annual Review Workshop	PCU / IDEPA / DEPI	**22nd to 30th June**	All implementing agencies participate in this yearly planning meeting.
6	Submission of PRODAPE AWPB through IDEPA / DEPI to National Directorate of Planning and Budget, DNPO (at MEF) for inclusion into National Budget	IDEPA/DEPI	**1st to 31st July**	The MEF / DNPO receives and examines the proposed AWPB, raises queries or needs for clarification from IDEPA / PCU as required. The PRODAPE PC provides immediate feedback when solicited.
7	MEF submits to the Council of Ministers	MEF	**Early September**	The MEF ensures that all Departments have submitted their budget through recommended procedures.
8	The Council of Ministers submits budgets to the Parliament	MEF	**Early October**	The Council of Ministers reviews budgetary allocations and makes formal recommendations to be tabled in Parliament.
9	The PCU submits the first draft of the AWPB to IFAD for comments and / or provisional '*No Objection'*	PRODAPE PCU	**by 1st week of November**	The drafts submitted may require changes in anticipation of Parliamentary approval. IFAD review, comments and *´No Objection´* should be expected by the end of November.
10	Preparation of final AWPB by PCU incorporating IFAD comments (if any)	PRODAPE PCU	**December**	
11	The GoM National Budget is deliberated in Parliament	National Assembly	**by December**	The National Assembly passes GoM budget, and by inference the IDEPA PRODAPE Budget is

No	Planning Activity	Participation / Responsibility	Completion Date	Remarks
				approved
12	The revised budget ceiling for IDEPA / PRODAPE is indicated	MIMAIP	**January** (of the year that the AWPB corresponds to**)**	The Council of Ministers re-defines budgetary allocations to Ministries, Departments and Programmes (at varying levels) but reflects the overall Parliamentary ceiling.

146. The AWPB is disaggregated into quarters for project monitoring purposes. If required, the PCU may propose adjustments in the AWPB during the project year, which will become effective upon approval by the NPSC and IFAD. Figure 1 outlines the general process for the production of AWPBs.

147. AWPB Deadline for Submission**.** The PCU will submit a draft consolidated AWPB to IFAD for comments and approval by November of each year. If no further requests are presented by IFAD on the draft AWPB within 30 days after receipt, the AWPB shall be deemed approved. Once approved the PCU will submit the AWPB to the Technical Council at MIMAIP for its final approval or endorsement.

148. As stated above, annual stakeholder review and planning workshops will be organized at different levels every year to assess progress and support the AWPB preparation process. This process shall however not be carried out in the first year of operations as the first AWPB and procurement plan for the first 18 months of operations have been prepared by the design mission team as a part of PDR.

B. Monitoring and Evaluation

149. The key functions to be assumed by PRODAPE in relation to M&E will be to support project management in ensuring critical performance-oriented reflection, integrating lessons learnt to maximize impact and presenting results for accountability purposes[16]. The main purpose of M&E activities is to keep track of day-to-day progress to identify shortcomings promptly in relation to the delivery of inputs, implementation of activities and the achievement of outputs, so as to adopt corrective measures on a timely manner. As such, M&E will be an integral part of PRODAPE implementation responsibilities under the PCU, specifically by the M&E Specialist. However, data / information will be fed into by implementers at all levels. The PRODAPE M&E Framework will function on the basis of systematically collecting, analysing and reporting information at three levels:

- Outputs. PRODAPE will measure outputs based on the measurement of output-level indicators. Data will be obtained from the project´s activity monitoring system, GoM records and/or audits. The output level monitoring will look at physical and financial progress as laid out in the AWPB, as well as component and activity-based technical action plans formulated by the PCU.
- Outcomes. Outcome monitoring will measure the immediate changes resulting from PRODAPE interventions. Data for outcome monitoring will be collected through annual impact / outcome surveys starting from the third year of

[16] The IFAD Guide for Project M&E is to be referred to while developing the Project M&E Framework: http://www.ifad.org/evaluation/guide/index.htm.

operations. These annual surveys may also be carried out for specific topics, as required by the project. Further, PRODAPE´s M&E Framework will explore the use of innovative models of data collection and monitoring of HH-level satisfaction and participation for outcome indicators for (technical) Components 1 and 2. These may include mobile phone and tablet based monitoring exercises.

- Impacts. Measuring impacts entails ascertaining PRODAPE contributions in the achievement of the overall project goal and project development objectives. This involves measuring changes in the beneficiary livelihood activities related to activities implemented by the project. Impact evaluations also attempt to reveal the efficiency, effectiveness, relevance, sustainability and targeting performance of project activities, and consider replicability, identify lessons learned and knowledge up-take over the project´s lifetime. Such evaluations will focus on PRODAPE outcome and impact level indicators. Data will be collected through periodic surveys (three times for the Project: namely at beginning / baseline, at mid-term and completion).

150. M&E Framework and Strategy. The alignment of output, outcome and impact level indicators to PRODAPE components, subcomponents and activities will serve as the basis for the project´s comprehensive M&E Framework and Strategy guiding the project´s monitoring, evaluation and reporting system. This system will be in line with GoM requirements, IFAD´s Country Strategic Opportunity Programme (COSOP), IFAD Operational Results Management System (ORMS-CIs) and PRODAPE´s Logical Framework. The PRODAPE M&E Framework and Strategy will include:

- *The Logical Framework*. The project M&E framework will be designed to measure project indicators specified in the Logical Framework; to track and verify the levels of achievement of project outputs, associated outcomes, and the success in achieving project objectives and development goal. This will be possible given the causal linkages intrinsic to the project´s hierarchy of objectives and results. The agreed output / outcome / impact measures will constitute the basis for reporting by service providers, DPMAIP / FP and the PRODAPE PCU to MIMAIP´s Technical Council and IFAD.

- *Disaggregated HH data and indicators***.** Special attention will be given to the project´s performance in terms of targeting effectiveness. Data will be collected at HH level will be disaggregated by socio-economic strata / beneficiary group, vulnerability factors, gender and age of the HH head. Other parameters will be considered, as required.

- *ORMS.* As per IFAD's guidelines, the PRODAPE PCU will prepare and report on the ORMS-CIs at output, outcome and impact levels. Lower level indicators correspond to project activities and respective outputs (included in the logical framework); which measure financial and physical progress in quantitative terms. After mid-term, the PRODAPE will start reporting on what the "old IFAD RIMS" called "second level indicators" corresponding to project outcomes, which assess the effectiveness and sustainability of project interventions in a qualitative manner. Various tools, including case studies, interviews / questionnaires, focus group discussions, and other data collection methods can be used to measure and report on PRODAPE outcome indicators.

- *M&E Matrix / Plan***.** A Project M&E Matrix / Plan will be used to elicit PRODAPE data and information needs against each indicator, potential data sources that can be used, frequency and methods for data collection, monitoring and reporting responsibilities, as well as plans associated with the use of information collected and plans on how to disseminate data / information

collected. The M&E Matrix / Plan will also incorporate the project´s baseline data.

- *Participatory M&E.* To a large extent, the PRODAPE M&E Framework will be participatory, involving target communities in the process of monitoring project activities. Participatory M&E process enable projects to capture project benefits, assess participation levels in project related activities, capture opinions on the timeliness and quality of project implementation and associated project processes, as well as identify potential omissions, challenges, or additional needs to be considered by the project.
- *Baseline Survey.* The Baseline Survey will be carried out at the start of the project in line with IFAD's reporting requirements. The Baseline Survey will use the standard RIMS questionnaire form to collect key beneficiary data including HH assets and baseline data to establish the prevalence of child malnutrition in participating HHs, with a few added questions to reflect project-specific impact data particularly concerning HH vulnerability. Participating HHs will be randomly selected from the project area.

The data will be integrated and presented also in the Project Geographic Information System (GIS) / Management Information System (MIS). The baseline survey will add a third layer to RIMS surveys in order to include HHs outside the project area, which noticeably would not be influenced by PRODAPE activities, but could be influenced by other factors. The baseline survey should be completed within 3 months with an estimated cost of USD 50,000. The survey may be carried out by a service provider.

- *Mid-Term & Project Completion Surveys.* Project impacts will be measured against baseline data through mid-term and project completion surveys, which will be carried out just before the Mid Term Review (MTR) and towards the end of the project, timed so that that the respective results are available for the MTR and Project Completion Review (PCR). These follow-on surveys will be carried out in the same manner as the Baseline Survey. Ideally efforts are made to visit the same HHs so that developments in the course of project participation can be measured in a longitudinal manner; efforts would be invested to ensure that HH members who have left the project area as a result of finding employment elsewhere will be interviewed as well.
- *The Mid Term Review* constitutes a 'forward looking review' to assess target group perceptions of project impacts and benefits, especially poor and vulnerable HHs as well as the adequacy of targeting mechanisms and project strategies. The Joint Review will re-visit the project logic, objectives, assumptions and risks, and suggest needed adjustments to project strategies, approaches and methods. Institutional arrangements, including M&E, learning and KM and partnership will also object of such reviews.
- *The Project Completion Review* will be carried out in Project Year 6 by an independent team and will focus on documenting the achievements of outputs and outcomes per component, and ultimately, progression towards the realisation of the Project Goal. Criteria such as relevance, effectiveness, efficiency and sustainability of interventions will be reviewed, building on findings of the Joint Reviews / Supervision Missions. Scale-up, replicability and sustainability of development results will also be analysed. The completion review will distil lessons to guide future sector interventions and other IFAD projects.

C. Progress Reporting

154. Regular and periodic reports will be generated by PCU, DPMAIPs / FP and service providers, to document achievements, challenges, and to habitually review the goal, objectives, status of the project at various stages.

155. Monthly, Quarterly, Semi-Annual and Annual Progress Reporting. Progress reports provide a platform for analysing cumulative results/outputs achieved with respect to outcome and the overall goal and will be used to guide the AWPB process. The PCU, together with relevant DPMAIPs / focal point, will be responsible for the preparation of progress reports for submission to the GoM and IFAD. The PCU and DPMAIPs / focal point will provide monthly, quarterly, semi-annual, yearly and other reports, as per the guidelines and specified formats of the GoM. In addition, the PRODAPE will report progress on the sixth-month of every year and consolidated annual progress reports, consistent with IFAD's project performance reporting system. In general progress reports will include the following information:

a) Summarised information on progress made in the implementation of the AWPB with achievements against annual targets;

b) Summarised information on cumulative achievements against appraisal report targets together with summary information from any of related impact studies, where applicable;

c) Detailed progress on implementation by component;

d) An analysis of strength and weaknesses, opportunities and threats;

e) A summary of expenditures relative to PRODAPE disbursement targets;

f) A summary of successful approaches used and lessons learned;

g) Information on constraints encountered during the reporting period and remedial actions taken;

h) Information in relation to strategic areas of intervention for the next planning period; and

i) Way forward (this is the conclusion of the report based on the financial and physical progress, the analysis of Project performance, and progress towards achieving Project outcomes and impacts).Additional guidelines on AWPB and Progress Report writing are attached as Annex 10 to this PIM.

156. **Roles & Responsibilities.** The overall responsibility for M&E and Reporting will be vested in the PRODAPE´s M&E Specialist in the PCU, who work closely with the FP in the respective DPMAIPs. However, it is important to note that all staff will be involved in monitoring project progress in their own respective areas of expertise and responsibility. The M&E Framework and Strategy will further define M&E roles and reporting responsibilities as well as timelines for reporting for each agency involved in Project implementation at all levels, in line with project reporting requirements.

D. Learning & Knowledge Management

157. Knowledge management is a valuable tool for project management to drive continued assessment of project implementation, the identification of innovation and lessons learnt for improved performance and timely achievement of targets. Through M&E activities, large amounts of quantitative and qualitative data / information are collected and analysed. However, KM is only complete when the best practices and lessons learnt are integrated into management and associated project implementation processes.

158. Thus, Learning and KM will be implemented as an integral part of the PRODAPE together with IDEPA, in recognition of the fact that the project will be identifying, testing, demonstrating and disseminating approaches with innovative technologies. The project will support a major learning process to overcome some of the conceptual barriers and raise awareness about the models piloted. In this context, the PRODAPE M&E system will constitute the foundation of the project´s KM and learning system and will be an essential instrument to capture and store information related to the indicators detailed in the results framework. Case studies, stakeholder interviews and surveys will be used to deepen understanding of the factors contributing to success and failure and to enable full documentation of impacts at beneficiary level.

159. Learning and knowledge sharing within PRODAPE and MIMAIP. A vital factor for the success of PRODAPE´s KM strategy is the existence of a knowledge sharing environment within the PCU, and more broadly within IDEPA, DPMAIPs and MIMAIP as a whole, as well as among other implementing partners. In this regard, efforts will be made for key staff to understand the role played by KM in project success. The PCU together with IDEPA will identify *KM champions* interested in leading efforts in this respect and act as FPs for KM issues.

160. The establishment of effective communication at all levels is critical raise awareness, promote actual learning and the adoption of new approaches and practices. Communication facilitates multi-stakeholder engagement and encourages participation of target groups. Communication with the wider public, including the media, will facilitate sharing project experience, emerging lessons and raise awareness about the importance attracting investment into the rural economy, encourage entrepreneurship, and encourage young people that opportunities do exist in rural areas.

161. The PRODAPE communication plan will be integrated in PRODAPE´s M&E system. It will facilitate effective and efficient communications with the various audiences involved in the project. Both the M&E and KM and Communication Specialists will prepare their respective action plans for KM and communication. The plans will integrate activities from IFAD´s Good Practice and Innovation Tracking System, learning routes, together with documentation, dissemination and learning activities. The action plans will be integrated in the AWPB and will be updated every year. During the preparatory phase the M&E and KM Specialists will ensure that the communication activities effectively reach women, youth and poorer HHs; these groups deserve special attention, as they are often not reached through normal communication channels used in communities due to having lesser participation in community affairs.

162. For effective learning and KM, the project will differentiate between two approaches:

- Action-based learning and KM that takes place within and during the project to enhance project performance by identifying immediate responses and corrective actions to pressing problems;
- Learning and KM for informed GoM and IFAD decision-making and policy dialogue.

163. Key elements of the Project's KM and learning strategy include the following:

- Establishment of the M&E System to provide information and analysis on progress achieved against the project´s Logical framework, ORMS, and AWPB;
- Routine planning, review and M&E workshops at various levels to effectively capture and consolidate challenges faced, solutions encountered and lessons learned;
- Participatory M&E involving beneficiary groups and representatives;

- Yearly targeted outcome assessment surveys and associated evaluation workshops;
- Regular production and communication of knowledge products displaying good aquaculture practices on television, radio, internet, and others, as relevant;
- PCU sharing experiences and lessons learnt to promote aquaculture publicly, using online exchange platforms (including IFAD Country Offices), as relevant.

E. Financial Management and Audit

164. This section of the PIM provides detailed information on the systems, procedures and steps to be used by PRODAPE in relation to financial management, audit and procurement. Information in this section aligns to GoM and IFAD policies, practices and standards and should be followed at all times by the project management team.

165. Financial Management. The financial management section focuses on issues related to the flow of PRODAPE funds, policies and procedures and the financial management cycle. The project will follow GoM accounting policies and procedures prescribed in the State Financial Administration Manual. This section outlines additional project–specific financial procedures and practices to be followed by the PCU during implementation and include all required information in relation to budgeting, accounting, funds flow management, internal controls, financial reporting, project audits and supervision. The financial management aspects of the project will further be guided by the following key documents: (i) PRODAPE Financing Agreement; (ii) IFAD General Conditions; (iii) Letter to the Recipient; (iv) IFAD Guidelines on Project Audits; (v) Disbursement Handbook; and (ix) the PRODAPE design report. Therefore, it is fundamental that project staff, especially the Project Coordinator (PC) and the Finance Manager master these documents in the early stages of project implementation.

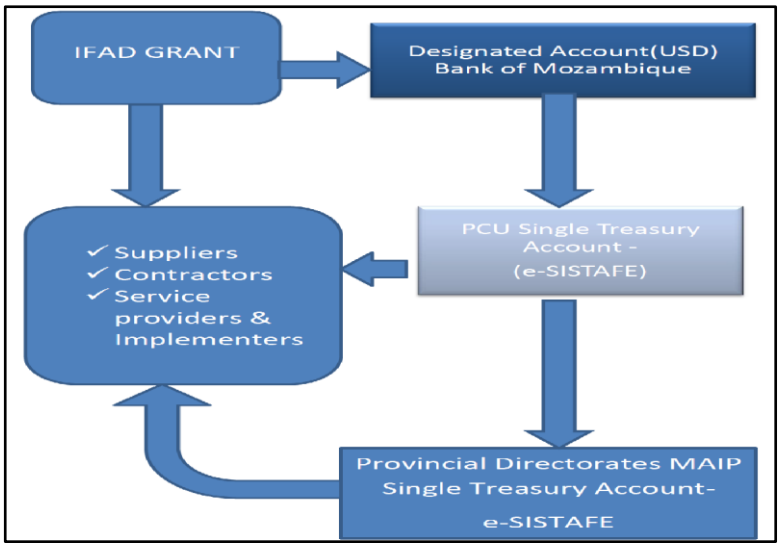
- FLOW OF FUNDS

166. *Designated and operating accounts.* IFAD funds will be channelled into a USD designated account maintained at the BoM. The funds will then be channelled into the Single Treasury Account (CUT) managed by the MoF via a transit USD account from where the funds are converted into MZN at the ruling exchange rate on date of conversion. The funds in the CUT are managed through coded designated ledger accounts ensuring traceability of project funds. Each target DPMAIP and implementing agency shall maintain a separate account in CUT to receive the project funds from the PCU.

167. The PCU will have the responsibility of coordinating and ensuring the smooth flow of funds so that funds are available as and when necessary to meet PRODAPE financial obligations towards suppliers, service providers and contractors. This will involve: (i) establishing the liquidity requirements of each implementing agency based on the approved AWPB; (ii) preparing and dispatching bank transfer instructions to the BoM to warrant sufficient liquidity in the operational account at all times; (iii) following up on any funds advanced to implementing agencies and ensuring the timely justification thereof; (iv) maintaining the supporting documentation underlying expenditures incurred by the project in order to prepare withdrawal applications for submission to IFAD; and (v) ensuring that the IFAD authorized allocation is fully accounted for at all times through the preparation of periodic reconciliation statements for designated accounts. All movements from the designated account will require countersignature by the authorized representative of the GoM.

168. The GoM will be implementing an integrated procurement module in e-SISTAFE in fiscal year 2019 to enhance the country's procurement and budgetary control systems. The implication is that all committed funds will not be available in the CUT. Long-term procurements and delays in completion of a procurement process may hold up funds in the CUT. As expenses can only be included in withdrawal applications when payment is affected, the project could experience liquidity challenges. To avert this, the authorised allocation to the designated account will be set and reviewed regularly to ensure its adequacy. Further, the Finance Manager at the PCU shall ensure timely submission of withdrawal applications to IFAD either once after 90 days have elapsed from the submission of the previous withdrawal application or when the amount withdrawn from the designated account is equal to about 20-30% of the advance, even if 90 days have not elapsed. Further disbursement details and procedures are to be included in the Letter to the Borrower (LTB). The threshold of direct payments from IFAD will be limited only to large payments over the equivalent of USD 100,000. Figure 5 illustrates PRODAPE fund flow.

Figure 5: PRODAPE fund flow chart



169. Signatories to PRODAPE bank accounts will be as follows:

Designated account	The designated account will be operated fully by the staff of MoF as the official recipient. For any transfers from the designated account to the operations account will require that PRODAPE's PCU write to the MoF requesting such a transfer. On receipt of the request the office of the MoF will process the transfer request.
Operational accounts	For a payment to go through it must have two signatures; one from category A and another from Category, as follows: Category A signatures: IDEPA Director & IDEPA Deputy Director Category B signatures: PRODAPE Accountant & PRODAPE Coordinator
Signatories	• IDEPA Director • IDEPA Deputy Director • PRODAPE Accountant • PRODAPE Coordinator

170. It must be noted that IFAD Supervision Missions will always be interested in the following:

a) Timeliness of funds disbursed by different sources (and co-financiers funding if applicable);

b) Timeliness of counterpart funds disbursed;

c) Efficiency of the funding channels; timeliness and traceability of funds flows;

d) Designated account and operating account management; disbursements;

- Adequacy of the authorized allocation to ensure a smooth flow of funds;
- Appropriateness of disbursement methods used;
- Adequacy of documentary support for Statement of Expenditure (SOE) disbursements, reimbursements, directs payments and special commitments;
- Timely preparation and accuracy of withdrawal applications;
- Authorization of withdrawal applications preparation;
- Status on expenditures withdrawn from the designated account but not yet claimed for replenishment (old cases will be queried);
- Regularity of designated account monitoring and monthly reconciliations signed by the Project Coordinator; Supervision Missions will always review and assess the reconciliations; and
- Disbursement rate against AWPB and whether satisfactory given the implementation time remaining.

171. Recognition, Measurement and Disclosure of PRODAPE Beneficiary and Government in-kind Contributions:

a) Participating beneficiaries will contribute to the project by providing seed and feed. Government will contribute to the programme in form of staff salaries for government staff implementing the programme. PRODAPE financial management system will ensure that expenditures are recognized and recorded in the accounting system only when incurred;

b) Contribution shall be considered as incurred expenditures by beneficiaries or government if they meet the eligibility rules drawn up on the basis of the agreed AWPB as well as project costs, and the amount of expenditure is duly justified by supporting documents having equivalent probative value to invoices;

c) All in-kind contributions are recognised as assets and revenue when it is probable that the future economic benefits or potential service will flow to the entity and the fair value of the assets can be measured reliably;

d) In-kind contributions shall be recognised at fair market value. “Fair market value” is defined as the agreed-upon price in an open and unrestricted market between knowledgeable and willing parties who are dealing at arm’s length and who are fully informed;

e) In case of government employees working on PRODAPE, the actual portion of salary cost of staff assigned to fulfil duties specifically and necessary to PRODAPE will be the fair market value of the government contribution;

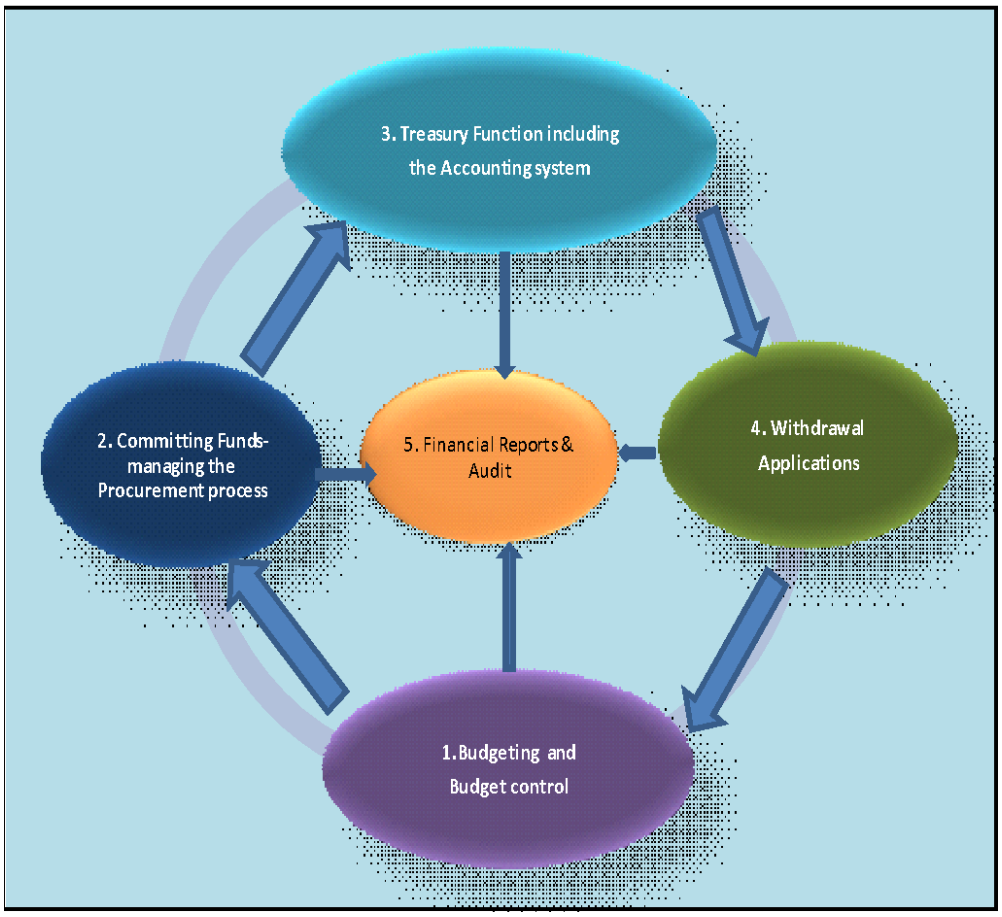
f) In the case of seed and feed cost pre-financed by PRODAPE beneficiaries, the fair market value shall be the actual invoiced amount by the supplier duly authenticated by PRODAPE Monitoring and Evaluation staff;

g) It is the ultimate responsibility of the PRODAPE Finance Manager to ensure that the reported fair-market value for all items involving an in-kind contribution is reasonable, as well as correctly and fully disclosed in its financial statements.

- THE FINANCIAL MANAGEMENT CYCLE

172. Financial management in Government Projects such as PRODAPE is to be established as a routine and highly standardised process and will follow an annual cycle of inter-dependent steps. It will start with planning and budgeting. In financial control, ***any expenditure incurred outside the approved budget will be declared ineligible for IFAD financing.*** After the AWPB is approved together with the procurement plan, the next step is the process of committing funds. Following on from commitments will be the treasury functions, payments to eligible contractors, service providers and suppliers. The finance team will have to exercise efficiency in turnaround of withdrawal applications to IFAD to ensure liquidity challenges do not hamper implementation. The final phase in the financial management cycle is financial reporting and auditing. Figure 6 depicts the financial management cycle. This is followed by a detailed description of each of the steps involved in the process.

Figure 6. The PRODAPE (yearly) financial management cycle



a. Step 1: Budgeting and budget control

173. PRODAPE budgeting is reflected in the project´s yearly AWPB. The AWPB constitutes a key instrument for PRODAPE implementation and operational control. Once approved, it guides day-to-day financial management, and serves as a guiding document indicating the activities to be implemented and the resources available. The AWPB is more than a guideline, it represents:

a) The commitment of the PCU and implementing agencies to carry out a set of activities, produce specific outputs and achieve certain targets; and

b) The agreement by the GoM and IFAD, that the activities planned are appropriate in light of the PRODAPE objectives.

174. The AWPB is a means by which the GoM and IFAD will have provided **"prior approval"** to the PCU to spend resources on the activities included in the AWPB. It should be taken very seriously, as any expenditure incurred outside the AWPB will be queried by auditors, supervision missions and will be declared ineligible for IFAD financing.

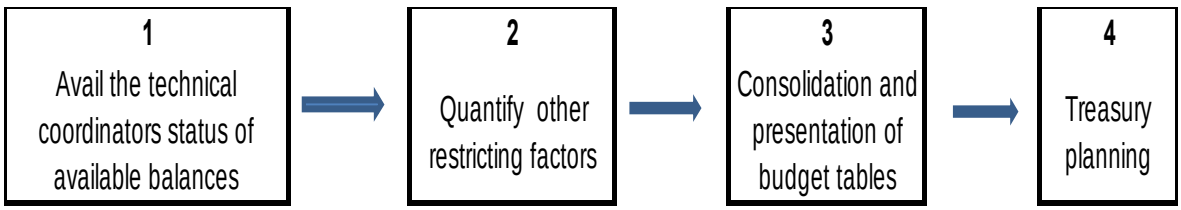
175. The detailed steps to be followed in the preparation of the AWPB are included in the IFAD Guidelines for Preparation of AWPBs and Progress Reports. All matters related to procurement planning are dealt with under the Procurement Manual.

176. It is equally important that AWPB preparation schedule be in tandem with Government budgetary process since PRODAPE budget should pass through Government budgetary approval process and PRODAPE must be included in the GoM printed budget estimates.

177. With reference to the detailed AWPB preparation schedule, the PCU will undertake the following steps to ensure that the approved AWPB is finalised and distributed to implementing agencies by the beginning of the new fiscal year: (i) The PCU shall submit to IFAD the draft AWPB submitted for parliamentary approval for No Objection by end of September; (ii) The IFAD Country Portfolio Manager shall collate IFAD's comments on the draft AWPB by mid-November; (iii) The PCU shall submit IFAD's changes on the AWPB to the MoF for approval and update in e-SISTAFE by end November; (iv) The PCU shall distribute the approved AWPB to implementing institutions by the end of December, in time for the new fiscal year.

178. In the planning and budgeting stage, the PRODAPE the finance team performs the four functions below:

Figure 7: Roles of PRODAPE staff in the budgeting process



179. Role 1: Avail the status of funds available to all PRODAPE technical staff**.** Technical project staff will play an important role budget preparation for activities in their respective realms of responsibility. This does not however imply that technical coordinators can dispose of the component budgets on their own, as sub-components are interrelated; PRODAPE budgeting will be done through the integrated team management approach.

Table 20: PRODAPE Budgeting holders / responsibility centres

Budget Unit (per project sub-component)	Responsible Technical Officer
1.1 Develop fish seed production capacity	Aquaculture Specialist
1.2 Develop fish feed production capacity	Aquaculture Specialist
1.3 Develop smallholder aquaculture production capacity	Aquaculture Specialist
1.4 Mainstreaming nutrition and addressing social risks	Nutritionist
2.1 Develop aquaculture business partnerships	Value Chain Specialist
2.2 Develop financial services	Value Chain/ Marketing Specialist
2.3 Develop market linkages	Value Chain/ Marketing Specialist
3.1 Project management	Financial Manager
3.2 Institutional capacity building	M & E Specialist
3.3 Policy development	M & E Specialist

180. Prior to the start of the planning and budgeting exercise, the Finance / Contracts Manager provides each of the above budget holders the status of available balances and overall category-wise implications for their respective sub-components. The Financial Manager extracts the information from the accounting system and obtains from IFAD a status of funds balances available per category. The status of funds available should be adjusted by deducting commitments, withdrawal applications in the pipeline and projected expenditures for the rest of the year. The adjusted information about the status of funds is provided to the budget holders to make them aware of budgetary ceilings. A working form in Microsoft Excel can be used to determine the balance available. The accounting software can assign historical expenditures to each of the planning units as described above as well as in the tables below.

Table 21: Working form to determine the status of available balances (USD) by category of expenditure for IFAD grant

Category	Available Cash Balance [17]	Less Commitments [18]	Less Withdrawal Applications in Pipe Line	Less Projected Expenses by End of Year	Net Available Balance
Category 1	x	x	X	x	x
Category 2	x	x	X	x	x
Category 3	x	x	X	x	x
Category 4	x	x	X	x	x
Total	**x**	**x**	**X**	**x**	**x**

181. The net available balance should be broken down by components, sub-components and major activity headings so that planners are able to determine the relative weights for each component / sub-component in the AWPB as illustrated in the table below. It is important to keep a relative balance between components.

[17] IFAD Flex cube Statement of Funds (convert to USD) plus balances for domestic financiers well reconciled to the computerized accounting system to be installed by PRODAPE.

[18] Take care to rollover commitments into next year's budget.

Table 22: Working form to deduce status of available balance budget units (USD) by sub-component of expenditure for IFAD grant

Budget Unit (per project sub-component)	Available Cash Balance[19]	Less Commitments [20]	Less Projected Expenses to End of Year	Net Available Balance
1.1 Develop fish seed production capacity	x	x	x	x
1.2 Develop fish feed production capacity	x	x	x	x
1.3 Develop smallholder aquaculture production capacity	x	x	x	x
1.4 Mainstreaming nutrition and addressing social risks	x	x	x	x
2.1 Develop Aquaculture business partnerships	x	x	x	x
2.2 Develop financial services	x	x	x	x
2.3 Develop market linkages	x	x	x	x
3.1 Project Management	x	x	x	x
3.2 Institutional capacity building	x	x	x	x
3.3 Policy development	x	x	x	x
Total	**x**	**x**	**x**	**x**

182. Role 2: Quantifying other factors restricting disbursement**.** Whereas available balances may set the ceiling of what to include in the AWPBs, other restricting factors also need to be considered. The Financial Manager will need to quantify these and communicate to the budget holders / sub-component heads at the start of the planning season. Examples of other restricting factors include:

a) The realistic amount that can be replenished from IFAD.

b) Time lag between commitment and disbursement.

c) Existing obligations to complete on-going works.

183. Role 3: Consolidating the PRODAPE AWPB**.** In the AWPB there is a number of finance tables that have to be consolidated by the Financial Manager and his or her team, working closely with the M&E Officer. While the consolidation of the AWPB into one document will be led by the M&E Officer, the finance tables will be a responsibility of the Financial Manager. The tables will include:

a) Cumulative financial performance for the previous year

b) Consolidated annual budget summary

c) Summary expenditure/receipts by category per financier

d) Summary of expenditure/receipts by component per financier

e) Detailed activity based AWPBs for each budget responsibility centre

184. The formats for each of the above summary tables are available in the IFAD Guidelines for AWPB Preparation and Progress Reports.

[19] This will be as per PRODAPE accounting system.

[20] Take care to rollover commitments into next year's budget.

185. Role 4: Treasury planning**.** As part of the AWPB preparation and processing the Financial Manager will earmark the bigger items that can be paid for through direct payments and those that have to be paid for from the operational bank accounts. This will be translated into a monthly cash flow forecast to ensure there is sufficient liquidity even in peak periods. A sample AWPB template is provided in Annex 1.

186. IFAD supervision missions will be interested in the following items related to work plan and budgeting:

a) Timely preparation and approval of AWPB;

b) AWPB compliance with expenditure categories as per Financing Agreement (Schedule 2);

c) Identification of financing sources and implementing agencies for each category in the AWPB;

d) Linkage between AWPB and procurement plan.

b. Step 2: Committing funds

187. Commitment of funds is largely a procurement function covered under the project´s procurement manual. However, the finance team will have a role to play in the procurement cycle, including:

a) Providing the status of available balances ahead of each procurement launch to avoid over-committing PRODAPE / GoM funds. This will require that the Financial Manager maintains a detailed analysis of commitments;

b) This means contracts cannot be signed off without the Financial Manager entering existing commitments into the system;

c) The authentication, custody and execution of any financial instruments such as performance bonds, advance guarantees will be a responsibility of the Project Accountant;

d) Elements of financial progress in the contract monitoring forms will be a responsibility of the Project Accountant.

c. Step 3: Treasury function including the accounting system

188. PRODAPE shall deploy the integrated public financial management information system, e-SISTAFE, comprised of sub-systems for budget, accounting, and treasury, inventory, state assets management and internal controls. However, the system is deemed not user-friendly for the preparation of IFAD specific financial reports. The MoF has advised that the system will continue to be upgraded gradually to allow for configuration of requested reports. PRODAPE shall therefore install and implement a parallel off-the-shelf accounting software package to compliment e-SISTAFE for financial reporting purposes with capability to record and report transactions by category, component, activity, cost-centre and financier. It is important that the general ledger balances of the two parallel systems are in balance at each the reporting date.

189. The project will use the GoM modified cash-basis accounting standards, which, in the 2015 Public Expenditure and Financial Accountability (PEFA) assessment, were deemed to be close to International Public Sector Accounting Standards (IPSAS) norms and could be considered comparable with those norms. The GoM is planning to adopt IPSAS accrual basis accounting standards within a period of 3-5 years. The project will follow GoM accounting policies and procedures prescribed in the State Financial Administration Manual.

190. Expenditure attribution. The use of the accounting software will ensure the traceability of the funding. In this manner, activities will be earmarked – right from planning to be followed through by the accounting system up to withdrawal application – GoM financing or to the IFAD grant.

191. Records Management. Financial records must be created and preserved for every financial transaction performed under PRODAPE. Financial records are defined as any financial information including written documents, computer data, internal forms, e-mails, or any other form of information storage originated from the PCU such as internal forms, journal vouchers, financial reports (monthly & quarterly) copies of cheques and withdrawal applications, etc. or received by the PCU, such as supplier invoices and receipts, bank statements, IFAD documents, etc. within the framework of official project activities. The objective of this procedure is to preserve the financial records and files for further official use by the PCU, for financial audit and for review by IFAD during Supervision Missions. The project's financial records are the property of MIMAIP and cannot be removed or destroyed.

192. Filing of financial records. The Finance team will maintain chronological files for all financial documents related to PRODAPE. Filing should be performed daily to prevent the accumulation of papers and to ensure that the financial records are maintained in an up-to-date manner, at all times. Each financial record should be filed under its code in a chronological order, with a sequential number assigned to every document. Any kind of additions or amendments to the financial document should be filed in a chronological order immediately following the principal document. A separate series of vouchers will be filed for each operational account opened.

193. Storage of financial records. In accordance with IFAD General Conditions the financial records of the project should be stored in the PCU and / or MIMAIP for a minimum of 10 years after project completion. The data should be stored within the accounting software, as paper copies, as scanned copies and as computer disc copies. The Financial Manager should allocate an appropriate storage area for the project´s financial records in paper format and maintain them in locked cabinets, safe from water and fire, to which access is controlled and limited. The Financial Manager should also classify the financial records as "Confidential" or "General". All important correspondences should be filed.

194. Back-up procedures. To avoid the loss or damage of financial data, the information should be kept in two copies: i) at the computer server and ii) in the locked cabinets of the PCU. Only authorised personnel should be allowed to access the financial records. The access of external persons is prohibited except for authorised persons such investigators, auditors and IFAD staff / consultants with prior arrangement.

195. In addition, PRODAPE shall deploy an e-archiving system currently being piloted on IFAD/EU funded projects in Mozambique to be launched by the end of 2018. This involves digitising the hard copy supporting documents such as vouchers, receipts, procurement documents and withdrawal applications to safeguard them for a minimum of 10 years after project closure. The server for the e-archive system is hosted by the MoF. This ensures availability of financial records by the borrower after project closure. The financial accounting information at each DPMAIP will be stored in the e-archiving system as well, under the supervision of the Financial Manager.

196. Under the area of accounting system, IFAD missions will be assessing the following:

a) Basis of accounting; PRODAPE should comply with the cash basis of accounting and required disclosures;

b) Adequacy and reliability of accounting system, therefore the project should ensure that it complies with internal controls around the accounting system;

c) Record-keeping (including documentation and filing / archiving);

d) Fixed assets register maintained and reconciled;

e) Adequate documentation and controls for information systems, including documented accounting procedures, backup of financial records, integration of all sub-systems;

f) Adequacy of chart of accounts for PRODAPE accounting purposes;

g) Timeliness in recording financial transactions, regularity of performance and approval of reconciliations, controls on erroneous recordings; and

h) Appropriate / adequate accounting and reporting of counterpart funds contributions (including tax and tax exemptions), as well as beneficiary contributions.

197. Internal controls and expenditure documentation. The PRODAPE is a GoM project and, therefore, it will comply with GoM allowances for travel and accommodation unless otherwise specifically agreed formally between IFAD and the GoM. The prevailing GoM field and travel related allowance rates will be applied for PRODAPE activities.

198. Payment documentation. For all payments, the Financial Manager should ensure compliance with the following steps:

a) Preparation of a payment request voucher for each payment.

b) Validation of invoice. The following validation checks should be performed by the finance team for each invoice:

- Invoice is arithmetically correct; and
- Quantity and price recorded on invoice should be checked back to contract, order, and certification of completion / delivery. Any discrepancy identified should be raised with the vendor prior to proceeding with invoice processing.

c) Supporting documentation. The following documents should be attached to the payment voucher to support validation:

- Invoice;
- Required approvals;
- Purchase order, receipt note and contract, if applicable; and
- Copy of required guarantees.

199. Minimum documentation. To ensure that the finance unit collects all required supporting documents, it is recommended that checklists be used. Examples of checklists are provided below. Checklists should be carefully and duly filled in (ticked-off) and attached to each payment voucher.

Standard Goods	(Tick)
1. Complete written voucher, duly approved	
2. Confirmation by *Procurement Officer* that the Procurement was properly done in accordance with GoM and IFAD procedures	
3. Attach copies of relevant *No Objections* from IFAD, where applicable	

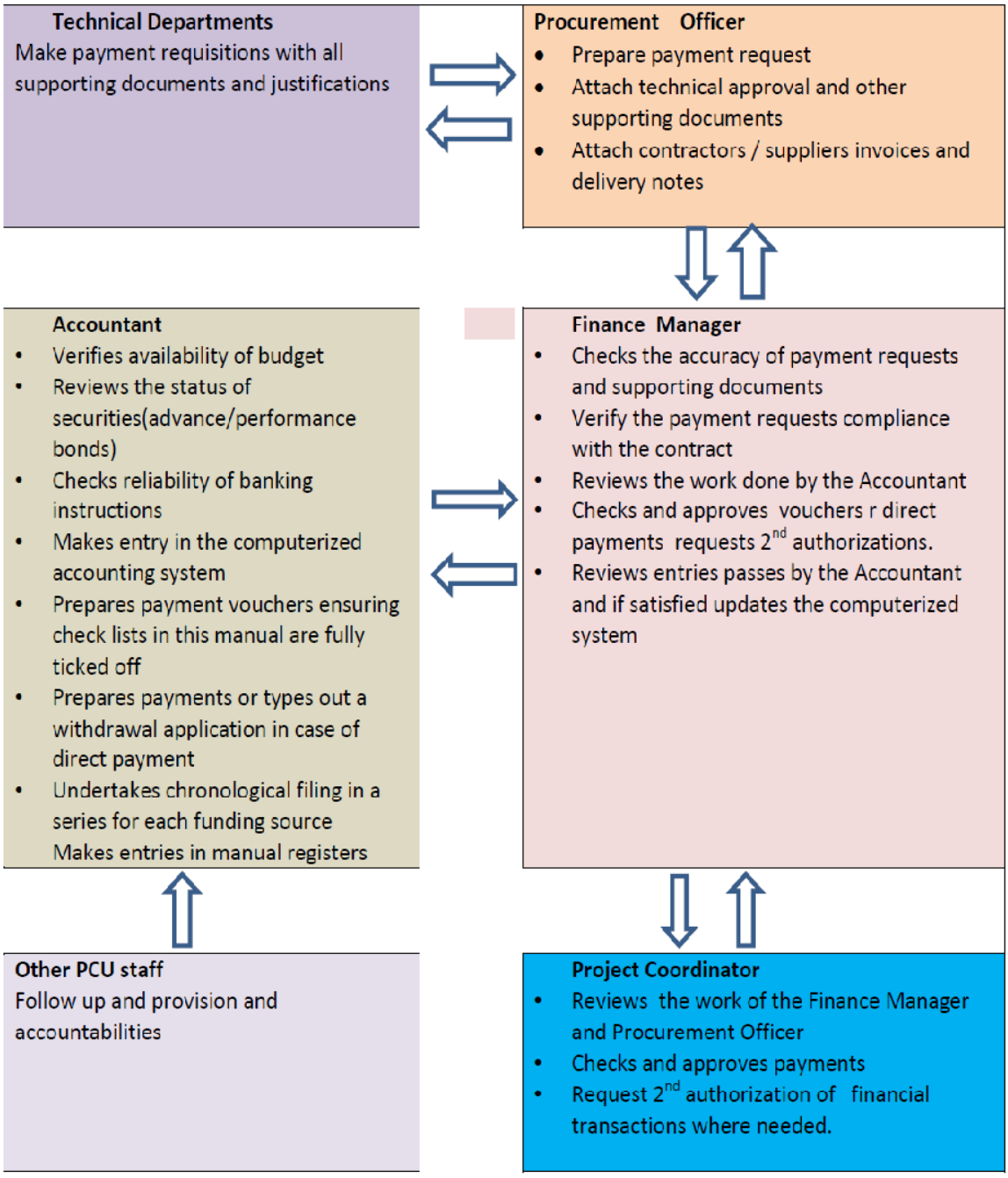
4. Availability of supporting documentation	
a) Contract	
b) Invoice	
c) Evidence of payment	
d) Bank guarantee	
e) Delivery notes/reports (Make Cross Reference where bulky)	
5. Fund availability in:	
a) Budget. Ensure E-SISTAFE budget controls have been updated	
b) Category(ies)	
6. Accuracy of computations / footings	
7. Reviewed optimality of the disbursement method	
8. Banking instructions	
9. Correspondence bank	
10. Percentage of financing	

In-Country Workshops	**(Tick)**
1. Attendance sheets	
2. Attendance sheets should be reconciled to DSA paid	
3. Availability of supporting documentation	
a) Training report	
b) Hotel receipts / bills for meals and accommodation (should be reconciled to attendance sheets)	
4. Procurement record on how the venue was selected	
5. Justification for any fuel refunds and related support	
6. Fund availability in	
a) Budget. Ensure E-SISTAFE budget controls have been updated	
b) Category(ies)	
7. Accuracy of computations / footings	
1. Invitations and related IFAD's *No Objection*	
2. Availability of supporting documentation	
- Boarding passes reconciled DSA days taken	
- Back to Office Reports	
3. Fund availability in	
- Budget. Ensure E-SISTAFE budget controls have been updated	
- Category(ies)	
4. Accuracy of computations / footings	

Consultancies	(Tick)
1. Timesheets in comparison with the work done	
2. Attach copies of relevant *No Objections* from IFAD, where applicable	
3. An acceptable / approved report	
4. Availability of supporting documentation a) Contract b) Invoice c) Evidence of payment d) Bank guarantee for advances	
5. Fund availability in c) Budget. Ensure E-SISTAFE budget controls have been updated a) Category(ies)	
6. Accuracy of computations / footings	
7. Banking instructions rrespondence bank	

200. Adequate segregation of duties. Within the PCU, the Project Coordinator, the Financial Manager and Assistants (including Accountant), will constitute "the finance team" and will have overall responsibility for all financial management matters related to PRODAPE. With this structure no single officer is allowed to originate, process, approve or sign off payments or to certify the receipt of any related goods and services all by him / herself. Non-finance staff will also be involved in financial management in their capacities as users, providing technical inputs in justifying expenditures incurred by the project. As such, even non-finance staff should be cognisant of the contents of the financial management section of the PIM because they also have a fiduciary responsibility to ensure PRODAPE funds are used only for intended purposes. The Procurement Unit at the PCU will play a special role in contractual certification of payments before these are passed to the Finance / Contracts Manager for payment processing.

Figure 8: Staff segregation of duties in relation to payments within PRODAPE´s integrated management structure



201. It is worth noting that IFAD Supervision Missions will also look into PRODAPE´s organisation and staffing, including the following issues:

a) Adequacy of organizational structure to meet the project´s functional needs. Hence, the structure above should not be changed without IFAD concurrence;

b) Availability of clear job descriptions for key project positions, including positions with fiduciary responsibilities;

c) Adequacy of project financial management staff (numbers and skill level) and correspondence to the project´s functional needs;

d) Availability and adequacy of operating manuals and guidelines for staff;

e) Existence and use of a performance based appraisal system and timely completion of performance appraisals for all staff;

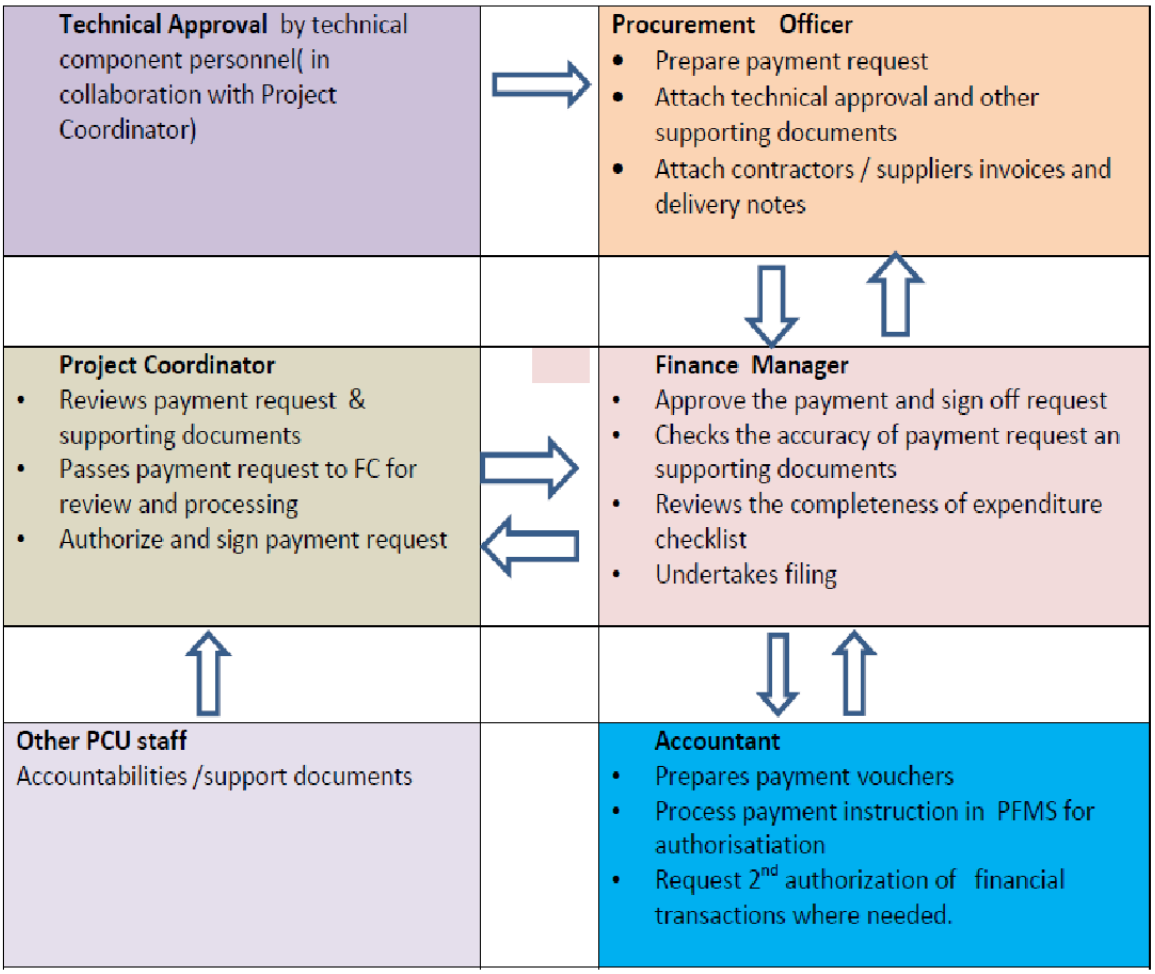
f) Adequacy of health insurance coverage for all staff;

g) Timely payment of social security fees; and

h) Staff adequately informed about IFAD's national and anti-corruption policy and relevant contact details.

202. Payments for consultancy services. There are two types of consultancy services: a) Consultants with a lump-sum contract; and b) Consultants with a time-based contract. For type (a) consultants, payments will be made against the delivery of outputs as detailed in their contracts. For type (b) consultants, payments will be made against the submission of a time sheet, a report on activities performed and the assurance (by a technical coordinator) of the adequacy of services rendered. Both time sheets and reports will need the technical approval of the technical component head before the payment can be executed.

Figure 9 : PRODAPE payment approval process



203. Arrangements similar to those illustrated above will be put in place to assure segregation of duties will apply for regular office supplies and travel related expenditures.

204. Fixed assets control**.** Fixed asset management seeks to track fixed assets for the purposes of financial accounting and to ensure preventive maintenance and deter theft. Adequate fixed asset maintenance also increases the project sustainability.

205. Asset register. The Financial Manager must maintain a register of all (material) PRODAPE equipment. The asset register should record the following information for each individual piece of equipment: 1) Asset description; 2) Asset number; 3) Serial number of the item; 4) Officer responsible for asset; 5) Funding of asset (IFAD, GoM,

etc.); 6) Location; 7) Date of purchase; and 8) Estimated life. Sample forms for asset records are included at Annex 4.

206. Asset verification review. The Financial Manager must ensure that a verification count of all equipment recorded in the fixed asset register is performed at least once a year. This should include the following checks:

a) Verifying that all equipment is still held in the location recorded at register;

b) Checking that equipment is still in a reasonable state;

c) Discrepancies between the verification exercise and the fixed asset register should be investigated. Where assets are missing or seriously damaged, they should be removed from the asset register. The removal should be formally documented and approved by the Project Coordinator and notified to the NPSC.

d) The verification review must be performed by different staff from those who use the equipment to ensure adequate segregation of duty.

207. Vehicle Maintenance and Fuel. Drivers are required to record all trips and fuel refills in the vehicle logbook. All supporting documentation must be kept and submitted (different if fuel cards / vouchers are used). The vehicle logbook provides control over the use of the vehicles as well as fuel consumption. For official field trips, a special cash provision is given to drivers to allow them to purchase fuel during the trip and payment of tollgate fees, as relevant.

208. The safety of vehicles is the responsibility of the recipient staff members and drivers assigned to the vehicles. Consequently, they must ensure that the vehicles are parked in a secure area when not in use outside working hours. Drivers are required to monitor the maintenance of their assigned vehicles under the supervision of the Accountant. The drivers must notify the Accountant of maintenance needs (including periodic servicing) so that the vehicles can be serviced on a timely basis. Sample documents for vehicle and fuel management are presented in Annexes 6 and 7.

209. The Financial Manager should check the mileage and fuel usage on a monthly basis, as well as any undertaken service reported in the log book of each vehicle. These should also be compared with official invoices and travel authorizations, etc. to make sure the numbers are accurate.

210. An insurance policy must be taken by the PCU to cover all cars and passengers against all risks, including damage, theft and fire, as well as injury and property damage to third parties.

211. Under internal controls, IFAD missions will be keenly interested in the following aspects:

a) Segregation of duties: are the following functional responsibilities performed by different units or persons:

- Authorization of transactions;
- Execution of transactions;
- Recording of transactions; and
- Custody of assets involved in the transaction.

b) Clarity and adequacy of decision processes and sequence of events for control functions in project implementation reflected in the Financial Manual (or equivalent thereof).

c) Adherence to project management manuals.

d) Effectiveness and efficiency of internal controls over inflows of funding sources other than IFAD.

e) Adequacy of contract management (use of contracts register and monitoring form) and filing thereof.

f) Effectiveness and efficiency of internal controls over expenditures (full cycle from commitment, payment, receipt of goods / services, approval of payments, classification, etc.)

g) Documentary evidence to confirm delivery and acceptance of contracted goods, works / services.

h) Physical controls over cash, documents and records. Adequacy of filing systems. Missions will review the petty cash subject to monthly reconciliation as well as surprise checks; custody of cash box and control of keys.

i) Adequacy of physical management of cash.

j) Timely payment to suppliers / consultants.

k) Eligibility of expenditures with respect to Financing Agreements.

l) Legality / eligibility of advances from project funds and timely justification for use thereof.

m) Compliance with financial management covenants in the Financing Agreement and Letter to the Recipient (LTR).

n) Adequacy of up-to-date record keeping for fixed assets and inventories.

o) Adequacy of controls concerning project assets including:

- Management of vehicles and other assets (assets should be property tagged and a physical inventory count done on a regular basis)
- Fuel management (drivers should maintain a vehicle log book)
- Travel authorisations (including Daily Subsistence Allowance (DSA) paid to staff)
- Adequacy of vehicles and assets insurance.

p) Workshops:

- Availability of list of participants
- DSA paid to participants
- Receipts for workshop expenditure

q) Adequacy of controls and process of authorisation for use of funds (payments, transfers, cash / bank balance management) / and other operational accounts.

r) Banking arrangement and controls (reconciliation of bank statements with financial accounts).

s) Existence of a proper information technology support unit in place.

212. Beneficiary / community contributions. Should participating community groups will have to match grant funds by contributing a required share of sub-project costs to PRODAPE, such cash contributions from beneficiaries will be deposited into a "Beneficiaries" bank account opened and maintained by the beneficiary groups. The first payment from the community groups is considered effective when community contribution is deposited into the bank account in accordance with the MoU.

213. Beneficiary / community contributions may be paid in kind, including contributions in the form of:

a) Labour

b) Construction materials

c) Agricultural products

d) Plots of land for demonstration gardens, farmer field school gardens, and

e) Any materials

214. The accounting / auditing / controls of in-kind contributions should be kept as simple as possible and be captured for information purposes only and in estimated values. Thus, there are minimum procedures to make sure that the contributions that have taken place are adequately captured in terms of values. An example of information required for beneficiary contribution is included in Annex 5.

d. Step 4: Withdrawal Applications

215. The IFAD Disbursement Handbook provides all the guidance and forms needed for the preparation of withdrawal applications including replenishment applications. Those forms and guidance are not reproduced in this manual. As stated in the LTR and the Disbursement Handbook, three standard disbursement procedures may be used for withdrawal of financing, namely:

a) Procedure I: Advance withdrawal (using imprest account with replenishment to the designated account in the BoM. The maximum authorised allocation to the designated account will be advised in IFAD's LTR.

b) Procedure II: Direct payment. This modality is used for eligible PRODAPE expenditures to be paid directly by IFAD, generally for large contracts, to suppliers, contractors or third parties in value over USD 100,000.

c) Procedure III: Reimbursement. This is applicable when eligible PRODAPE expenditures, reimbursable under the financing agreement, have been pre-financed by the GoM. Such reimbursements are expected to be claimed not later than 90 calendar days from the date of payment by PRODAPE.

216. The finance team must be efficient in the submission of the withdrawal applications to IFAD otherwise liquidity can be a hindrance to implementation. A tool that can be used to measure the efficiency of a replenishment process is the designated account reconciliation, as shown below. Thus, the designated account reconciliation should not always be included in withdrawal applications, rather, it should be carried out on a monthly basis as a performance measure, as illustrated below.

Table 23: Illustrating that Designated Account Reconciliation is good Treasury Management Tool

		USD	Management Tips
1	Total initial advance by IFAD	xxx	This reconciliation should give the whereabouts of this advance and the Financial Manager should always on a monthly basis be interested to know the whereabouts of the initial deposit.
2	LESS amount recovered by IFAD	-	
3	Outstanding advance to designated account	xxx	
4	Balance of designated account as per bank statement from the commercial bank	xxx	If less than 50% of the initial deposit can be traced to bank statements, this can alert the Financial Manager and the PRODAPE Coordinator of lingering cash flow problems by looking at lines 4 and 5
5	Balance on project operational accounts as per bank statements	xxx	
	Total of Bank Balances	**xxx**	
6	Plus, total amount claimed in this application No.	xxx	If this amount is materially higher than 30% of the initial deposits it points at laxity in the

			replenishment system. If for example, this amount is twice or more than the minimum amount for replenishment, It would tell PC that the Financial Manager could have lodged a withdrawal application when expenditure reached the minimum amount of 30% of the initial deposit and there could be over bulking / inefficiency.
7	Plus, total amount withdrawn from bank accounts not yet claimed	xxx	This should cause the PRODAPE Coordinator to demand why money to this magnitude has been withdrawn but is not being included in the withdrawal application. The Financial Manager should always demand for a schedule of the items making up this amount — it reflects inefficiency and results in cash flow problems to have large amounts of money from bank accounts and take a long time to be replenished. Secondly, care should be taken that this figure is not only inserted as a *balancing figure*, which would reflect that the designated account is not well managed.
8	Plus, amounts claimed in previous applications not yet credited at date of bank statement	xxx	When withdrawal applications in the pipeline take long to be processed it could indicate that IFAD raised questions on the quality of the withdrawal application, in which case the PRODAPE Coordinator could request staff training. Such a situation could also be caused by IFAD delays, in which case the PC would still have to follow-up with IFAD. It is advisable for the Financial Manager to always follow the status of the withdrawal applications on IFAD's Withdrawal Application Tracking System (WATTS).
9	Minus Interest Earned		
TOTAL ADVANCE ACCOUNTED FOR		xxx	If this total does not equal to the outstanding initial deposit, the PC should demand explanation. Fail to reconcile the initial deposit should be considered as a serious matter requiring follow up.

217. It is key for the Financial Manager to know PRODAPE´s available cash balance at all times in order to better manage PRODAPE's liquidity position in a timely and efficient manner. The key goals are to ensure that:

a) There are sufficient funds in treasury to implement activities planned.

b) The disbursement rate of the project closely follows progress in physical activity;

c) PRODAPE performance increases and that the project is well placed to meet its objectives, as outlined in the PDR.

218. The key elements related to project treasury position are:

a) Status of balance in designated accounts (using the cash books as at reporting date)

b) Status of balance in operations accounts (using the cash books as at reporting date)

c) The status of cash in hand (using the cash book as at reporting date)

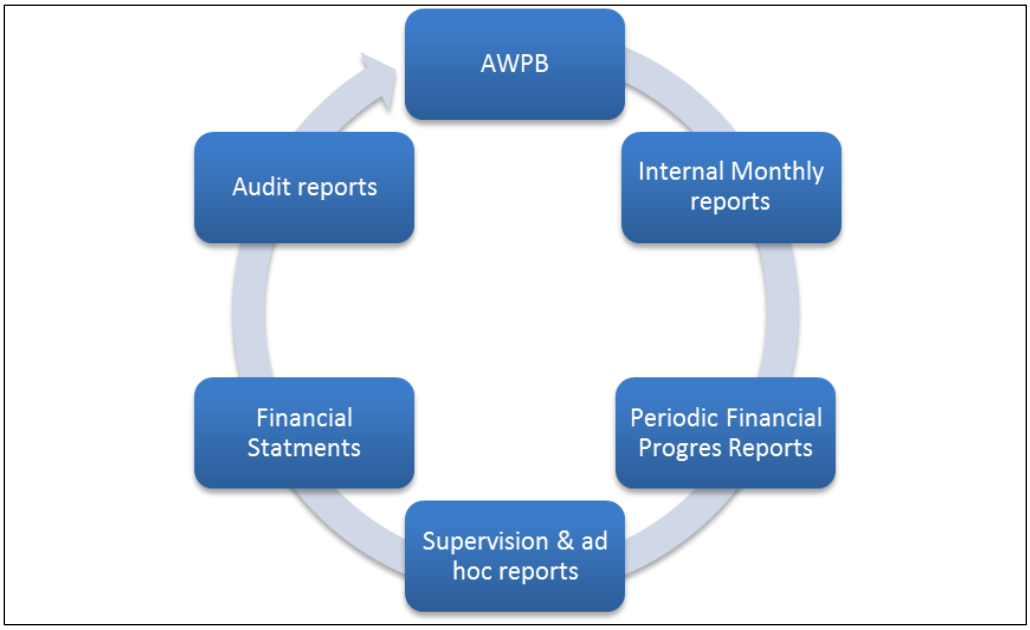
d) The money value of withdrawal applications submitted to IFAD for reimbursement

e) The money value of withdrawal applications to be submitted to IFAD

219. The Financial Manager should prepare monthly cash and expenditures cash flow forecasts. This will help to detect periods, which could be subject to liquidity gaps, and adequate measures taken, in terms of work scheduling or any other remedial actions deemed appropriate.

e. Step 5: Financial reports and auditing

220. Periodic financial progress reports are required under the IFAD Financing Agreement. Sufficient information must be made available on how funds are used, on amounts spent and results obtained. The main financial reports to be produced will include the following: AWPB, monthly financial reports, other periodic financial progress reports, supervision reports, annual financial statements and audit reports. IFAD has now developed Guidelines for Interim Financial Reporting to guide progress reporting. Sample reporting templates are included in attachment to this PIM.



221. Under financial reporting, IFAD Supervision Missions will look for:

a) Completeness, accuracy, usefulness, and timeliness of financial reports;

b) Interim financial management reports and linkages to progress reports; timely preparation and submission to IFAD;

c) Preparation of reports showing actual vs. budget income / expenditure and AWPB execution rate;

d) Follow up of recommendations presented in previous *Aide Memoires* related to fiduciary matters; and

e) Reasonable alignment between disbursement rate of recurrent versus investment cost categories.

222. **Audit** The key players in PRODAPE´s financial management have fiduciary responsibility to ensure that project funds are used exclusively for intended purposes. Poor financial management in project implementation could result in failure to achieve

intended impacts. IFAD will undertake Supervision Missions that will include a review of all fiduciary aspects through review of audit reports. IFAD may also commission its own audits / reviews.

223. **External audits.** In accordance with the IFAD general conditions and the IFAD guidelines for project audits, the PCU must have PRODAPE financial statements audited by an external auditor acceptable to IFAD. The audited financial statements need to be sent to IFAD no later than six months after the end of the fiscal year. The detailed instruction regarding project audit are outlined in the IFAD Guidelines for Project Audits available at http://www.ifad.org/pub/basic/index.htm.

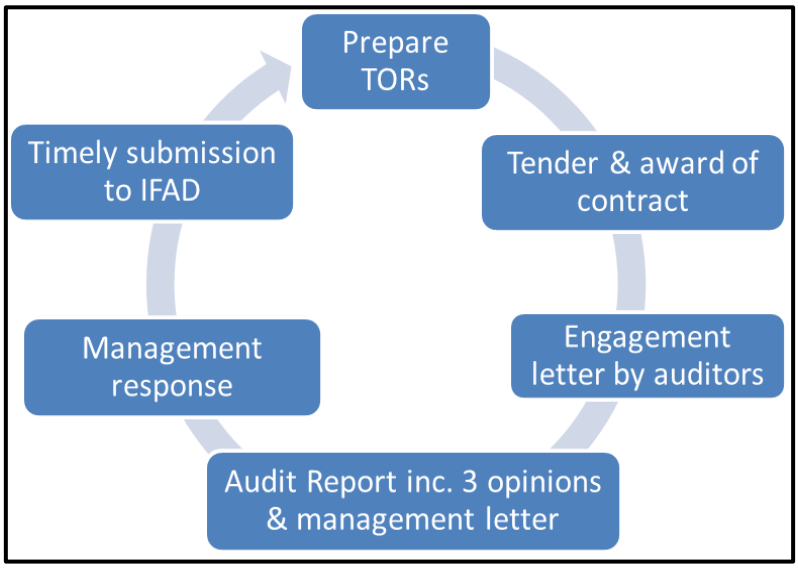
224. **Internal audits.** The Internal Audit Department at MIMAIP is to include PRODAPE in its internal audit work plans; associated reports will be submitted to PRODAPE to MIMAIP and the NPSC. IFAD will require submission of related action plans and reports on progress in implementation of internal audit recommendations. Internal audit reports are expected to provide assurances that PRODAPE is being implemented in accordance with the approved AWPB and in compliance with GoM regulations and the IFAD financing agreement. A key risk is low staff capacity to cover the project internal audit requirements. It is recommended that at start up, internal audit staff be present and attend to familiarise themselves with IFAD procedures.

225. **Audit arrangements.** The project audit is an ex-post review of financial statements, records of transactions and financial systems. It examines the adequacy of accounting systems and procedures, the capacity to maintain appropriate accounts and documentation of project / grant expenditures. The objective of the project audit is to provide credibility and assurance of accountability. In accordance with IFAD General Conditions and the IFAD Guidelines for Project Audits, financial statements must be audited by an external auditor acceptable to IFAD. The audited financial statements need to be sent to IFAD no later than six months after the end of the fiscal year. Detailed instructions regarding project audit are outlined in the IFAD Guidelines for Project Audits available at httphttps://www.ifad.org/web/guest/corporate-documents.

226. T**he audit cycle and auditor appointment.** The complete audit cycle can be divided according to the roles carried out by the Financial Manager at the PCU, the Auditor and IFAD.

- **The PCU and the Financial Manager** will timely prepare ToRs of the audit and submit these to IFAD for N*o Objection*; manage the selection process of the auditor (if relevant); and appoint the auditor; prepare the financial statements for the reporting period and make all the financial information necessary to the auditors available. The PCU should respond to the audit findings and recommendations and submit the audit report to IFAD no later than six months after the end of the project´s fiscal year.
- **The Auditor will** perform the audit; deliver an audit package that includes the audited financial statements, including additional disclosures; an audit opinion on the financial statements within the audit scope, a report on factual findings, within the scope of agreed-upon procedures indicating identified ineligible expenditures and a management letter. The audit report should provide sufficient detail as to the nature and extent of the procedures performed by the auditor.
- **IFAD will** provide a *No Objection* to the auditors ToRs; monitor timely submission and review of audit reports; follow up on remedial action / apply sanctions and / or remedies, if relevant including suspension of disbursement and or cancellation of loan balance, as required (legal notice is sent to the Lead Programme Agent (LPA) after three months of delay. Suspension of disbursement to the project after six-months delay.

Figure 10: Project audit cycle



227. When appointing the Auditor, the Financial / Contracts Manager will need to ensure that the following steps are followed:

228. Appointment procedure. If a private audit firm is contracted to conduct the audit, the borrower / recipient is responsible for its selection and appointment process. Auditors should normally be appointed in advance of the start of the reporting period to be audited, to allow the auditor sufficient time to plan and carry out a comprehensive examination of the borrower's / recipient's financial records and accounts. The following private audit firm appointment process should be adhered to:

Table 24: Private audit firm appointment process

Step	Procedures	Guidance / Timing
Development of the auditor's ToR	● The Borrower / Recipient prepares ToRs for the audit. ● The Borrower / Recipient sends the ToRs to IFAD for review and "*No Objection*". ● IFAD communicates "*No Objection*" to Borrower / Recipient on the final ToRs, within thirty days of receipt.	● In sufficient time to allow the appointment of auditors by the start of the financial year to be audited.
Procurement process	● The Borrower / Recipient initiates the procurement process, using the agreed ToRs. ● The Borrower / Recipient informs IFAD of the name of the proposed auditor and the procurement process that was followed.	● The Borrower / Recipient should attempt to finalize the procurement process at least thirty days prior to the commencement of the reporting period.
Auditor appointment	● The Borrower / Recipient appoints the auditor. ● The appointed auditor will issue a formal engagement letter.	● The representative of the Borrower / Recipient will sign and return a copy of the engagement letter to the auditor.

229. *ToRs of the auditors and engagement letter.* When preparing auditors ToRs the Financial Manager should address the following points:

a. Project background;

b. Objective of the audit;

c. Responsibility of the borrower / recipient;

d. Responsibility of the auditor: auditing standards, general principles, reporting, management letter;

e. Scope of the financial audit;

f. Scope of agreed procedures: withdrawal application summary, designated account statement and reconciliation;

g. Other relevant information;

h. Public disclosure;

i. Appendices: Financing / Grant Agreement(s), LTB, IFAD Handbook on Financial Reporting and Auditing of IFAD-financed Projects.

230. *The audit report.* The Auditor is required to deliver an audit package that includes:

a. The audited financial statements, including all specified additional disclosures;

b. An audit opinion on the financial statements, within the scope of the financial audit;

c. A report on factual findings, within the scope of agreed-up on procedures. Any ineligible expenditure identified should be clearly mentioned.

231. A management letter, which outlines the auditor's recommendations to improve identified accounting and internal control issues; the responses of project management to the identified control issues, and its proposal to address the issues identified within a specific time period and where applicable, follow up on the issues identified in the previous year's management letter.

f. GRANT COMPLETION AND CLOSURE

232. The closure of the loan / grant is due six months after the project completion date. Both the completion and the closing dates of the grant have financial implications on the project management such as: development and submission of a recovery plans, ensuring eligibility of expenditures and submission of the necessary documents outlined below. Please also refer to section 1.3 of the Disbursement Handbook for further details.

233. Recovery plan. To ensure that the designated account is completely and timely justified, the Project Accountant / PCU has to develop and submit to IFAD a recovery plan outlining the percentages per withdrawal application that will be recovered and paid respectively. The recovery plan should be submitted to the fund around six months before the completion date or when the outstanding balance (amount still undisbursed by IFAD) is less than the double of the authorised allocation. Please refer to Annex 8 for a sample recovery plan.

234. Grant completion. By the completion date all the project activities must have been finalised. The payments can be done also after the completion date, as long as the commitments / contracts are signed prior to the completion date. Activities that have continued after the completion date are considered as ineligible expenditures and can therefore not be financed with IFAD funds.

235. After the completion date but no later than the closing date (six months after the completion date) the PCU can still incur expenditures related to so called winding down expenditures e.g. final audit, project completion report, project staff salaries involved in the winding down activities, PCU maintenance cost, project completion workshop.

236. Grant closure. IFAD requires the following to be provided by the PCU in order to close the grant:

a) Confirmation of last withdrawal application

b) Submission of final audit report

c) Submission of project completion report

237. The final audit report has to cover, the final project year up to the final expenditures and it can be paid from the grant available balance by using, for example, direct payment or reimbursement of pre financed expenditures.

F. Procurement

238. This section provides additional advice and assistance to PRODAPE implementers to help them carry out project related procurement responsibilities using IFAD financing. This section does not contain any new policies but rather explains in more detail how specific aspects of procurement should be handled consistent with the IFAD Guidelines and Procedures. It is expected that this procurement section will continue to be improved and added to with a view to keep it relevant and useful to its users.

239. Under IFAD financing, procurements of good, works, consulting and non-consulting services, is the responsibility of the borrower or grant recipient. Therefore, IFAD encourages use of borrower's procurement guidelines to the extent they are consistent with its own; where the Government's public procedures are inconstant with those of IFAD, IFAD generic procurement guidelines will supersede.

240. Ideally, the procurement process under PRODAPE should be transparent, competitive and should ensure that the goods and services needed to implement project activities are procured with due attention to economy and efficiency. All procurement processes will also ensure that the grant is used to buy only those goods and services included in the approved AWPB. It should be noted that any procurement of goods, services or works outside the AWPB and non-compliant with procurement guidelines will be treated as ineligible expenditures and rejected for IFAD financing.

KEY PLAYERS

241. IDEPA at MIMAIP is the main PRODAPE implementation unit currently governed by Public Procurement Decree (PPD) No. 5/2016 that establishes the principles and procedures to be applied in any procurement held by public authorities and institutions governed by public decree, under public control or using public funds. The PCU at IDEPA will include a Procurement Officer. The position will be in charge of coordinating all administrative work related to procurement, such as preparation of bidding documents, Requests for Quotations (RfQ) and others, and users. In addition, a Permanent Tender Committee will be formed to handle items common across more than one cost centre or generally requiring Open Competitive Bidding. Each competitive procurement package will have an *Ad Hoc* Evaluation Committee comprising of members skilled in the subject matter at hand. Evaluation Committee members should not be restricted to only PCU / National Roads Administration (ANE) members to ensure an adequate mix of skill of adequate level; independent external members may also be invited to participate.

242. Other counterparts should be involved in the project from the beginning such as the General Inspection of Finance (IGF) and the Public Procurement Authority (UFSA). Both conduct joint annual audits that could take place during the IFAD supervision mission.

CONTRACT MANAGEMENT AND PROCUREMENT RECORDS

243. Procurement methods**.** IFAD has no restriction on the use of any procurement method. However, each method used should be easily justifiable in terms of the cost, technical complexity and the circumstances giving rise to the need for the goods or services concerned. The decision of a procurement method is considered to be one of high importance and therefore the Procurement Officer should always reflect the method of procurement at the planning stage.

244. According to the IFAD Procurement Handbook, International Competitive Bidding (ICB) will be used in accordance with the World Bank guidelines. This will be mandatory for procurement contracts with the following values:

a) Goods above USD 200,000

b) Works above USD 1,000,000

c) Services above USD 100,000

245. Guidance on when to use other procurement methods is summarised in the table below.

Table 25: Thresholds for procurement and review methods

Expenditure Category	Contract Value Threshold (USD)	Procurement/Selection Method
Works	> 1,000,000	International Competitive Bidding (ICB)
	≥ 50,000 ≤ 1,000,000	National Competitive Bidding (NCB)
	< 50,000	Shopping
	All values	Direct Contracting
Goods	≤ 200,000	ICB
	≥ 10,000 < 200,000	NCB
	< 10,000	Shopping
	All values	Direct Contracting

246. Non-Consulting Services. Non-consulting services will be procured using the following methods:

a) Request for Quotations:

- Internationally, for contracts valued over USD 200,000 equivalent, and
- Nationally, for contracts valued over USD 50,000 equivalent up to and including USD 200,000 equivalent (i.e. > USD 50,000 ≤ USD 200,000);

b) National shopping applies to contracts valued up to and including USD 50,000 equivalent (i.e. ≤ USD 50,000).

247. Consulting Services. The Quality and Cost Based Selection will be the standard method applied unless otherwise approved. The following processes will apply:

- Request for Proposals (Internationally) – for contracts with a value over USD 200,000 equivalent (i.e. > USD 200,000); and
- Request for Proposals (Nationally) – for contracts with a value up to and including USD 200,000 (i.e. ≤ USD200,000).

248. Prior-Review by IFAD. In accordance with paragraph 80 of the IFAD Project Procurement Guidelines, the following will be subject to prior review by IFAD:

a) Award of any contract for goods and equipment to cost USD 100,000 or equivalent or more (i.e. ≥ USD100,000);

b) Award of any contract for works estimated to cost USD 100,000 or equivalent or more (i.e. ≥ USD100,000);

c) Award of any contract for consulting services estimated to cost of USD 50,000 or equivalent or more (i.e. ≥ USD50,000);

d) All contracts done under direct procurement method; and

e) Memoranda of Understanding (MOU) or any equivalent contractual vehicle entered into between RFEP/FARE with any entity including GoM agencies.

THE PRODAPE PROCUREMENT CYCLE

249. The IDEPA will be held responsible for overall contract management including monitoring of performance of the implementing agencies as appropriate and establishing contract management systems. The IDEPA contract management system will include: a) management of contract start-up issues; b) opening and updating the contracts' register; c) monitoring of contract implementation; d) complaints handling management and tracking; e) implementation of penalty clauses; f) monitoring contract amendments; g) contract completion and closure; and h) record keeping, including e-filling.

250. Procurement records shall include a request to initiate each procurement action, the rationale for the method of procurement, solicitation document including, ToRs / specifications / bid documents, selection of contract type, advertisement, record of sale of bids, record of receipt of bids (both successful and unsuccessful bids), record of opening of bids, minutes and reports associated with the evaluation, justification for the award, award letter, acceptance letter, contracts (including amendments if any), and other correspondences related to the procurement, including approvals and '*No Objections'*. Under the IFAD General Conditions, records are kept for 10 years after project closure.

251. IFAD Involvement. All procurements with contract value above set thresholds will require the IFAD Country Portfolio Manager's clearance (*No Objection*). Also, IFAD Supervision Missions will always intently scrutinize project procurement processes to obtain reasonable assurance on the efficiency and effectiveness of procurement practices.

252. All PRODAPE procurement processes will involve fifteen sequential but interrelated steps. The steps describe the process from planning to contract performance evaluation, as discussed hereunder:

Step 1: Procurement Planning

253. Procurement planning is the first step – a critical step - that enables objectives and priorities to be set, workloads to be estimated and resources to be allocated. The PRODAPE will plan, organise, forecast and schedule its procurement activities and identify potential areas for aggregation of needs. Procurement planning is not the beginning in itself, before reaching the decision to procure, a number of more

fundamental decisions should have been made, for example, definition of project goals and resource availability. It is thus necessary for PRODAPE procurement planning to be aligned to or integrated with financial budget and project activity plans as much as practicable. At project inception, IFAD requires the PCU to prepare an indicative procurement plan covering a period of 18 months. This should be finalised and submitted to IFAD within six months of the implementation period. For subsequent years, 12-month successive plans should be prepared and synchronised with the AWPB during implementation period.

254. In addition, IFAD needs to provide the procuring units to ANE with useful templates for each step of the procurement cycle. Besides, a procurement workshop should be conducted jointly with IFAD, the UFSA, the IGF and the Administrative Court to clarify the role of each institution and anticipate any potential confusion that may lead to errors, delays and cost overruns.

255. Scope of the Plan. A Procurement Plan should at least include a brief description of each procurement activity to be undertaken during the period, estimated value of each activity, the method of procurement to be adopted for each activity and the method of review IFAD will undertake for each activity. The standard templates for the procurement plan are contained in the IFAD procurement Handbook.

256. All procurement will be executed only against approved procurement plans and AWPBs, specifying items to be procured, responsibility for the procurement and the appropriate procurement methods. A detailed procurement cycle is presented and discussed herein. The Procurement Plan for each year will be consistent with the PRODAPE AWPBs. Items procured outside the Procurement Plan and the related AWPB will be declared mis-procurement and the related expenditure will be ineligible for financing from the grant proceeds. The consolidated Procurement Plan will be submitted together with the AWPB to the NPSC for approval and to IFAD for review and expression of *'No Objection'*.

257. Summary of key areas to consider during the procurement planning process. The following is a summary of the key areas for consideration during the process of procurement planning:

a) A brief description of each procurement activity to be undertaken during the planning period;

b) The estimated value of each activity in USD equivalent to MZN;

c) The method of procurement to be adopted for each activity;

d) Works Procurement Packages with methods and time schedule;

e) Goods Procurement Packages with methods and time schedule;

f) Service Procurement Packages (both consultancy and non-consultancy assignments) with selection methods and time schedule;

g) Requirements as contained in the specific funding windows that will require requests for expression of interest will also be included in the plan under the services category;

h) The method of review IFAD will undertake for each activity (post or prior review);

i) Timelines showing milestones to be achieved in key stages of the procurement cycle; and

j) The effective procuring entity.

258. Tracking actual dates of completion against the baseline will be useful for future activities and is a powerful performance indicator of the procuring entity.

259. Procurement Plan Review. Once the initial plan has been approved and cleared by IFAD, it should form the basis of all procurement activities by the project. It is important that the procurement plan is reviewed at least once every quarter and necessary amendments are made promptly and a *No Objection* sought from IFAD, accordingly.

Step 2: Procurement Requisition

260. Once the procurement plan is in place, the various users will initiate procurements based on project needs by filling requisition forms. It is the responsibility of the users to specify the technical requirements and specifications of the required goods, services and works including the estimated cost of the goods and services.

Step 3: Confirmation of Funds Available

261. The Procurement Officer will first direct any procurement requisitions to the Finance / Contracts Manager to check availability of funds. This will take into account any outstanding commitments. Specifically, the Procurement Officer should confirm that the contract amount is covered by the amount stated in the budget and that there is (or there will be) enough money in the bank to pay the planned invoices as per the payment schedule. Strictly, any procurement should be stopped at this point if no funds are confirmed.

Steps 4, 5 and 6: Review of Specifications, ToR and Scope of Works

262. This will be done by the Permanent Tender Committee / *Ad Hoc* Evaluation Committee, Procurement Officer , depending on the package type to be procured. The results of the analysis will determine the method of procurement to be used and also result in the preparation of solicitation documents. The team will make use of the standard templates contained in the IFAD Procurement Handbook or those of the GoM. The solicitation documents are expected to cover Specifications / ToRs / Scope of Works, Procurement Method, Evaluation Criteria, Procurement method, Instruction to Bidders, Price Schedule and Terms and Conditions.

263. Solicitation documents will not be necessary where Direct contracting, local / international shopping or Force Account procurement methods are chosen. In this case, a RfQ will be prepared.

Step 7: Approval of Procurement Documents

264. Except for contracts falling under shopping procurement method, solicitation documents must be approved by the Permanent Tender Committee or *Ad-hoc* Evaluation Committee, depending on the type of procurement. For all items above the prior review threshold, IFAD's *No Objection* on the solicitation documents will be required.

Step 8: Advertising / Issuance of Bidding Documents

265. The conduct of a transparent and successful procurement is dependent on the quality of bidding documents. Thus, to guard against omissions, costly amendments arising out of bidders seeking clarifications and related delays, and unnecessary cost overruns, it will be essential that bid documents are very well prepared and obtain necessary approvals. Under PRODAPE, the GoM standard bid documents will be used and adapted to suit each specific procurement item. IFAD clearance of the Standard Bidding Documents / ToR and specifications in respect of the PRODAPE project will be a requirement.

266. Bidding opportunities should be advertised in such a way to allow an opportunity to all potential bidders to participate.

267. To ensure smooth and rapid procurement actions, all invitations to tender and expressions of interest shall be published through the IDEPA and the UFSA websites. The IDEPA will ensure that the necessary approvals and the required *No Objections* are obtained prior to implementing any procurement actions.

268. A shorter version of the advertisement text, including the minimum relevant information, shall be published in a national newspaper of wide circulation provided that the full text is simultaneously published in the official gazette or on a widely used website or electronic portal with free national and international access.

269. The issuance of solicitation documentations under open bidding will comply with the following:

- Arrange publication of the advertisement (open competitive bidding only). This can be via the local, regional and international newspapers, depending on the procurement method;
- Documents must be dispatched promptly to those who respond to any notice. If documents are being sold, they must be dispatched immediately on receipt of the request or payment of the fee, whichever is later;
- A register must be kept of all bidders issued with a document. This will be used to contact bidders in the event that a bid clarification or extension needs to be issued; and
- In all cases, bidders must be required to confirm receipt of the document.

270. The issuance of solicitation documentations under restricted bidding will comply with the following:

- Where documents are being issued to bidders on a shortlist or pre-qualified list, the documents must be dispatched to all bidders at the same time; and
- A record must be kept of the issue of documents.

271. Pre-bid conferences or site visits will be crucial for some procurements. This will be a useful technique because some of the procurements are highly technical. Through these site visits, a significant number of requests for clarification are likely to be received and knowledge of the site will be very important for tender preparation. This will, however, have to be included in the procurement plans and bid documents; it cannot be arranged hurriedly or on *ad hoc* basis.

272. The Tender Committee will undertake the following after the completion of the pre-bid conference or site visits:

- Prepare authorised minutes of the proceedings, which will be sent to all organisations that have been issued with solicitation documents;
- Determine whether it is necessary to issue a formal bid clarification in addition to the Minutes in which case Permanent Tender Committee (PTC) approval will be required;
- Determine whether it is necessary to amend the tender closing date as a consequence of the bid clarifications. The decision to extend the closing date should be made quickly but will also require approval of the PTC. It will save time and work if it is issued with the bid clarification.

273. Even without a pre-bid conference or in cases where site visits may not be mandatory, the PTC will provide clarifications to bidders in accordance with IFAD or

relevant GoM procurement regulations. Importantly, any clarification provided must be copied to all bidders that were issued with the bidding documents.

274. No automatic extension of the bid validity shall apply. If justified by exceptional circumstances, an extension of the bid validity may be requested in writing by the project to all bidders before the original bid validity expiration date and it shall cover only the minimum period required to complete the evaluation and award of the contract. It is important to note that where bid security is a requirement, extension of the validity period should correspond to the bid validity.

Step 9: Receipt and Opening of Bids

275. Bidders shall be given at least forty five days for ICB, thirty days for NCB and fourteen days for selective tendering, from the date of the invitation to bid or the date of availability of bidding documents, whichever is later, to prepare and submit bids in line with Public Procurement Regulations. It is good practice to publish bids when the tender documents are ready for issuance. This should shorten the time for the specific procurement cycle and allow adequate time to address clarifications whenever they arise. Bids shall be opened in public, immediately after the deadline for their submission in accordance with the procedures stated in the bidding documents. The public bid opening shall take place in only one session. At the public bid opening, the names of the bidders and the total amount of each bid and of any alternative bids if they have been requested or permitted, shall be read aloud and recorded when opened. Bids shall not be evaluated as part of the bid opening process, and no bid shall be rejected during the public bid opening session, except for late bids. Bidders shall not be allowed to submit their bids or additional information after the deadline for submission of bids has expired.

276. Bidders will deliver their bids to the location and official stated in the invitation document. The selected officer will ensure that the bids submitted are kept under key and lock. The committee will issue a receipt to the bidders confirming the date and time of delivery as proof of delivery prior to the deadline for submission. Bids submitted passed the deadline should be rejected. For open competitive bidding procurements, the opening date should be communicated in advance to the applicants and opened in their presence.

277. Qualification criteria shall entirely concern the bidder's capability and resources to perform the contract considering objective and measurable factors. The qualification criteria shall be clearly specified in the bidding documents, and all criteria so specified and only such criteria so specified shall be used to determine whether a bidder is qualified. Qualification criteria shall be assessed on a 'pass or fail' basis, and merit points shall not be used. Bidders' qualifications may be assessed by post-qualification and such an assessment shall be conducted separately from the technical and commercial evaluation of the bids.

Step 10: Evaluation of Bids

278. Evaluation of bids shall be made in strict adherence to the evaluation criteria declared in the bidding documents. Basically, the purpose of bid evaluation will be to decide on the most economically advantageous bid for contracting with PRODAPE**.** Evaluation of bids should be done systematically following certain procedures, as any error made at this stage can have significantly cost implications to PRODAPE. It is important that evaluation criteria are directly relevant to the package for which bidding in being carried out and neither should it be seen as favouring particular bidders. The committee doing the evaluation will follow the stages of a good evaluation process which include:

- *Preliminary examination* – to eliminate tenders that do not meet the basic requirements of the invitation document and bids that do not meet the mandatory eligibility requirements;
- *Assessing responsiveness and undertaking detailed technical and commercial requirements of the invitation documents* – this includes seeking clarification from bidders where necessary;
- *Financial evaluation* – to compare costs of the responsive tenders and determine which is successful bidder and should be recommended for award of contracts; and
- *Post qualification* – this will be done to verify if the best-evaluated bidder has the capacity and resources to execute the contract, if awarded. The criteria for post qualification should be specified in the solicitation documents. Post qualification should be done where pre-qualification was not carried out prior to bidding. If prequalification was carried out prior to bidding, the evaluators need to satisfy themselves that the information provided for in the prequalification is still valid before recommending contract award.

279. The following should be noted:

- A contract shall be awarded to the qualified bidder offering the lowest-evaluated and substantially responsive bid;
- Bidders shall not be eliminated on the basis of minor, non-substantial deviations;
- Requests for clarification and the bidder's responses shall be made in writing and all the clarifications made shall be notified to all the bidders; and
- After the public opening of bids, information relating to the examination, clarification, and evaluation of bids and recommendations concerning the awards shall not be disclosed to bidders or other persons not officially concerned with this process until publication of the award of the contract.

280. Rejection of all bids and re-bidding. Without the Fund's prior concurrence, there will be no procurement process where all the bids will be rejected, or which will be cancelled, and new bids solicited. This also applies to corrections on bid documents that had been previously given a *No Objection* by IFAD.

281. Securities. Bid securities shall not exceed 3% of the estimated cost of the contract and performance securities shall not exceed 10% of the contract price. The successful bidder shall be given at least 15 days from the receipt of notification of contract award to submit a performance security. No advance payment shall be made without a suitable advance payment security in accordance with Public Procurement Regulations.

Step 11: Submission of Evaluation Report to IFAD

282. To ensure that the evaluation of bids has been properly done, an independent person / committee will review the evaluation report. For procurement above a given threshold, the evaluation report will be submitted to IFAD for review.

Steps 12 and 13: Contract Award and Signature

283. The PRODAPE Procurement Committee will award the contract to the best-evaluated bid as per the reviewed evaluation report. The terms of the contract should be clear and are expected to be in line with the initial user requirements stated. To uphold the principles of transparency and responsiveness applicable in good public procurement, it is important that appropriate communication is made to both successful and unsuccessful bidders.

284. Contracts shall be in writing and the bid of the successful bidder shall become part of the contract documents. In the case of contracts signed after prior review by IFAD, the IFAD's *No Objection* shall be obtained before agreeing to any type of amendment, such as: a) a material extension of the stipulated time for performance of a contract; b) any substantial modification of the scope of services or other significant changes to the terms and conditions of the contract; and c) the proposed termination of the contract. A copy of all contracts and amendments shall be furnished to the IFAD for its record.

285. Complaints by Bidders and Handling of Complaints. The borrower / recipient shall establish an effective and independent protest mechanism allowing bidders to protest and to have their protest handled in a timely manner. The GoM complaint management procedure shall be used (see the PPD).

Steps 14 and 15: Contract Management and Performance Evaluation

286. This will be the last stage of any PRODAPE procurement process. This step is a critical part of the process as it focuses on the outcomes. Contract management strives for continuous improvement, value preservation and additional value creation, risk mitigation, quality assurance and compliance with the terms and conditions. The contract administration procedures are largely determined by the terms and conditions of each individual contract and the description of requirements for the goods, works or services. The procedures should be designed to ensure that:

- The supplier / service provider performs the contract in accordance with the terms and conditions specified in the contract;
- The PRODAPE fulfils its obligations and duties under the contract; and
- Swift remedial or preventative action is taken when problems arise or are foreseen.

287. The detailed contract administration tasks are outlined in the IFAD Procurement Handbook and therefore have not been reproduced in this PIM.

288. Right to Inspect / Audit. In accordance with the Procurement Guidelines, each bidding document and contract financed from the proceeds of the financing shall stipulate that bidders, suppliers and contractors, and their subcontractors, agents, personnel, consultants, service providers or suppliers, shall permit that IFAD, at its request, inspects their accounts, records and other documents related to the submission of bids and contract performance and to have them audited by auditors appointed by IFAD. Acts intended to materially impede the exercise of IFAD's inspection and audit rights constitute an obstructive practice as defined in the Procurement Guidelines.

289. Fraud and Corruption. In accordance with the Procurement Guidelines, each bidding document and contract financed from the proceeds of the financing shall include provisions on matters pertaining to fraud and corruption. The IFAD will sanction a firm or individual, at any time, in accordance with prevailing IFAD sanctions procedures, including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time.

290. Contract Registration. All contracts must be listed in the Register of Contracts, which should be updated and submitted to the IFAD on a quarterly basis. In accordance with the GoM Public Procurement Regulations, all contracts are subject to review by the Administrative Court. The IDEPA should ensure that the requirement is met.

291. Transparency, governance, anti-corruption. The PRODAPE Governance and Anti-Corruption Framework to mitigate the risk of corruption and promote effective utilisation of resources include the following:

a. The provisions of this financial management manual articulating the type of internal controls and administrative systems to be established towards transparency and accountability;

b. The E-SISTAFE accounting system that will substantially reduce the scope for human error;

c. The risk-based implementation reviews of programme financial management and staff;

d. The back-up procedures kept on the PCU's computer server to avoid the loss or damage of financial data;

e. The PRODAPE will also include a systems audit in the ToRs of the auditors and in the supervision plan; and

f. The internal audit department of MIMAIP will include the programme in its yearly internal audit oversight plans. The implementation status of the internal audit recommendations will be addressed and made available to the fund.

292. IFAD zero tolerance policy for corruption and fraud urges persons observing concerns of irregular practices in IFAD funded projects to report to the IFAD Office of Audit and Oversight through any of the following means:

- By telephone: +39 0654592888
- By confidential fax: +39 0654597888
- By confidential email: anticorruption@ifad.org or by using the online complaint form
- In person or by mail to: IFAD - Office of Audit and Oversight (AUO): Investigation Section - Via Paolo Di Dono, 44 - 00142 Rome, Italy

- **Annex 1: Sample Annual Workplan and Budget Templates**

Summary table 1: Planned Project Expenditures by Component and Financier

	Total		Financing Source				
Component	**Local**	**USD**	**IFAD Grant**	**Source 1**	**Source 2**	**Source 3**	**Beneficiaries**
1. Component 1 1. Component 2 2. Component 3 3. Component 4 4. Component 5							
Total							

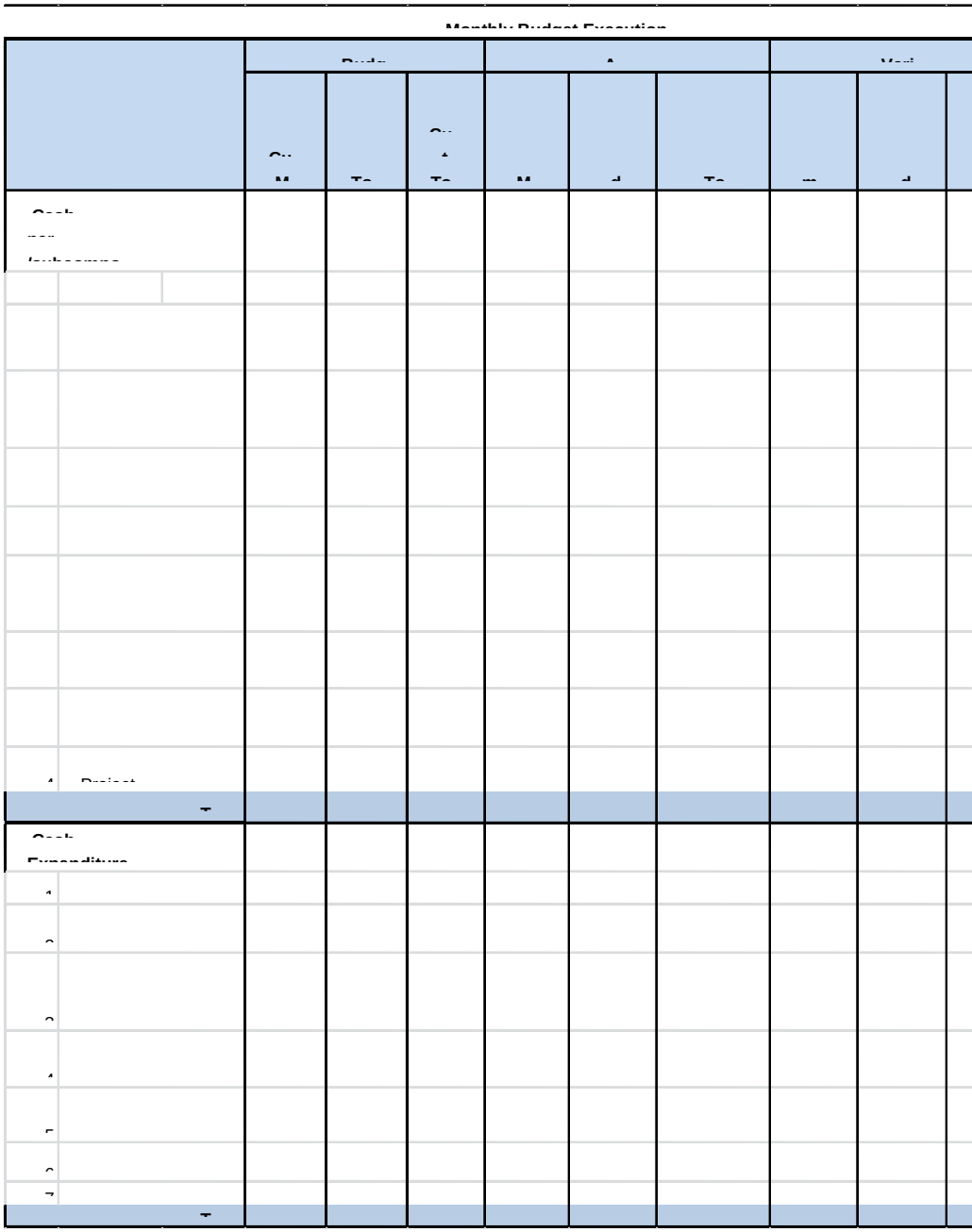
Summary table 2: Planned Project Expenditures by Expenditure Category and Financier

	Total		Financing Source				
Category	**Local**	**USD**	**IFAD Grant**	**Source 1**	**Source 2**	**Source 3**	**Beneficiaries**
I. Category 1 II. Category 2 III. Category 3 IV. Category 4 V. VI.							
Total							

Component	**Sub Component 1**	**Component 2**	**Component 3**	**Programme Management**	**Total**
Category					
I. Category 1 II. Category 2 III. Category 3 IV. Category 4 V. VI.					
Total					

- **Annex 2: Sample Templates for Monthly Report for Management Use**

Table 1: Monthly Budget Execution Report



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a. Table 2: Designated Account Reconciliation Form

Designated Account Reconciliation Statement (imprest account)	
Designated Account No: Bank Name:	
1. Total Advanced by IFAD	USD
2. Less total amount recovered by IFAD	USD
3. Equals present outstanding amount advanced to the designated account (line 1 less line 2)	USD
4.Balance of designated account per attached bank statements as of (Date: day/month/year)	USD
5. Plus balance of the project account(s) (listed separately)	USD
Plus, balance of sub accounts (listed separately)	USD
Plus, balance of Cash in Hand	USD
Total of Bank Balances (designated A/C, PA, SUB accounts& cash in hand balance) (line 4+line 5)	USD
6. Plus total amount claimed in this WA no.	USD
7. Plus total amount withdrawn from the designated/PA/Grant account and not yet claimed for replenishment) or WAs pending submission	USD
8. Plus amounts claimed in previous applications but not yet created at the date of bank statement and/or claimed after date of bank statement	USD

Application No.	Date	USD	Amount
		$	
		$	
		$	

9. Minus Interest earned (to be completed. If zero, please enter zero)		USD
10. Total Advance accounted for (line 5 through line 9)		USD
11. Explanation of any difference between the totals appearing in Lines 3 and 10		USD
e.g.	Non eligible amount to be refunded to the designated account	USD
e.g.	calculation errors in application of percentage financing	USD
e.g.	counterpart financial resources to be reimbursed	USD
e.g.	cheques not yet cleared/presented to Bank	USD

12 DATE _____ SIGNATURE

Name in full

Title in Full

-

b. Table 3: Petty Cash Reconciliation Form

Project _____ Date of reconciliation _____

Part I. Petty cash reconciliation

Petty cash balance brought forward (a) _____

Replenishments during the current month (b) _____

Total petty cash balance (c = a + b) _____

Disbursements during the current month (d) _____

Petty cash book balance (e = c – d) _____

Cash count balance (f) – see part ii. below _____

Difference (G = E – F) _____

Explanation Of Difference

_____

_____

Part II - Cash Count

Description	Quantity	Total amount
bank notes		
100		
50		
10		
coins		
Total in local currency		

Counted/reconciled by (Accounts Assistant)_____

Reviewed by (PA) _____

Date _____

c. Table 4: Monthly DSA report

Project Name:
Lead Project Agency: IDEPA
Reporting period: 1 Jan-31 Jan 2017

Monthly DSA report as at DD/MM/YYYY						
Name of Traveller/mission member	Description of the Training course/mission	Location	Cost (reporting period in USD)	Annual Planned (USD)	Cumulative Cost (annual in USD)	Variance (%)
Total						

Table 5: Monthly fuel consumption report

Project Name:
Lead Project Agency: MIMAIP
Reporting period:

Monthly fuel Consumption report as at DD/MM/YYYY						
Vehicle	Location	Quantity (litres)	Cost (reporting period in USD)	Annual Planned (USD)	Cumulative Cost (annual in USD)	Variance (%)
Total						

- **Annex 3: Sample Periodic Financial Progress Report**

Table 1: Statement of cash receipts and payments (by category and by financier)

	notes	20xx	20xx-1	Cumulative to date
		USD	USD	USD
1 - Initial cash balance / or cash balance brought forward		XX	XX	
FINANCING:				
- IFAD funds received:				
- Initial deposit				XX
- Replenishment of the Designated Account		XX	XX	XX
- IFAD Direct Payments		XX	XX	XX
- Funds received by the government - if any		XX	XX	XX
- Funds received by the beneficiary - if any		XX	XX	XX
- Other receipts - if any		XX	XX	XX
2 - TOTAL FINANCING		**XX**	**XX**	**XX**
PROJECT EXPENDITURES (BY CATEGORY OF EXPENDITURES)				
	IFAD Grant (separate analysis if different sources of IFAD's funding)			
Category				
1	*Consultancies*	xx	xx	xx
2	*Goods, Services and Inputs*	xx	xx	xx
3	Training and Workshops	xx	xx	xx
4	*Works*	xx	xx	xx
5	*Operating expenses*	xx	xx	xx
6	*Salaries and allowances*	xx	xx	xx
	Subtotal IFAD Grant	*xx*	*xx*	*xx*
	Government Funds			
1	*Consultancies*	xx	xx	xx
2	*Goods, Services and Inputs*	xx	xx	xx
3	Training and workshops	xx	xx	xx
4	*Works*	xx	xx	xx
5	*Operating expenses*	xx	xx	xx
6	*Salaries and allowances*	xx	xx	xx
	Subtotal Government Funds	*xx*	*xx*	*xx*
	Beneficiary Funds			
1	*Consultancies*	xx	xx	xx
2	*Goods, Services and Inputs*	xx	xx	xx
3	Training and workshops			
4	*Works*	xx	xx	xx
5	*Operating expenses*	xx	xx	xx
6	*Salaries and allowances*	xx	xx	xx
	Subtotal Beneficiary Funds	*xx*	*xx*	*xx*
3 - TOTAL PROJECT EXPENDITURES		**xx**	**xx**	**xx**
Balance brought forward (1 + 2 - 3)		xx	xx	xx

a. Table 2: Statement of cash receipts and payments (by component)

		notes	20xx	20xx-1	Cumulative to date
			USD	USD	USD
1 - Initial cash balance / or cash balance brought forward			XX	XX	
FINANCING:					
- IFAD funds received:					
	- Initial deposit				XX
	- Replenishment of the Designated Account		XX	XX	XX
	- IFAD Direct Payments		XX	XX	XX
- Funds received by the government - if any			XX	XX	XX
- Funds received by the beneficiaries - if any			XX	XX	XX
- Other receipts - if any			XX	XX	XX
2 - TOTAL FINANCING			**XX**	**XX**	**XX**
Component	***IFAD grant***				
1	Support to feed production		xx	xx	xx
	Support to fingerling production		xx	xx	xx
	Support to smallholder aquaculture farmers				
2	Support to aquaculture marketing		xx	xx	xx
	Nutrition / social risks		xx	xx	xx
	Etc.		*xx*	*xx*	*xx*
3	Project Management, etc.		xx	xx	xx
	Subtotal IFAD Funds		*xx*	*xx*	*xx*
	Government Funds				
1	Support to feed production		xx	xx	xx
	Support to fingerling production		xx	xx	xx
	Support to smallholder aquaculture farmers				
2	Support to aquaculture marketing		xx	xx	xx
	Nutrition / social risks		xx	xx	xx
	Etc.		*xx*	*xx*	*xx*
3	Project Management, etc.		xx	xx	xx

	Subtotal Government Funds	*xx*	*xx*	*xx*
	Beneficiary Funds			
1	Support to feed production	xx	xx	xx
	Support to fingerling production	xx	xx	xx
	Support to smallholder aquaculture farmers			
	Support to aquaculture			
2	marketing	xx	xx	xx
	Nutrition / social risks	xx	xx	xx
	Etc.	*xx*	*xx*	*xx*
	Project			
3	Management, etc.	xx	xx	xx
	Subtotal beneficiary Funds	*xx*	*xx*	*xx*
3 - TOTAL PROJECT EXPENDITURES		**xx**	**xx**	**xx**
Balance brought forward (1 + 2 - 3)		xx	xx	xx

Table 3: Statement of comparative budget and actual amount by category

	notes	**20XX BUDGET** USD	**20XX ACTUAL** USD	**VARIANCE** USD
FINANCING:				
- IFAD funds received:				
- Initial deposit				XX
- Replenishment of the Special Account (SA)		XX	XX	XX
- IFAD Direct Payments		XX	XX	XX
- Funds received by the government - if any		XX	XX	XX
- Funds received by beneficiaries - if any		XX	XX	XX
- Other receipts - if any		XX	XX	XX
TOTAL FINANCING		**XX**	**XX**	**XX**

Category	***IFAD Grant (separate analysis if different sources of IFAD's funding)***			
1	*Civil Works*	xx	xx	xx
2	*Equipment, Goods and Vehicles*	xx	xx	xx
3	Training, workshops, Technical assistance and studies	xx	xx	xx
4	*Pasture improvement grants*	xx	xx	xx
5	*Income generating Activity (IGA)*	xx	xx	xx

	Grants			
6	*Pasture reserve funds*	xx	xx	xx
7	*Operating Expenses*	xx	xx	xx
	Subtotal IFAD Grant	*xx*	*xx*	*xx*
	Government			
	Finance			
1	*Civil Works*	xx	xx	xx
2	*Equipment, Goods and Vehicles*	xx	xx	xx
3	Training, workshops, Technical assistance and studies	xx	xx	xx
4	*Pasture improvement grants*	xx	xx	xx
5	*Income generating Activity (IGA) Grants*	xx	xx	xx
6	*Pasture reserve funds*	xx	xx	xx
7	*Operating Expenses*	xx	xx	xx
	Subtotal Government Funds	*xx*	*xx*	*xx*
	Beneficiary			
	Funds			
1	*Civil Works*	xx	xx	xx
2	*Equipment, Goods and Vehicles*	xx	xx	xx
3	Training, workshops, Technical assistance and studies			
4	*Pasture improvement grants*	xx	xx	xx
5	*Income generating Activity (IGA) Grants*	xx	xx	xx
6	*Pasture reserve funds*	xx	xx	xx
7	*Operating Expenses*	xx	xx	xx
	Subtotal Beneficiary Funds	*xx*	*xx*	*xx*
TOTAL PROJECT EXPENDITURES		**xx**	**xx**	**xx**

The excess/deficit of actual expenditures over the budget of X% was due to….

Table 4: Statement of comparative budget and actual amount by component.

	notes	**20XX BUDGET**	**20XX ACTUAL**	**VARIANCE**
FINANCING:		USD	USD	USD
- IFAD funds received:				
- Initial deposit				XX

- Replenishment of the Special Account (SA)	XX	XX	XX
- IFAD Direct Payments	XX	XX	XX
- Funds received by the government - if any	XX	XX	XX
- Funds received by beneficiaries - if any	XX	XX	XX
- Other receipts - if any	XX	XX	XX
2 - TOTAL FINANCING	**XX**	**XX**	**XX**
Component *IFAD grant*			
1			
1.a	xx	xx	xx
1.b	xx	xx	xx
2			
2.a	xx	xx	xx
2.b	xx	xx	xx
3	*xx*	*xx*	*xx*
Subtotal IFAD Funds	*xx*	*xx*	*xx*
Government Finance			
1			
1.a	xx	xx	xx
1.b	xx	xx	xx
2			
2.a	xx	xx	xx
2.b	xx	xx	xx
3	*xx*	*xx*	*xx*
Subtotal Government Funds	*xx*	*xx*	*xx*
Beneficiary Funds			
1			
1.a	xx	xx	xx
1.b	xx	xx	xx
2			
2.a	xx	xx	xx
2.b	xx	xx	xx
3	*xx*	*xx*	*xx*
Subtotal beneficiary Funds	*xx*	*xx*	*xx*
3 - TOTAL PROJECT EXPENDITURES	**xx**	**xx**	**xx**

The excess/deficit of actual expenditures over the budget of X% was due to….

Table 5: Designated Account Reconciliation

Designated Account Reconciliation Statement (imprest account)	
Designated Account No: Bank Name:	
1. Total Advanced by IFAD	USD
2. Less total amount recovered by IFAD	USD
3. Equals present outstanding amount advanced to the designated account (line 1 less line 2)	USD
4.Balance of designated account per attached bank statements as of (Date: day/month/year)	USD
5. Plus balance of the project account(s) (listed separately)	USD
Plus, balance of sub accounts (listed separately)	USD
Plus balance of Cash in Hand	USD
Total of Bank Balances (designated A/C, PA, SUB accounts& cash in hand balance) (line 4+line 5)	USD
6. Plus total amount claimed in this WA no.	USD
7. Plus total amount withdrawn from the designated/PA/Grant account and not yet claimed for replenishment) or WAs pending submission	USD
8. Plus amounts claimed in previous applications but not yet created at the date of bank statement and/or claimed after date of bank statement	USD
9. Minus Interest earned (to be completed. If zero, please enter zero)	USD
10. Total Advance accounted for (line 5 through line 9)	USD
11. Explanation of any difference between the totals appearing in Lines 3 and 10	USD
e.g. Non eligible amount to be refunded to the designated account	USD
e.g. calculation errors in application of percentage financing	USD
e.g. counterpart financial resources to be reimbursed	USD
e.g. cheques not yet cleared/presented to Bank	USD

Application No.	Date	USD	Amount
		$	
		$	
		$	

12 DATE _____

SIGNATURE
Name in full
Title in Full

b. Table 6: STATEMENT OF EXPENDITURES –

c. WITHDRAWAL APPLICATION STATEMENT

Project Name:
Lead Project Agency: Ministry of Agriculture
Reporting period: 1 Jan-30 June 2012

STATEMENT OF EXPENDITURES - WITHDRAWAL APPLICATION STATEMENT							
		By category of Expenditures in Local Currency					
WA submitted to IFAD							
Category	Category Description	WA n..	WA n..		WA n..	WA n..	Total
1	AAAA	xx	xx		xx	xx	*xx*
2	BBBB	xx	xx		xx	xx	*xx*
3	CCCC	xx	xx		xx	xx	*xx*
Total		*xx*	*xx*		*xx*	*xx*	
In USD equiv/ Rejected from IFAD		xx xx	xx xx		xx xx	xx xx	
Net Reimbursed		*xx*	*xx*		*xx*	*xx*	
WA pending submission to IFAD							
Category	Category Description	WA n..	WA n..	WA n..		WA n..	
1	AAAA	xx	xx		xx	xx	

2	BBBB	xx	xx	xx	xx
3	CCCC	xx	xx	xx	xx
Total		*xx*	*xx*	*xx*	*xx*

Withdrawal applications are submitted for reimbursement to IFAD using the historical exchange rate of the transfers to the Operating Account.

Expenditures partially or totally rejected by IFAD (if any) should be detailed here.

This statement should be reconciled with the Statement of Receipts and Payments

-

- **Annex 4: Fixed Asset Register**

4. Fixed Asset Register

ASSET REF. NO.	ASSET DESCRIPTION	COMPONENT	FINANCING SOURCE	BENEFICARY AGENCY	LOCATION	ASSIGNED TO	TAG NUMBER	SUPPLIER NAME	PMT/INV. REFERENCE
Total									

a.

- **Annex 5: Vehicle Log**

Vehicle registration number _____
Assigned driver _____

Date	Time		Mileage		Trip		Fuel purchase		Driver signature	Responsible staff
	Departing	Arrival	Departing	Arrival	Destination	Purpose	Mileage	Quantity		

- **Annex 6: Vehicle History Record**

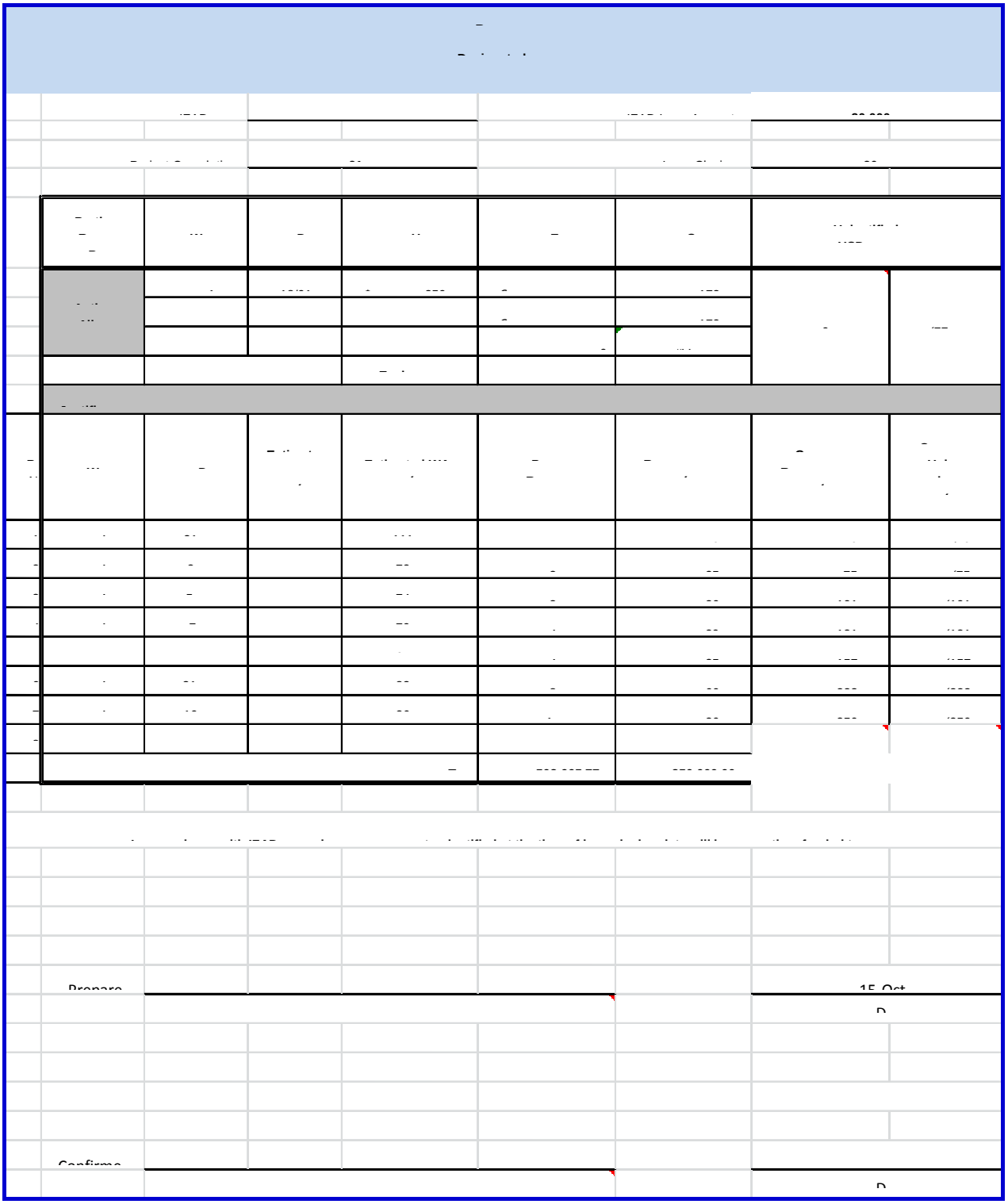
Vehicle registration number _____
Assigned driver _____

Date	Repairs			Service & maintenance			Insura
	Description of repair	Garage	Cost	Description of service	Garage	Cost	Type

Report accidents in the space below, providing all relevant details for each occurrence:
Date:
Place:
Name of driver:
Circumstances:
Damage to PCU vehicle:
Damage to other vehicles:
Injuries (indicate name of victims and describe injuries):
Insurance settlement:

a.

- **Annex 7: Sample Recovery Plan**



- **Annex 8: Procurement Manual**

Contents

List of Procedures

PRODAPE Procurement Manual

A. PREAMBLE

Public Procurement Environment in Mozambique

Public Procurement is regulated by a decree (Decree Nº 5/2016 dated 8 March - Regulations for Contracting of Public Works, Supply of Goods and Consultancy and Non-Consultancy Services) which approves the regulations for public Works contracts, supply of Goods and Consultancy (and non-consultancy) services. The regulations cover goods, works and services (including consultancy) for all procurement using national budget funds. The decree is enshrined in the State Financial Management System (SISTAFE) Law. Two Ministerial Orders were issued with the aim to set up the institutional arrangement following the Decree. The Ministerial Order nº 141/2006 dated 5 September establishes the public procurement authority (UFSA) within the Ministry of Finance, while Ministerial Order nº 142/2006 dated 5 September approves the structure of procuring units. Standard bidding documents were approved with ministerial orders; however, these documents are not updated to accommodate provisions of the new decree.

However, there are few weaknesses in the system that may negatively affect the project efficiency, including the complexity of the Government's electronic financial administration system e-SISTAFE; and complex procedures for approving contracts and procurement-related activities, and the delays this may lead to.

Donors and development partners' overall appreciation of the current status of public procurement in Mozambique.

The existing legal framework for public procurement in Mozambique is assessed to face some challenges. In fact, according to an Independent assessment of Public Procurement system carried out by the AfdB in 2017, the public procurement system in Mozambique-both in terms of: i) national public procurement legal framework and regulatory institutions performance and ii) procurement practices- was assessed to be moderately risky.

Capacity assessment

During the programme design mission, IFAD team undertook a comprehensive assessment of: (i) the degree of practical implementation of the Mozambican public procurement framework, and (ii) the procurement capacity of the programme implementing agency IDEPA and other stakeholders (oversight institutions: IGF, UFSA)

IFAD met with the World Bank (WB) and reviewed recent reports and assessments of the African Development Bank, the World Bank within the framework of their work in Mozambique in the procurement domain.

<u>Main findings of the procurement capacity assessment:</u>

The existing legal framework for public procurement in Mozambique is currently governed by the Public Procurement Decree (PPD) No: 5/2016 that establishes the principles and procedures to be applied in any procurement held by public authorities and institutions governed by public law, under public control or using public funds. The overriding principles of the legislation are: (i) legality, (ii) purpose, (iii) reasonableness, (iv) proportionality, (v) public interest, (vi) transparency, (vii) publicity, (viii) equality, (ix) competition, (x) fairness, (xi) good will, (xii) stability, (xiii) motivation, (xiv) responsibility, (xv) sound financial management, (xvi)speed and (xvii) other applicable principles of public law.

The Public Procurement Authority (UFSA) is the main regulatory authority. It is an important tool to improve the completion and transparency and to reduce costs.

Unfortunately, the Procurement Regulatory Authority (UFSA) does not have resources to: (i) handle complaints; (ii) conduct or contract out annual independent procurement audits; and (iii) publish contract awards;

The existing legal framework for public procurement in Mozambique is assessed to be broadly in compliance with international standards.

Overall, the capacity assessment has determined that the Mozambican public procurement system is deemed to be consistent with the IFAD's procurement guidelines, in particular, and with the International donor community requirements, in general. Hence, the national procurement system will be used to undertake the programme-funded procurement activities subject to the implementation of the risk mitigation plan detailed below. The team needs a capacity building session on the IFAD procurement guidelines including the use of the procurement plans and the contracts' register as monitoring tools and to anticipate activities by preparing all bidding documents in advance for all planned procurements

B. PROGRAMME'S PROCUREMENT ARRANGEMENTS

Programme Institutional aspects and implementation arrangements

PRODAPE will be integrated into the Ministry of Sea, Interior Waters and Fisheries (MIMAIP) that will be responsible for providing overall policy guidance and oversight.

Day-to-day oversight will be assigned to IDEPA as the lead project agency implementing the project through a Project Coordination Unit (PCU). The Ministry´s Provincial Directorates (DPMAIPs) will coordinate, implement and monitor procurement activities at the provincial levels.

Robust procurement systems and procedures will be put in place and used at all times during project implementation. Public, open and competitive procurement processes will be used, as relevant to warrant transparency and safeguard project resources. Templates will be provided for every step of the procurement cycle..

The national procurement officer in addition to the regional procurement officers and the provincial procurement officers will make sure the procurement activities are conducted as stated on the procurement manual, the procurement plan and monitor contracts using the e-archiv and the contracts' register.

Programme procurement arrangements

All procurement for the project will be under the oversight of the PCU. The PCU Procurement Specialist will oversee and carry out all PRODAPE procurement activities in coordination with specialised and technical units . At the provincial level , procurement would be limited to small works and locally available service providers for issues such as transport and subject to the close supervision by the PCU Fiduciary Officer. As required by the PPD, bidding documents will be submitted to the the administrative tribunal for approval. The PCU will also provide the necessary technical support in the preparation of technical specifications, bills of quantities and ToR to project participating provinces, as required.

While PCU staff will knowledgeable on national procurement procedures to be used under PRODAPE, they would need to be trained on applicable IFAD procedures and guidelines. A joint induction training should be conducted with IFAD, UFSA and staff from the Administrative Tribunal to explain the different roles within the project and provide guidance for smooth implementation. UFSA should publish all PRODAPE calls for bidding and contract awards. All relevant documentation will be stored in the e-archive system.

Risk Mitigation Measures

The procurement capacity assessment identified overall procurement implementation risks and gaps and proposed the following mitigation measures:

Analysis of Procurement Capacity	**Issues/Risks**	**Mitigation Measures**
1. Organization. Management of the project involves a PCU in IDEPA. This unit will ensure the overall coordination of the project and assume PRODAPE fiduciary responsibilities	During the assessment, it was not possible to ascertain that IDEPA is committed the fiduciary responsibility and the tasks that it entails.	It is recommended to make the fiduciary arrangements clear in the legal agreement and in the Programme Implementation Manual (PIM) for IDEPA and the entities involved in the project at the provincial level.
2. Facilities, Support Capacity and Staff Experience. The project implementation would involve, in addition to the PCU other structures/departments of the MIMAIP such as ANE and provincial entities	There are some doubts about the availability of support staff and capacity to undertake project-related procurement and produce adequate documentation in a timely manner.	(i) Conduct an induction training to brief and update MIMAIP/ IDPA staff who will be involved in project procurement on the main procurement procedures -- to be used in project implementation -- before the start of project operations; (ii) Hire a senior procurement specialist and a fiduciary officer to help in the preparation of the documents for procurement and selection of consultants; and (iii) Train staff and consultants involved in the project, on IFAD procedures and guidelines, as required.
3. Record Keeping and Filing System. Procurement records will be kept under the custody of the procuring in IDEPA	It is not sure that the IDEPA will have the capacity to cope with the project volume of transactions since some procurement transactions are handled by other departments.	Ensure that instructions and training are given to ensure that project specific files are kept for all procurement and related transactions and recorded contract by contract. Storing documents using e-archiving system can ease access to documentation.
4. Procurement Planning.	It is uncertain that IDEPA will update the project's Procurement Plan; it appears that the institution does not perceive the instrument as a management and monitoring tool. .	(i) Prepare a detailed Annual Work Plan and Budget (AWPB) with full costing consistent with an Annual Procurement Plan; (ii) Ensure proper coordination between IDEPA and other relevant units and departments at MIMAIP especially with respect

		to procurement planning; (iii) Use the procurement plan as a monitoring tool for processing timely activities, not only as a reporting tool.
5. Monitoring/Control Systems.	While the existing legal framework for public procurement in Mozambique is deemed to be almost in compliance with international standards, it still presents certain shortcomings at operational level.	Update the procurement section in the PIM to reflect new PPD provisions.
6. Capacity to meet IFAD's Reporting Requirements.	Register of contracts and annual reports on statistics for the overall procurement transactions are not provided in a timely manner and in an adequate format.	(i) Ensure that the Project Coordinator is assigned with the responsibility of reporting: (ii) Clearly define the content of reports and contributions of all entities involved in the project. (iii) Involve UFSA in project supervision missions and associated reports.
7. Conclusions: The executing agency MIMAIP/ IDEPA has the capacity to carry out and manage the procurement under this financing, provided that the above recommended actions are effectively carried out. This does not apply to the Procurement Plan, which should be provided before the approval of the financing.		

Procurement Arrangements

Overriding principles. As provided in Section 7.05 of the IFAD General Conditions, procurement of goods, works and services shall be carried out in accordance with the provisions of the Borrower/Recipient's procurement regulations, to the extent such are consistent with the IFAD Procurement Guidelines and by observing the following specific principles:

- Procurement will be carried out in accordance with Financing Agreement and any duly agreed amendments thereto;
- Procurement will be conducted within the project implementation period, except as provided under Article 4.10(a)(ii) of IFAD General Conditions;
- The cost of the procurement is not to exceed the availability of duly allocated funds established in the Financing Agreement;
- Procurement is to be consistent with the duly approved AWPB including a procurement plan;
- Procurement is to result in the best value of money and fit for purpose.

Procurement of goods. The goods to be financed under the project include but are not limited to the following: office equipment (computers, printers, photocopiers and other equipment), accounting software and vehicles. Contracts for procurement of goods costing USD 200 000 or more will be awarded based on International Competitive Bidding (ICB); those costing USD 10 000 or more, but less than USD 200 000 will be based on National Competitive Bidding (NCB); while those costing less than USD 10,000 will be based on National Shopping/Request for Quotations (RfQ).

Procurement of works. Works to be financed under the PRODAPE include, but are not limited to, the construction of Irrigation scheme / ponds. The procurement of works estimated to cost more than USD 50,000 and less than USD 1 million will be carried out under NCB; ICB will be applied for contracts to cost USD 1 million and above. National Shopping/RfQ will be applied for contracts with values estimated at USD 50,000 or below, as long as they are clearly identified in the relevant AWPB and procurement plan.

Procurement of consulting services. The consulting services to be financed under the project include, but are not limited to, are the following: the selection of individual consultants, the market study and other qualitative studies on social issues relevant to the project. These studies will be under the responsibility of MIMAIP/IDEPA. (i) Quality and Cost Based Selections (QCBS); (ii) Least-Cost Selection (LCS); (iii) Selection Based on the Consultants' Qualifications (CQS); (iv) Single Source Selection (SSS); and, (v) Selection of Individual Consultants (IC).

Direct Contracting. Direct contracting might be used, if duly justified, for some expenses which could include hiring venues for training, village/ community based events such as awareness raising and sensitization, beneficiary exchange visits and visits to demonstration sites.

Prior Review Thresholds. The following shall be subject to prior review:

i. Award of any contract for goods and equipment to cost USD 50 000 or equivalent or more;

ii. Award of any contract for works estimated to cost USD 100 000 or equivalent or more;

iii. Award to a firm of any contract for consulting services estimated to cost USD 50 000 or equivalent

iv. Award to an individual of any contract for consulting services estimated to cost USD 30 000 equivalent and more;

v. All contracts awarded through direct contracting and/or single source selection; and

vi. Award of and the first two contracts regardless of the contract amount.

1. The above thresholds may be modified by IFAD unilaterally or upon MIMAIP request as a result of experience in the field during the course of PRODAPE implementation;

2. All contracts will be listed in the Register of Contracts maintained by the procuring entity with the date of IFAD approval, irrespective of the contract having been approved by IFAD or not. As this report facilitates the review and approval of payment requests for contracts, it is to be updated and submitted to the IFAD Country Programme Manager (CPM) on a quarterly basis. It would also be necessary that the PMU at IDEPA prepares annual statistics for all procurement transactions carried out under the project.

3. **Bidding Documents**. All bidding documents for the procurement of goods, works and services will be prepared by IDEPA procurement officer as required. At the provincial level, procurement assistants under the overall guidance of the IDEPA procurement officer. All procurement documents will be cleared by MIMAIP and the IFAD before any action is taken. As per IFAD Procurement Handbook, where ICB is being used, the World Bank ICB procedures, as set forth in their Procurement Guidelines, will apply in all cases.

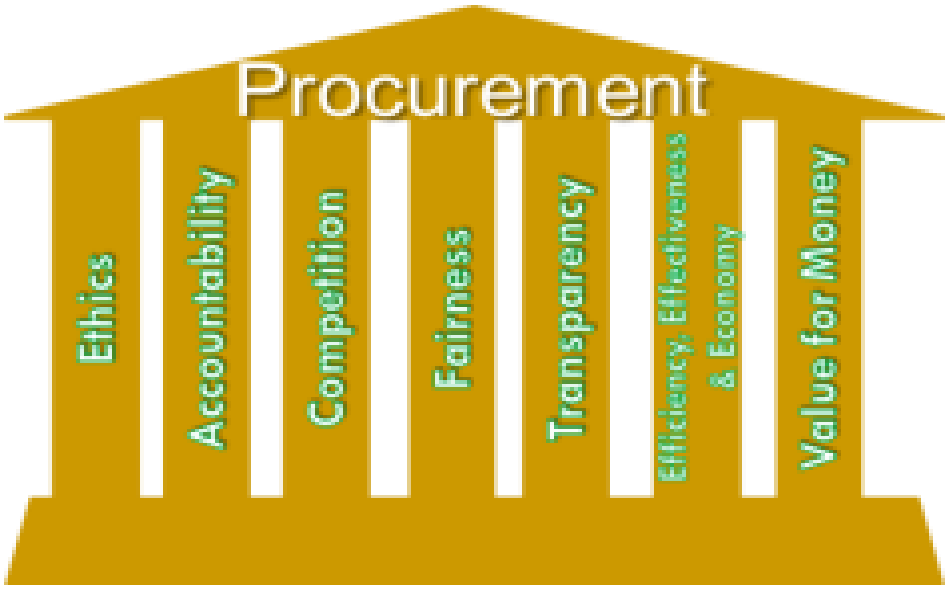
II. PROCUREMENT PLAN

Procurement Plan.

Full version of the procurement plan covering the whole programme duration will be available at MIMAIP/IDEPA before programme effectiveness. The procurement plan will be updated at least semi-annually in agreement with IFAD or as required to reflect actual project implementation needs and improvements.

General Considerations

The responsibility for the implementation of the project, and therefore for the award and administration of contracts under the project, rests with the Borrower/MIMAIP. The IFAD, for its part, is required to ensure that the proceeds of any loan or grant are used only for the purposes for which the loan or grant was granted. While in practice the specific procurement rules and procedures to be followed in the implementation of a project depend on the circumstances of the particular case, seven (7) principles generally guide the Fund's requirements: 1) Ethics, 2) Accountability, 3) Competition, 4) Fairness, 5) Transparency, 6) Efficiency, Effectiveness & Economy and 7) Value for Money.



Ethics : The guiding principles of ethical behavior are impartiality, independence and integrity. No person or entity shall use his/her/its authority, position or office for personal gain, which will be defined as soliciting, accepting or otherwise benefiting from anything of material value, in any form[21], either in person or indirectly through close relatives or associates, as a result of procurement financed by IFAD. Borrower/Recipient officials engaged in procurement activity have a duty to:

(a) maintain and enhance the reputation of the Borrower/Recipient country by:

(i) maintaining the highest standards of honesty and integrity in all professional relationships;

(ii) developing the highest possible standards of professional competence;

(iii) maximizing the use of IFAD funds and other resources for which they are responsible for the purposes for which these funds and resources were provided to the Borrower/Recipient country; and

(iv) complying with both the letter and the spirit of:

- the financing agreement;

21 Including, but not restricted to, gifts, services, favours or hospitality

- the laws and regulations of the Borrower/Recipient country;
- accepted professional ethics; and
- contractual obligations;

(b) declare any personal interest that may affect, or might reasonably be deemed by others to affect, impartiality in any matter relevant to their duties (conflict of interest). In a situation of this nature, the official concerned should not participate in any way in the procurement process, to avoid mis-procurement; and

(c) respect the confidentiality of information gained in the course of duty and not use such information for personal gain or for the unfair benefit of any bidder, supplier or contractor. Information given in the course of their duties shall be true, fair and not designed to mislead.

Accountability: The Borrower/Recipient is accountable to IFAD for all actions and decisions in relation to project-funded procurement. This includes, but is not limited to:

(a) Ensuring that the funds are used solely for the purpose for which they were provided; and

(b) Ensuring that procurement is undertaken in accordance with these Guidelines.

Competition: Full, fair and legitimate competition among eligible suppliers and contractors is the foundation on which project-funded procurement activities should be based. The most common method of seeking competition is through a competitive bidding process, and, in this regard, IFAD specifies that all goods, works and services should be obtained through an agreed[22] procurement process involving at least three separate[23] suppliers or contractors whose business is directly related to the procurement being undertaken. It is recognized that it is neither practical nor efficient to advertise internationally for low-value contracts for goods, works or services, and the degree to which the principle of competition is required for each procurement activity will be outlined in the procurement method approved by IFAD within the procurement plan. Borrowers/Recipients will be expected to promote genuine competition at every opportunity and maybe required to provide evidence of:

(a) fair and genuine competition in the compilation of shortlists and in the solicitation of bids; and

(b) the effectiveness of competition during the bidding process.

Single sourcing and direct contracting do not provide the elements of competition required by IFAD. Only in exceptional circumstances will these approaches be considered and approved in procurement plans agreed with IFAD.

Fairness: IFAD's expectation is that project-funded procurement will be open to as many eligible bidders from IFAD's developed and developing Member States as is practicable in order to meet the requirements of competition. IFAD expects Borrowers/Recipients to ensure that all prospective bidders are:

(a) managed with a consistent approach and application of laws, regulations and requirements in respect of the procurement process;

(b) offered a level playing field on which to genuinely compete; and

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22 "Agreed" refers to the use of a recognized procurement method approved in the procurement plan.

23 In this context, "separate" means that the suppliers or contractors must (i) all have separate ownership, (ii) not have any affiliation, connection, association or attachment with each other that may be deemed to compromise the principle of competition, and (iii) have no common shareholders or directors.

(c) treated in a fair, impartial and unbiased way, so that principles of impartiality and equal opportunity can be demonstrated in all procurement activities.

In striving for fairness in its procurement operations, IFAD:

(a) will not tolerate exclusion of, discrimination, bias or prejudice against, or favouritism or inequality towards any potential supplier or contractor, either directly or indirectly through manipulation of any part of the procurement process, including, but not limited to, the preparation of technical specifications, evaluation criteria or bidding requirements. Where any such activity is suspected or proven, IFAD reserves the right to take any preventative, corrective or punitive action it considers appropriate; and

(b) will seek to address, in consultation with the Borrower/Recipient, any impositions that may deter or impinge on the attainment of fairness within the procurement process.

Transparency: IFAD expects the highest degree of transparency and openness within the procurement processes undertaken under its projects. A lack of transparency can be perceived as an attempt to withhold information, which in turn may make the fairness and integrity of the procurement process suspect. Transparency within procurement relates to disclosing the public domain, information for parties involved, interested in or affected by the process, including but not limited to information on:

(a) the availability of potential and existing procurement opportunities;

(b) where to access relevant data;

(c) the processes by which the procurement is being undertaken;

(d) the mechanisms by which contracts will be awarded;

(e) contract award data; and

(f) appeal procedures.

Modes of communication/publication of such information will vary depending on the nature of the data but will generally be through existing means of public information (e.g. government websites, public notice boards or media) or in the procurement documentation relevant to an individual procurement activity (e.g. bid notices and bidding documents). Borrowers/Recipients are required at all times to act openly, predictably and in accordance with the information provided.

Efficiency, Effectiveness and Economy: IFAD requires Borrowers/Recipients to demonstrate efficiency and economy in undertaking project-related procurement, to avoid undue implementation delays and to achieve value for money. Procurement must be well organized, carried out correctly with regard to quantity, quality and timeliness, and at the optimum price, in accordance with the appropriate guidelines, principles and regulations. Processes must be proportionate to the procurement activity, so that the overall cost of conducting the procurement process is minimized and tailored to the size of the budget for the activity being undertaken, while upholding the guiding principles. Efficiencies can be obtained through a combination of methods. For instance, a strategic approach can be taken to planning, combining and conducting procurement activities so as to minimize loss of time and resources. For this reason, the design of all IFAD-funded projects must now include a procurement plan.

Value for money: Underpinning all of the above is the need to obtain value for money for all project procurement activities through the optimum combination of several factors, including:

(a) applying sound, internationally recognized procurement principles;

(b) ensuring that the goods, works or services procured meet the requirements for the task and are not overspecified;

(c) ensuring that the goods, works or services are contracted on the best possible terms, taking into account their expected life cycle; and

(d) ensuring that the provider/supplier of the goods, works or services is qualified, legally entitled and competent to execute the contract.

Best value does not necessarily mean the lowest initial price option, but rather represents the best return on investment, taking into consideration the unique and specific circumstances of each procurement activity; the balance of time, cost and quality required; and the successful overall outcome of the contract in meeting its original objectives.

Applicable procurement rules and regulations

Overriding principles

As provided in Section 7.05 of the General Conditions, procurement of goods, works and services shall be carried out in accordance with the provisions of the Borrower/Recipient's procurement regulations, to the extent such are consistent with the IFAD Procurement Guidelines and by observing the following specific principles:

- Procurement will be carried out in accordance with Financing Agreement and any duly agreed amendments thereto;
- Procurement will be conducted within the Programme implementation period, except as provided under Article 4.10(a)(ii) of IFAD General Conditions;
- The cost of the procurement is not to exceed the availability of duly allocated funds as per the Financing Agreement;
- Procurement is to be consistent with the duly approved annual work plan and budget (AWP/B) including a procurement plan (for the first time, the procurement plan will cover the first 18 months of the programme implementation period);
- Procurement is to result in the best value of money and fit for purpose.
- All goods, works and services procured will be exempt from duties and taxes.

Procurement Methods and prior review thresholds

Procurement methods and thresholds. For activities to be implemented by PRODAPE Project, the following procurement methods and thresholds will apply.

Procurement of goods/non-consulting services

- **Goods and Works and Non-consulting services**

1. Procurement methods and Prior review thresholds

The goods to be financed under the programme include but are not limited to the following: Office equipment (computers, printers, photocopiers, and other equipment), accounting software, barns, insulated tents, vegetable irrigation system, vehicles, and minibus.

- ***International Competitive Bidding (ICB)*** will be used for the procurement of goods costing USD 200 000 equivalent and above. Where ICB is being used, the World Bank ICB procedures, as set forth in their Procurement Guidelines, will apply in all cases.
- ***National Competitive Bidding (NCB)(or Open procedure)*** will be used for the procurement of goods costing USD 100 000 equivalent or more but less than USD 200 000 equivalent. Procedures to be followed are those as set forth in the Mozambique's Public Procurement Decree (PPD) no. 05/2016 and described in this Manual.

- ***National Shopping*** will be used for the procurement of goods costing less than USD 10,000 equivalent will be based on as described in the Procurement Manual.
- **Direct Contracting** might be used, if duly justified, for some expenses related to venues for training, village/ community based events such as awareness campaigns, farmer exchange and study tours, and visits to demonstration sites.

Procurement of works

he works to be financed under the programme include, but are not limited to, the following: construction of fruit processing units, construction of milk collecting and cold storage, construction of Cattle/sheep/goat market/ barrier, construction of Vegetable / fruit markets, construction of Market roads and construction of Irrigation scheme / ponds.

- ***International Competitive Bidding (ICB)*** will be used for the procurement of works costing USD

  1 Million equivalent and above. Where ICB is being used, the World Bank ICB procedures, as set forth in their Procurement Guidelines, will apply in all cases.
- ***National Competitive Bidding (NCB)(or Open procedure)*** will be used for the procurement of works costing USD 200 000 equivalent or more but less than USD1 Million equivalent. Procedures to be followed are those as set forth in the Mozambique Public Procurement Decree (PPD) no. 5/2016 and described in this Manual.
- ***National Shopping*** will be used for the procurement of works costing less than USD 50 000 equivalent will be based on as described in the Procurement Manual.

Definition of the applicable Procurement methods

- *International Competitive Bidding*: International competitive bidding (ICB) is a procurement method suited to high-value requirements that would be of interest to the international business community. The objective of ICB is to provide all eligible prospective bidders located and operating both within the Borrower's/Recipient's country and abroad with timely and adequate notification of the Borrower's/Recipient's requirements and an equal opportunity to bid for the required goods and works. Where ICB is the identified method of procurement within an approved procurement plan, World Bank procedures as set forth in their guidelines will apply. As per the *new Procurement Regulations for Investment Project Financing (IPF) Borrowers of the World Bank* available at: *https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005&ver=current*, the competitive bidding is now called " Request for Bids (RFB)". A RFB is a competitive method for the solicitation of Bids. It should be used when, because of the nature of the Goods, Works, or Non-consulting Services to be provided, the Borrower is able to specify detailed requirements to which Bidders respond in offering Bids. The minimum period allowed for preparation of Bids/Proposals shall be **thirty (30) Business Days** for open international competitive procurement. The Standard Procurement Document for Request for Bids is available at: *http://pubdocs.worldbank.org/en/299661509568509693/SPD-Request-for-Bids-GOODS-1-envelope-OCT-2017.docx* **for Goods** and at *http://pubdocs.worldbank.org/en/328641509642865653/SPD-Request-for-Bids-SMALL-WORKS-1-Env-OCT-2017.docx* **for works**.

- *National Competitive Bidding (NCB)(or Open procedure)* (Article 6 of the PPD No 5/2016): Open procedure is used where all bidders may submit their tenders without any limitation. Both qualification and financial offer is submitted in open procedure. The tender documents to be used are those as defined in Art. 47-2 of the PPD no. 5/2016 and provided electronically against fees payment.
- *Shopping*. Shopping is a procurement method that entails comparing price quotations from several suppliers or contractors (usually at least three) to ensure competitive prices. It is an appropriate method for procuring readily available, off-the-shelf goods or standard specification commodities that are small in value, or simple civil works of small value. Requests for quotations should indicate the description and quantity of the goods, together with desired delivery (or completion) time and place. Quotations may be submitted by mail, electronic mail or facsimile. The evaluation of quotations will follow the principles of competition. The terms of the accepted offer are to be incorporated in a purchase order or brief contract. Under international shopping, the purchaser is to solicit quotations from at least three suppliers in two different countries. National shopping may be used where the desired goods are ordinarily available from more than one source in the country of the Borrower/Recipient at competitive prices.
- *Direct Contracting (for Goods and Works)* consists in procuring goods or works without competition (by single or sole-source selection). Due to its non-competitive nature, DC may **is only permitted in the following exceptional circumstances**:

    a) An existing contract for goods or works awarded in accordance with procedures acceptable to IFAD, may be extended for additional goods or works of a similar nature **to a maximum of 25 per cent (%) of the original contract value**, with the prior approval of IFAD, provided that no advantage could be obtained by further competition and that the prices on the extended contract are reasonable. Provision for such an extension, if considered likely in advance, is to be included in the original contract;

    b) Standardization of vehicles, equipment or spare parts to ensure compatibility with existing vehicles, equipment or machinery may justify additional purchases from the original supplier. For such purchases to be justified, the original vehicles, equipment or machinery should be suitable; the number of new items should generally be less than the existing number; the price should be reasonable; and the advantages of another make or source of equipment are to have been considered and rejected on grounds acceptable to IFAD;

    c) The required equipment is proprietary and obtainable only from one source;

    d) The contractor responsible for a process design requires the purchase of critical items from a particular supplier as a condition of a performance guarantee; and

    e) Purchases from the original supplier may also be justified in exceptional cases and emergencies, such as in response to a natural disaster, conflict and post conflict, or in countries where there are restrictions to free markets and enterprises.

    Any request for direct contracting from a Borrower/Recipient must be accompanied by a detailed justification, which IFAD will examine carefully to ensure that it is satisfied that no other alternative selection methods can be used.

In Direct Procurement, the needs shall be met upon a market price research by a person or persons to be assigned by contracting officer, without necessity of establishing a tender commission and of requiring the qualification provisions stated in article 265 of the PPD no.5/2016.

Any request for direct contracting from a Borrower/Recipient must be accompanied by a detailed justification, which IFAD will examine carefully to ensure that it is satisfied that no other alternative selection methods can be used.

Consulting Services:

The consulting services to be financed under the programme include, but are not limited to, the following: study on Quality Control, study on geographical indication, the recruitment of IDEPA and RPMU support staff, baseline survey, mid-term review, completion review, impact assessment, market study and studies on Sector Development Facility. PRODAPE is expected to conduct

- *Quality and Cost Based Selection* (**QCBS**);
- *Least-Cost Selection* (**LCS**);
- *Consultant's Qualification-based Selection* (**CQS**);
- *Single Source Selection* (**SSS**); and
- *Selection of Individual Consultants* (**IC**).

Definition of the Consultants' selection methods

- *Quality and Cost Based Selection (QCBS)*. QCBS is a competitive process among Shortlisted consulting firms under which the selection of the successful firm takes into account the quality of the Proposal and the cost of the services. The request for proposals (RFP) document shall specify the minimum score for the technical Proposals. The relative weight to be given to the quality and cost depends on the nature of the assignment. Among the Proposals that are responsive to the requirements of the request for proposals document and are technically qualified, the Proposal with the highest combined (quality and cost) score is considered the Most Advantageous Proposal
- *Least-Cost Selection (LCS)*. Similar to QCBS, LCS is a competitive process among Shortlisted consulting firms under which the selection of the successful firm takes into account the quality of the Proposal and the cost of the services. LCS is generally appropriate for assignments of a standard or routine nature (such as engineering designs of non-complex Works), for which well-established practices and standards exist. The request for proposals document specifies the minimum score for the technical Proposals. Among the Proposals that score higher than the minimum technical score, the Proposal with the lowest evaluated cost is considered the Most Advantageous Proposal.
- *Consultant's Qualification-based Selection (CQS)*. CQS is appropriate for small assignments or Emergency Situations in which preparing and evaluating competitive Proposals is not justified. The Borrower shall request expressions of interest (REOI), by attaching the TOR to the REOI. At least three qualified firms shall be requested to provide information about their relevant experience and qualifications. From the firms that have submitted an Expression of Interest (EoI), the Borrower selects the firm with the best qualifications and relevant experience and invites it to submit its technical and financial Proposals for

negotiations. Advertisement of REoIs is not mandatory.

- *Single Source Selection (SSS)*. This selection method may be appropriate when only one firm is qualified, a firm has experience of exceptional worth for the assignment, or there is justification to use a preferred firm. SSS may be appropriate under the following circumstances:

    a) an existing contract for Consulting Services, including a contract not originally financed by IFAD but awarded in accordance with procedures acceptable to IFAD, may be extended for additional Consulting Services of a similar nature, if it is properly justified, no advantage may be obtained by competition, and the prices are reasonable;

    b) for tasks that represent a natural continuation of previous work carried out by a Consultant within the last 12 months, where continuity in the technical approach, experience acquired, and continued professional liability of the same Consultant may make continuation with the initial Consultant preferable to a new competition, if performance has been satisfactory in the previous assignment(s);

    c) there is a justifiable requirement to reengage a firm that has previously completed a contract with the Borrower to perform a similar type of Consulting Service. The justification shows that the firm performed satisfactorily under the previous contract, no advantage may be obtained by competition, and the prices are reasonable;

    d) the procurement is of both very low value and low risk, as agreed in the Procurement Plan;

    e) in exceptional cases, for example, in response to Emergency Situations;

    f) only one firm is qualified, or one firm has experience of exceptional worth for the assignment; or

    g) the Consulting Services provided in the Borrower's country by a State Owned Enterprise (SOE), university, research center, or institution of the Borrower's country are of a unique and exceptional nature.

    In all instances of direct selection, the Borrower shall ensure fairness and equity, and shall have in place procedures to ensure that:

    - the prices are reasonable and consistent with the market rates for services of a similar nature; and
    - the required Consulting Services are not split into smaller-size procurements to avoid competitive processes.

- *Individual consultants (IC)*. IC are employed on assignments for which (a) a team of experts is not required, (b) no additional outside (home office) professional support is required, and (c) the experience and qualifications of the individual are the paramount requirement. Advertisement for seeking expressions of interest (EOI) is encouraged, particularly when the Borrower does not have knowledge of experienced and qualified individuals or of their availability, or the services are complex, or there is potential benefits from wider advertising, or if it is mandatory under national decree. All invitations for EOIs should specify selection criteria that are solely based on experience and qualifications.

    Individual consultants are selected on the basis of their relevant experience, qualifications, and capability to carry out the assignment. They do not need to submit proposals and shall be considered if they meet minimum relevant

requirements which shall be determined by the Borrower on the basis of the nature and complexity of the assignment, and assessed on the basis of academic background and relevant specific experience, and, as appropriate, knowledge of local conditions such as national language, culture, administrative systems, and government organization. The selection shall be carried out through the comparison of the relevant overall capacity of at least three qualified candidates among those who have expressed interest in the assignment or have been approached directly by the Borrower. Individuals selected to be employed by the Borrower shall be the most experienced and best qualified, and shall be fully capable of carrying out the assignment. The Borrower shall negotiate a contract with the selected individual consultant after reaching agreement on satisfactory terms and conditions of the contract, including reasonable fees and other expenses.

- Individual consultants may be selected on a single-source basis with due justification in exceptional cases such as:
    a) tasks that are a continuation of previous work that the consultant has carried out and for which the consultant was selected competitively;
    b) assignments with a total expected duration of less than 6 (six) months;
    c) urgent situations; and
    d) when the individual is the only consultant qualified for the assignment. The Borrower shall submit to IFAD for its review and no objection the TOR of the assignment, a sufficiently detailed justification, including the rationale for single-source selection instead of a competitive selection process, and the basis for recommending a particular individual consultant in all such cases.

Government officials and civil servants of the Borrower's country may only be hired under consulting contracts in the Borrower's country, either as individuals or as members of the team of experts proposed by a consulting firm, provided that such hiring does not conflict with any employment or other laws or regulations, or policies of the Borrower's country and if they **(i)** are on leave of absence without pay, or have resigned or retired; **(ii) are not being hired by the agency they were working for before going on leave of absence without pay, resigning, or retiring** and (iii) their hiring would not create a conflict of interest

Prior review thresholds. In accordance with paragraph 80 of the IFAD Project Procurement Guidelines, the following will be subject to prior review by IFAD:

Works

- Documents for the first two (2) contracts, regardless of their value, and thereafter for works estimated to cost USD100,000 or more;
- Award of the two (2) first contracts procured through shopping; and
- Award of any contract through direct procurement/contracting.

Goods /Non consulting-services

- Documents for the first two (2) contracts, regardless of their value, and thereafter for goods estimated to cost USD50,000 or more;

- Award of the two (2) first contracts procured through shopping; and
- Award of any contract through direct procurement/contracting.

Consulting services

- Documents for the first two (2) contracts for consulting firms, regardless of their value, and thereafter for services estimated to cost USD50,000 or more;
- Documents for the first two (2) contracts for Individual Consultants, regardless of their value, and thereafter for services estimated to cost USD30,000 or more; and
- Award of any contract through single source selection.

The aforementioned thresholds may be modified by IFAD during the course of Project implementation.

The following documents/steps shall be submitted by the Borrower to IFAD's prior review

Goods, non-consulting services and works

Prior to issuance of invitations to bid, IFAD reviews:

- conformity of procurement with applicable rules/procedures, approved AWPB/procurement plan and funds availability;
- draft bidding documents, including invitation to bid, instructions to bidders, technical specifications, qualification criteria, contractual conditions; and
- proposed composition of the bid evaluation committee (for comments if requested by IFAD).

After borrower's evaluation of bidders' submissions, IFAD reviews:

- bid evaluation report including minutes of public bid opening session, evaluation and comparison of bids and award recommendation.

Consulting services (Firms)

Prior to issuance of Request for proposals (RFP), IFAD reviews:

- conformity of procurement with applicable rules/procedures, approved AWPB/procurement plan and funds availability; and
- draft RFP, including instructions to consultants, terms of reference (TOR), selection method and evaluation criteria, shortlist of consultants, cost estimate, and contractual conditions.

After borrower's evaluation of technical proposals, IFAD reviews:

- technical evaluation report, including description of the process, summary of scores and award recommendation
- technical scores/ranking given to each consultant on each evaluation criterion
- scores given by each evaluation committee member
- copy of proposals, if requested by IFAD

After borrower's evaluation of financial proposals, IFAD reviews:

- minutes of public bid opening
- account of adjustments made to prices of the proposals and determination of the evaluated price
- final evaluation report and award recommendation; and
- the negotiated draft contract.

Consulting services (Individual Consultants)

- *Competitive selection process*: the Evaluation report comparing at least 3 CVs along with the 3 CVs and the negotiated contract with the selected consultant as initialed by the latter:
- *Single source selection*: The Borrower shall submit to IFAD for its review and no objection the TOR of the assignment, a sufficiently detailed justification, including the rationale for single-source selection instead of a competitive selection process, and the basis for recommending a particular individual consultant in all such cases together with the negotiated contract with the selected consultant as initialed by the latter.

C. PROCUREMENT PLANNING

An initial 18-month project procurement plan is required to be prepared at the outset of each project, with successive 12-month procurement plans to follow during the course of implementation. Once this initial plan receives a 'no-objection' from IFAD, the plan should form the basis of the procurement activity for the project. The Procurement Plan summarizes procurement methods, applicable rules and prior review requirements as provided in the financing agreement. The procurement Plan template to be used is automatically generated by the Planner Excel-based software that the project is using.

D. RECORD KEEPING

The IFAD General Conditions for Agricultural Development Financing require that Borrower/recipients retain documents and records for review by IFAD at any time within a period of three (3) years after completion of the bid or contract. The following table shows what procurement files, folders or dossiers should contain:

Document	Preferred format
(i) A copy of the published advertisement or shortlist (if applicable)*	Hard and/or Soft copy
(ii) A copy of the published pre-qualification and invitation documents and any amendments, extensions or clarifications that were requested and issued*	Hard and/or Soft copy
(iii) A record of tender opening signed by all present	Hard and/or Soft copy
(iv) A full copy of each bid received and evaluated, plus clarifications requested and responses received	Hard and/or Soft copy
(v) A copy of the evaluation report*	Hard and/or Soft copy
(vi) Signed minutes of all meetings relating to the procurement, including pre-bid and negotiation meetings where these were held	Hard and/or Soft copy
(vii) A contract award notice*	Hard and/or Soft copy
(viii) Any letter of tender acceptance to the supplier, contractor or consultant*	Hard and/or Soft copy
(ix) The signed contract document and contract acceptance*	Hard and/or Soft copy
(x) Any contract amendments*	Hard and/or Soft copy
(xi) All contractual correspondence between the procuring entity and a supplier, contractor or consultant	Hard and/or Soft copy
(xii) Post-contract documents relating to the fulfillment of contract obligations, in particular photocopies of bank guarantees or payment guarantees	Hard and/or Soft copy

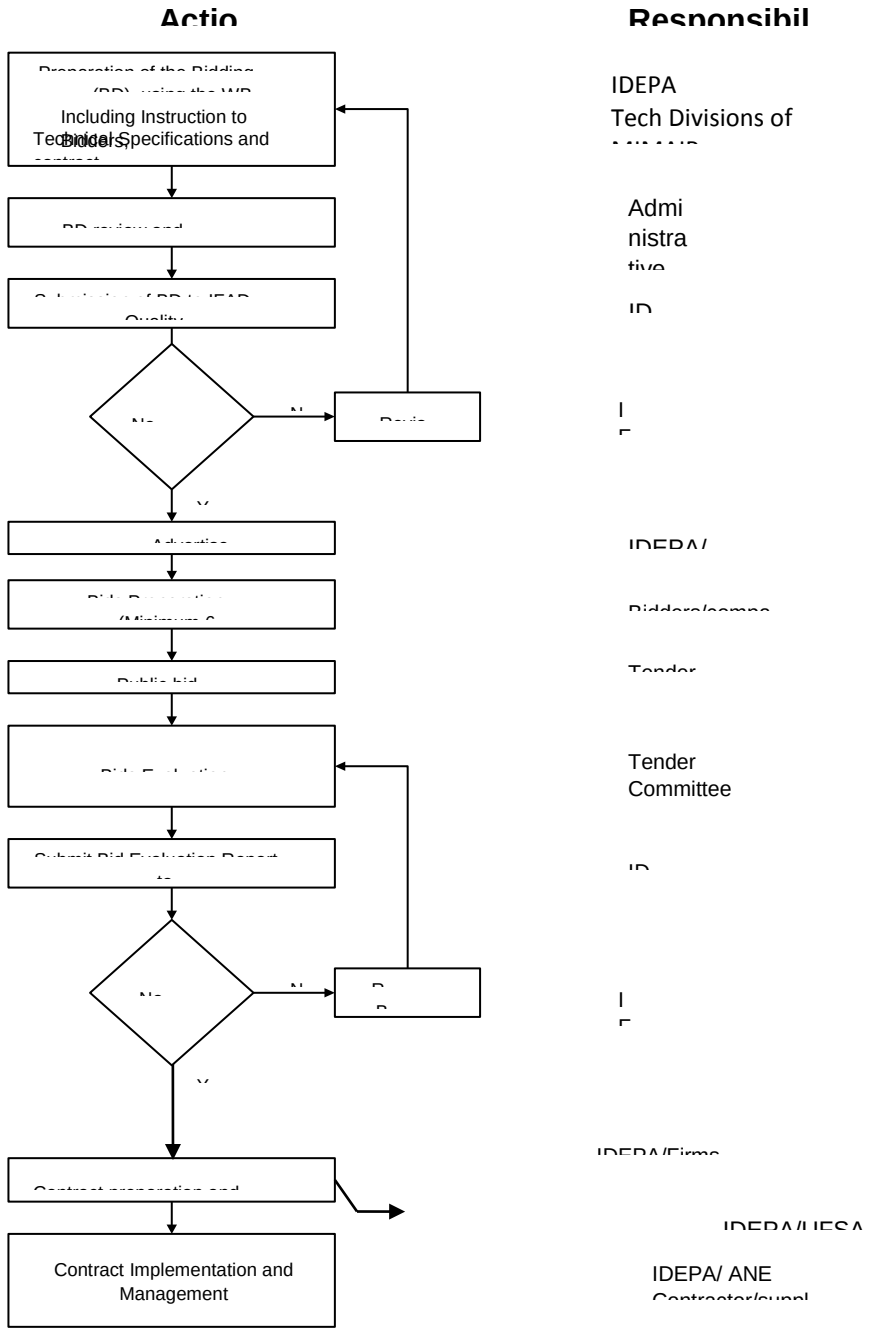
(xiii) Signed minutes of any meetings related to contract management, including contract progress or review meetings	Hard and/or Soft copy
(xiv) Signed delivery documents evidencing delivery of supplies or signed completion certificates in relation to a contract for services or works under the contract, including any contract delivery records	Hard and/or Soft copy
(xv) A copy of all invoices for works, services or supplies, including work papers verifying the accuracy of payments claimed and details of the actual payment authorized	Hard and/or Soft copy
(xvi) A copy of cumulative payment worksheets/records evidencing management of all payments made	Hard and/or Soft copy
(xvii) A copy of all submissions to and all decisions of the appropriate approval authority related to the procurement, including the approval of the invitation documents, approval of the evaluation report(s), contract award, approval of contract documents and contract amendments and any decision to suspend or cancel procurement proceedings	Hard and/or Soft copy
(xviii) A copy of any claims made by the procuring entity with respect to any warranty, nonwarranty, short supply, damage and other claims upon the provider or upon the procuring entity	Hard and/or Soft copy
(xix) In the case of IFAD prior review, all submissions and correspondence in relation to the seeking of IFAD's no-objection	Hard and/or Soft copy
(xx) any other communications relating to the procurement in questions, including internal entity correspondence	Hard and/or Soft copy
**Ideally, drafts of these published documents and reports should also be retained for completeness and to provide a full picture of how the published document evolved. It is, however, accepted that where issues of space exist this may not always be possible in practice.*	

E. REGISTER OF CONTRACTS

All contracts, with or without prior IFAD approval, should be listed in the Register of Contracts with the dates of approval. As this report facilitates the review and approval of payment requests on contracts, please ensure that the Register is updated and submitted to the IFAD Country Programme Manager on a monthly basis. The Register of Contracts template is annexed to the Letter to the Borrower.

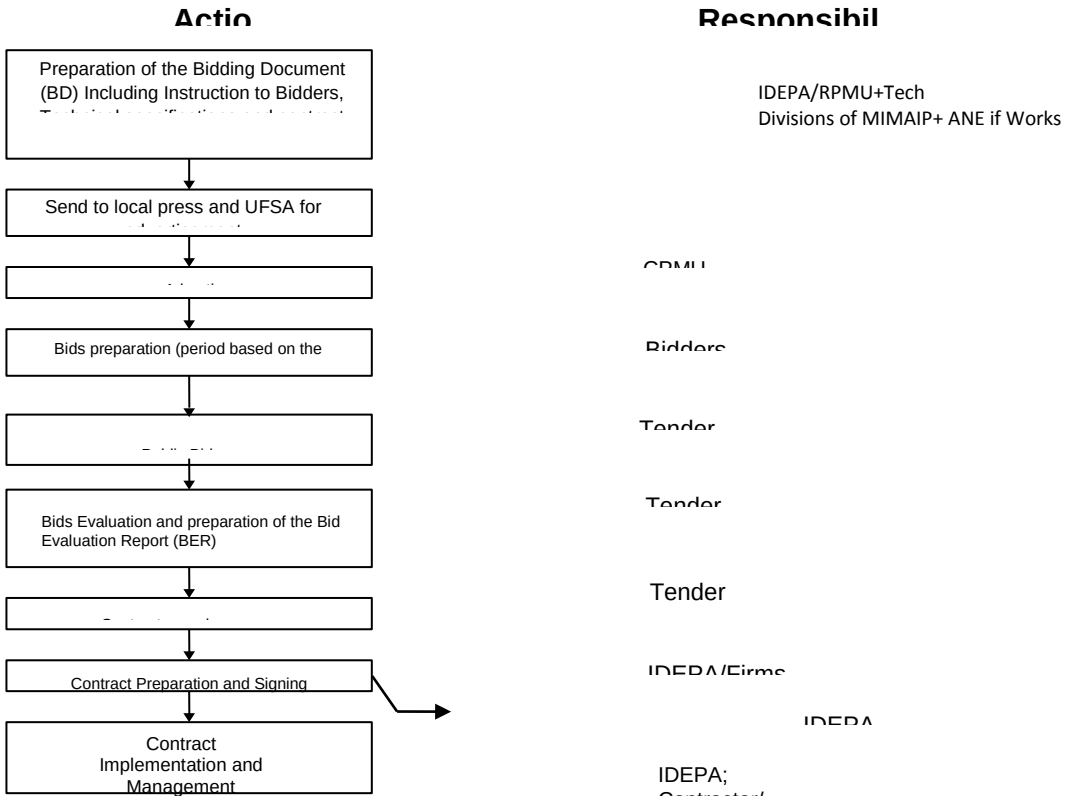
List of Procedures

Small-Scale Aquaculture Development Project (PRODAPE)		**Number** : 01
Procedure : Open Procedure /International Competitive Bidding (ICB for goods or works)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :



Contract Award advertisement

Project : **Small-Scale Aquaculture Development Project (PRODAPE)**)		**Number** : 02
Procedure : Open Procedure/National Competitive Bidding (NCB for goods; works or non-consulting services)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :

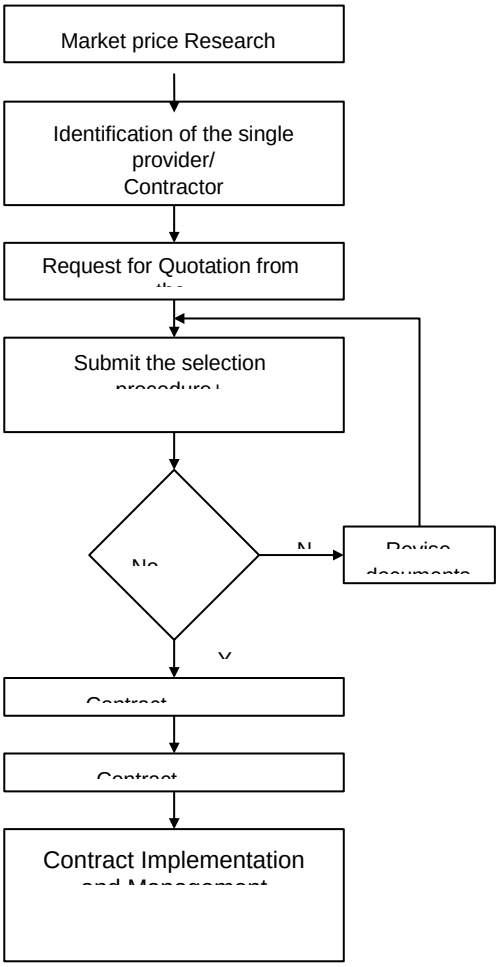


Contract Award advertisement

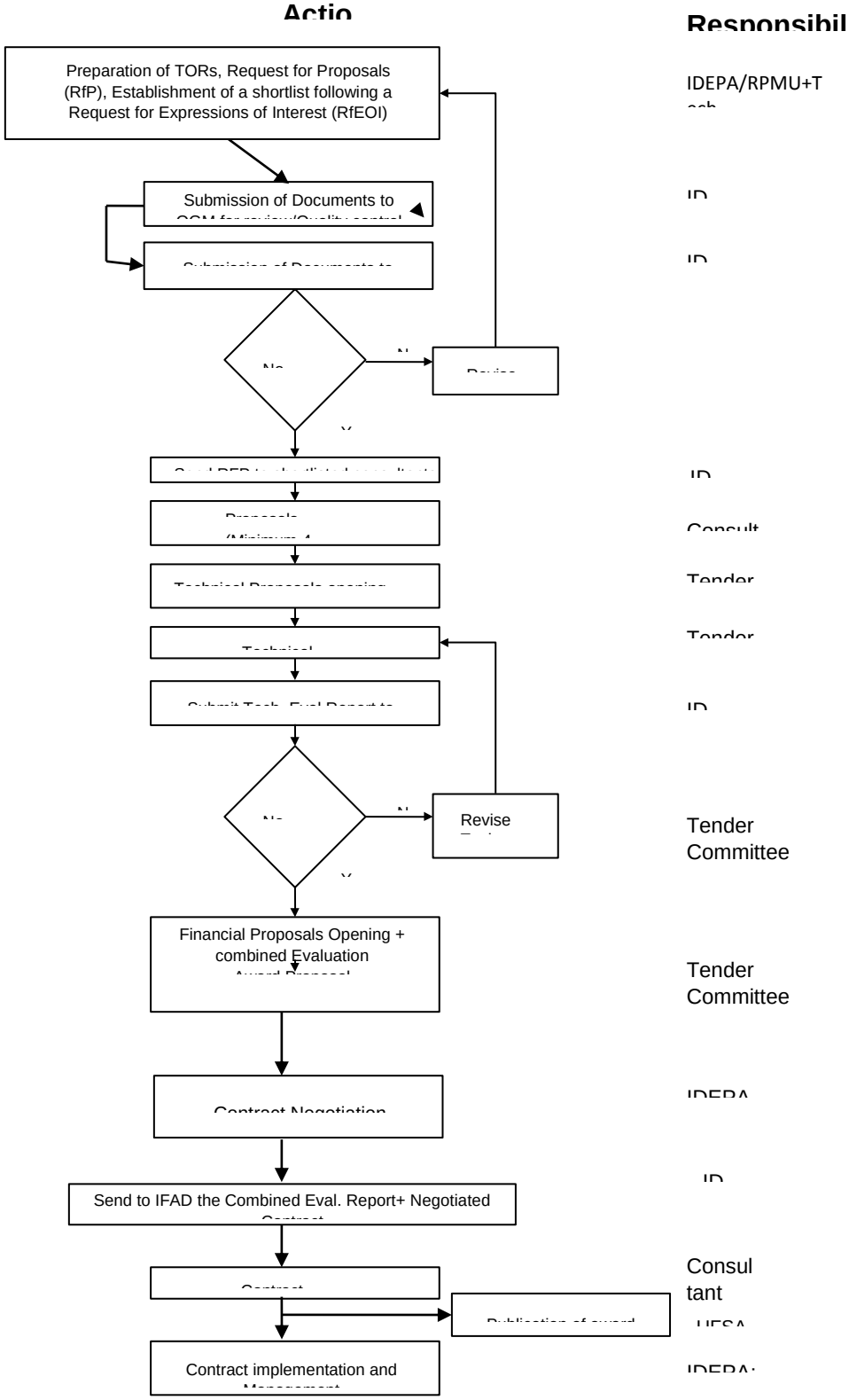
Project : **Small-Scale Aquaculture Development Project (PRODAPE)**		**Number** : 03
Procedure : Shopping (for goods, works or non-consulting services)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :

Actions	Responsibili
Preparation of the Request for Quotations Document (RfQ)	IDEPA/RPMU+T
Request for at least 3 quotations	IDEPA/R
Quotations opening	Tender Committee
Quotations Evaluation	Evaluation
Award	IDEPA/PR
Purchasing	IDEPA/RPMU

Project : **Small-Scale Aquaculture Development Project (PRODAPE)**		**Number** : 04
Procedure : Direct Procurement		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :

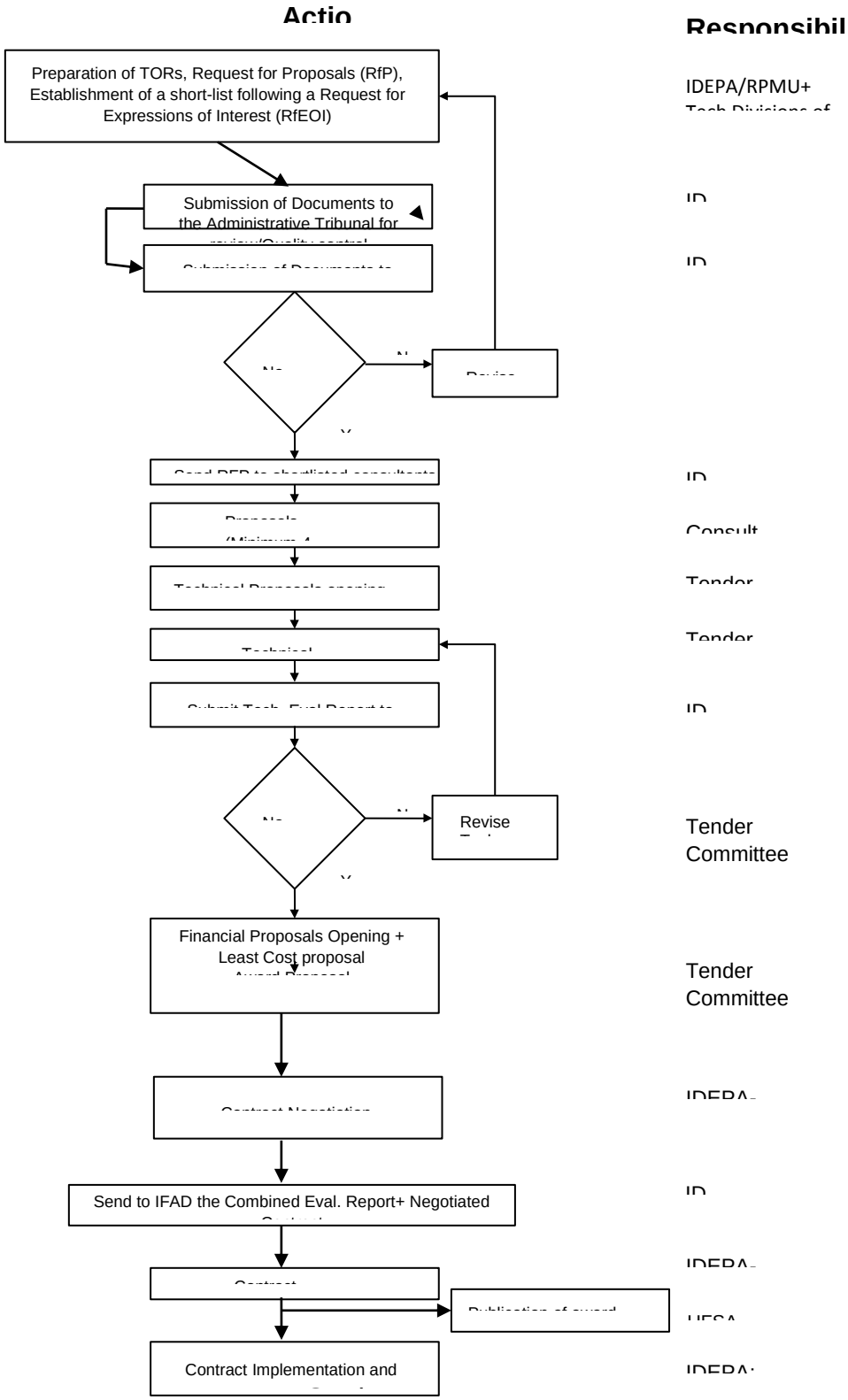
Acti	Responsibilit
	Person or persons to be assigned IDEPA/RPMU+Tech IDEPA/RPMU IDEPA/RPMU/ IDEPA/RPMU/Single provider/contractor

Project: Small-Scale Aquaculture Development Project (PRODAPE)		**Number** : 05
Procedure : Quality and Cost Based Selection (QCBS for Consulting Services)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :

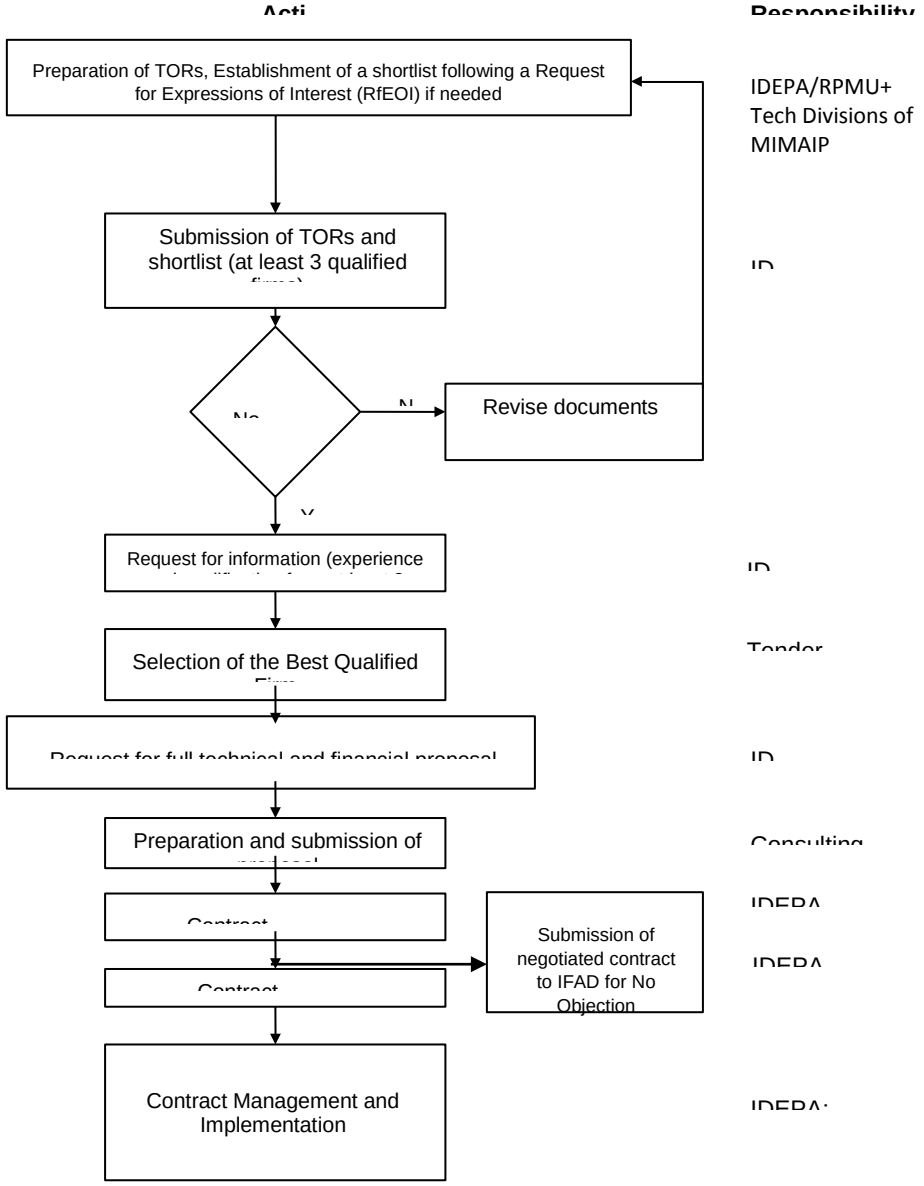


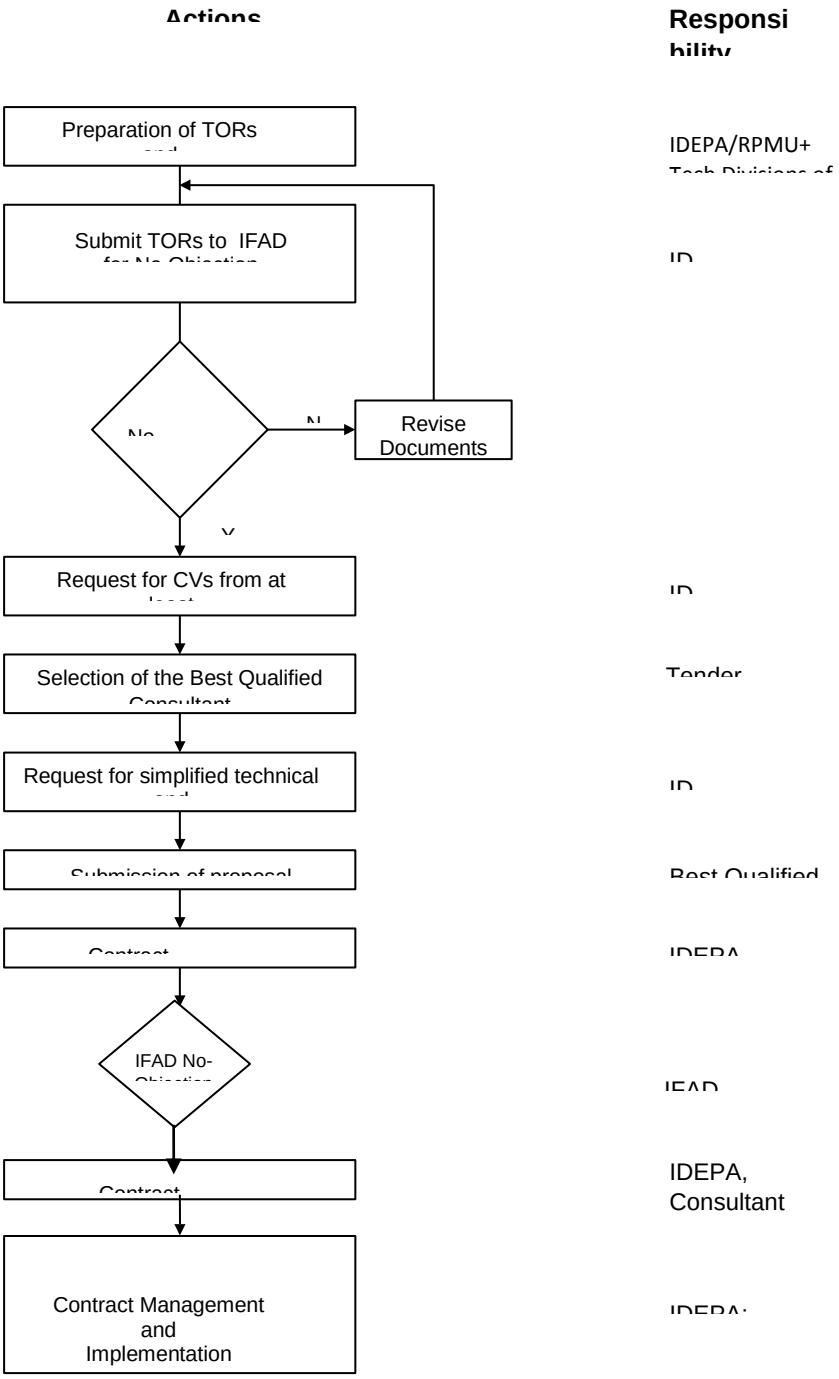
Project : **Small-Scale Aquaculture Development Project (PRODAPE)**	**Number** : 06

Procedure : Least Cost Selection (LCS for Consulting Services)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :

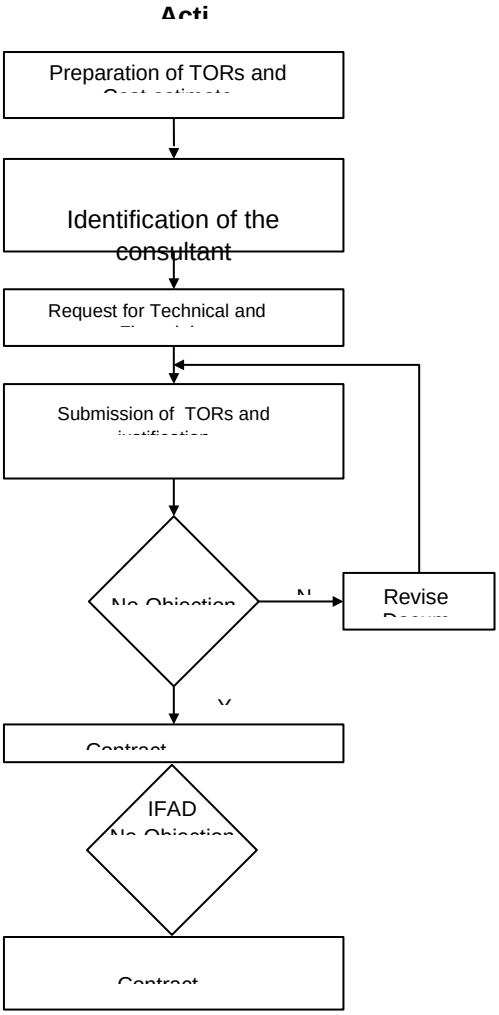


Project : **Small-Scale Aquaculture Development Project (PRODAPE**)	**Number** : 07
Procedure : Consultant's Qualification-based Selection	**Revision** : 0


Acti
Responsibility
Preparation of TORs, Establishment of a shortlist following a Request for Expressions of Interest (RfEOI) if needed
IDEPA/RPMU+ Tech Divisions of MIMAIP
Submission of TORs and shortlist (at least 3 qualified
ID
Revise documents
Request for information (experience
ID
Selection of the Best Qualified
Tender
ID
Preparation and submission of
Consulting
IDEPA
Submission of negotiated contract to IFAD for No Objection
IDEPA
Contract Management and Implementation
IDEPA



Project : **Small-Scale Aquaculture Development Project (PRODAPE**)		**Number** : 08
Procedure : Single Source Selection (SSS)		**Revision** : 0
Elaborated : Feb 2019	**Approved** :	**Revised** :



Responsibility

IDEPA/RPM U+ Tech

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IDEPA

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Small Scale Aquaculture Promotion Project

Project Design Report

Annex 9: Integrated Risk Framework (IRF)

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Risk categories	Risk Probability	Risk Impact	Mitigations/comments
1. Political and governance	Medium	Medium	Risk: General elections to be held in October 2019 to potentially delay financing agreement ratification and start of project activities due to a new Government being sworn in by January 2020 and the potential need for a Legal Opinion by Attorney General. Mitigation measures: the IFAD Country Office in Mozambique will continue its engagement with the relevant Government authorities to ensure ratification is done before elections and that the start-up of PRODAPE is prioritized by the Ministry of the Sean, Inland Waters and Fisheries (MIMAIP).
2. Macroeconomic	Medium	Medium	Risk: Following the impact of cyclones IDAI and Kenneth in the first quarter of 2019, the sluggish economy may be affected by exchange rate deterioration and higher inflation than foreseen in design. Mitigation measures: The PRODAPE project management team will ensure that project funds are always kept in a USD account to avoid the impact of exchange rate variations
3. Sector strategies and policies	Low	Low	Risk: None
4. Technical aspects of project or program	Medium	Medium	Risk: There's a risk of low uptake of cage aquaculture as cage farming is limited to specific lakes and reservoirs, and requires higher levels of management. Mitigation measures: PRODAPE to conduct rigorous feasibility studies and environmental and impact assessments of the potential areas identified for cage farming.
5. Institutional capacity for implementation and sustainability	Medium	Medium	Risks: The proposed implementation agency for PRODAPE, the Institute for Aquaculture and Fisheries Development (IDEPA) has implemented past IFAD projects in the small-scale fisheries and aquaculture sectors. However, it is dependent on international assistance, and suffers from insufficient technical/extension capacity in the field. Mitigation measure: Building on the results of PROPESCA and PROAQUA, PRODAPE will continue supporting the capacity building of IDEPA staff and local administration.
6. Financial management	Medium	Medium	Risk: Delays in processing payments at provincial government level resulting from potential decentralization of the central government structures to provincial and district levels following proposed constitutional amendment in 2018. This will be mitigated by centralizing large payments through the PCU account for the first two years of programme implementation and the provinces execute only operational payments until payment systems at the provincial levels are fully functional.

Risk categories	Risk Probability	Risk Impact	Mitigations/comments
7. Procurement	High	High	Risk: While the existing legal framework for public procurement in Mozambique is deemed to be almost in compliance with international standards, it still presents certain shortcomings at operational level. Mitigation measures: 1) Update the procurement section in the IFAD “Code of Practice for Project Management in Mozambique” to reflect new IFAD Project Procurement Guidelines; 2) Project to ensure that Procurement Plans are compliant with IFAD requirements; 3) Appointment a qualified and experienced procurement officer with prior experience in donor-funded projects.
8. Stakeholders	Medium	High	Risk: There’s a risk that Government and the Private Sector shall remain dependent donor-funded projects for the continued development of the small aquaculture sector. Mitigation measures: The Project will empower the relevant provincial and district institutions and the private sector by, progressively but gradually, transferring increased responsibilities to those institutions, particularly for planning, coordination of implementation, monitoring and evaluation.
9. Environment and social	Medium	Medium	Risk: Small-scale aquaculture can have significant environment and social impacts especially if it is newly introduced and if the system of production has high demand of water in areas where freshwater is a scarce natural resource. Mitigation measures: The project will use technologies and production methods adapted to local conditions and avoid operations located in fragile or environmental sensitive areas, including natural reserves and parks. An Environmental and Social Management Framework (ESMF) has been elaborated to set out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts of the Project
Overall	Medium	Medium	

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Small Scale Aquaculture Promotion Project

Project Design Report

Annex 10: Exit Strategy

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex 10: Exit Strategy

1. Government of Mozambique and IFAD's desire to ensure sustainability of the different interventions has been very clear from the very beginning. The successful implementation of PRODAPE to be hinged on both the Government and the private sector. This institutional framework will continue to exist after the funded Project comes to a close. In addition, the participatory design process for PRODAPE responded directly to target beneficiaries' concerns and national development policies and strategies. These efforts to create ownership of the Programme from the very beginning will provide the foundation and necessary commitment for post-PRODAPE continuity. The capacity of all the different stakeholders will be strengthened in various ways. this increased know-how will facilitate continued productivity improvement after project closure. In addition, stakeholders in this project will be linked to available financing options, including to the IFAD-funded Rural Enterprise and Financing Project (REFP) to access different products on offer in that project. .

2. *Economic/Income Sustainability* **–** The design and approach in this project is market-based. Interventions are being planned to increase productivity, value addition and quality of the target commodities and their by-products to fill an identified market gap for fresh water fish locally and internationally. As long as the market linkages are mutually beneficial to the involved stakeholders, the existent market pull will stimulate the production of the demanded products in a sustainable manner.

3. *Institutional Sustainability* – PRODAPE implementation will be mainstreamed within the Government's institutional, strategy and policy framework and will also position beneficiaries and project participants to better leverage private sector p[alyers ineth value chain.

4. *Environmental Sustainability* – To enhance environmental sustainability and climate resilience, the Programme will promote sustainable natural resource management practices and climate smart technologies and practices. Climate smart technologies and practices are expected to increase productivity, enhance resilience and reduce carbon emissions. Climate, weather and market information services will strengthen farmers' and value chain actors' access to timely and reliable weather updates and extension, to inform decision making.

5. A SECAP review note has been developed in line with IFAD's guidelines. The SECAP review note identifies potential risks and proposes mitigation measures and monitoring protocols, such as ESMPs. In addition, the Programme will ensure strong integration with line ministries and strengthen the capacities of Programme staff and the relevant government units to implement proposed interventions within value chains, mitigate risks and monitor the implementation of ESMPs and other SECAP related guidelines and recommendations. Climate risk analysis and vulnerability assessments will improve decision making and targeting of interventions.

6. In the process of implementing the PRODAPE exit/sustainability strategy, the following basic principles should be observed:

- The NPMU should empower the relevant provincial and district institutions and the private sector by, progressively but gradually, transferring increased responsibilities to those institutions, particularly for planning, coordination of implementation, monitoring and evaluation;
- Capacity building of all institutions with a responsibility in PRODAPE implementation should target those areas that are identified, through a needs assessment. This will equip them with the needed abilities to effectively execute the different tasks after the Project;
- The aquaculture communities, through their various local organisations should be closely involved in all matters related to management and use of their natural resources.

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Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Full Irf

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Integrated Risk Framework (IRF)

1. In accordance with IFAD's Financial Management policies and guidelines, a financial management assessment was carried out during the PRODAPE design mission at two levels: (i) the Government public financial management system assessment; and (ii) the financial management operations assessment at the project level made on the proposed Fisheries and Aquaculture Development Institute (IDEPA), delegated by the Ministry of Sea, Inland Waters and Fisheries (MIMAIP). IDEPA will have day-to-day oversight responsibility on a separate, dedicated Project Coordination Unit (PCU), which will be recruited using a competitive selection process to handle both technical and financial issues of the project.

2. **Government of Mozambique public financial systems assessment.** The 2015 World Bank Public Expenditure and Financial Accountability (PEFA) assessment for the Government of Mozambique (GoM) Public Finance Management reported that 71% of Mozambique's indicators had either improved or remained the same when compared to the previous assessment of 2010. The country has consolidated the major improvements in a number of areas in the public financial management systems, most notably in the implementation the of single treasury accounts (CUT), budgets, integrated financial accounting system, administrative procedures for authorization of expenditures, state inventory and fixed assets management, integrated procurement systems and external audits. Key among areas of deficiency was procurement practices, which were deemed to be lagging behind international best practices. The GoM is currently piloting an e-procurement module integrated with the budgeting and accounting modules in e-SISTAFE a Government integrated financial management information system. This development is aimed at enhancing the procurement and budgetary controls and is expected to go live at the start of financial year 2019.

3. The PRODAPE financial management arrangements will, to the extent feasible, be mainstreamed within the GoM systems as the assessment has shown the government's financial management systems have potential to provide adequate controls and ensure proper management of project funds.

4. The country's score on the Transparency International Corruption Perception Index for 2017 was 25, ranking 153 out of 180 countries assessed. This is rated as high risk and the PRODAPE design arrangements have taken into account this fiduciary risk and proposed appropriate financial management safeguard measures to be put in place at project level.

5. The overall country fiduciary risk at design is assessed as high after taking into account the above country level issues:

6. **Project specific assessment**. Below is the overall summary of risk ratings at design, derived from the lead project agency assessment mentioned above, inclusive of recommended mitigation measures to be implemented from project start-up.

Table 1: Fiduciary risk assessment framework

Risk Category	Initial FM Risk Rating (H/M/L)	Proposed Risk Mitigating Measures	Residual Risk Rating (H/M/L)
Inherent Risks			
Country Level (i) Transparency International Corruption Perception Index Rated Mozambique at 153th / 180 countries with a score of 25. (II) 2015 PEFA assessment found the country's procurement system below best practices.	**H**		**H**
Entity and project design Implementation is spread across 23 districts in seven provinces of the country. Previous implementations of IFAD – funded projects in IDEPA were centralised at the PCU level.	**M**	Processing of payments to suppliers of goods and services, implementing partners and beneficiaries to be centralized at the PCU level for the first two years of project implementation while the provinces process mostly local operational expenses related to daily subsistence allowance, travel and office sundries until adequate financial management capacity of staff and systems within Provincial Directorates of Sea, Inland Waters and Fisheries (DPMAIPs) is established.	**L**
Project Control Risks			
1. Organization & Staffing Inadequate staff capabilities, skills and experience on donor funds management and on IFAD procedures.	**M**	(i) Recruited PCU finance staff and financial management staff within the provincial DPMAIPs will be inducted in IFAD specific procedures at start of the project and continuously during implementation. (ii) Draft Terms of Reference (ToRs) for finance staff outlined in Appendix 6 as a basis for their recruitment / performance evaluation to include experience in IFAD/donor funds management.	**L**
2. Budgeting Some projects under IDEPA in the past did not have an approved budget uploaded in e-SISTAFE for up three months after the start of a fiscal year. (ii) Foreseen delay in approval of FY2020 budget following the 2019 general elections in Mozambique.	**M**	The PRODAPE PCU will obtain budget submissions of the planned activities from all concerned stakeholders timely, ensuring accurate forecasts of the current fiscal year AWPB execution to the end of the fiscal year to form a proper basis for developing an accurate and comprehensive AWPB for the following fiscal year. The PCU timetable will allow for timely approval by the National Project Steering Committee	**L**

Risk Category	Initial FM Risk Rating (H/M/L)	Proposed Risk Mitigating Measures	Residual Risk Rating (H/M/L)
		(NPSC), prior to its submission for approval within the Government's annual budget calendar and for obtaining IFAD's non-objection before start of the fiscal year. The process for budget amendments within the fiscal year to be clear in the FMM to avoid delays in the budgeting process. (ii) The procurement planning shall factor long-term project activities that can be paid using direct payment method according to IFAD thresholds to avoid implementation delays.	
3. Funds Flow & Disbursements (i) The GoM will be Implementing an integrated procurement module in e-SISTAFE in FY2019 to enhance the country's procurement and budgetary control systems. The implication is that all committed funds will not be available in the CUT. Long-term procurement and delays in completion of a procurement process may hold up funds in the CUT, and the expense can only be included in withdrawal applications when payment is affected. The project could therefore face potential liquidity challenges.	**M**	(i) The level of the authorised allocation for the project should factor in this risk and should be reviewed regularly during implementation to ensure its adequacy. (ii) PCU Finance Manager to ensure timely and regular submission of WAs to IFAD. (iii) Regular monitoring and follow-up of the procurement commitments in CUT.	**L**
4. Internal Control (i) Whilst e-SISTAFE performs daily reconciliations on its various systems, evidence of regular bank reconciliations between the general ledger accounting balances and CUT balances are not availed. (ii) Risk of grants in form of fingerlings, support initial pond construction / cage acquisition, feed, etc. not reaching project beneficiaries. (iii) Delay in granting prior approval for project expenses by the Administrative Court under its legal mandate to conduct prior approvals (ex-ante control)	**M**	**(**i) PRODAPE shall perform monthly bank reconciliations between the e-SISTAFE general ledger accounting balances and the CUT balances. All general ledger balances in the off the shelf accounting software system should be reconciled to e-SISTAFE general ledger balances on monthly basis. (ii) All grant support to project beneficiaries will be channelled through service providers or other entities, which will be subject to appropriate due diligence. (iii) Robustness in procurement planning process to factor in envisaged delays in obtaining prior approvals	**L**

Risk Category	Initial FM Risk Rating (H/M/L)	Proposed Risk Mitigating Measures	Residual Risk Rating (H/M/L)
on public expenditure.		from the Administrative Court.	
5. Accounting Systems, Policies & Procedures (i) Inadequate record keeping of accounting records in a decentralised environment. (ii) Inadequate accounting for in – kind contributions from beneficiaries supported to initiate aquaculture production activities, (labour) and GoM in-kind contributions (office space, staff salaries, vehicles usage and utilities).	**M**	(i) PRODAPE shall deploy an e-archiving system currently being piloted on IFAD / European Union funded projects in Mozambique expected to be launched by end of 2018. This involves digitising the hard copy supporting documents such as vouchers, receipts, procurement documents and withdrawal applications to safeguard them for a minimum of 10 years after project closure. (ii) Guidance on evaluation of in-kind contributions to be included in the Financial Management Manual. The evaluation methods shall be agreed upon at negotiation between IFAD and GoM to facilitate proper accounting throughout project implementation.	**L**
6. Financial Reporting & Monitoring e-SISTAFE, the integrated financial management information system of the GoM, captures all information relating to all Ministries and Development Projects/Projects. PRODAPE will process all payments in e-SISTAFE. The system was deemed not user-friendly for the preparation of IFAD specific financial reports. The Ministry of Finance (MoF) has advised that the system will continue to be upgraded gradually to allow for the configuration of requested reports.	**M**	PRODAPE shall deploy a parallel off-the-shelf accounting software package to compliment e-SISTAFE on financial reporting, with capability to record and report transactions by category, component, activity and financier according to IFAD requirements. This will be in place until IFAD´s Financial Management Division confirms the adequacy of financial reports generated from e-SISTAFE.	**L**
7. Internal Audit The internal audit division within MIMAIP mainly deals with inspections and verifications. It also faces capacity constraints due to the low capacity level of staff. For projects under IDEPA there have been few internal audit interventions.	**H**	The General Inspection of Finance (IGF) has agreed to include PRODAPE in their annual audit program and they will need to familiarize themselves with IFAD's procedures during the start-up workshop. Internal audit recommendations thereon (together with the status once implemented), will be communicated to the NPSC and IFAD.	**M**

Risk Category	Initial FM Risk Rating (H/M/L)	Proposed Risk Mitigating Measures	Residual Risk Rating (H/M/L)
8. Auditing Private external auditors are appointed for IFAD-funded projects under IDEPA; audit requirements were performed satisfactorily. The Administrative Court, which is the supreme audit institution of the GoM will be assessed on the ability to undertake timely and quality audits on PRODAPE to meet IFAD requirements. The World Bank has been using the Administrative Court for projects implemented by GoM ministries. According to 2015 PEFA assessment, the audits by the Administrative Court follow the international standards of the International Organisation of Supreme Audit Institutions (INTOSAI), and include regular audits and performance audits.	**M**	IFAD's revised audit guidelines are to be applied for PRODAPE. The decision regarding selection of whether the Administrative Court or private external auditors are to be appointed will be taken dependent on the outcome assessment of the Administrative Court.	**L**
OVERALL FM RISK	**M**		**M**
* H=High, M=Medium, L=Low			

7. The assessment concluded that the proposed financial management arrangements for PRODAPE will satisfy IFAD's minimum requirements for robust and sound financial project management. Risk levels are deemed to be low with the inclusion of the specific risk mitigation measures incorporated in project design.

8. **Proposed financial management structure**. IDEPA, the proposed the lead project agency, is an institution under MIMAIP. It has a management structure comprising operations departments, and support departments, which include finance and administration, information technology and human resources and procurement. IDEPA has separate internal audit department. It is planned that at the provincial level, the finance staff at the DPMAIPs will be responsible for financial accounting aspects of the project, which will be implemented in 23 districts in seven provinces. Within IDEPA, the Director General and the Finance Manager will have an oversight role on the financial management unit of PRODAPE. The IDEPA came into being in 2016 following the merger of IDPPE (responsible for sea fishing) and INAQUA (responsible for aquaculture). The new merged institution undertook the oversight function of the two existing IFAD–funded projects, PROPESCA (since 2011) and PRODIRPA (since 2013). In addition, IDEPA is an implementing agency of World Bank–funded projects. The NPSC will provide an oversight role and ensure coordination with relevant implementing partners.

9. The PRODAPE PCU finance team shall comprise of a Finance Manager, reporting to the Project Manager supported by an Accountant. The PCU finance team will be responsible for the accounting function of the project including budgeting, accounting, funds flow management, internal controls, financial reporting and ensuring timely

external audits. The staff will be competitively hired and engaged on performance-based contracts in line with draft ToRs for key staff provided in Appendix 6. At the provincial level, finance staff within DPMAIPs will be assigned to undertake the financial accounting functions, under the guidance of the PRODEPA Finance Manager.

10. **Annual Work Plan and Budget (AWPB).** The project will be implemented on the basis of approved AWPBs. In the GoM annual budget process, requests for budget submissions start in July of the preceding budget year the project expenditure appropriations and budget ceilings are registered in the e-SISTAFE by August of each year and the central budget is approved by September of each year. The country has a well-ordered budget preparation process, with a clear, well-structured budget calendar. A comprehensive budget circular with detailed methodologies and a guide to the completion of budgetary tables is drafted annually and is distributed by the National Budget Directorate to the sector ministries and provinces. Budgeting procedures and additional controls are further provided in the e-SISTAFE manual.

11. In order to ensure that the timelines of the GoM budget calendar are met, PRODAPE PCU will obtain budget submissions of the planned activities from all concerned stakeholders in line with GoM detailed guidance. The project will hold annual review workshops, with implementing partners, beneficiaries and NPSC and discuss progress during the prior financial year and move on to develop proposals for the forthcoming year. The PCU will assist implementing partners and other participants to formulate activities and expenditure estimates and be responsible for their timely analysis and consolidation into an AWPB for the project for the coming year. In view of the time taken between the start of budget preparation process and the end of the fiscal year, accurate forecasts of the current fiscal year AWPB execution to the end of the fiscal year is key for developing an accurate and comprehensive AWPB for the following fiscal year.

12. The Finance Manager will develop strategic planning tools to guide the different stakeholders during the preparation PRODAPE AWPB. This will involve consultations by the PCU with beneficiaries and the implementing partners involved, as well as an assessment of previous activities undertaken, and the related targets attained. The process should allow for timely approval by NPSC, prior to its submission for approval within the Government's annual budget calendar and obtaining IFAD no-objection before start of the fiscal year. The process for budget amendments within the fiscal year shall be stipulated in the financial management manual.

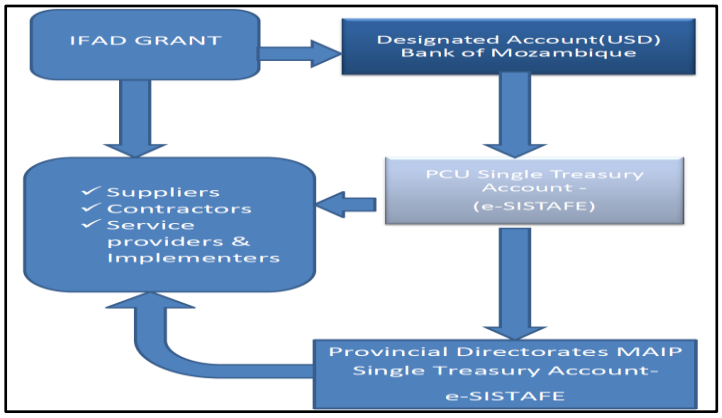
13. **Funds flow and disbursement arrangements.** IFAD funds will be channelled into a USD designated account at the Bank of Mozambique (BoM). The funds will then be channelled into the CUT managed by the MoF, via a transit USD account from where the funds are converted into meticais (MZN) at the prevailing exchange rate on the date of conversion. The funds in CUT are managed through coded designated ledger accounts that ensure traceability of project available funds. Each provincial directorate and implementing agency shall maintain a separate account in CUT to receive the project funds from the PCU.

14. The PCU will have the responsibility of coordinating and ensuring the smooth flow of funds so that funds are available as and when necessary to meet programme financial obligations towards suppliers, service providers and contractors. This will involve: (i) establishing the liquidity requirements of each implementing agency based on the approved AWPB; (ii) preparing and dispatching bank transfer instructions to the BoM to ensure that there is sufficient liquidity in the operational account at all times; (iii) following up on any funds advanced to implementing agencies and ensuring the timely justification thereof; (iv) maintaining supporting documentation for expenditures incurred by the project in order to prepare withdrawal applications for submission to IFAD; and (v) ensuring that the IFAD authorized allocation is fully accounted for at all

times through regular preparation of periodic reconciliation statements for the designated accounts. All movements from the designated accounts will require countersignature by the authorized representative of the GoM.

15. The GoM will implement an integrated procurement module in e-SISTAFE in FY2019 to enhance the country's procurement and budgetary control systems. The implication is that all committed funds will not be available in the CUT. Long-term procurements and delays in completion of procurement processes may hold up funds in the CUT. As expenses can only be included in withdrawal applications, when payment is affected, the project may face potential liquidity challenges. To avert this, the authorised allocation to the designated account will be set and reviewed regularly to ensure its adequacy. Further, the Finance Manager at the PCU shall ensure timely submission of withdrawal applications to IFAD, either: (i) once after 90 days have elapsed from the submission of the previous withdrawal applications; or (ii) when the amount withdrawn from the designated account is equal to about 20-30% of the advance, even if 90 days have not elapsed. Further disbursement details and procedures are to be included in the Letter to the Borrower. The threshold of direct payments from IFAD will be limited only to large payments over the equivalent of USD 100,000.

Figure 1: funds flow chart



16. **Accounting systems.** PRODAPE shall deploy the integrated public financial management information system, e-SISTAFE, comprised of the budget, accounting, and treasury, inventory and state assets management and internal controls sub-systems. However, the system was deemed not user-friendly for the preparation of IFAD specific financial reports. The MoF has advised that the system will continue to be gradually upgraded to allow for the configuration of requested reports. PRODAPE shall therefore install and implement a parallel off-the-shelf accounting software package to compliment e-SISTAFE financial reporting, with capability to record and report transactions by category, component, activity, cost centre and financier. It is important that the general ledger balances of two parallel systems are in balance at each the reporting date. The project will use the GoM modified cash basis accounting standards, which in the 2015 PEFA assessment were deemed to be close to IPSAS norms and could be considered comparable with those norms. The GoM is planning to adopt IPSAS accrual basis accounting standards within 3 - 5 years. The project will follow GoM accounting policies and procedures prescribed in the State Financial Administration Manual.

17. In-kind contributions from beneficiaries at production level will be in the form of labour mostly and will include assumption of feed and seed costs from the second production cycle onwards. With respect to government in-kind contributions, they will be in form of foregone office space, staff salaries, vehicles usage and utilities. Guidance on

evaluation of in-kind contributions shall be included in Financial Management Manual. The evaluation methods shall be agreed upon at negotiation between IFAD and the recipient to facilitate proper accounting throughout project implementation.

18. **Internal controls, policies and procedures.** At the project level, internal controls will be implemented to ensure that resources are properly utilized towards project objectives with funds reaching intended beneficiaries. The GoM public financial management regulations and systems will be applied in the context of PRODAPE implementation. The accounting systems, policies, procedures and internal controls to be used by the PCU for accounting and managing project funds will be documented in the Financial Procedures Manual. The manual will describe the internal control procedures, basis of accounting, standards to be followed, authorization procedures, financial reporting processes, budgeting procedures, in-kind and other beneficiary contribution recording procedures and flow of funds, as well as financial data back-up procedures.

19. Adherence to the internal control framework will be verified during the internal and external audit exercises, with reporting to IFAD through submission of an internal audit report and management letter, in line with IFAD's external audit guidelines. Furthermore, compliance with internal controls will be part of the fiduciary checks performed during supervision missions.

20. In order to complement GoM internal control mechanisms, specific internal controls will be set up at the project level, as follows:

- Monthly bank reconciliations prepared by the Finance Manager and approved by Head of Finance at IDEPA.
- The PCU PRODAPE shall deploy an e-archiving system digitising hard copy supporting documents such as vouchers, receipts, procurement documents and withdrawal applications to facilitate traceability and quick access to documents during supervision and implementation support missions and audits;
- The project will maintain an updated fixed asset register, identifying assets codes / numbers for ease of identification. Physical verification is to take place on a quarterly basis.

21. **Financial reporting arrangements**. The PRODAPE PCU will be required to prepare and submit to IFAD separate half yearly interim financial reports to account for project activity related expenditures, no later than 60 days after the end of each semester. The project will also prepare monthly and quarterly financial management reports designed to provide relevant information to the NPSC for management decision-making and control, for financiers and other stakeholders to monitor the project's performance. Implementing partners will be required to submit simplified quarterly financial reports to finance team of the PCU, for validation with their replenishment requests.

22. **Internal audit.** The internal audit department of MIMAIP is responsible for the provision of internal audit services to PRODAPE. The unit reports to Inspectorate General of Finance at the MoF. Audits are conducted according to internationally accepted auditing standards. The selection of audits is based on a formal risk analysis and focuses primarily on the major areas of systemic risk.

23. The Internal Audit Department is to include PRODAPE in its internal audit work plans with the submission of PRODAPE reports to MIMAIP and the NPSC. IFAD will require submission of management action plans and progress of implementation of the internal audit recommendations. Internal audit reports are expected to provide

assurances that PRODAPE is being implemented in accordance with the approved AWPB and in compliance with GoM regulations and the IFAD financing agreement. A key risk is staff low capacity to cover the internal audit requirements of the project. It is recommended that at start up, internal audit staff be present and attend to familiarise themselves to IFAD procedures.

24. **External audits.** The external audit of the project will be conducted in accordance International Standards on Auditing, under specific ToRs generated in line with IFAD approved audit guidelines. For IFAD-funded projects under IDEPA, private external auditors are engaged to conduct the audit. During the design mission a meeting with the Administrative Court, the supreme audit institution did not materialize. The IFAD country office Finance Analyst should arrange for the assessment before project financing negotiations to inform the project audit arrangements. The World Bank office in Mozambique advised that the Administrative Court conducts external audit of its projects being implemented through the government ministries.

25. In compliance with IFAD's General Conditions, PRODAPE's financial statements prepared by the PCU and submitted through IDEPA will be audited on an annual basis. The corresponding audit report together with the related management letter are to be submitted to IFAD no later than six months after the end of each fiscal year. Costs incurred for the external audit will be borne by the project. Any internal control issues that are identified during the course of the audit will be documented and an action plan submitted to IFAD together with the audit report. IFAD will check the status of implementation of the action plan during supervision missions.

26. **Supervision of PRODAPE´s financial management.** Due to the expected medium risk rating, it is foreseen that in the first year of implementation, the supervision plan will include site visits to DPMAIPs to assess the adequacy of financial accounting arrangements, review of the budgetary planning process for PRODAPE in line with the national budget calendar and the quality of the AWPB, the review of latest progress and interim financial reports against AWPB, review of compliance with internal controls, review the impact of the economic crisis triggered by a debt burden of USD 9.89 billion, representing over 90% of the country's Gross Domestic Product (GDP) in 2016. For subsequent years the supervision may be conducted by the Finance Officer or a financial management specialist, including *inter alia* the following:

- Confirm adherence to internal controls and AWPB;
- Review project quarterly financial reports, progress against planned budget activities and recommend remedial actions, where necessary;
- Development in the implantation of the national public financial management systems;
- The adoption of International Public Sector Accounting Standards (IPSAS) accrual based accounting standards.

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Poverty Targeting And Nutrition

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Poverty, Targeting and Nutrition

1. This appendix presents information, analysis and strategy for PRODAPE design in relation to poverty, social inclusion (including gender and women) and nutrition. Information is presented in three sections: (i) Poverty and social inclusion; (ii) Mainstreaming nutrition; (iii) Addressing social risks. As noted in the PDR, the mitigation of common social risks and mainstreaming nutrition was integrated into PRODAPE design as a sub-component in itself.

I. POVERTY AND SOCIAL INCLUSION

A. Demography and Poverty

2. According to the last population census conducted in Mozambique, the country is home to 28.9 million people; projections indicate that the population could more than double by 2050. Demographic distribution of the population is highly differentiated with the Provinces of Nampula and Zambézia not being the most populous but also the most densely populated[12].

3. Mozambique´s population is predominantly young (between 60-70% of the population being aged 0-35 (final data from the 2017 census yet to be released). According to the Human Development Index, Mozambique ranks 181/187 countries[13], due to high illiteracy rates (41%)[14], coupled to low enrolment in and poor quality of education. Life expectancy has been affected by the country´s generalised HIV epidemic currently standing at 55 years of age[15]. Twenty-five per cent (25%) of households (HHs) in Mozambique are headed by women[16]. Households are in average comprised of 4.7 people[17].

Table 1: Population and poverty data per target provinces

Target Region / Province / District	Population 2017	Population density (people / km2) 2017	% People living in poverty 2015 (%)
NORTHERN REGION			
Niassa	1,865,976	14.5	60.6%
Cabo Delgado	2,333,278	28.2	44.8%
Nampula	6,102,867	74.8	57.1%
Zambézia	5,110,787	48.7	56.5%
CENTRAL REGION			
Manica	1,911,237	31.0	41.0%
Sofala	2,221,803	32.7	44.2%
Tete	2,764,169	27.4	31.8%
SOUTHERN REGION			
Gaza	1,446,654	19.1	51.2%

Sources: (i) INE (no date), Censo 2017, Quarto Recenseamento Geral da População e Habitação. Divulgação dos Resultados Preliminares; (ii) MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.

[12] INE, (no date). Censo 2017, Quarto Recenseamento Geral da População e Habitação. Divulgação dos Resultados Preliminares.
[13] UNDP, 2016. Human Development Report 2016, Mozambique. Briefing Note for Countries on the 2016 Human Development Report.
[14] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[15] PEPFAR, 2017. Mozambique Operational Plan (COP/ROP) 2017, Strategic Direction Summary.
[16] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[17] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.

B. Poverty

4. **Poverty levels and distribution**. Mozambique has made encouraging progress in poverty alleviation over a period of 18 years (1996-2014) with a 25 point drop in poverty over that period. However, despite the encouraging macro-economic environment the country enjoyed for a couple of decades, up to 2014, poverty reduction has not seen the same pace of improvement: poverty reduced in only five points between 2009 and 2014. Forty-six per cent (46.1%) of the population still lives under the national (consumption) poverty line. In fact, the absolute number of people living in poverty in 2015 is actually higher than in 2009, due to the low percentage decrease in poverty over the period. Opportunities for the poor have not been equal to those of the non-poor.

5. Poverty alleviation efforts have generated better results in the Southern Region of the country (partly attributed by a higher degree of urbanization), followed by the Central Region. However, the same does not hold true for the Northern Region, where poverty has actually increased from 45% to 55%.

6. Poverty is primarily rural (50.1%), this is especially true in isolated areas in which assets are not only harder to acquire but also it is more difficult to generate returns from them[18]. The current scenario is Mozambique is thus one of increasing disparities.

7. Key determinants of poverty in Mozambique include location of residence, low education, low profitability livelihood strategies (especially subsistence agriculture) and high dependency ratios[19]. Poverty is similar across male and female HHs, but can be lower among females headed ones[20].

8. According to the World Bank, the depth of poverty in Mozambique is higher than international standards, meaning that most people living under the poverty line in Mozambique actually live in a situation of extreme poverty[21]. This is in fact consistent with data produced under the national Demographic Health Survey (IMASIDA) of 2015 in relation to poverty quintiles, revealing that 55% percent of the rural population falls into the two lowest poverty quintiles[22].

9. **Multidimensional poverty (MDP).** HHs in Mozambique are not only affected by consumption poverty; multidimensional poverty (MDP) is also prevalent affecting human development, health and standards of living of Mozambicans[23]. Despite significant investments in infrastructure over the past 25 years, access to quality services continues being challenging. According to the MDP report of 2017, over 69% of the Mozambican population encounters MDP deprivations – which is substantially higher than other countries with high-income poverty levels (examples of other countries MDP levels for the same period include Swaziland 16%, Tanzania 56% and Malawi 53%)[24].

10. In this context, poor rural HHs face a steep hill out of poverty. Overcoming poverty in such a context requires increasing the profitability of livelihood activities to a level in which people can meet the triple challenge of: (i) meeting their basic needs – including access to food and basic services; (ii) investing to improve their living standards and accumulate productive assets; and (iii) continuously improving their livelihood strategies.

[18] MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.
[19] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.
[20] MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.
[21] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.
[22] INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[23] Oxford Poverty and Human Development Initiative, 2017. Mozambique Country Briefing. Multidimensional Poverty Index Data Bank. OPHI, University of Oxford.
[24] University of Oxford, 2017. OPHI Country Briefings 2017 for Malawi, Mozambique and Tanzania.

C. Rural Livelihoods

11. Seventy-five per cent of the country´s population is involved in agriculture with subsistence agriculture being the main driver of rural livelihoods. Seventy per cent (70%) of agricultural plots are up to 2 ha and only 3% are over 5 ha. Maize, cassava, beans and groundnut are the main staple crops, while sugar cane, sesame, mango and coconut constitute the main cash crops. Low input use, low yield, rain-fed agriculture, low access to extension and financial services and to markets, and little bargaining power continue driving HH level agriculture.

12. Fisheries plays an important role in the livelihood strategies of people living in coastal districts of the country. It is estimated that about 350,000 people participate in production, processing and sale of fish in Mozambique. It is estimated that over 90% of fish production activities come from artisanal fisheries.

13. The culture of freshwater species such as tilapia has been practiced for some decades in Mozambique, whereas the cultivation of marine species has emerged over the last five years. Aquaculture practices range from extensive farming (tilapia and seaweed) with few inputs and modest output, to semi-intensive farming (shrimp) with high inputs and high output[25].

14. The low production, productivity and profitability of smallholder livelihood strategies continue locking smallholders in poverty. Despite years of investment in the smallholder segment this reality remains relatively unchanged. Paradoxically, approximately 93% of agricultural production and 90% of fishing activities in the hands of smallholders[26].

15. Albeit the strong reliance on agriculture and fisheries, off-farm activities such as casual low paid labour, informal trade and remittances also play an important role in the HH economy and actually account for a good proportion of HH revenue[27]. Women´s and men´s participation in different livelihood activities have shown minor shifts in recent years even though agriculture continues being driven by women, while fisheries and aquaculture is led by men. Men are moving out of agriculture, when other opportunities arise, especially into non-agricultural self-employment and the private sector. At the same time women´s participation in agriculture dropped from 89% to 75%, which is attributed to increased participation in informal trade from 5.5% to 12%[28].

16. Adverse climatic conditions, combined with other activities providing low returns and the lack of profitable alternatives and low asset base of the majority of rural dwellers, limits the ability of smallholder farmers to make sustainable economic progress and enhance resilience to shocks.

17. In offering access to a new livelihood activity, such as aquaculture, enables HHs to diversify activities and spread risk. However, for the activity to succeed at HH level and for smallholders to sustain their engagement and be able to capture expected benefits in the short, medium and long term, it is important that concerted efforts are invested to addressing all elements in the value chain related to inputs for engagement and outputs to markets. In this sense, PRODAPE´s comprehensive value chain approach aligns well to beneficiary needs. It will be critical however that all interventions are well coordinated and offered at the right time and in the right quantities and quality. Just as

[25] Technoserve. 2017. Aquaculture Industry Strategic Plan – Final Report. The sector could provide cheap source of protein, improve the population's diet, create jobs, generate income and promote regional development.
[26] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[27] Ibid.
[28] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.

important is that smallholders, due to their intrinsic vulnerability, receive assistance in overcoming common social risks that could hinder HH socio-economic progression.

D. Common Shocks / Risks Affecting Rural Livelihoods.

18. **Adverse weather conditions / pests.** Droughts, floods and cyclones recurrently affect Mozambican smallholders. Localized floods occur almost every year, causing multiple casualties and loss of economic assets. Droughts, "late rains" also lead to loss of crops, seeds and animals, and generate pockets of food insecurity throughout the country. Cyclones are common and have the same effects along coastal districts of the country. Because of the already low resource base, those endowed with more assets in rural areas resort to selling assets to smooth consumption.

19. Pests constitute the second major threat to rural livelihood activities; low access to inputs and extension services exacerbates vulnerability in this respect[29].

20. **Loss of labour force at HH level.** The temporary or permanent loss of labour force at HH level constitutes the prime internal shock faced by smallholder households in Mozambique. Mozambique´s generalized HIV epidemic constitutes one of the major threats in this respect; approximately 1.9 million people are HIV positive in the country. In Mozambique HIV transmission is driven by heterosexual contact, due to inconsistent condom use. 29% of new infections are among sex workers and their clients, 26% occur in people in stable relationships and 23% due to multiple concurrent partnerships[30].

21. HIV prevalence increased from 11.5% to 13.2% between 2009 and 2015 among people aged 15-49. Women continue being harder hit by HIV: prevalence rates continue being persistently higher among women (15.4% vs.10.1% in men at national level, and 13% vs. 9% in rural areas). People with the highest prevalence rates include those aged 35-39, people who are separated / divorced / widowed and people who only have primary education, but the highest prevalence rates are among those in the highest wealth quintiles. Young women aged 15-24 are also particularly vulnerable to HIV acquisition with a prevalence rate of 9.8% versus 3.2% among their male peers[31], highlighting the role of transactional and intergenerational sex mainly driven by poverty and economic incentives.

22. Mozambique adopted the UNAIDS 90-90-90 2020 targets meaning that 90% of those positive should know their HIV status, receive treatment and be virally (HIV) suppressed. To achieve this, the country also adopted the "Test and Treat" HIV treatment protocol, with the aim of enrolling HIV positive people on ART as soon as they are identified HIV positive. This measure aims to suppress viral load with ART serving as the prime means of avoiding HIV transmission.

23. Seventy-eight per cent of women reporting being HIV positive are on Anti-Retroviral Treatment (ART) against 68% among men, and trends are for enrolment in treatment to be lower among poorer socio-economic groups.

24. While it is anticipated that substantial gains will be obtained from newly adopted treatment guidelines in line with international strategies and protocols, along with the foreseen expansion of HIV services, positive health outcomes require addressing behavioural transmission risks. In Mozambique, key areas requiring specific interventions are: (i) increase demand for HIV testing; (ii) getting pregnant women, young women and adult men into HIV treatment; (iii) encouraging retention to treatment from onset of treatment; and (iv) couple disclosure.

[29] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[30] PEPFAR, 2017. Mozambique Operational Plan (COP/ROP) 2017, Strategic Direction Summary.
[31] INE and INS, March 2017. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015. Relatório de Indicadores Básicos de HIV.

25. Widespread poverty, gender inequality, lack of time and availability of limited resources among women – including time - to take care of themselves, zero-status disclosure related stigma, and lack of access to sufficient food to take with ARVs, could be some of the reasons explaining the disproportionate vulnerability and effects of HIV and AIDS on women.

E. Women and Youth

26. **Women**. Women in Mozambique play a leading role in managing their homes, rearing their children and feeding their families. However, gender roles abscrived to women result in them facing multiple barriers towards gender equality, including lower education, access to opportunities and income than men. Illiteracy among women is much higher than among men (54% vs. 27%)[32]. Women have lower participation in formal employment than in Sub-Saharan Africa (14% versus 21%, respectively)[33] and are greater hit by HH or climatic changes and are also the prime victims of gender based violence[34].

27. Women have limited ownership and control of productive resources, have smaller plots of farmed land and tend to own animals of low economic value. Access to agricultural inputs is limited among women as these are mainly used for the production of cash crops that are largely in the hands of men. Even if women play a leading role in day-to-day food production, men´s role at specific times of the agricultural cycle is essential for smallholder farming, fisheries and aquaculture.

28. Women´s role in aquaculture can involve feeding, selling and processing fish. However, aquaculture ponds "belong" to a woman´s husband. During the fieldwork for this design mission it was observed that women tend to play a more prominent role in productive livelihood activities and even control assets and at least part of the resulting benefits as HH livelihood strategies diversify and several activities generate returns and in turn increase HH wellbeing. This is especially the case when husbands are already engaged in a profitable activity and they perceive benefits to supporting their wives personal and economic development. In this context, it is probable that as HH strategies are strengthened and income levels improve, married women engage in aquaculture, as true beneficiaries in their own right.

29. The rapid field assessment conducted in the context of this project design indicates however that the same is likely not to be the case among the poorer potential married PRODAPE beneficiaries. In fact, the establishment of quotas for women within the project faces a high risk of husband´s "sending" their wives to apply for the project to get access to this benefit, when in fact, husbands will "own" and control the aquaculture ponds and associated benefits.

30. Women´s active participation in community groups and the degree to which their voices are heard and taken into account in development processes varies widely from community to community and largely depends on the value attributed by individual groups and community leaders. However, cultural roles and tradition generally emphasize men´s dominance in such spaces. Interestingly though, a study conducted in 2017 indicates that women have greater levels of participation in decision-making related to agriculture than would have been thought given the overall trends in women´s participation in decision-making at HH and community level[35].

[32] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[33] Ibid.
[34] INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[35] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.

31. Intra-HH food distribution in rural areas tends to favour men, a trend which can be enhanced in situations of food insecurity, exposing women, including pregnant women, as well as children, to higher levels of nutritional deficiency.

32. Interviewees reached during the design mission indicated that tensions and an increase in gender-based violence could be attributed to sudden increases in HH income and women´s increased access to opportunities.

33. Different sources indicate that women headed smallholder HHs account for 23%-38% of HHs in the country[36]. Lack of access to male labour among women headed HH contributes to the gender gap in the productivity of rural livelihood activities; male headed HHs are estimated to have 57% more labour power than female headed ones[37].

34. The Ministry of Gender, Children and Social Action leads efforts in promoting gender equality and empowering women. The country has seen some progress in producing sector specific gender policies and strategies and in identifying focal points for gender mainstreaming within government institutions. IFAD is currently supporting the finalization of a gender strategy and action plan for the agriculture sector for the period 2016-2025. A gender strategy and action plan was developed for the fisheries sector under PROPESCA for the period 2015-19[38] and serves as a good basis for the identification of current needs, constraints and opportunities for different social groups and the development of sector wide commitments to render the fisheries and aquaculture sector more socially inclusive. The MIMAIP currently has very limited capacity in terms of gender mainstreaming (and promoting social inclusion more broadly).

35. **Youth**. The country´s youth policy considers youth as being people aged 15-35[39]. Illiteracy is lower among youth (23%) than among adults (51%)[40]. Enrolment in primary education has increased substantially in Mozambique but quality of education and completion rates continue being lower than desired. In fact, while continuity into secondary education has also increased dropout rates are still alarmingly high. Vocational training opportunities for youth have grown in the past few decades but are still not adequate to provide youth without completed secondary education with the skills required by the labour market[41].

36. Agriculture, the informal sector and small and medium sized enterprises continue constituting the main avenues for youth. Youth lack some forms of capital, such as financing, and social capital to access the few opportunities available in rural areas. Approximately 37% remain unemployed. Entrepreneurship constitutes the driving strategy promoted by the GoM towards youth employment[42].

37. Youth are not homogeneous, according to anecdotal evidence collected in the field during the design mission youth aged 15-24 are more interested in activities that generate quick returns; their interest in longer term cycle opportunities such as aquaculture is generally contingent on their engagement in other activities with quick wins. While this is partly explained by interests, the weight played by the lack of capital

[36] (i) CGAP, 2016. National Survey and Segmentation of Smallholder Households in Mozambique. Working Paper; (ii) Morgado, J. and Salvucci, V., December 2016. Gender Divide in Agricultural Productivity in Mozambique. United Nations University – UN WIDER. Wider Working Paper 2016/176; and (iii) INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[37] Morgado, J. and Salvucci, V., December 2016. Gender Divide in Agricultural Productivity in Mozambique. United Nations University – UN WIDER. Wider Working Paper 2016/176.
[38] Ministério das Pescas, 2014. Estratégia de Género e Plano de Acção do Sector das Pescas 2015-2019.
[39] Ministério de Juventude e Desportos, February 2012. Política da Juventude (Revista). Versão 1.
[40] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[41] Ibid.
[42] Ibid.

of most rural youth (human, social, financial and material) should not be underestimated.

38. Youth aged 24-35 have more stable livelihoods and are interested in agriculture and other rural livelihood activities. In fact, they are the social group with the largest plots of farmed last among smallholders in Mozambique and are more likely to take risk and are better off than their older smallholder peers[43].

39. Without being specifically targeted rural youth have a limited opportunities to access rural development opportunities. Creating an enabling environment for youth to engage in rural entrepreneurship is crucial. The situation of young women deserves special attention, as they are seldomly targeted by development interventions; early pregnancies are common in rural areas. Youth do not generally participate in political and local planning processes; the voice of youth is overrun by that of older men.

F. Socio-Economic Stratification of the Population

40. Rural HHs in Mozambique can be divided into four socio-economic strata, namely: a) Very poor subsistence smallholders; b) Smallholders battling to make ends meet; c) Entrepreneurial smallholders; and d) Economically stable rural dwellers.

41. Economically active households comprise some smallholders battling to make ends meet those in more favourable positions.

Table 2: Socio-economic characterization of rural smallholder HHs in Mozambique

Poorest			Wealthiest
Very poor subsistence smallholders	Smallholders battling to make ends meet	Entrepreneurial smallholders	Economically stable rural dwellers
-Reliance on agriculture (most less than 1 ha of land, other 1-2 ha), selling at times some of the harvest to meet immediate needs; provide labour to others -Income is insufficient to meet basic needs, including food for consumption -Regularly food insecure -Are headed by people aged >35 -High dependency ratios (large number of children) -Includes single headed HHs that have been severely affected by an internal shock, including HIV/AIDS -Include illiterate and low HH heads with very low education -Tend to not participate in community groups -This group constitutes a high proportion of subsistence rural HHs	-Involved in agriculture (<2 ha) or fisheries and other natural resource based livelihood activities -Some of these HHs are engaged in small scale fish farming -Generate income from more than one income stream including agriculture (<2 ha) / fisheries / aquaculture but cannot meet all basic needs -Are the group most affected by shocks -Can experience acute food insecurity -Generally headed by people >35 -HH size is smaller -Participation in traditional community savings and credit groups	-Engagement in agriculture for 6-10 years with largest size plots among smallholders (most <3 ha) -Can hire outside labour - Have 3+ livelihood activities, including aquaculture -Are generally headed by younger people (<35) -More favourable dependency rations -30-40% have secondary education -Generally capable of spreading and dealing with risks	-Have steady income streams and assets -Income derived both from farm and off-farm activities -Low dependency ratios -Most have secondary education

G. PRODAPE Targeting Strategy

42. **Project targeting strategy.** The PRODAPE targeting strategy involves geographic and beneficiary targeting and is complemented by the integration of gender and youth transformative approaches and measures to ensure effective social inclusion in project activities and generation of associated benefits.

[43] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.

43. The project will include a set of empowering, enabling and procedural measures to promote socio-economic, gender and youth engagement and mitigate common social risks identified during project design. A comprehensive set of measures will be put in place to mobilize, apply, and select project beneficiaries to ensure transparency and accountability to local community members and project staff. A grievance mechanism will enable community members to submit concerns with the project or any of the processes employed by it.

44. **Geographic targeting.** PRODAPE will be targeting eight of 10 provinces of the country, with a total of 23 target districts, in line with GoM priorities, namely:

- Niassa Province: Lago, Lichinga and Mecanhelas Districts.
- Cabo Delgado Province: Metuge, Mueda and Balama Districts.
- Nampula Province: Mossuril, Ribaue and Larde Districts.
- Zambézia Province: Milange, Nicoadala and Mocubela Districts.
- Tete Province: Cahora Bassa, Magoé and Maravia Districts.
- Manica Province: Sussundenga, Vanduzi, Gondola and Mossurize Districts.
- Sofala Province: Beira, Dondo, Gorongosa and Buzi Districts.

45. The project will adopt a progressive implementation approach, whereby operations will start in key locations in line with the following criteria: (i) favourable natural conditions for aquaculture in ponds; (ii) the existence of water bodies capable of providing sufficient water for aquaculture activity; (iii) the existence of potential markets; (iv) unfavourable socio-economic conditions among local populations (high poverty levels), food and nutrition insecurity; and (v) the existence of access roads, which could be subject to improvements to warrant access throughout the year. The districts chosen in which to initiate activities being: Lago, Baloma, Ribaue, Milange, Cahora Bassa, Sussundenga and Beira. Interventions in six of the seven initial districts (all except Beira, will include a fish production component).

46. Expansion into other districts listed herein will occur once the aquaculture value chain in these districts is operational. Lessons drawn in these districts will inform expansion on the basis of local demand.

47. However, once the results of final assessments of damage caused by cyclones Idai and Kenneth to aquaculture infrastructure are available, target areas of intervention could be adjusted.

48. The ESMF will establish the overall framework for project operations among the 23 target districts. This information, along with demand expressed from districts will support the decision-making process to identify districts to be contemplated in the second and third batch of expansion. The phased implementation approach aims to consolidate supply and demand approaches towards effective and efficient value chain functionality. Lessons learnt and best practices will be integrated into the project as it expands from a set of districts to another.

49. The same criteria will be used to identify specific target locations within the aforementioned Districts. Relevant excluding criteria will also be taken into account to ensure that the project remains Category B (for example, the project cannot operate in conservation areas or in areas with marine water).

50. Also, in the event that communities affected by large scale economic activities, including extractive industry projects, whose livelihood strategies have largely deteriorated as a result of these projects comply with all technical criteria stipulated above, they will be given priority over other communities.

51. The implementation of activities at community level will also follow a progressive approach through the incremental reach of beneficiaries in communities targeted. The first round of support in each target community will include financial inclusion activities and engagement of easier to reach beneficiaries.

52. **Direct targeting of beneficiaries**. The project aims to reach 88,900 people within communities, along the aquaculture value chain and in relevant sector institutions. PRODAPE was designed under an inclusive targeting approach. Specific measures were integrated to ensure that poor and vulnerable groups, such as HHs severely affected by HIV and the disabled can access project opportunities. At community level, beneficiaries will participate in project activities based on self-selection within project-supported areas, based on pre-established eligibility criteria.

53. Table 3 illustrates the range of beneficiaries that will be reached by PRODAPE over the course of the project lifetime.

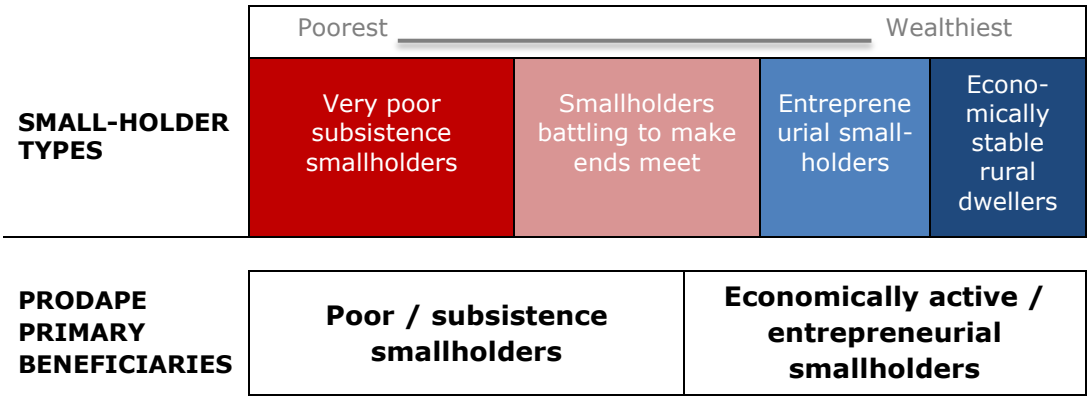
Table 3: Summary of PRODAPE beneficiaries at community and institutional level

COMMUNITY LEVEL BENEFICIARIES				INSTITUTIONAL LEVEL BENEFICIARIES
PRE-PRODUCTION	PRODUCTION	HANDLING AND PROCESSING	MARKETING	
PRIMARY BENEFICIARIES (13,000 people) **7,000** smallholders who will start aquaculture production activities; and **6,000** smallholders already engaged in aquaculture production				Approximately **500** people in / related to the sector will receive training from PRODAPE
SECONDARY BENEFICIARIES (2,500 people) **2,500** rural entrepreneurs already engaged in / who wish to be engage in levels of the aquaculture value chain other than production				
250 Extentionists & **30** Graduates who will engage in the level of the value chain of their choice				
An additional **2,000** people are expected to be reached through nutrition related interventions				

(i) Community level beneficiaries:

- Smallholder aquaculture farmers. This group comprises poor / subsistence smallholders and economically active / entrepreneurial smallholders requiring support to engage in the aquaculture value chain.

Figure 1: PRODAPE primary beneficiaries vis-à-vis smallholder categories



PRODAPE will reach a total of 7,000 people to engage in smallholder aquaculture production over the course of five years, through earthen ponds (60%) and cage culture (40%).

Table 4: Detail of PRODAPE beneficiaries to be reached per year

Type of aquaculture producer	Total Target	Yr1	Yr2	Yr3	Yr4	Yr5
Pond-based	4.200	-	1.400	1.400	1.400	-
Cage aquaculture	2.800	-	500	1.150	1.150	-
TOTAL	**7.000**	-	1.900	2.550	2.550	-

EARTHERN PONDS: Targeting quotas to be applied for the smallholder aquaculture producers being: 40% poor / subsistence smallholders and 60% economically active / entrepreneurial smallholders. Across all socio-economic strata 20% of beneficiaries will be women headed HHs, 10% youth aged 18-24 and 30% youth aged 25-35.

Table 5: Expected participation rate of different social groups as primary beneficiaries

Type of aquaculture producer	Total Target	Poor / subsistence smallholders	Economically active / entrepreneurial smallholders	Female Headed HHs 20%	Youth 18-24 10%	Youth 25-35 30%
Pond-based	4.200	1.680	2.520	840	420	1.260
Cage aquaculture	2.800	-	2.800	560	280	840
TOTAL	**7.000**	**1.680**	**5.320**	**1.400**	**700**	**2.100**

Specific support packages have been developed for the different socio-economic groups engaging in the production of cultured fish with the use of earthen ponds, as depicted in Table 6.

Table 6: Packages developed for HHs of different socio-economic groups to enable engagement in aquaculture production through earthen ponds

	SUPPORT PACKAGE FOR 1ST POND		SUPPORT AVAILABLE BEYOND THE FIRST POND
	POOR / SUBSISTENCE SMALLHOLDERS	ECONOMICALLY ACTIVE / ENTREPRENEURIAL SMALLHOLDERS	
Characteristics	• Food insecure; only 1-2 meals a day • Provide labour to others and engage in agriculture / fisheries / aquaculture marginally • ATT: some of these HHs could be labour constrained. • Have fewer assets and worst living conditions than the rest of the community	• Mostly food secure 2-3 meals / day • Have some surplus which is channelled to markets • Have various income generating activities	Beneficiaries of any socio-economic background, who already have one aquaculture pond and wish to expand their activity.
Support available	PACKAGE INCLUDES: • Participation in PCR group required • Provision of an aquaculture pond; if no labour constraints are faced, beneficiary must participate actively in the digging of the pond as part of the team provided by a private sector service provider **AND BE PAID FOR IT** (*Exception: HH head is affected by illness, disability, is a women-headed HH or headed by person >50. These HHs will not provide labour*) • Fingerlings for first cycle • Feed for first cycle	PACKAGE INCLUDES: • Participation in PCR group highly recommended • Provision of tools for the construction of aquaculture ponds. • Fingerlings for first cycle • Feed for first cycle	**RESOURCES AVAILABLE INCLUDE:** • Technical assistance • Aquaculture feed • Fingerlings • Financial products specific for the aquaculture value chain

Other beneficiaries will also include rural HHs already engaged in aquaculture production as they will benefit from improvements at other levels of the aquaculture value chain generated by the project, with support indicated in Table 5 under (support available beyond the first pond). It is expected that at least 40% of smallholders owning / managing aquaculture ponds in the target areas will progressively expand from 1 to 2-3 ponds over the project lifetime.

CAGE PRODUCTION: All beneficiaries will be economically active, to ensure that they are able to present a 20% contribution of all initial capital costs and input costs for the first production cycle, as well as have been granted approval for financial support from REFP.

Rural aquaculture entrepreneurs. Comprise individuals wishing to engage in levels of the aquaculture value chain other than production but require external support to do so. Fifty per cent (50%) of financial products targeting the value chain will be attributed to women. Specific opportunities and products will also be developed to meet the interests and capacities of youth of different ages. This beneficiary group will also include existing private sector entrepreneurs.

A portion of the youth reached at community level as fish producers or entrepreneurs will benefit from participating in a youth champion led intervention widely used by the International Labour Organization (ILO, Start Your Own Business).

- Young Graduates. PRODAPE will also target between 5-10 fresh graduates with aquaculture degrees to engage in the value chain, striving to attain a gender balance. In addition to being offered the support packages offered to any beneficiary, they will benefit from coaching and mentoring activities from specialized institutions. Efforts will be made to attain a gender balance.

- Extensionists. Extentionists will also be given the opportunity to engage in aquaculture activities through the same approaches as community level beneficiaries. A total of 250 extensionists will receive PRODAPE support. The measure is intended to enable these players to participate in commercial activity within the aquaculture value chain. The approach replicates similar positive experiences used in the agriculture sector in the country.

- Broader communities and individuals working in markets targeted by PRODAPE. The following activities are expected to reach and benefit the wider communities and markets targeted by the project: (i) The promotion of PCRs; (ii) Nutritional activities; and (iii) Water and sanitation improvements in markets and training of traders in fish handling techniques and business development.

(ii) Institutional level beneficiaries. Staff of all institutions involved in the project will benefit from capacity building interventions including exposure visits to locations of successful aquaculture activities. Extensionists will be provided with opportunities to engage in aquaculture activity.

H. PRODAPE Social Inclusion Strategy

54. The PRODAPE will integrate a comprehensive social inclusion strategy to ensure that HHs of different socio-economic groups, women, gender dynamics, youth and other vulnerable groups are all accounted for. The strategy includes:

(a) Parity of employment between men and women at the PCU and technical assistants hired with PRODAPE funding.

(b) Training of all project staff at national level, implementing agencies and relevant stakeholders on social analysis, as well as youth and gender sensitive programming.

(c) PRODAPE human resource policies and procedures are gender sensitive.

(d) Establishing targeting quotas for poorer community members who would likely otherwise not be reached; identification and provision of specific support packages that cater to the needs of each social group at different levels of the aquaculture value chain.

(e) Ensuring that all activities at local level start with obtaining buy in from local structures, and specifically, support towards social inclusion. Specific issues to be highlighted in that process include:

- Participatory socio economic, gender and youth analysis at community level;
- Agreement on the criteria for selection of beneficiaries who will receive different support packages promoting meaningful participation of youth in project and local governance processes;
- Agreement on how project information can be disseminated to ensure that all social groups receive project information;
- Agreement of project related processes involving all social groups targeted (men and women of different socio-economic groups, gender and age);
- Participatory assessment of other common social risks and barriers identified in project design that could compromise sustained participation in project activities; and
- Agreement on how the PRODAPE grievance mechanism will work.

(f) Implementation of inclusive project information dissemination, participatory planning and monitoring throughout the lifetime of the project.

(g) Integration of a *Social Mentoring* intervention to address pressing social risks and barriers constraining sustainable engagement of youth and women and enjoyment of benefits to be generated by the project.

(h) Collection, analysis and use of disaggregated data by socio-economic group, gender and age.

(i) Monitoring targeting goals per social group and targeting effectiveness; use of information to fine tune programme strategies.

(j) Monitoring intended and unintended changes in gender relations and common areas of gender inequality.

(k) Earmarking funds for qualitative special studies to improve understanding of specific issues related to social inclusion.

(l) Production of knowledge and sharing lessons learnt in the domain of social inclusion with stakeholders at national level.

II. MAINSTREAMING NUTRITION ACROSS THE VALUE CHAIN

A. Introduction

55. In 2015, Mozambique reached the Millennium Development Goal of halving the number of hungry people in the country; chronic food insecurity now sits at 24% down

from 61% in 1997[44]. Despite these impressive achievements, significant challenges to food and nutrition security are still encountered. The situation is made worse by inflation and a rise in food prices, recording a five-year high in October 2016[45]. According to the 2018 Cost of Hunger in Africa study, Mozambique loses more than 10.9 % of its annual GDP due to chronic malnutrition, the equivalent to a yearly loss of MZN 62 billion (about USD 1.6 billion).

56. In alignment with the GoM vision, the Mission underscores the importance of aquaculture in poverty reduction, food and nutrition security. In light of this, and based on experience, PRODAPE will mainstream nutrition; as a result, rather than only promoting activities at community level such as nutrition education and demonstration of nutritious cooking practices, the project will embed nutrition throughout the value chain. The project will focus on nutrition-sensitive strategies that increase supply, add nutritional value and increase demand of aquaculture fish.

57. Small-scale farmers will be enabled by the social behaviour change communication (SBCC) activities to address individual barriers tied to knowledge, skill, attitudes and motivation for consumption of diversified diets. To address other underlying causes of malnutrition, the project will use the nutrition governance structures in place to engage in sector coordination with the health, education, agriculture and relevant programs implemented by the nutrition partners' forum implementing agencies. Social Mentoring support will be offered to rural aquaculture producer households within the farmers clustered groups to tackle social risks such as lack of adequate planning and use of resources at household level, gender inequality and HIV and AIDS.

58. Finally, PRODAPE will monitor nutrition outcomes resulting from project interventions and contribute to achieve the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PAMRDC) objectives. The aim of these endeavours is to contribute to good nutrition through consumption of fish and fish-based products as an entry point to improved and diversified family diet.

B. Food and Nutrition Status in Mozambique

59. Mozambique has a three-fold nutritional burden (chronic undernutrition, micronutrient deficiency and emerging issues with overweight and obesity in urban areas). Nationally, 43% of children under the age of five are stunted, 6% are wasted and 15% are underweight. Low birth weight in Mozambican children is estimated at 14%, indicating that malnutrition affects children from conception and while in their mother´s womb[46]. Adolescent pregnancies contribute significantly to low birth weight. Malnutrition levels vary across the country; stunting prevalence is highest in the Provinces of Cabo Delgado (53%), Nampula (55%), Zambézia (45%), Tete (44%), Manica (42%) and Sofala (35%) and highest number of families with limited economic access to a nutritious diet.

60. Fish is the main source of animal protein for the coastal areas, providing vitamins and minerals, especially omega-3. Freshwater aquaculture fish, mainly tilapia, is not widely eaten in comparison to marine fish. The main barrier to fish consumption is accessibility, affordability and preference to other food, especially in rural areas located far from the sea and dependent on agricultural crops. Iron, Iodine and Vitamin A constitute the main micronutrient deficiencies[47]. The prevalence of overweight and obesity among women is reportedly increasing nationwide but is highest in the Southern Provinces and in urban areas, affecting over a third of women.

[44] The State of Food Insecurity in the World 2015 – SOFI.
[45] https://tradingeconomics.com/mozambique/inflation-cpi
[46] MISAU, INE and ICFI. 2013.
[47] SETSAN, 2013.

61. High levels of rural poverty, low HH purchasing power, limited access to markets, high post-harvest losses and weather-related hazards (droughts, floods and cyclones) continue to put significant pressure on food and nutrition security of the population. The causes of malnutrition in all its forms are driven by several factors:

(i) Nationally, 42% of the population lives more than 30 minutes walking distance from a market and 76% more than 2km from any road. As a result, large portions of the population are unable to sell produce, earn an income or purchase more nutritious foods.

(ii) The poorest do not produce enough food, do not have reliable income sources, and suffer disproportionately from diseases due to inadequate access to quality health care and sanitation.

(iii) Dependence on monotonous diets with limited diversified protein and micronutrients.

(iv) Cultural factors influence food consumption both in terms of the food that is eaten from what is available to HHs, when certain foods are eaten and in relation to food distribution at HH level.

(v) Women are overloaded with tasks, constrained by gender norms, and given limited access to and control over resources.

(vi) Limited access to nutrition and consumer awareness information on nutrition.

62. Barriers to diverse and nutritious diets have been highlighted by 2018 Fill the Nutrient Gap Mozambique studies and the in-depth review of the 2018 Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PARMDC).[48] This underscores that there is a pressing need to ensure appropriate nutrition interventions are in place for vulnerable populations including quality health and nutrition services.

C. National nutrition policies, strategies and governance

63. **Policies and strategies.** The GoM is committed to tackling food and nutrition security. This commitment is reflected in the Five-Year Plan of the GoM (PQG 2015-2019), which includes the reduction of chronic undernutrition as an indicator in the human and social development pillar. It is further supported by the National Strategy for Food Security and Nutrition policy (ESANII 2008-2015)[49] and the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PAMRDC 2011–2020) that aim to reduce stunting in children under five; wasting in pregnant and lactating women and girls and in children under two are recognized as at-risk groups for stunting.

64. The Communication and Advocacy Plan in the PAMRDC is supported by the Communication Strategy for Social Behaviour Change Communication (SBCC) for the Prevention of Malnutrition in Mozambique (2015-2019)[50]. In addition, food security and nutrition from fish is one of the development objectives of the Fisheries Master Plan 2010-19 (PDP) and is also accounted for within the PAMRDC. Finally, the Food Fortification Strategy (COMFAM) supports the scale up of industrially processed fortified cereal flours, particularly wheat flour and edible oils.

65. **Nutrition governance.** The Scaling Up Nutrition (SUN) movement started in 2010; Mozambique was one of the early riser countries committing to the movement and its objective, namely to end malnutrition in all of its forms. The movement has 10 principles of engagement and consists of four stakeholder networks, namely the United

[48] 2018 In-Depth Review of the Multisectoral Action Plan for the Reduction of Chronic Undernutrition in Mozambique 2011 – 2015 (2020)'.
[49] ESAN III (2018-2025) is currently under development.
[50] Estratégia de Comunicação para a Mudança Social e de Comportamento para a Prevenção da Desnutrição em Moçambique (2015-2019).

Nations, donors, private sector and civil society. SETSAN with the Ministry of Health (MISAU) coordinates the SUN movement and its networks through a technical working group. The Executive Director of SETSAN is the SUN focal point. A similar coordination structure has been replicated at provincial level with the recently -decreed provincial and district steering committees for food and nutrition security (CODSAN and COPSAN)[51]. Despite the structural components in place, PAMRDC 2018 review findings[52] show that persistent gaps still exist at national, provincial and district level in distinguishing nutrition security from food security. As such, it is difficult to accurately assess progress in addressing chronic undernutrition, as data is non-comparable and many times missing.

Mainstreaming Nutrition within PRODAPE

66. The investment focus of the PRODAPE has enormous potential to contribute to the increase in fish production to meeting the country´s growing demand for fish. The PRODAPE project will improve nutrition outcomes by using *nutrition-sensitive impact pathways* and *nutrition-sensitive strategies* that increase supply, add nutritional value and increase demand of aquaculture fish and associated value-added products. The PRODAPE will provide 2,000 women, youth and men with targeted support to improve their nutrition. Overall however, it is expected that 13,000 beneficiaries from the 24 target districts benefit from nutrition related activities.

67. Integrated impact pathways embedded in PRODAPE are as follows:

(a) **Consumption pathway (among producers).** The PRODAPE will focus on farmers as producers and consumers by introducing nutrition and consumer awareness around fish as a driver for diet diversity among producers and encouraging fish consumption planning vis-à-vis channelling fish into markets. Also, diversified production systems will be encouraged among beneficiaries engaged in aquaculture (fish production and agriculture activities) to increase the quantity and nutrient-rich quality of diverse foods available to the HH year-round.

(b) **Income pathway.** The PRODAPE will support the strengthening / emergence of credit and savings groups (PCRs) in all communities targeted by aquaculture production activities. These activities will also include household budgeting and business planning. The project will encourage use of associated profits to address malnutrition by addressing health, nutrition and care necessities.

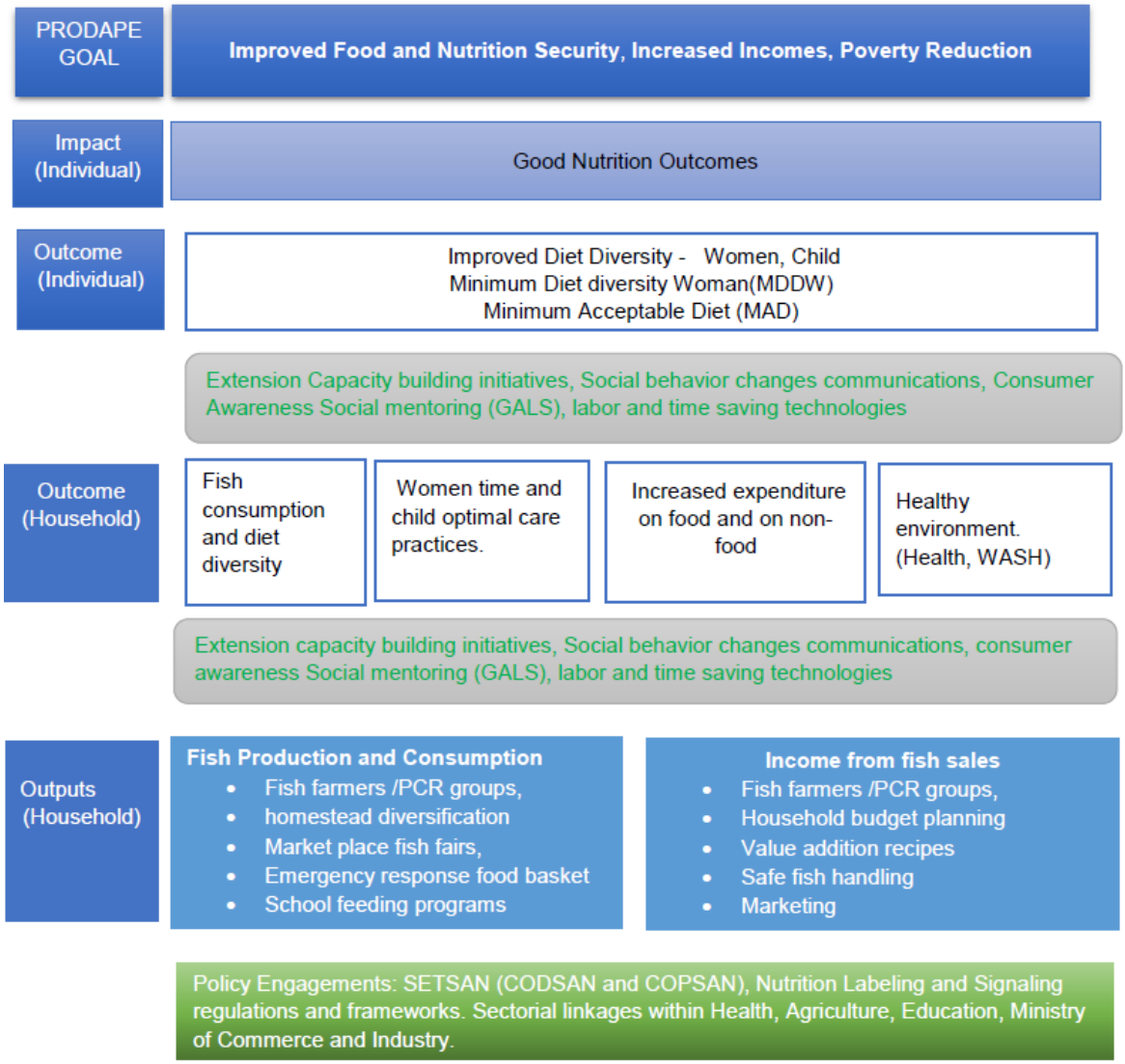
(c) **Market pathway.** The PRODAPE will work all across the aquaculture value chain to address supply and demand constraints. This is expected to increase availability of and access to aquaculture fish in markets. A consumer awareness study on cultured fish and other products will be conducted as part of the initial market survey to be conducted by the project to establish consumer awareness levels and on the basis of that, delineate effective strategies for demand creation for the purchase of aquaculture fish in the target districts.

The project team shall develop linkages with the World Food Programme (WFP) for the fish farmers and cottage fish industries to explore the possibility of tapping into the *diversified diets food baskets e-voucher scheme* for emergency response and school feeding programs, so create yet another market for aquaculture producers.

[51] December 6th, 2017, the Council of Ministers (Decree N. 69/2017) approved the creation of the National Council for Food and Nutrition Security (CONSAN).
[52] In-Depth Review 2018 of the Multisectoral Action Plan for the Reduction of Chronic Undernutrition in Mozambique 2011 – 2015 (2020)'.

In addition, fish farmers with support from the project can benefit from the Mozambique Scaling-Up Nutrition Business Network platform to access technical assistance / services on nutrition marketing including safe food handling and packaging that preserves the nutritional value of fish, frameworks for adherence to mandatory minimum requirements for nutrition labelling and market place support activities for demand generation.

Figure 2: PRODAPE integrated impact pathways for nutrition



68. PRODAPE interventions will be implemented through the use of nutrition sensitive strategies, namely, SBCC and consumer awareness activities, institutional capacity building activities on nutrition mainstreaming approaches, and food and nutrition security policy support. To address other underlying causes of malnutrition, the project will use the nutrition governance structures in place to engage in sector coordination with the health, education, agriculture and relevant programs implemented by agencies in the context of the Nutrition Partners Forum.

69. **SBCC activities.** Project extension staff will engage and support small-scale aquaculture farmers with nutrition education and consumer awareness information and activities focused on ensuring that farmers and their HHs consume fish produced and use

the income from the fish and fish products to access other diverse nutrient-dense food, with the aim of improving the quality of their diets. The intention is for them to also become change agents within their communities and use the marketing of their produce to increase demand, consumption and utilisation of fish at community level. Some of the suggested SBCC activities include:

(a) **Farmer clusters and/or the PCR group nutrition education sessions:** Using the farmer clusters and/or the PCR groups as entry points, the nutrition education activities will include nutrition-specific content on: a) nutritional value of fish; b) fish safety; c) fish benefits for the family, especially for the 1,000-days group[53]; and d) demonstration of improved recipes for preparing cultured fish[54]. Activities will be implemented from the onset and throughout the production and marketing cycles.

(b) **Marketplace awareness and communication content and materials.** To address issues related to aquaculture fish acceptability in coastal areas and address cultural habits that inhibit the consumption of fish in inland areas, as well as promote fish production and overall fish consumption the project will: (1) develop, multimedia messages, creative print materials such as scripts, stories, lyrics, agendas, discussion guides and slide shows tailored to rural communities; (2) take advantage of local fish fairs to promote tilapia and establish promote fish processing and value addition; (3) add to the on-going marketplace communication activities to emphasize the prevention of chronic malnutrition through community drama / theatre, interactive storytelling, music and road shows. National events such as health and nutrition weeks and the SETSAN "Month Dedicated to Feeding" *(Mês da Alimentação)* offer a wider geographical and thematic focus opportunity for community awareness on the use of aquaculture fish and associated products to improve HH diet. The project team will contribute on the production of content and the social mobilization activities for the events in target districts; (4) explore use of the district and provincial community radios that benefited from the Millennium Development Goals program (MDG1c)[55] radio station training support and the MISAU "One Minute on Nutrition" (*Um Minuto de Nutrição*) initiatives to convey the fish-related nutrition messages.

(c) To support wider coverage and dissemination of information on aquaculture fish consumption, the project team could explore the provision of tilapia and catfish-related content on production, consumption and marketing to community mother, infant and young child nutrition extension teams (SDMAS) to use during home visits and to the Nutrition Partners Forum organisation working on nutrition-specific and nutrition-sensitive intervention in the districts to integrate health, school and community nutrition activities.

70. **Institutional capacity building on nutrition mainstreaming.** To facilitate quality extension services within the sector a nutrition specialist will be hired to support the PCU in planning, implementing and monitoring nutrition outcomes within PRODAPE. An overall capacity assessment planned for the extension team and provincial and district directorates will also elaborate on the nutrition capacity gaps. In collaboration with SETSAN, Ministry of Agriculture National Directorate for Agriculture Extension Department of (DNEA), and MISAU, specific content for the aquaculture sector will be developed and included in the overall aquaculture extension services training plans. A nutrition focal point will join the extension master training team that will train target provincial directorates of Ministry of Sea, Inland Waters and Fisheries (DPMAIPs) and extension staff at district levels and the project team. The training will be done at the

[53] Adolescents, pregnant, lactating women and children 6-23 months.
[54] Nutrient-dense recipes that use fish as base ingredient and or fish value added products.
[55] Accelerating progress towards the achievement of the Millennium Development Goals1c in Mozambique (MDG1c) 2013-2018.

district level to avoid the cascading training of trainer model to avoid the potential loss of technical knowledge and skills along the training chain.

71. **Food and nutrition policy support.** The DPMAIPs and district level nutrition focal points will monitor and manage the data collection and utilisation of the routine nutrition outcome data. The data will then be reported and monitored against the aquaculture planned activities within PARMDC at district, provincial and national level. In this regard the project will support districts and provincial directorates to engage in the food and nutrition policy alignment. This is in line with planning and monitoring activities stipulated for the recently decreed provincial and district steering committees for food and nutrition security (CODSAN and COPSAN)[56]. The project will also engage with the food and nutrition evaluation assessment and surveys working group chaired by SETSAN department of evaluation.

72. **Do no harm considerations.** The time spent by women participating in project activities could have a negative effect on breastfeeding and other childcare responsibilities assumed by women. The project will mitigate these harms by ensuring that the organisation of the PRODAPE activities are well coordinated and take place at times which are convenient for women. In addition, the introduction of timesaving technologies for food processing, such as solar dryers and cool boxes, as well as for marketing, including mobile phone marketing, will be explored by PRODAPE.

73. A social and gender analysis will be carried out by the project to determine trends in the distribution of aquaculture related benefits at HH level to develop strategies to ensure equitable intra-household access to resources and benefits.

D. Partnerships and linkages

74. Synergies with initiatives in other donor-supported projects/programmes working in target PRODAPE locations will help maximize nutrition outcomes by leveraging facilities and other resources already in place, among which:

(a) Ministry of health provincial directorate and district services. In provinces with persistently high stunting levels, such as Niassa, Cabo Delgado, Nampula and Zambézia, small-scale aquaculture farmers with HH members who are pregnant, lactating, with children under-five and/or adolescents will be linked with on-going child and maternal health support services in their areas, as needed. This will be achieved thorough collaboration with community health workers (in Mozambique APEs) and the district women's health and social services (SDSMAS) extension teams.

(b) Nutrition sector partners. The following table elaborates potential linkages which could be explored by PRODAPE with Nutrition Partners Forum members for projects planned from 2019 through 2022[57]:

Organization and Partner	Project / Programme	Area of Linkage / Partnership	Province / District
IFAD-funded projects			
IFAD	Nutrition Community of Practice IFAD projects	Sharing lessons learnt and experience on mainstreaming strategies in Mozambique and diet diversity baseline and end line surveys	

[56] December 6th, 2017, the Council of Ministers (through Decree No. 69/2017) approved the creation of the National Council for Food and Nutrition Security (CONSAN).
[57] Nutrition Investment Overview Mozambique 2018.

Organization and Partner	Project / Programme	Area of Linkage / Partnership	Province / District
	PROMER	Agricultural diversification	Cabo Delgado / Balama Niassa / Lichinga
	PROCAVA	Agricultural diversification	65 districts in Northern and Central Mozambique
Rome-Based Agencies			
WFP	Emergency response program School feeding program	Institution markets for the aquaculture fish through the e-voucher scheme	Emergency response district in the north and central(TBC)
Nutrition Partnership Forum			
GAIN (DFID)	Catalysing private sector in scaling up nutrition 2016-2021 -SUN Business Network-Mozambique	Investment fund and technical assistance to increase safe nutritious diets through private sector engagement and demand generation through market place support	Nampula, Cabo Delgado, Tete, Niassa, Sofala , Manica and Zambézia
USAID	Community nutrition 2019-2024	SBCC, nutrition services through the national health system	Nampula / Murrupula, Meconta, Mogovolas and Larde
UNICEF/ EU / WB funds	Health and nutrition, behaviour change communication for nutrition 2017-2012	Specific community nutrition activities, SBCC platforms and WASH services	Nampula / Monapo and Ribáue Zambézia
DFID SCI-HKI	Linking Agriculture to Nutrition 2017-2022	SBCC, promotion of orange fleshed sweet potato and farmer field schools	Tete and Manica
The Spanish Red Cross	Health and Nutrition 2019-2022	Water, sanitation and hygiene promotion	Cabo Delgado

E. Institutional and Implementation Arrangements

75. The PRODAPE PCU will hire a nutrition specialist officer to manage day-to-day activities related to nutrition. The nutrition specialist will work with the DPMAIPs, who are responsible for the coordination, implementation and progress of nutrition mainstreaming actions for the project at local level. The SDAE extension workers are the front-line team for PRODAPE and will be supported trained and mentored on nutrition-sensitive interventions by the nutrition specialist and the DPMAIPs nutrition focal points.

76. The contributions of PRODAPE interventions will be monitored through periodic project-specific monitoring activities as well as SETSAN biannual surveys. The baseline survey on knowledge, attitudes and practices and diet diversity surveys will provide

benchmark data to measure changes related to nutritional outcomes in the project target areas. IFAD Mozambique´s Nutrition Community of Practice will enable sharing information, best practices and networking within IFAD funded programs (PROMER[58] and PROCAVA[59]) as well as establishing linkages with nutrition specific / sensitive programmes.

77. Planning, implementation and monitoring of social behaviour change from the multimedia and marketplace campaigns will be done in collaboration with the Ministries of Health, Agriculture, Education, Commerce and Industry, SETSAN, SUN business network and community activists.

F. Nutrition Indicators

78. Diet diversity measured at the individual level has been repeatedly validated as predictive of diet quality and is associated with nutritional status across a range of countries and contexts[60]. A positive association has also been shown between higher diet diversity and reduced prevalence of stunting and underweight among children under five. The same applies to diet diversity and mean micronutrient adequacy for women and children. The following indicators will be used by PRODAPE to track nutrition results:

Impact indicators	**Per capita consumption of aquaculture fish**
Outcome indicators	**Percentage of smallholder women of reproductive age with increase dietary diversity (at least 5 food groups)** *Dietary Diversity Scores consist of a simple count of the different food groups that a HH or an individual has consumed over a given period (usually 24 hours). These scores have been used by the MGD1c project. Future plans for SETSAN biannual evaluations to incorporate MDDW.*
Output indicators	• Number fish (kg) reserved for household consumption per production cycle • Types of fish value added products with proper nutrition labelling and signalling • # of nutrition campaigns, events, awareness raising sessions and trainings conducted • Number of persons / HHs provided with targeted support to improve their nutrition (gender and age disaggregated data) • # of government staff trained in nutrition-sensitive food systems • # of nutrition-related progress reports generated for SETSAN, CODSAN and COPSAN • Fish-related nutrition content developed, publications and policy briefs produced and disseminated

III. ADDRESSING SOCIAL RISKS

79. An analysis of social risks which could undermine primary beneficiary engagement in project supported activities and/or limit beneficiary HH socio-economic progression led the identification of the following:

a) Individual HHs seek individual solutions to common problems;

[58] The Rural Markets Promotion Programme.
[59] Inclusive Agri-food Value-chains Development Programme.
[60] Compendium of indicators for nutrition-sensitive agriculture FAO 2016.

b) Lack of joint planning at HH level;

c) Potential increase of HH tensions and gender inequality with increased income flows among married beneficiaries;

d) Increased risk of HIV acquisition by women; limited health seeking behaviour among HIV positive pregnant women, youth and men. Threat of poor health with deteriorating health if treatment is not initiated and sustained;

e) Food insecurity and malnutrition associated with lack of production of food for consumption by participating households and an increase in food prices.

80. Whether organized under cluster models or around aquaparks, smallholder aquaculture farmers face greater challenges than the rest of the actors in the value chain due to their socio-economic vulnerability. Engagement in aquaculture will require organization to address challenges and take advantage of opportunities. The *Social Mentoring* intervention aims to support farmers in this respect by working at two levels:

i) Aquaculture producer groups (in clusters or aquaparks). Activities will instil joint planning, collaboration and equip them to identify common problems and joint solutions.

ii) Individual aquaculture producers receiving PRODAPE support. Activities would aim to address social risks that could hinder beneficiary ability to sustain engagement and limit socio-economic progression: (i) absence of joint HH plans; (ii) gender inequality; (iii) malnutrition; and (iv) HIV and AIDS.

81. The proposed *Social Mentoring* activity, specifically catered to the risks identified among small aquaculture farmers is facilitative in nature. The intervention is based on the Gender Action Learning System (GALS)[61] broadly used by IFAD, together with Stepping Stones[62], an effective facilitative methodology used in HIV programmes and the integration of information and messages used in the country to fight malnutrition. Activities will be imparted by facilitators trained under PRODAPE and enable participants to develop realistic plans, better take advantage of existing opportunities and make decisions on how to avoid social risks identified.

[61] IFAD, October, 2014. Case Study: Gender Action Learning System in Ghana, Nigeria, Rwanda, Sierra Leone and Uganda. Gender, Targeting and Social Inclusion.
[62] http://steppingstonesfeedback.org Accessed 16th July 2018.

Table 6: Key information in relation to four key social risks faced by project beneficiaries at HH level to be addressed by the Social Mentoring intervention

	Lack of joint household plans	Gender inequality	HIV and AIDS[63]	Malnutrition
CHALLENGES	- High poverty levels push HHs to rely on day to day opportunities - Resources tend to be scattered and poorly coordinated and not strategically used for HH progression	- Women have more responsibilities and tasks than men and are the prime food producers at household level - Decision making is primarily by men - Lack of control of resources / benefits	- 13.2% HIV prevalence[64] - Challenges: • Enrolment in and adherence to treatment • Stigma / discrimination • Vulnerability of women, and children • HIV disclosure affects women • Food availability and consumption patterns	- 43% chronic malnutrition - 54% maternal anaemia, iron, iodine and vitamin A[65] - Challenges: • Limited physical and economic access to diverse, nutritious diets • Limited diversified protein and micronutrient • Cultural influence on diets/caring practises • High disease burden
PROPOSED SOLUTIONS	- Empower HHs to produce HH plans and identifying solutions to the four social risks identified herein (and others)	- HH members analyse the impacts of gender inequality on individual benefits and HH progression and identify corrective measures to issues deemed relevant	- Sensitization on HIV testing, treatment and adherence - Sharing information on existing HIV services - Tearing down barriers to disclosure / discrimination - HIV/AIDS & gender inequality - Nutrition in the context of HIV and AIDS	- Targeted nutrition education on nutritional value of fish, fish safety, consumption benefits especially the 1,000 days group[66] - Demonstration of improved aquaculture fish recipes[67] - Partnerships with relevant sectors

82. Issues to be included in the *Social Mentoring* intervention will include:

    a. Development of a household vision;

    b. Household planning: use of resources and opportunities available, including remittances;

    c. Identifying and addressing common barriers for household progress (including common areas of gender inequality);

[63] Instituto Nacional de Saúde, Instituto Nacional de Estatística (INE), ICF Internacional, 2015. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique 2015. Relatório Preliminar de Indicadores de HIV.
[64] Mozambique recently adopted the HIV Test and Treat Strategy, which entails getting HIV positive patients into anti-retroviral treatment as soon as diagnosed. As is the case in other HIV high-burden countries, treatment is considered to be the prime prevention strategy.
[65] In-Depth Review 2018 of the 'Multisectoral Action Plan for the Reduction of Chronic Under-nutrition in Mozambique 2011 – 2015 (2020)'.
[66] Adolescents, pregnant and lactating mothers and children aged 6-23 months.
[67] Nutrient dense recipes that use fish as base ingredient and or fish value added products.

d. Provision of basic information on HIV prevention and clinical HIV services close to the community, including, as relevant: HIV testing and counselling, HIV care and treatment, community services and support groups (if any) and use of services;

e. Importance of pregnant women, youth and men testing and using clinical HIV services and adhering to anti-retroviral treatment;

f. Couple disclose of sero-prevalence; overcoming HIV stigma and discrimination;

g. Provision of basic information to prevent malnutrition and linkages, as appropriate.

83. *Social Mentoring* activities will be implemented by trained Mentors. *Social Mentoring* activities will be imparted to primary beneficiary producer groups, in groups, in whichever way they are organized for the purposes of accessing project opportunities related to aquaculture production. It is expected that groups will consist of 25 members. However, more focused attention will be given to "more at risk beneficiaries", considering that these will primarily be the poorest HH (those receiving the highest level of support to engage in aquaculture), but it could also include beneficiaries that are not among the poorest but require additional assistance in overcoming challenges and capitalizing opportunities due to enhanced exposure to a given social risk. These beneficiaries will receive additional support at HH level. It is expected that the proportion of beneficiaries requiring this level of additional support will represent 20% of the total number of beneficiaries receiving Social Mentoring support.

84. Evidence shows that when implemented correctly, the impact is such that there is a multiplier effect at community level as beneficiaries themselves target others spontaneously. As such, the project will only target 50% of groups in each community and 50% of individual beneficiaries requiring additional support at HH level and will work with those targeted directly by Mentors so that once the "graduate" they replicate the same process among the remaining 50% of groups and individual beneficiaries requiring additional support.

85. Activities at group and HH level will both be implemented for a period of 12 months. It is expected that after this time groups and individuals targeted will "graduate" out of *Social Mentoring*. Each Mentor will cover three groups (and the estimated 20% of group members requiring HH level support, i.e., five people in each group, totalling 15 HHs) in a period of 12 months.

86. All information related to the prevention, treatment of and discrimination in the context of HIV, as well as nutrition, included in *Social Mentoring* activities will be aligned with GoM guidance documents and duly coordinated at local level with other players working towards common goals.

Attachment 1: Detailed population data per target district PRODAPE.

Target Province	Target District	Population 2017
Niassa	Lago	163,982
	Lichinga	213,361
	Mecanhelas	296,908
Cabo Delgado	Metuge	89,122
	Balama	180,957
	Mueda	217,641
Nampula	Larde	85,971
	Mossuril	142,787
	Ribáue	290,244
Zambézia	Mocubela	110,857
	Nicoadala	180,686
	Milange	619,275
Tete	Magoé	91,313
	Marávia	131,685
	Cahora Bassa	132,972
Manica	Vanduzi	124,064
	Sussundenga	168,200
	Gondola	201,735
	Mossurize	219,551
Sofala	Buzi	177,348
	Gorongosa	182,226
	Dondo	184,458
	Beira	533,825
Gaza	Chókwè	240,244

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Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Institutional Sector Status And Organizational Arrangements

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Institutional Sector Status and Organizational Arrangements

The Appendix presents detailed information on institutional and policy issues from the aquaculture sub-sector in Mozambique and beyond framing the development of aquaculture in Mozambique, which have informed PRODAPE management arrangements and capacity building strategies embedded in project design.

I. LEGAL AND POLICY CONTEXT FOR AQUACULTURE

A. Relevant Sector Policies and Strategies

1. Aquaculture in Mozambique is guided by a sub-sector development strategy and a wider sector (fisheries) masterplan. The vision and strategies laid out in these documents are in turn integrated in the Government of Mozambique´s (GoM) five year programme, as described as follows:

2. **The *Aquaculture Development Strategy 2008-17*** is being reviewed through the ***Aquaculture Development Action Plan*** **(**PADA), projected for a five-year period beginning in 2019. The development strategy acknowledges that the aquaculture development has been affected by several factors, among which, insufficient and poor-quality aquaculture inputs (mainly feed and fingerlings), limited research investments and extension services and difficult access to credit for aquaculture.

3. The concept of *centralities* is a key feature considered for the effective and inclusive development of aquaculture in the country. Through centralities, currently dispersed functions and actors would be concentrated in the same geographic areas, selected on the basis of natural and socio-economic conditions. The concept involves concentrating production units, inputs and markets in the same geographic areas to overcome key bottlenecks currently faced in the aquaculture value chain with the aim of transforming predominantly subsistence aquaculture into commercially oriented enterprises.

4. The PADA is based on three pillars: (i) increased production, productivity and competitiveness in aquaculture; (ii) improved access to markets and financial services; and (iii) institutional development. It is expected that with the implementation of PADA aquaculture production will rise from the current 1,835 tons (2017) to 30,000 tons (2023).

5. The ***Fisheries Master Plan 2010*****-19** aims to increase the fisheries sector´s benefits to the country, as follows:

i. Increasing sector contribution (through fish) to food security and nutrition;

ii. Improving the standards of living of artisanal fishing and small-scale aquaculture communities;

iii. Increasing the contribution of commercial fisheries and aquaculture to the achievement of national economic and social development objectives; and

iv. Increasing the sector´s net contribution to the country's balance of payments.

6. The achievement of the vision laid out in the Fisheries Masterplan requires strong sector institutions that are able to manage sector development to effectively transform public and private investments into lasting results.

7. **The *Government Five-Year Programme 2015-19*** is aligned with Mozambique´s National Development Strategy for the period 2015-35. It establishes five general priorities which also underpin the development of the aquaculture sector, namely:

i. The defence of marine and inland natural resources under national jurisdiction;

ii. Gender mainstreaming in national development policies and strategies;

iii. The promotion of aquaculture technologies and training of small-scale processors, traders and fish farmers in fish handling and processing techniques as well as the conservation of fish;

iv. The promotion of aquaparks, zonal fingerlings production centres and other facilities to support the development of fish farming and the establishment of mechanisms for the certification of aquaculture production;

v. The construction and rehabilitation of aquaculture support infrastructure;

vi. Safeguarding the rights of communities living in areas endowed with natural resource and their access to benefits derived from the exploitation of these resources;

vii. Strengthening capacities for the rational exploration of natural resources;

viii. The promotion of research on aquatic environments and aquaculture resources.

8. The current five-year programme considers the increase of food production as one of the most important elements for the improvement of living conditions in the country´s population.

B. Legislative Framework

9. The legislative framework applicable to aquaculture is included in the GoM´s fisheries law and associated regulations.

10. **The *Fisheries Law* of 2013** provides the legal framework for fisheries and aquaculture in Mozambique. Specifically, for aquaculture, it establishes the following:

i. The use and enjoyment of land and water resources of public domain for aquaculture activities is subject to the respective legislation;

ii. The government is responsible for establishing the general guidelines for the development and management of marine and freshwater aquaculture, including:

- Determining species to be cultivated and corresponding production systems, areas where aquaculture can be practised, species to be introduced,
- Guiding research activities, experimentation and provision of extension, use of chemical products, the provision of feed and veterinary drugs, the organisation, registration and establishing the conditions for carrying out aquaculture activity
- Providing the necessary frameworks for disease control

iii. The construction of aquaculture installations must be authorised by relevant sector entities, except when for subsistence purpose;

iv. Catching species in aquaculture installations is not subject to the rules applied to fishing activities;

v. Licensed aquaculture units must prevent, detect and control disease, which could endanger aquatic species, the environment, ecosystems and public health;

vi. The cultivation of indigenous or established species and authorised exotic species is permitted;

vii. Effluents must be controlled and treated;

viii. The destruction of mangroves for aquaculture ventures is prohibited, except under conditions and for purposes foreseen by the law;

ix. Except for subsistence aquaculture units, aquaculture ventures must present project documents, environmental impact studies, obtain prior authorization, be licensed, and pay taxes.

11. **The *General Aquaculture Regulations* of 2001** are based on the 1990 Fisheries Law. As such, the regulations need to be revised to ensure alignment and consistency. The regulations are divided into five chapters containing: (i) general principles, (ii) organisation and management of aquaculture activities; (iii) authorisation and licensing; (iv) conditions to be met by products used in aquaculture so as to warrant protection of the environment and natural resources; and (v) fees, inspection and penalties.

12. **The *Regulations on Inspection and Quality Assurance of Fishery Products* of 2009** give practical effect to the powers conferred by the Fisheries Law on matters related to health within the sector. It applies to establishments and vessels, local fishery products and by-products, processes and transport of fishery products intended for human consumption, wholesale and export activities and fishery products and by-products imported and intended for human consumption.

II. INSTITUTIONAL ANALYSIS OF THE AQUACULTURE SECTOR

13. The main institutions involved in the promotion of aquaculture activity in Mozambique are the Ministry of Sea, Inland Water and Fisheries (MIMAIP), the Provincial Directorates of Sea, Inland Waters and Fisheries (DPMAIPs), the Institute of Development of Fisheries and Aquaculture (IDEPA), the District Services for Economic Activities (SDAEs), the Fisheries Research Institute (IIP), the National Fisheries Administration (ADNAP), the National Institute for Fish Inspection (INIP), national and local non-governmental organizations and the private sector. Within their specific mandates, an analysis of strengths, constraints faced and potential to be explored was conducted in the context of PRODEPA design, as follows:

- **MIMAIP**. Strengths: (i) strong donor support through development projects; (ii) on-going improvements in light of institutional reforms; Constraints: (i) insufficient administration capacity at central, provincial and, particularly, district level; (ii) lack of clarity in what regards procedures in the context of on-going decentralization, specifically in what regards to planning, coordination, implementing and monitoring; Opportunities: MIMAIP could be supported in the areas of (i) policy development; (ii) capacity building.
- **DPMAIPs**. Strengths: (i) on-going improvements in light of institutional reforms; Constraints: (i) recent experience in the implementation of development projects; (ii) lack of procedures for institutional coordination and implementation in the context of the implementation of development projects; (ii) insufficient technical capacity in aquaculture; Opportunities: (i) increasing attention is given to aquaculture development; (ii) willingness to have an increased role in project implementation.
- **IDEPA**. Strengths: (i) experienced leadership in the implementation of development projects; (ii) improved strategy for the development of small-scale aquaculture based on lessons learned from recent interventions; (iii) staff positively motivated; Constraints: (i) dependence on international assistance; (ii) insufficient technical/ extension capacity in the field; (iii) positioning in the project implementation process insufficiently defined after institutional sector reform; Opportunities: (i) ample experience in implementing development projects.

- **SDAEs**. Strengths: (i) presence on the ground, close to communities; (ii) strong connection to communities and fish farmers; Constraints: (i) high financial dependence; (ii) weak technical connection to institutions dealing with aquaculture administration; (iii) no presence of aquaculture administration and development bodies at district level; Opportunities: (i) growing attention to aquaculture; (ii) willingness to play a more important role in the development of aquaculture.
- **IIP**. Strengths: (i) research and experimentation capacities; support to the development of aquaculture reinforced with the Aquaculture Research Centre (CEPAQ); (ii) existence of regional research departments; (iii) staff positively motivated; Constraints: (i) dependence on international assistance; (ii) insufficient scientific / technical capacity at central and provincial levels; Opportunities: (i) experience in cooperating in international scientific bodies / projects.
- **ADNAP**. Strengths: (i) experience in fisheries administration; (ii) present in all provinces; Constraints: (i) dependence on international assistance; (ii) insufficient technical / administrative capacity at central, provincial and particularly at district level; (iii) inexistence of an administration unit dedicated to aquaculture; Opportunities: (i) growing attention given to local administrative bodies; (ii) willingness to integrate aquaculture administration at central, provincial and district levels.
- **INIP**. Strengths: (i) clear strategy for the development of fish inspection services; (ii) central and provincial offices able to increasingly cover aquaculture produce; (iii) receives international assistance in the area of fish inspection; Constraints: (i) high dependence on international assistance; (ii) insufficient technical capacity at central and provincial levels and lack of presence at district level; Opportunities: (i) willingness to have an increased role in aquaculture.
- **National NGOs**. Strengths: (i) strong financial support from international donors; Constraints: (i) high operating costs; (ii) poor coordination; (iii) sustainability is questionable; (iv) loose contract terms, poor monitoring targets and exit strategies; Opportunities: (i) link to NGO resource base; (ii) sound participatory know-how; (iii) strengths in specific training areas.
- **Local NGOs**. Strengths: (i) strong connection to communities; Constraints: (i) lack of funds and experience in the use of best practices; (ii) difficulty in hiring staff; Opportunities: (i) capacity building programmes; (iii) capacity to provide services.
- **Private sector**. Strengths: (i) growing participation in the country´s economy; Constraints: (i) the private sector is still weak and relatively inexperienced; (ii) very limited experience in joint ventures; (iii) limited access to financing; (iv) face difficulties as a result of the country´s current economic crisis; Opportunities: (i) strengthening linkages in rural areas; (ii) existence of business training modules for small and medium enterprises.

II. PRODAPE INSTITUTIONAL AND MANAGEMENT ARRANGEMENTS

14. The PRODAPE directly aligns with the GoM´s policies and strategies as expressed in the Five-year Government Plan for 2015-19 and the PADA (2019-23) currently under review. The project integrated a component dedicated to capacity building and management to fill identified gaps in the policy and institutional capacity, which unaddressed, could compromise project success and sustainability of project investments.

15. The objective of PRODAPE´s component 3 is to strengthen the institutions responsible for small-scale aquaculture development to fulfil their roles in project

implementation and increase their capacity to give continuity to aquaculture activities after project completion. PRODEPA support towards institutional development is expected to contribute to IDEPA´s performance and that of other institutions involved in the aquaculture sub-sector at central and local level. The component has the following sub-components: (3.1) Project management, (3.2) Institutional capacity building and (3.3) Policy and regulatory development.

A. PRODAPE INSTITUTIONAL ARRANGEMENTS

16. The project will operate in a complex institutional framework. Therefore, the roles and responsibilities of participating institutions, as well as the organisational arrangements for management, coordination, implementation and monitoring of the project were identified on the basis of the institutional adjustments that have taken place in the sector and the successes and lessons learned from other projects.

17. As described in PRODAPE sub-component 3.1 (project management) responsibilities related to PRODAPE lie as follows: (i) MIMAIP is the government entity to oversee the project; (ii) IDEPA will coordinate the overall implementation of the project; (iii) the DPMAIPs will be responsible for ensuring the implementation of project activities with the participation, where necessary, of the district level aquaculture extension services offered by SDAEs.

18. The distribution of responsibilities described herein follows the extinction of the provincial delegations of IDEPA and their integration into DPMAIPs[119], specifically, under the Department of Promotion of the Development of Fisheries and Aquaculture. In light of this, and to enable the DPMAIPs and the aquaculture extension services at SDAEs to respond to PRODAPE implementation needs, the project will provide the necessary resources to cover existing capacity gaps within these institutions to cover investment costs for the engagement of field staff motorcycles and housing for extensionists, equipment, training of staff and technical assistance.

19. However, specific PRODAPE activities will be coordinated with other sector institutions such as IIP / CEPAQ, ADNAP, INIP and the Fisheries Schools (EP)), and with institutions in other sectors through their respective ministries including the National Roads Administration (ANE) / the Ministry of Public Works and Housing (MOPH), Electricity of Mozambique (EDM) / (the Ministry for Mineral Resources and Energy (MIREME), the Ministry of Land, Environment and Rural Development (MITADER), the Ministry of Health (MISAU) / the Technical Secretariat for Food Security and Nutrition (SETSAN), as described as follows:

i. **MIMAIP** will be responsible for policy and legislative initiatives, for promoting any required institutional adjustments and for overseeing the project.

ii. **IDEPA** has the overall responsibility of promoting the development of the small-scale aquaculture in Mozambique. This will be done through a Project Coordination Unit (PCU) working under the supervision of the National Director of IDEPA (for further details refer to section on Management Structure below).

iii. **DPMAIPs** are responsible for the implementation of project activities. Technical experts funded by the project and based at IDEPA will provide technical assistance for the implementation of project activities.

iv. **SDAES** will be responsible for implementing aquaculture extension activities among project beneficiaries.

[119] The organisational structure of the DPMAIP comprises: (i) an Inspectorate for the Sea, Inland Waters and Fisheries, (ii) three technical departments: Maritime and Inland Waters Affairs, Promotion of the Development of Fishing and Aquaculture, and Planning and Infrastructure and (iii) support functions, namely: Administration and Human Resources, Provincial Director's Office, Legal Counsel, Information and Communication Technology, Communication and Image, and Procurement.

v. **INIP** will provide technical support to project initiatives involving improvements in the quality of fish produced for national and export markets.

vi. **IIP** is responsible for CEPAQ, which will play a decisive role during the first years of PRODAPE operations, when it is expected that local production of fingerlings will not meet the needs of fish farmers. In principle, CEPAQ will receive assistance from Norway during the next five years.

vii. **ADNA**, presently deals with fisheries but not with aquaculture. It is expected that ADNA, together with the Department of Maritime and Inland Waters Affairs at DPMAIPs will together be involved in setting up the aquaculture administration at sub-national level.

viii. **INIP** is the sector's institution responsible for certifying fish quality and the sanitary conditions of fishing facilities and vessels. It will provide technical support to project initiatives involving the improvement of the quality of aquaculture produce.

ix. **FFP**. FFP will have, in principle, no direct role in credit management under the project, as this will be handled through the Rural Enterprise Finance Project (REFP) through private sector financial institutions including banks, micro-banks and micro-finance institutions. Nevertheless, the FFP will provide oversight and help ensure that project activities requiring financial services are consistent with the policies and objectives of the sector.

x. **MOPH** is the government body responsible for public works. Project investments in roads, either rehabilitated or built with project funds, will be coordinated and supervised by ANE in accordance with the procedures in force.

xi. **EDM** the national agency responsible for the provision of electricity from the national grid, in conjunction with the National Energy Fund (FUNAE) will be responsible for supporting the implementation of project activities for provision of electricity in key areas supported by PRODAPE, which may require ice plants, markets and other installations in the aquaculture value chain.

xii. **The Ministry of Finance (MoF)** is responsible for financial oversight for all government programmes. It also supervises the budget process and the allocation of project financing from external sources and will supervise the REFP, which will be housed at the National Investment Bank (BNI). This project will fund the promotion and assistance to PCRs and financial literacy training in all communities targeted by PRODAPE and make credit available for different activities along the aquaculture value chain.

B. PRODAPE MANAGEMENT STRUCTURE

20. The IDEPA will manage PRODAPE with the support of a PCU. The PCU will be composed of a Coordinator, a Financial Manager, an Accountant, a Procurement Officer and an M&E Officer. In addition to these, the project will recruit technical experts in aquaculture (two), value chain development, nutrition and a sociologist, who will be integrated into IDEPA departments with the view to not only support PRODAPE but also the broader institution as a whole. The benefits of having a robust core (management and technical) team financed by PRODAPE at IDEPA is also expected to trickle down to the DPMAIPs and SDAEs´ extension service.

21. The staffing structure of the PRODAPE PCU at IDEPA is presented in Table 1 below.

Table 1: Proposed PRODAPE PCU structure and key responsibilities

Position	Qualifications/Experience	Expected contract duration	Placement
Project Coordinator (1)	Background in project management with knowledge of administrative/financial management and of artisanal fisheries and fish marketing	Full time for five years	Based in Maputo
Financial Manager (1)	Background and experience in financial/ administration management of development projects	Full time for five years	Based in Maputo
Financial / Contracts Management Assistants (3)	Experience in administration and background in accounting (one of which with procurement expertise)	Full time for five years	Based in Maputo but in charge of 2-3 provinces each
Procurement Officer (1)	Experience in procurement processes for large and complex development projects	Full time for five years	Based in Maputo
M&E Specialist (1)	Good experience in project planning and management of information systems with a degree in economics or related discipline	Full time for five years	Based in Maputo
KM Specialist (1)	Experience in statistics and information systems and in moderating discussions on lessons learned	Full time for five years	Based in Maputo
Admin. Secretary (1)	Administrative experience. Experience in accounting and contracts would be a condition of preference	Full time for five years	Based in Maputo
Driver (1)	Experience in driving of at least 5 years	Full time for five years	Based in Maputo

22. As referred to above, technical experts will be integrated into relevant IDEPA departments. Expertise will include long- term and short-term specialists who together, will provide technical support to key project activities: aquaculture, value chain/marketing, nutrition and targeting / social inclusion / management of social risks. These experts will not be considered as members of the PCU. To ensure that IDEPA staff capacity increases each technical specialist will work closely with at least one direct counterpart at IDEPA. In addition, to their project specific duties, technical specialist duties will include on-the-job training of counterparts, contribute towards strengthening the departments that they work in in terms of consolidating strategies, systems and tools, among others. Table 2 provides summarised information in relation to the background required for each long-term technical position to be financed by PRODAPE, the duration of contract and placement within IDEPA. It is expected that all technical experts will spend approximately 50% of their time in the geographic areas targeted by the project.

Table 2: Summary information on technical experts to be financed by PRODAPE

Position	Qualifications/Experience	Expected contract duration	Placement
Aquaculture Specialists (2)	Experience in fishing operations, fishing gear and aquaculture. Minimum of seven years of experience.	Full time for five years	Based in dPPP*, Maputo
Value Chain Specialist (1)	Experience in value chain development aspects. Minimum of seven years of experience.	Full time for five years	Based in Maputo
Sociologist /	Experience in community mobilisation,	Full time for five	Based in the dEPDS,

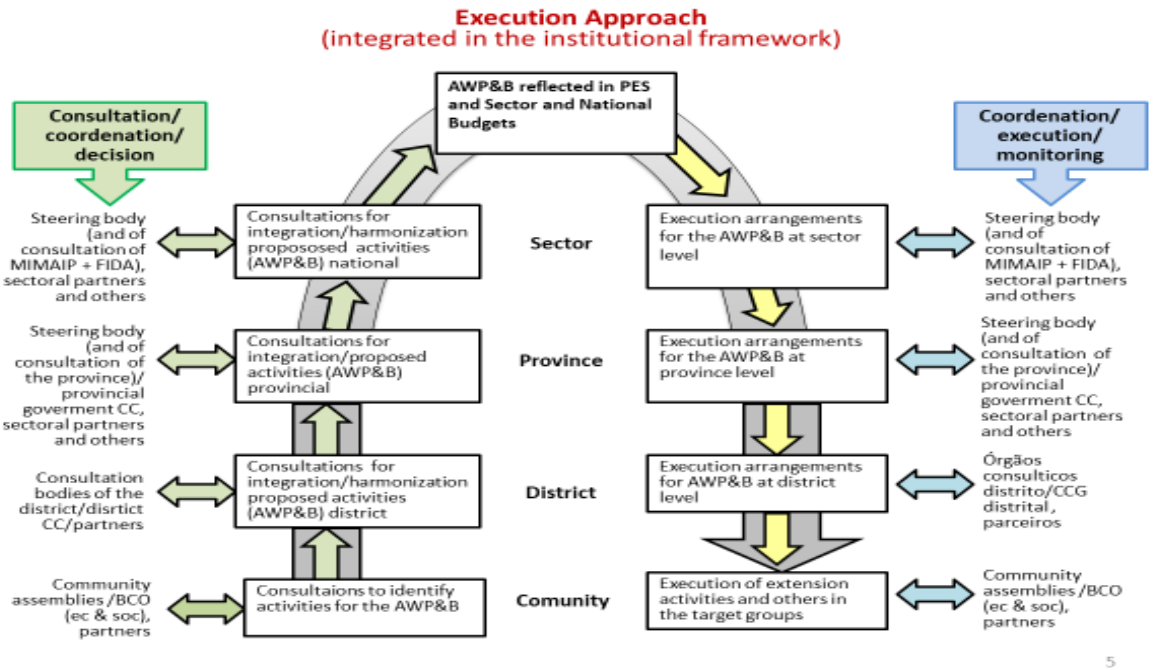
Position	Qualifications/Experience	Expected contract duration	Placement
Social inclusion Specialist (1)	with a strong understanding of social and gender analysis and integration in project strategies. Minimum seven years of experience. Previous experience with aquaculture or fisheries will be an advantage.	years	Maputo
Nutritionist (1)	Experience in and demonstrated understanding of food and nutrition initiatives in rural development contexts; knowledge of and experience in mainstreaming nutrition in government structures; experience in training and capacity building is required.	Full time for five years	Based in dEPDS, Maputo
Financial Liaison Officer	Specialised in the operationalisation of financial inclusion projects for specific value chains.	Full time for five years	Based in Maputo

** dEPDS = Depart. of Studies, Planning and Socio-economic Development; dPPP = Depart. of Promotion of Fisheries Production; dPCP = Depart. of Promotion of Fisheries Marketing*

C. Vertical Linkages

23. Communications, planning, coordination, implementation and monitoring activities in the context of PRODAPE between IDEPA / PCU and provincial / district players will be streamlined from the start of project operations, based on existing institutional arrangements and systems, with improvements made as relevant. The experience to date with small-scale fisheries and aquaculture projects will be valuable in this respect.

Figure 1: Vertical linkages used by other projects and proposed for PRODAPE



D. Planning, Budgeting and Monitoring

24. The project annual planning and budgeting process will be coordinated by the PCU, more specifically by the M&E/Knowledge Management Officer. The process will involve all staff participating in the implementation of the project, target communities and other stakeholders involved in the aquaculture value chain. Experience from other IFAD-funded sector projects has shown that the participatory nature of the process enhances buy-in and continued engagement, identification of areas requiring project attention and can contribute to improved results.

25. As depicted in Figure 1 above, the annual planning and budgeting process will start at community level. The process will start with community consultations in each PRODAPE target area to disseminate project interventions and identify priorities for the development of aquaculture in each area. A technical review would then be conducted by the project implementation team in each area, in order to establish / adjust priorities and resources available. Potential options are then discussed with communities and action plans produced.

26. Activity plans and corresponding budgets will be then prepared for each district, covering training and other activities considered under the project. It is crucial that the process involves district representatives responsible for the development of small-scale aquaculture; the information will also feed into the District Annual Plan and Budget produced by the GoM at district level. District level plans and budgets will be aggregated and integrated in the PRODAPE AWPB.

27. The PCU will be in charge of finalizing the AWPBs and submitting them for review to the Provincial Project Steering Committees and later to MIMAIP´s Consultative Council / NPSC.

28. AWPBs will include a description and justification for each activity, verifiable indicators, institutional and individual responsibilities, time frames for implementation and deadlines, costs and the sources of funding. Annual procurement plans will be prepared upon approval of the AWPB. The AWPB preparation process and content will facilitate individual staff performance appraisal throughout project implementation. Performance will be an important factor in establishing the level of financial incentive to be given to each member of staff.

E. PRODAPE Performance-Based Incentive System

29. Among the lessons learned from the implementation of projects previously promoted in the fisheries sector (namely, the Nampula Artisanal Fisheries Project (PPAN), the Sofala Bank Artisanal Fisheries Project (PPABAS) and the Artisanal Fisheries Promotion Project (PROPESCA), is the contribution of a performance-based incentives system to project success. Such systems have been based on key government staff involved in the project implementation getting incentive payments depending on their level of responsibility and performance, determined on quarterly basis.

30. The system of performance-based incentives proposed in PRODAPE will cover a limited number of staff in IDEPA, the seven provincial directorates and the 23 district services for economic activities directly involved in the management of project activities. The system does not cover the PCU staff and the technical team supported by the project. The system of performance appraisal under the project would be in accordance with the practices used in the past by MIMAIP and subordinate institutions.

31. The proposed system would enable participating staff to receive an average increment of 25% on top of their base salary (20% for the staff of IDEPA and the provincial directorates and 40% for the staff permanently based in the field integrated in SDAEs. The costs resulting from these performance-based incentives would be covered by PRODAPE.

32. Table 3 indicates the personnel covered by the incentive system and associated costs.

Description	*Staff (number)*	*Annual base salaries (USD)*	*Total base salaries (USD)*	*Incentive rate*	*Total incetives (USD)*
IDEPA					
Director and management staff	10	63 054	315 268	20%	63 054
Technical staff sr.	22	72 565	362 824	20%	72 565
Subtotal IDEPA	**32**	**135 618**	**678 092**		**135 618**
PROVINCIAL DIRECTORATES (DP)					
Director and management staff	40	175 507	877 536	20%	175 507
Technical staff sr.	96	316 646	1 583 232	20%	316 646
Subtotal DP	**136**	**492 154**	**2 460 768**		**492 154**
DISTRICT SERVICES (SDAE)					
Director	24	68 923	344 616	40%	137 846
Extension staff (aquaculture)	72	113 962	569 808	40%	227 923
Subtotal SDAE	**96**	**182 885**	**914 424**		**365 770**
TOTAL GENERAL	**264**	**810 657**	**4 053 284**		**993 542**

33. The total cost of the incentive system represents 2% of project total costs. This value is likely overestimated as the technical staff base salary used corresponds to the senior level salaries.

34. The project will also adopt other forms of incentives that represent a benefit to other staff involved in the implementation of activities, such as participation in training and attendance to meetings in the country and in the region, allocation of computers and means of transport in accordance with their needs and responsibilities.

F. PRODAPE Governance Framework

35. Transparency, accountability and participation will underpin project management. The PRODAPE will also integrate an effective grievance mechanism. Financial and procurement processes and systems will all comply with IFAD and GoM regulations

36. The participation of multiple stakeholders at different levels in the planning, implementation and monitoring of project operations (as depicted in Figure 1 above) is expected to result in ensuring inclusive management and monitoring of risks and results. Internal and external audits will allow for the identification of existing risks and prompt mitigation.

37. A National Project Steering Committee (NPSC) and steering committees at provincial - and if necessary, at district level - will assume an oversight function in PRODAPE. The committees will focus on strategic and policy issues, will review and approve PRODAPE Annual Workplans and Budgets (AWPB) and monitor progress and quality of implementation and results achieved over the course of the project. If considered appropriate, the sessions of these steering committees will be part of the agenda of the MIMAIP's Consultative Council at central level as well as in Provincial and District governments. The sessions are expected to be attended by representatives of the implementing and coordinating entities at the respective levels.

III. PRODAPE CAPACITY AND POLICY DEVELOPMENT

38. The PRODAPE will invest substantial efforts in building the capacity of institutions involved in the development of the aquaculture value chain in Mozambique to ensure that: (i) project interventions are implemented loyal to project design and to expected quality standards to achieve project objectives; and (ii) lay the foundations for sustainability of project interventions. Likewise, and understanding that the sector

development needs to be driven and underpinned by a strong policy and regulatory environment, PRODAPE will support required policy development processes, as described below.

39. **Institutional capacity building**[120]. To support aquaculture production and the fish value chain in the areas covered by PRODAPE, subcomponent 3.2 includes the following main outputs: (3.2.1) Capacity of IDEPA strengthened (set up of PCU); (3.2.2) Capacity of local administration reinforced (integration of the technical specialists in IDEPA departments, number of extension agents in the districts increased and with the means of work required, provincial-based technical staff trained and having work experience in business/marketing/value chains); and (3.2.3) Aquaculture institutional systems improved (assistance to enhance the aquaculture administration institutions through the establishment of the licensing and enforcement functions at SDAE level, review of the role of small scale aquaculture institutions, including organic statutes and regulations, staff tables and professional progression and the design of a pilot statistical system for small-scale aquaculture to be tested and scaled up in the project area and subsequently to the rest of the country).

40. **Policy development**. Subcomponent 3.3 aims at contributing to the improvement of the policy/legislative framework, advocacy and governance efforts in support of small-scale aquaculture production, through the following outputs: (3.3.1) Relevant government authorities develop frameworks enabling climate smart aquaculture (ESMF and detailed climate analysis, including an agro-ecological map of suitable zones for aquaculture that provides the basis for the identification of areas to be covered by the project, specific guidelines for cage culture and biosecurity, together with protocols to mitigate risks and establish remedial actions); and (3.3.2) Policy/ legislative framework (regulations on aquaculture production and aquaculture produce, aquaparks, small scale aquaculture policy, strategy and planning) updated and improved.

41. Other studies and initiatives aiming to strengthen the policy/ legislative environment for aquaculture arising during implementation, could be considered.

[120] Capacity building will also take place in the other two components: Development of small-scale aquaculture production capacity and Development of aquaculture business.

Attachment 1: Draft Terms of Reference for PRODAPE PCU Management Team

PRODAPE PROJECT COORDINATOR

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

The project goal of PRODAPE is to contribute to poverty reduction and enhancement of food security and nutrition among rural households in targeted areas. The project development objective is to increase production, consumption and income of rural households and other actors involved in the aquaculture value chain in the target area. The main outcomes are: (i) Increased production and productivity of smallholder aquaculture; (ii) Increased fish consumption by both rural and urban households; (iii) Improved efficiency of the fish value chain and associated products through the use of a business development approach; and (iv) The aquaculture sector is effectively managed based on good information and providing increased services to smallholders and other value chain actors.

The development objectives of PRODAPE will be achieved through two interlinked investment components (*Development of small-scale aquaculture production capacity* and *Development of aquaculture business*), which are aligned with the promotion of centralities, a key element driving the vision of aquaculture development in Mozambique, aiming to increase production capacity and productivity of small-scale aquaculture farmers. A third component will be centred on *Project Management, Institutional Strengthening and Policy Development*.

The total project budget is estimated at USD 50 million, to be financed by IFAD and the GoM.

Qualifications and Experience. IDEPA is looking for an experienced Project Coordinator to lead PRODEPA management. The following qualifications and experience are required for the position:

- Academic degree in economics, sociology or aquaculture.
- Minimum 10 years of experience in project management.
- Proactive and problem solving, proven ability to lead a team of people of diverse backgrounds and communicate effectively with senior government officials and development partners.
- Excellent communication skills, written and verbal. Fluency in both English and Portuguese.
- Knowledge of the following subjects are required: (i) financial management, procurement and administration, (ii) aquaculture, (iii) fish value chains, (iv) participatory planning methods, (v) environment and climate change.

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the Project Coordinator will spend at least 50% of the time travelling in the target areas.

Key responsibilities. The objective of the position is to assist IDEPA in the management of PRODAPE to warrant efficiency in fund use and achievement of project results. The Project Coordinator shall:

- Ensure adequate use of financial and administrative systems at the PCU;

- Ensure that the project objectives are effectively achieved within the proposed time frame;
- Contribute to the institutional strengthening of IDEPA and its sub-national level implementing agencies for effective project management;
- Complete the Project Implementation Manual (PIM), as required, covering planning, budgeting, implementation and monitoring procedures for project activities;
- Facilitate the preparation of AWPBs is made in coordination and through consultation with relevant stakeholders and in accordance with the project objectives, outcomes and outputs;
- Prepare AWPBs, procurement plans and progress reports and submit them to the national director of IDEPA, project steering committees at different levels and development partners for obtaining 'no objection';
- Assume all responsibilities for project procurement;
- Attend steering committee meetings and report on project progress and results achieved; and
- Ensure that the estimates of cash and disbursements are in accordance with the needs of the project and that the financial and accounting follow established procedures.
- Ensure the correct functioning of PRODAPE´s grievance mechanism and that grievances are responded to in due course.

PRODAPE FINANCE / CONTRACTS MANAGER

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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Qualification and Experience. IDEPA is looking for an experienced Finance / Contracts Manager (FCM) to join the PRODAPE Project Coordination Unit. The FM will be responsible for: managing and coordinating PRODAPE financial management activities in strict compliance with the requirements of the Financing Agreements between the Government of Mozambique (GoM) and IFAD, the Project Financial Management Manual (FMM) and best financial and procurement management practice. He/she will provide all possible support to the Project Coordinating Unit (PCU) of which he/she is a member, in order to achieve successful project implementation.

The FCM will report to the Project Coordinator (PC) and will be responsible to the PC and IDEPA for the proper performance of the duties. The following qualifications and experience are required for the position:

- A university degree in accounting.

- At least three years of proven experience in:
  - **a.** Projects financed by external donors at a management level;
  - **b.** Preparing balance sheets according to GoM guidelines and international standards;
  - **c.** Preparing withdrawal applications for external funding agencies;
  - **d.** Liaising with the Ministry of Finance for replenishment of project accounts from external funding and for making payments to suppliers, service providers and staff;
  - **e.** Planning and presenting financial needs according to GoM budgetary cycle and procedures based on activities planned;
  - **f.** Management of procurement systems and practices in large and complex development projects;
  - **g.** Working in rural development projects, particularly involving rural organizations and groups.
- Proficiency in computer, information and communication technology
- Good communication skills; fluency in written and spoken English and Portuguese

Desirable Skills and Personal Qualities

- Experience with IFAD or WB financed projects;
- A solid understanding of GoM accounting practices and systems;
- A practical understanding of external source financing procedures;
- Leadership skills and ability to operate effectively in diverse teams, contributing positively to working relationships;
- Willingness to work outside of formal working schedule;
- Willingness to link with service providers to verify the use of standard accounting practices in reporting.

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the FCM will spend at least 30% of the time travelling in the target areas.

Key responsibilities. The FCM specific responsibilities include:

- Implement and update financial management procedures applying to Project receipts and payments and ensure that funds are used for the purposes intended, in an open and transparent manner; ensure that the Project Coordinator (PC) is aware of risks arising from any weaknesses associated with internal control systems and take steps to minimize risks.
- Ensure that all financial documents relating to the project (expenses, and all other ledger transactions, registers, payroll records including benefits, contributions and tax deductions, invoices and all vouchers) are retained by the PCU and are made available for inspection by IDEPA, external auditors and IFAD supervision mission teams.
- The implementation and maintenance of the e-SISTAFE accounting system and ensuring that the chart of accounts and reporting system thereof

provides information to link between project activities by category, component and funding source. In the initial stage, until e-SISTAFE reporting tools are fully configured, ensuring that PRODAPE's off-the-shelf accounting software balances are in agreement, and preparation of a journal of entries, as required, for reconciliation with e-SISTAFE ledger entries for PRODAPE in the Single Treasury account.

- Managing and administering all payments for contracts, memoranda of understanding (MoU) with implementing partners and grant beneficiary goods' proposed payments in accordance with IFAD Guidelines, Grant Selection Committees, NPSC deliberations and any other applicable national guidelines.
- Management of all procurement procedures, obligations, systems and practices in line with IFAD and GoM regulations; timely production of PRODAPE procurement plan in line with AWPB, budget and project needs;
- Maintenance and regular update of the following: Fixed Assets, Staff, Grant Beneficiary, MoU and Contract Registers. Conduct an inventory of project assets at quarterly intervals and ensure insurance coverage thereof.
- In close collaboration with the Monitoring and Evaluation Officer, assist the PC with the preparation, monitoring, consolidation and review of PRODEPA's AWPB, as follows:

  a. Provide training and guidance to project beneficiaries and implementing partners for AWPB activity preparation and submissions and participate in the development and implementation of plans, and procedures for budget request submission activities to ensure that project objectives are achieved in compliance with PRODEPA strategy and that informed decisions are taken;

  b. Consolidation of budgets, plans and activities after review for consistency; provide advice to the PC on optimized use of resources;

  c. Calculate the cost of services and associated analyses; translating activity requirements into financial information for NPSC review and guidance, identify problem areas and propose actions to be taken to improve cost-efficiency of services, without affecting quality;

  d. Monitor and provide advice on advance financing to implementing partners, monitor and analyse activities undertaken by these in accordance with AWPB;

  e. Review and propose alternative financial solutions to the PC and NPSC to facilitate transparent and efficient allocation of resources for the implementation of project activities;

  f. Prepare monthly projected liquidity flow statements, and conduct associated analyses;

  g. Reconcile and review expense statements for Withdrawal Application requests to IFAD every quarter;

  h. Review insurance coverage of assets during implementation/ construction;

  i. Review all payroll and relevant worksheets, payments to suppliers, utilities, contractors, grant related payments, service providers and implementing partners prepared by the accountant;

j. Prepare interim and annual financial statements for management, IFAD and liaise with the external auditors and internal audit department of MIMAIP.

- The FM will supervise the Accountants and organize appropriate training / career development plan / guidance to ensure successful attainment of tasks assigned.
- The incumbent is expected to visit the project area periodically as part of monitoring of activities.
- Perform any other financial management duties that may be assigned by the PC.

AQUACULTURE / CLIMATE CHANGE SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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The development objectives of PRODAPE will be achieved through two interlinked investment components (*Development of small-scale aquaculture production capacity* and *Development of aquaculture business*), which are aligned with the promotion of centralities, a key element driving the vision of aquaculture development in Mozambique, aiming to increase production capacity and productivity of small-scale aquaculture farmers. A third component will be centred on *Project Management, Institutional Strengthening and Policy Development*.

Qualifications and Experience. IDEPA is seeking the engagement of an Aquaculture Specialist with the following qualifications and experience:

- Master's of Science in Aquaculture or closely related discipline and a Certificate/Diploma in Environmental Impact Assessment;
- Minimum of 10 years of experience required in: a) Fish seed production; b) Fish nutrition; c) Culture of fin-fish; d) Large scale fish farm operations and feed manufacturing; e) Fish processing and value addition; f) Fisheries extension and education; g) Fisheries policy; h) Fisheries regulatory frameworks;
- The incumbent should have experience in: a) Project planning and management; b) Environmental/Climate Impact Assessment; c) Environmental Audits d) Natural Resource Management and/or Water Resource Management and/or Hydrology; and f) climate change adaptation and mitigation issues related to aquaculture operations;

- In addition, the incumbent must show evidence of: a) Being a registered environmental auditor/expert; b) Having conducted strategic environmental assessment; c) Competency in remote sensing and GIS; d) Competency in Information and Communication Technology (ICT); e) Good communication skills, written and verbal and fluency in both English and Portuguese.

Duty station. The duty station would be located in Maputo but with frequent travelling to project target areas.

Key responsibilities. The objective of the position is to assist PRODAPE with aquaculture related planning taking into consideration environmental parameters during implementation of the project as well as developing environmental management systems and mitigations for potential negative impacts of the project. In particular s/he shall:

- Ensure adequate siting of PRODAPE interventions according to the criteria outlined within the ESMF;
- Carry out strategic environment assessment of aquaculture activities on the natural resources such as land, water, air and the biota during project planning and implementation to ensure that activities take place in adequate environmental and climate conditions;
- Advice the project on potential environmental and climate hazards and elaborate viable and sustainable best options to mitigate adverse impacts and increase resilience, including climate change adaptation and mitigation;
- Ensure compliance with existing environmental legislations and regulations thus contributing to the best possible solution to environmental licensing in coordination with relevant MITADER units;
- Ensure the sound integration of best environmental practices and climate-resilient technologies in all aquaculture development activities supported by the project;
- Provide guidance to all PRODAPE stakeholders (including service providers) on environment and climate risk management. This includes the identification, planning, implementation, monitoring and evaluation of environmental and climate resilient aspects/ activities of the project, including for the preparation, implementation and monitoring of annual aquaculture development action plans and the promotion of climate resilience in farmers' organisations;
- Oversee service providers´ integration of expected environmental & climate resilient measures in all activities implemented by the project;
- Liaise with the Rural Enterprise Finance Project (REFP) to explore potential financial products to increase climate resilience of PRODAPE's beneficiaries;
- Ensure and promote continuous and effective linkages and collaboration with relevant national institutions (i.e. MITADER, INAM, INGC, IPP), international partners, service providers and other IFAD financed projects in Mozambique;
- Instil the development of a strong shared understanding at the Project Coordination Unit (PCU) and among service providers in all issues related to environmental and climate resilience considerations;
- Develop land use maps to inform planning of aquaculture facilities and systems in the project area;

- Capture relevant lessons to support institutional capacity building and knowledge sharing on environmental and climate resilient aquaculture approaches;
- Support the Knowledge Management (KM) and Communication Specialist in developing the Project Learning System with a specific focus on environmental and climate change adaptation, mitigation measures and best practices;
- Assist project efforts in providing climate/weather information and in establishing an effective early warning system to strengthen the climate/environmental package provided to PRODAPE beneficiaries;
- Guide the preparation of Annual Work Plan and Budgets (AWPBs) regarding environmental requirements and climate resilient activities;
- Develop environmental management plans for all project sites;
- Assess the potential impacts of aquaculture waste and suggest appropriate methods of waste disposal;
- Identify training needs for public and private sector stakeholders; plan and implement relevant training, accordingly;
- Ensure the integration of environmental education sessions for all categories of PRODAPE beneficiaries.
- All responsibilities assumed by the incumbent will seek to warrant effective implementation of the project in line with design as much as to build the capacity of IDEPA. The incumbent will work closely with a local counterpart at IDEPA and collaborate with wider IDEPA teams as required;
- Assume any other duties relevant to the position indicated by the PRODAPE director and / or the IDEPA Director in line with the purpose of the position.

VALUE CHAIN SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

The project goal of PRODAPE is to contribute to poverty reduction and enhancement of food security and nutrition among rural households in targeted areas. The project development objective is to increase production, consumption and income of rural households and other actors involved in the aquaculture value chain in the target area. The main outcomes are: (i) Increased production and productivity of smallholder aquaculture; (ii) Increased fish consumption by both rural and urban households; (iii) Improved efficiency of the fish value chain and associated products through the use of a business development approach; and (iv) The aquaculture sector is effectively managed based on good information and providing increased services to smallholders and other value chain actors.

Qualifications and Experience. IDEPA is looking for a Value Chain Specialist to lead the management of all post-production interventions along the aquaculture value chain supported by PRODAPE. He/she will have a wide professional background in tropical inland aquaculture and / or fisheries development. The following qualifications and experience are required for the position:

- Degree in aquaculture and / or fisheries development;
- Minimum 10 years of experience in rural setting in tropical areas;
- Sound knowledge of aquaculture and fish value chains;
- Successful experience in managing development interventions seeking to strengthen aquaculture value chains (post-production);
- Experience and proven capacity in designing and delivering training to community members and field officers;
- Experience in the use of participatory methods;
- Proactive and problem-solving attitude, proven ability to lead a team from various backgrounds;
- Excellent communication skills, written and verbal fluency in Portuguese as well as good skills in English are essential.

Duty station. The duty station would be located in IDEPA's office in Maputo, Mozambique. It is estimated that the Value Chain Specialist will spend at least 50% of the time travelling in the target areas.

Key responsibilities. The objective of the position is to assist IDEPA in the management of relevant PRODAPE interventions for the development of a functional aquaculture value chain in line with project design. The Value Chain Specialist shall:

- Approve and oversee the implementation of all activities aiming to reach target beneficiaries and support the engagement of other local stakeholders in the development of the aquaculture value chain (post-production);
- Ensure that activities respond to the needs of beneficiaries and are in line with the results of market studies supported by the project;
- Participate in all matters related to AWBPs and procurement of equipment and supplies for the PRODAPE PCU;
- Identify training needs among target beneficiaries and the wider PRODAPE stakeholder base in relation to the development of the aquaculture value chain: plan and implement relevant trainings accordingly;
- Lead the development of any relevant manuals and training modules required under the project;
- Promote linkages and dialogue between stakeholders at all levels, as relevant;
- Ensure consistency in required data collection required by the project;
- Identify relevant risks and adequate mitigation measures to maximize the success of project interventions;
- All responsibilities assumed by the incumbent will seek to warrant effective implementation of the project in line with design as much as to build the capacity of IDEPA. The incumbent will work closely with a local counterpart at IDEPA and collaborate with wider IDEPA teams as required;
- Assume any other duties relevant to the position indicated by the PRODAPE director and / or the IDEPA Director in line with the purpose of the position.

PRODAPE M&E SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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Qualification and Experience. IDEPA is looking for an experienced M&E Specialist to assume M&E responsibilities in the context of PRODAPE. The following qualifications and experience are required for the position:

- Master's degree in Economics, Agriculture, Business Administration, Planning, M&E, Development, Management or related discipline
- At least 7 years of professional experiences in the field of research and studies, statistics and at least 5 years proven M&E experience with:
  - **a.** The logical framework approach and other strategic planning approaches;
  - **b.** M&E methods and approaches (including quantitative, qualitative and participatory);
  - **c.** Planning, design and implementation of M&E systems and management information systems;
  - **d.** Training in M&E development and implementation and/or facilitating learning-oriented analysis of M&E data;
  - **e.** Computer based data processing and information analysis;
  - **f.** Report writing.
- Familiarity with and a supportive attitude towards processes of strengthening local organizations and building local capacities for self-management
- Willingness to undertake regular field visits and interact with different stakeholders, especially primary stakeholders
- Proficiency in computer, information and communication technology
- Good communications skills; fluency in written and spoken English and Portuguese

Desirable

- Understanding of the IFAD systems and procedures

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the incumbent will spend approximately 50% of the time travelling in the target areas.

Key Responsibilities. Key responsibilities include (but are not limited to) the following:

- Planning support
    a. Support the production of annual work plans and budgets (AWPBs) in consultation with local communities, district stakeholders, the project team and other stakeholders;
    b. Prepare working guidelines for the planning process in close consultation with district stakeholders and the project team;
    c. Facilitate the organization of district and project level annual reviews and periodic meetings and get feedback for further improvements;
    d. Prepare timely and relevant quarterly and annual progress reports.
- Setting up the Project M&E system
    a. Develop the overall framework and plan for the Project´s M&E activities in accordance with the Project document, with focus on both qualitative and quantitative measures;
    b. Guide and coordinate the review of the Project´s log-frame, including:
        - Provide technical advice for the revision of performance indicators;
        - Ensure realistic intermediate and end-of-Project targets are defined;
        - Identify data sources, collection methods, who collects data, how often, cost of data collection and who analyses it;
        - Ensure all critical risks are identified, communicated and those related to M&E, duly managed.
    c. Identify the requirements for the project baseline, prepare terms-of-reference and arrange for the conduction of a baseline survey;
    d. Clarify M&E responsibilities of different project staff;
    e. Contribute to the development of AWPBs, ensuring alignment with project strategy, agreement on annual targets and inclusion of M&E activities in the work plan;
    f. Prepare detailed M&E budget;
    g. Prepare calendar of M&E activities;
    h. Identify technical assistance in the area of M&E and support the hiring process.
    i. Develop the Project MIS (Management Information System), ensuring that community level data is disaggregates beneficiaries according to beneficiary type, gender and age.
- Implementation of the Project M&E system
    a. Oversee and execute M&E activities included in the AWPB, with particular focus on results and impacts as well as in lesson learned and good practices;
    b. Based on the AWPB design the framework for the physical and process monitoring of Project activities;

c. Promote a results-based approach to M&E, emphasizing results and impacts;

d. Coordinate the preparation of relevant Project reports. Guide staff and executing partners in preparing their progress reports in accordance with approved reporting formats and support their timely submission. This includes inception report, quarterly progress reports, annual Project report and *ad-hoc* technical reports;

e. Collaborate closely with the KM and Communication Specialist, prepare consolidated progress reports for Project management including identification of problems, causes of potential bottlenecks in Project implementation, and providing specific recommendations;

f. Undertake regular visits to the field to support implementation of M&E and to identify where consolidations might be needed;

g. Foster participatory planning and monitoring by training and involving primary stakeholder groups on M&E;

h. Support the design of an M&E System and coordinate the MIS (Management Information System) development through selection of a competent and experienced service provider.

i. Prepare M&E reports for annual supervision missions, mid-term review and final evaluation in accordance to IFAD guidelines;

j. Facilitate, act as resource person, and join if required any external supervision and evaluation missions;

k. Monitor the follow up of supervision and evaluation recommendations;

l. Identify the need and draw up the TORs for Project specific studies. Recruit, guide and support consultants or service providers that are contracted to implement special surveys and studies required for evaluating Project outcomes and impacts;

m. Organize and provide refresher training in M&E for Project and implementing partner staff, local organizations and primary stakeholders with view of developing local M&E capacity;

n. Focus on simplification of e-M&E and reporting tools to achieve effectiveness and efficiency;

o. Consider the need for comparative M&E of pilot activities to develop strong rationale for scaling up proven practices within PRODAPE as well as other Government initiatives;

p. Support in the assessment of national as well as project policies and processes, providing recommendations to improve project performance, and to make field implementation practical and effective;

q. Other tasks as directed by PC.

KNOWLEDGE MANAGEMENT AND COMMUNICATION SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that

addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

The project goal of PRODAPE is to contribute to poverty reduction and enhancement of food security and nutrition among rural households in targeted areas. The project development objective is to increase production, consumption and income of rural households and other actors involved in the aquaculture value chain in the target area. The main outcomes are: (i) Increased production and productivity of smallholder aquaculture; (ii) Increased fish consumption by both rural and urban households; (iii) Improved efficiency of the fish value chain and associated products through the use of a business development approach; and (iv) The aquaculture sector is effectively managed based on good information and providing increased services to smallholders and other value chain actors.

Qualifications and Experience. IDEPA is looking for an experienced Knowledge Management (KM) and Communication Specialist to join the PRODEPA Project Coordination Unit. The following qualifications and experience are required for the position:

- Master's degree in natural resource management, agricultural economics, information and communication technology or related discipline;
- At least 7 years of professional experience in relevant fields with at least 4 years of experiences in knowledge management work;
- Sound knowledge and skills in documentation and dissemination of project related information;
- Strong research and report writing skills;
- Extensive experience in institutional strengthening and participatory processes;
- Ability to develop external organizational relationships and applied representation skills;
- Proficiency in computer, information and communication technology;
- Good communication skills; fluency in written and spoken English and Portuguese.

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the Project Coordinator will spend at least 50% of the time travelling in the target areas.

Key Responsibilities. The main responsibilities and duties of the KM and Communication Specialist will include gathering and analysing project information and effectively communicating results to project beneficiaries, management and project stakeholders. Other responsibilities are:

- Design and implement a KM and communication strategy to identify, analyse, document, disseminate lessons learned over the project lifetime and ensure they are adequately integrated in PRODAPE operational strategies;
- Consider the GIS/geospatial nature of products in KM outputs, including spatial maps, while designing the KM and communication strategy;
- Ensure that terms of reference for consultants recruited by the project also incorporate mechanisms to capture and share lessons learned through their inputs to the Project, and to ensure that the results are reflected in the reporting system described above;

- Consolidate a culture of capturing lessons learned among all Project staff, providing support, as relevant to them, in capturing, documenting, packaging and disseminating lessons on a regular basis;
- Establish and manage a Community of Practice for knowledge sharing on climate change adaptation across the IFAD portfolio, and support the organisation of training and workshops for climate change adaptation knowledge dissemination to all stakeholders;
- Identify and participate in additional networks, for example scientific or policy-based networks that may also yield lessons that can benefit Project implementation;
- Ensure effective KM of project activities and approaches, including the social inclusion strategy embedded in project design;
- Support PRODAPE efforts in using KM tools for policy development processes in the aquaculture sub-sector;
- Support in the assessment of national as well as project policies and processes, providing recommendations to improve project performance, and to make field implementation practical and effective;
- Other tasks as directed by the Project Coordinator and/or IDEPA Director.

Attachment 2: Terms of Reference for PRODAPE supported technical specialists to be integrated in IDEPA

AQUACULTURE TECHNICAL SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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Qualifications and Experience. IDEPA is looking for an experienced Aquaculture Technical Specialist. The following qualifications and experience are required for the position:

- Minimum Qualification of Master's of Science in Aquaculture or closely related discipline. Candidates with PhD will have an added advantage.
- Minimum of 10 years of experience required in: a) Fish seed production; b) Fish nutrition; c) Culture of finfish; d) Large scale fish farm operations and feed manufacturing; e) Fish processing and value addition; f) Fisheries extension and education; g) Fisheries policy; h) Fisheries regulatory frameworks;
- The incumbent should have experience in: a) Project planning and management; b) Public financial management; c) Procurement procedures d) Human resource management; d) Operations of donor funded projects/ programmes;
- In addition, the incumbent must show evidence of: a) Being a team worker; b) Proactive in the work environment and problem solver; c) Proven ability to lead a team of people with various backgrounds and communicate effectively with senior government officials and development partners; d) A good communication skill, written and verbal and fluency in both English and Portuguese; and d) Competency in Information and Communication Technology (ICT).

Duty station. The duty station would be located in Maputo but with frequent travelling to the project target areas.

Key Responsibilities. The objective of the assignment is to assist IDEPA with technical implementation aspects of the project to ensure that implementation is based on sound technical advice, technological adoption, productivity, management and development to improve the living standards of project beneficiaries by transitioning into commercial

activity and promote linkages between public and private sector players in the aquaculture value chain. In particular s/he shall:

- Approve the construction and development of all aquaculture systems;
- Supervise the construction and installation of all ponds and cages under the project;
- Ensure continuous production of fingerlings, transportation and stocking of ponds and cages supported by the project;
- Ensure availability of quality feed to sustain at least two production cycles in every culture facility established under the project;
- Plan production cycles at different project sites as established in the project´s geographic targeting strategy, ensuring continuous stocking and production of fish;
- Participate in all matters related to AWBPs and procurement of equipment and supplies for the PRODAPE PCU;
- Ensure proper training of the beneficiaries in pond construction, management and production (extension);
- Conduct promotion of aquaculture activities through extension, outreach and publicity;
- Ensure consistency in aquaculture data collection that covers inputs, production, value, species and distribution;
- Ensure safety and health of aquaculture products using international standards for Total Quality Management of fish and fish products;
- Ensure and implement a disease monitoring programme for bio-safety and bio-security of farmed fish;
- Produce a state of the environment report for aquaculture on annual basis.
- All responsibilities assumed by the incumbent will seek to warrant effective implementation of the project in line with design as much as to build the capacity of IDEPA. The incumbent will work closely with a local counterpart at IDEPA and collaborate with wider IDEPA teams as required;
- Assume any other duties relevant to the position indicated by the PRODAPE director and / or the IDEPA Director in line with the purpose of the position.

NUTRITION SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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Improved efficiency of the fish value chain and associated products through the use of a business development approach; and (iv) The aquaculture sector is effectively managed based on good information and providing increased services to smallholders and other value chain actors.

Qualifications and Experience. IDEPA is looking for an experienced Nutritionist. The nutrition specialist will coordinate and facilitate the implementation of the nutrition interventions defined in PRODAPE at national, sub-national and community levels. He/she will work closely with the IFAD nutrition focal points Mozambique and Eastern and Southern Africa to ensure the operationalization of nutrition mainstreaming in project investments. The following qualifications and experience are required for the position:

- Advanced degree from an accredited institution in the field of Human Nutrition, food science or equivalent in a field related to food security.
- Solid understanding of mainstreaming nutrition;
- At least 7 years of experience in and demonstrated understanding of food and nutrition initiatives in rural development. Experience in Mozambique is desirable.
- Experience in training and capacity building is required. Knowledge on the linkages between nutrition, social norms and climate change is strongly desirable.
- Good communication skills. Excellent written and verbal communication skills in Portuguese is required; working knowledge of English is desirable.
- Experience of interacting with a variety of internal and external stakeholders.
- Strong management and coordination skills, including basic knowledge on M&E.

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the Nutrition Specialist will spend at least 50% of the time travelling in the target areas.

Key responsibilities. The objective of the position is to assist IDEPA in the management of relevant PRODAPE interventions related to mainstreaming nutrition in line with project design. The Nutrition Specialist shall:

- Conduct the analysis of food security and nutrition situation in the project locations and develop location specific project´s nutrition mainstreaming strategy in line with project design;
- Ensure that nutrition is adequately mainstreamed across project activities, as delineated in the Project Design Document;
- In close liaison with other Project Coordination Unit (PCU) team, ensure adequate integration of nutrition in the project documents such as Project Implementation Manual during the start-up phase, M&E system, Annual Work Plan and Budgets (AWPBs) and progress reports;
- In collaboration with the project M&E specialist, ensure that results from nutrition related interventions are captured and adequately recorded in the Project's M&E database and used to refine operational strategies;
- Develop terms of reference for baseline/end line studies, design additional studies including food and nutrition surveys or food knowledge attitudes and practice survey, or other, as required;

- Establish and maintain good working relationships with the line ministries (such as SETSAN, MASA, MISAU, etc.) to build synergies with project interventions; establish coordination mechanisms, as required;
- Support Project Coordinator in the establishment of relevant partnerships (SETSAN, Mozambique Scaling Up Nutrition Business Network Platform) to support implementation;
- Facilitate the implementation of nutrition activities in close collaboration with relevant stakeholders (e.g., implementing partners, extension workers, community service providers);
- Develop PRODAPE´s communication strategy on nutrition and adequate integration in project interventions, including the development of messages, training events/forum and materials;
- Coordinate capacity building and training sessions on nutrition-sensitive interventions for project staff, implementers and extension workers;
- Track and document substantive data and information on food security and nutrition indicators and maintain regular progress reporting especially at supervision, midterm and completion;
- Work collaboratively with the project-supported technical specialists to warrant the effective interface towards nutrition outcomes;
- All responsibilities assumed by the incumbent will seek to warrant effective implementation of the project in line with design as much as to build the capacity of IDEPA. The incumbent will work closely with a local counterpart at IDEPA and collaborate with wider IDEPA teams as required;
- Assume any other duties relevant to the position indicated by the PRODAPE director and / or the IDEPA Director in line with the purpose of the position.

SOCIOLOGIST / SOCIAL INCLUSION SPECIALIST

Background. IFAD has been supporting the aquaculture sub-sector in Mozambique through PROAQUA, a project implemented between 2013-18. Based on the successes and lessons learned from that and three other previous artisanal fisheries projects, IFAD and the Government of Mozambique (GoM) agreed on a new project – PRODAPE - that addresses small scale aquaculture opportunities for poverty alleviation and will have a duration of five years, starting in 2019.

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Qualifications and Experience. IDEPA is looking for an experienced Sociologist to assume the position of Social Inclusion Specialist. The Social Inclusion Specialist will coordinate and facilitate the implementation of all targeting, gender mainstreaming and

social risk management interventions defined in PRODAPE at national, sub-national and community levels.

She will work closely with work closely with all PRODAPE team members and technical specialists to ensure that project management in loyal to design and that the project effectively and successfully reaches beneficiaries of different socio-economic groups, gender and age – not just the "easy to reach", and project implementation of approaches and interventions that enable beneficiaries to capture expected benefits and sustain their engagement in opportunities conferred by PRODAPE. The following qualifications and experience are required for the position:

- Advanced degree from an accredited institution in sociology, anthropology, human sciences or related field;
- At least 7 years of experience in the provision of technical assistance to rural development projects. Experience in fisheries / aquaculture and in Mozambique is desirable.
- Experience in social analysis and integration of findings in development interventions;
- Solid understanding and proved experience in successfully promoting gender mainstreaming in development interventions;
- Solid understanding of the barriers hindering some social groups in accessing, successfully and sustaining engagement in development opportunities and capturing / enjoying associated benefits;
- Experience in participatory processes associated to community development;
- Experience in training and capacity building;
- Good communication skills. Excellent written and verbal communication skills in Portuguese is required; working knowledge of English is desirable.
- Experience of interacting with a variety of internal and external stakeholders.
- Strong management and coordination skills, including basic knowledge on M&E.

Duty station. The duty station will be in Maputo, Mozambique. The total duration of contract is five years. It is estimated that the Social Inclusion Specialist will spend about 50% of the time travelling in the target areas.

Key responsibilities. The objective of the position is to assist IDEPA in the management of relevant PRODAPE interventions related to targeting, gender mainstreaming and social risk management in line with project design. The Social Inclusion Specialist shall:

- Ensure that social inclusion and social risk management is adequately mainstreamed across project activities, as delineated in the Project Design Document;
- Lead the production of PRODAPE´s Social Mentoring and Social Inclusion Manuals; ensure that all relevant target groups receive training in these areas and that knowledge and skills are integrated into their duties and responsibilities;
- Ensure that the implementation of PRODAPE´s targeting and social inclusion strategies are loyal to project design and that they lead to expected results;

- Produce Terms of Reference, assist in the hiring of required specialists and oversee delivery of quality results for any special qualitative studies aiming to increase project understating of social issues faced by the project;
- In close liaison with other Project Coordination Unit (PCU) team, ensure adequate integration of social inclusion in the project documents such as Project Implementation Manual during the start-up phase, M&E system, Annual Work Plan and Budgets (AWPBs) and progress reports;
- In collaboration with the project M&E specialist, ensure that results from related interventions are captured and adequately recorded in the Project's M&E database and used to refine operational strategies; ensure that data collected by the project is disaggregated by beneficiary type, gender and age, as relevant.
- Establish and maintain good working relationships with relevant ministries and other stakeholders supporting rural development to build synergies with project interventions; establish coordination mechanisms, as required;
- Facilitate the implementation of PRODAPE´s Social Inclusion strategy in close collaboration with relevant stakeholders (e.g., implementing partners, extension workers, community service providers, etc.);
- Work collaboratively with the project-supported technical specialists to warrant the effective interface towards desired outcomes;
- All responsibilities assumed by the incumbent will seek to warrant effective implementation of the project in line with design as much as to build the capacity of IDEPA. The incumbent will work closely with a local counterpart at IDEPA and collaborate with wider IDEPA teams as required;
- Assume any other duties relevant to the position indicated by the PRODAPE director and / or the IDEPA Director in line with the purpose of the position.

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Financial Services

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Financial Services

A. INTRODUCTION

1. The financial sector in Mozambique comprises of 18 banks, 11 micro-banks, nine credit unions, two electronic money institutions, 12 savings and loan organizations, 330 microfinance operators; 18 insurance companies, 59 insurance brokers, three social security institutions, eight pension funds, six pension funds management companies and nine stock exchange operators. Despite the diversity of the financial sector, the country has high levels of financial exclusion. Mozambique scored low marks on the WEF Global Competitiveness Index 2015 - 2016 for financial market development because of the low availability and affordability of financial services, local equity financing and availability of venture capital[110]. It was also ranked at 157 out of 190 economies on the ease of getting credit. The recent financial crisis in Mozambique triggered a series of regulatory actions from the Bank of Mozambique (BoM), which had a negative effect on the performance of banks and led to further contraction of credit flow into the economy.

2. Rural areas have higher levels of financial exclusion than urban areas. Recent studies indicate that rural areas have a higher gap between the overall population and the number of bank branches while rural agriculture has the second highest level of exclusion and with the lowest access to bank credit compared to other economic sectors[111]. Banking credit to the agriculture and fisheries sector has stagnated at 2 - 3% of the total banking credit[112]. In the rural agriculture sector only 8% of smallholder farmers access credit. The financial exclusion of rural smallholder farmers is attributed to supply and demand constraints, including: (i) vulnerability risks (ii) operational risks (iii) capacity constraints, political and regulatory constraints.

3. **Vulnerability constraints** include: (i) systemic risk resulting from the fact that rural incomes are highly susceptible to risk; (ii) market risk associated to cyclical and seasonal price fluctuations of agricultural commodities; (iii) credit risk where lenders are unwilling to extend credit to smallholder farmers due to lack of acceptable collateral and inability to meet "Know Your Customer" (KYC) requirements.

4. **Operational constraints** include: (i) low investment returns due to low profit margins from agriculture; (ii) low investment and assets**:** poverty in rural areas causes common crises to become major crises due to the lack of asset "cushion." Any loss of expected income through sickness or production losses cause significant impacts at HH level. The small asset base also reduces savings and borrowing capacity, thus constraining economies of scale in the use or provision of services; (iii) geographical dispersion: low population density and high dispersion in rural areas is coupled with a relatively low market potential usually accompanied by poor services, making access and communication difficult, and hence cause high operating costs for both production and marketing, as well as for access and delivery of services.

5. **Capacity constraints** include: (i) infrastructural capacity**:** poor communication and poor road networks result in high transaction costs low efficiency of operations which discourages provision of services in rural areas; (ii) weak technical capacity: low endowment in production factors, such as land, water and capital assets results in the majority of smallholder farmers having low production levels and offering poor quality products, which can affect receptivity by output markets; (iii) social exclusion**:** cultural, linguistic, gender and educational constraints affect market and financial integration; (iv) institutional capacity: most financial institutions lack the necessary capacity to develop appropriate products and services for rural smallholder farmers. Even when urban-based institutions have the capacity to reach into rural areas, there is little incentive to do so.

[110] AfDB, OECD and UNDP, 2016. African Economic Outlook.
[111] CGAP, 2016. Advancing Financial Inclusion for Smallholder Households in Mozambique.
[112] Ibid.

6. **Political and regulatory constraints.** Political uncertainties and regulatory decrees have an impact on the flow of financial services into the economy. Regulations such as land tenure regulations, banking laws, exchange rate manipulation and monetary policies can destabilize and/or hinder viability of business and financial operations in rural areas (for instance the current regulatory actions from the BoM have restricted the flow of financial services to rural areas).

7. In order to overcome financial access constraints, provision of financial services to rural smallholder farmers requires the adoption of innovative financial intermediation instruments supported by complementary social and technical intermediation services such as training, technical assistance, business development services, market linkages etc.

B. POLICIES AND LEGISLATION FOR FINANCIAL INCLUSION

8. The Government of Mozambique (GoM) has developed various policies aimed at increasing expansion and access to financial services in rural areas. The Strategy for Agricultural Development 2011 – 2020 recognises that providing access to financial services to producers, agri-traders, and agri-processors is critical to scale up and increase their competitiveness. The Aquaculture Development Action Plan (PADA) has identified access to financial services as one of the key pillars for the development of the aquaculture subsector. With regard to financial inclusion, the Mozambique Financial Sector Development Strategy aims to develop a solid, diverse, competitive, and inclusive financial sector that serves individuals and Small and Medium Enterprises with access to a range of quality, affordable, and accessible products and services.

9. The Financial Inclusion National Strategy 2016 – 2022 aims to increase access to financial services from 24% to 60% of the population by 2022. The strategy aims to ensure that districts have at least one formal access point to financial services and 75% of the population have one financial service access point within 5 kilometres of their place of residence or workplace. The strategy is anchored on three key pillars: (i) access to and use of financial services; (ii) strengthening of the financial infrastructure; and (iii) consumer protection and financial education. The strategy identifies smallholder farmers as one of the main target segments.

10. On the regulatory front, the BoM introduced regulations, which compel banks intending to expand their activities to locate one in three of their proposed branches in under-banked regions. The BoM also introduced the regulation on of warehouse receipts aimed at facilitating access to financial products and services by small and medium-scale farmers or traders, since it can serve as a bank loan guarantee (up to 70% of the value of the produce deposited in the warehouse).

11. However, these policies may not achieve the desired outcome in the short term due to the country´s current financial crisis, which has triggered restrictive regulatory actions from the BoM. These include higher interest rate regimes (by the end of October 2016, BoM raised the reference rate for credit to 23.25%), higher core capital requirements and strict reporting requirements. These regulatory actions will further restrict the flow of credit to sectors with high-risk profiles such as agriculture, fisheries and aquaculture.

12. The financial services sub-component of PRODEPA aims to provide a short to medium term intervention, which will catalyse the provision of financial services to aquaculture farmers and other aquaculture value chain enterprises. Ultimately the subcomponent seeks to demonstrate that aquaculture enterprises can be transformed into commercially viable enterprises, which can attract commercial finance including venture capital, equity, long-term finance, etc.

C. FINANCING AQUACULTURE ENTERPRISES

13. Aquaculture farming is a relatively new subsector and the GoM has recognised that the sector has a high-untapped potential for growth in production, value addition and export[113]. Access to financial services has been identified as one of the critical pillars for the development of smallholder aquaculture farming and related value chain enterprises[114]. However, access to financial sector by smallholder aquaculture producers is constrained by both supply and demand side factors. On the supply side, most financial institutions are typically reluctant to provide financial services to due to perceived high risks associated with aquaculture farming. On the demand side, smallholder aquaculture farmers and other value chain entrepreneurs are financially excluded due to lack of collateral, lack of credit history and weak commercial viability of their enterprises. Additionally, aquaculture farmers and entrepreneurs face sector specific challenges such as seasonality, high transaction costs, poor cash flows and high exposure to systemic risks. Unlocking the constraints to financial services to the aquaculture sector will contribute to the development of commercially viable aquaculture enterprises.

14. Smallholder aquaculture farmers and other value chain actors have various financing needs. At production level, smallholder aquaculture farmers require finance for construction of ponds, purchase of fingerlings, purchase of fish feeds and general management of the fishponds[115]. Other value chain actors include fingerling producers who need finance to set up hatcheries (facilities, equipment, feed for fingerlings, etc.)[116]. At marketing level, traders require finance to purchase various equipment including freezers, motorcycles etc. At processing level, processors need finance to establish processing units as well as distribution outlets.

D. DEVELOPING FINANCIAL SERVICES FOR AQUACULTURE

15. The provision of financial services to very poor and economically active but poor aquaculture farmers is based on the premise that access to finance provides a sustainable pathway out of poverty. As stated during the international year of microcredit 2005, 'Financial services contribute significantly to poverty alleviation. They cannot directly multiply the net assets of the poor, but they can multiply their working assets, and income is generated by a return on working (productively earning) assets. Financial services provide a family HH or business the opportunity to leverage capital through a loan, thus increasing the amount of earning assets. Equally important, financial services are vehicles for families to productively invest excess liquidity capital and reserves into savings, not only to earn, but more importantly to build a risk reserve for future needs and shocks, thus averting more costly future losses caused by crises'[117].

16. Facilitating access to financial services under PRODAPE (subcomponent 2.3) aims to contribute to the improvement of the livelihoods of project beneficiaries by facilitating access to appropriate and sustainable financial services. The subcomponent aims to stimulate effective demand for financial services among smallholder farmers by mitigating demand side constraints and enable aquaculture value chain actors to establish and manage commercially viable enterprises which can attract financial services from a range of service providers. The subcomponent will also mitigate against supply-side constraints by providing technical assistance and training as well as outreach

[113] GoM Fisheries Master Plan 2010-2019.
[114] The Aquaculture Development Action Plan (PADA).
[115] The estimated fixed cost of construction of a 500 m^2 pond is 103,404.60 MZN while variable costs are costs of 267,040 MZN. For cage farming, the total cost is 707,007.50 MNZ for the first cycle.
[116] See Table 1 for details of financing requirements of other value chain actors.
[117] AFRACA, 2005. "Global Perspectives in Rural Finance and Poverty Alleviation**.** *Lessons Learnt in Micro and Rural Finance Service Provision in Africa", Unpublished paper presented during the 4th AFRICA microfinance forum.*

expansion support to enable participating financial service providers to develop and deliver appropriate financial products and services to the aquaculture sector.

17. Through the Rural Enterprise Finance Project (REFP) implemented by the Banco Nacional de Investimento (BNI), PRODEPA beneficiaries will have access to four financing windows and one business development support window, as follows: (i) graduation fund; (ii) establishment and/or strengthening of community based credit and savings groups (PCRs); (iii) Crowding-In Fund (CIF); (iv) Line of Credit (LoC); and (v) business development support services.

18. Specific funds will be ring-fenced to support youth entrepreneurship program based on the successful experience of the ILO (Support Your Own Business).

19. **Graduation fund.** This fund will be available to support very poor project beneficiaries (i.e., the bottom end of the income pyramid), as required by PRODAPE to support project efforts in 'graduating' beneficiaries out of poverty. The graduation fund provides a route for very poor rural households that are not bankable in their current financial and socio-economic state. This graduation route is implemented through a combination of intensive handholding and technical training with the provision of small-scale investment funds for a graduation cycle of between 18 and 24 months[118]. They are assisted in accessing micro loans to engage in more profitable opportunities and/or livelihood diversification to move out of poverty and vulnerability. Specific opportunities for the use of the Graduation Fund will be assessed in the first year of project operations.

20. **Establishment / strengthening of PCRs.** PCRs are community based financial institutions designed to introduce financially excluded communities to a culture of savings and credit as well as equipping them with financial illiteracy skills. The low level of business and financial literacy amongst smallholder aquaculture producers, as well as lack of experience with formal or even informal savings or credit could prevent smallholders from participating in establishing viable aquaculture enterprises. For example, if they do not understand the potential returns, have not saved money, or do not know how to manage credit for the investment. The facilitation of all project beneficiaries at the producer level into savings and credit groups will therefore build financial literacy and a culture of savings in the target communities. The groups are designed to be self-sustaining after twelve months of training and support. This activity will be implemented by a service provider under the supervision of BNI.

21. **Crowding-In Fund.** The CIF will offer a tripartite cost sharing with matching grant mechanism to enable loan applicants with bankable propositions that are not able to attract full private sector financing to get access to part loan financing under the project. The tripartite cost-sharing scheme will provide funding with beneficiaries making a matching contribution, the participating financial institution providing a market-priced loan – the interest rate to be charged to beneficiaries will take into account that the loan funds are developmental in nature and not one of profit maximisation, and the REFP providing a matching grant. This will finance investments that do not yet have proven commercial viability and will serve as a demonstration for participating financial institutions on supporting the viability of that specific type of project, so that in future, this may be financed on purely commercial terms.

22. **Line of Credit.** The LoC will be available to small-scale investors who are ready to expand and intensify their aquaculture enterprises. It will finance upstream value chain activities, which require relatively large capital outlays such as fish processing, transportation trucks, fish feed processing and export marketing. **Climate / weather index-based insurance for smallholder farmers.** During the first year of operations, PRODAPE will assess the degree to which financial institutions are willing and able to

[118] See Annex 1 for graduation model.

provide project beneficiaries with a weather / climate index based insurance to cover natural calamities. This assessment will include the possibility of conducting a small pilot to assess the viability, functionality and demand for such products. At the same time, the Project will ensure a specific "line of credit" for natural calamities.

23. **Capacity building and business development support services.** This activity will provide training to aquaculture farmers and other value chain actors to improve their business and marketing skills, which could include issues such as book-keeping, business forecasting and planning and business management with the use of financial services.

24. **Targeting and outreach**. The project will provide financial services to at least 15,750 PRODAPE beneficiaries to meet their various needs as follows:

- 7,000 beneficiaries will receive PRODAPE support to construct and manage open pond or cage-based production enterprises and will be eligible for financial services (PCRs);
- 6,000 beneficiaries who already have ponds will access financial services to expand their operations (PCRs, CIF, LoC);
- 2,500 beneficiaries engaged in post-production handling and trade levels will receive financial services to expand their activities (PCRs, CIF, LoC);
- 250 extensionists and 30 graduates will be supported in engaging in the aquaculture value chain enterprise of their choice (PCRs, CIF, LoC);
- All the beneficiaries engaged in running aquaculture enterprises at various levels of the value chain will receive business development support services.

Table 1: Summary information on financing instruments to be made available for PRODAPE beneficiaries across the aquaculture value chain

Enterprise activity	Financing requirements	Value of financing (min)	Financing instrument	Provider
Fish feed producers	• Machinery • Raw materials for fish feed • Packaging materials • Storage material / equipment • Labour	TBD	• Full grant to experiment in formulation and production of fish feed (cottage industry)	Project
			• CIF for scale up	BNI
Fingerling producers	• Hatchery equipment • Fish Feeds • Labour	TBD	• Full grant towards the establishment of small-scale community level producers	Project
			• CIF for producers who want to scale up	BNI
Small-scale aquaculture farming (Earthen Pond)	• Labour or hiring machinery for pond construction • Purchase of fingerlings • Purchase of fish feed • Labour for stocking, feeding & harvesting fish • Security services	USD 7,000	• Different levels of support for investment costs and 100% project support for inputs needed for the first production cycle	Project
			• LoC for inputs for second production cycle	BNI
			• CIF for opening new ponds (maximum 3)	BNI
			• After the second cycle, the farmer should graduate to the normal loans under the LoC	BNI
Small-scale aquaculture	• Purchase of cage • Purchase of	USD 12,000	• CiF for investment and the first cycle	BNI

Enterprise activity	Financing requirements	Value of financing (min)	Financing instrument	Provider
			• LoC for inputs for second production cycle	BNI
			• CIF for the establishment of new cages (maximum 3)	BNI
			• After the second cycle, the farmer should graduate to the normal loans under the LoC	BNI
Distributors	Refrigerated truck	TBD	• LoC	BNI
Traders	Motor cycles Cooler boxes	TBD	• CIF	BNI
Fish processors	Small scale processing units	TBD	• LoC	BNI

22. **Support for essential rural institutions**. Financial institutions willing to work in the aquaculture sector will be supported to develop appropriate financial products (including digital finance solutions) as well as support to expand to the underserved project areas. To achieve this, REFP, in collaboration with PRODAPE will support the development of skills and knowledge within financial institutions, assist them in designing policies and tools / products on the basis of best international practices, among others.

23. **Sustainability.** Sustainability of financial services for PRODAPE beneficiaries is assured through the institutional arrangements of both REFP and PRODAPE. The BNI, the lead implementing agency, is a national institution whose mandate is to mobilise and channel resources to productive sector. It is expected BNI's mandate will extend beyond the life of the project. During implementation of both REFP and PRODAPE, BNI will receive capacity building support to strengthen its capacity to develop appropriate financial products and services for the aquaculture value chain. Similarly, under support for essential rural institutions component, all participating financial service providers will receive support to expand their operations into rural areas as well as capacity building support to enable them to develop appropriate financial products and services for the aquaculture sector.

24. **Learning and knowledge management**. Learning and knowledge management will be implemented through REFP. Since financing aquaculture enterprises is a relatively new undertaking for both BNI and the participating financial institutions, the project will be identifying, testing, demonstrating and disseminating approaches with innovative technologies. In the process, the project will generate learning and knowledge management products and best practices, which will be documented and disseminated among stakeholders.

25. A baseline study will be conducted as part of the project inception activities. Regular Monitoring and Evaluation (M&E) reports will be generated by the M&E systems. At the end of the project, an impact study will provide information on achievement of project outputs and outcomes.

D. Implementation Arrangements

26. Financial services will be provided through BNI. The linkage process will be as follows:

Table 2: Institutional framework for linking PRODAPE beneficiaries to REFP

Targeting and Selection
Step 1: Targeting, selection and profiling of PRODAPE beneficiaries undertaken by PRODAPE project staff.
Step 2: Information on beneficiary location and profiles and funding requirements is sent to Regional REFP PMU.
Step 3: Regional REFP PMU provides information to Business development and participating financial service providers.
Step 4: On the basis of the information provided the participating business development and financial service providers prepare work plans for providing services to PRODAPE beneficiaries.
Phase 2: Financing Process
Step 1: Participating business development service providers and financial service providers conduct outreach and sensitization campaigns in project areas.
Step 2: Business development service providers provide training to PRODAPE beneficiaries and assist to prepare business plans and funding proposals for submission to financial service providers.
Step 3: Financial service providers receive loan applications from beneficiaries.
Step 4: Financial service providers appraises applications using its internal criteria.
Step 5: Financial service providers disburse funds to successful applicants.
Step 6: Loan beneficiaries repay loan using modalities established by financial service providers.

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Status Of Aquaculture In Mozambique

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Status of Aquaculture in Mozambique

Overview

1. **Institutions** related to this value chain are as follows: for technical assistance and extension, IDEPA is the institution at central level in charge of the development of aquaculture, created from the merging of Institute for the Development of Small-Scale Fisheries (IDPPE) and National Aquaculture Institute (INAQUA). It has a group of about ten aquaculture technicians; each province of the country is more specifically supervised by one of them. At provincial level, the aquaculture specialists who previously were under the INAQUA Delegations are now directly under the authority of the Provincial Directorates of Sea, Inland Waters and Fisheries (DPMAIPs); each of them has one or two specialists (see the Appendix related to Institutional Development).

2. **Two IFAD co-funded projects** implemented by IDEPA are involved in the development of aquaculture: PROAQUA, specifically dedicated to this sub-sector and covering four districts of Manica and Sofala Provinces, and PROPESCA, covering all coastal provinces of the country, which recently opened its range of activities to small-scale aquaculture. The Fund for the Promotion of Fisheries (FFP) is the major funding agency for the sub-sector and finances small-scale farmers. The Institute for Fisheries Research (IIP) has a specific department at central level dealing with research on aquaculture and, through its Delegation in Gaza province, is in charge of the CEPAQ facility in Chókwè, for applied research on and development of improved broodstock of tilapia.

3. **Feeds** are essentially imported, either by the existing commercial aquaculture companies (in Tete and Gaza provinces) or by an importer in Maputo (Laimar), supplying IDEPA and DPMAIPs for their promotion activities with small-scale farmers. Some commercial operators (e.g. in Inhambane and Gaza provinces) are setting up their own production capacity, on the basis of imported raw ingredients and / or local products. Simultaneously, IDEPA is promoting cottage feed production at local level, initially with two imported machines, as a possible way of decreasing the feed costs in tilapia culture; two Educational Superior Institutes ("*Institutos Superiores Pedagógicos"*), in Gaza and Manica provinces, are developing small equipment to that effect. As an additional route for local feed production, an aquafeeds line could be established within an existing feed company such as a poultry feed company. Such initiatives may possibly arise in the future with Mereque company in Maputo and other similar companies in other provinces (e.g. in Tete).

4. **Seed production** has been pioneered over the last years in Inhambane province (Xibaha) and Tete province (Mozambeze), producing for their own needs and for sale, at times with quality concerns (in particular in terms of sex reversion). New commercial initiatives are been developed in Nampula, Zambézia and Sofala provinces. CEPAQ stared operated end 2017 and is producing good quality fingerlings for sale.

5. **The number of small-scale ponds** for tilapia has increased considerably in the country over the past ten years, under IDEPA and the DPMAIPs' impulse, and is presently estimated at 9,000 ponds. Some small-scale fish farmers have been identified by IDEPA and the DPMAIPs as "reference aquaculturists" and will be essential actors for PRODEPA's interventions. **Commercial pond operators** are established in Inhambane and in Gaza provinces.

6. The Sector is presently promoting **small-scale tilapia cage culture** as well, eventually in collaboration with established **commercial cage operators** in Tete, Inhambane and Gaza provinces, and the number of cages is growing significantly.

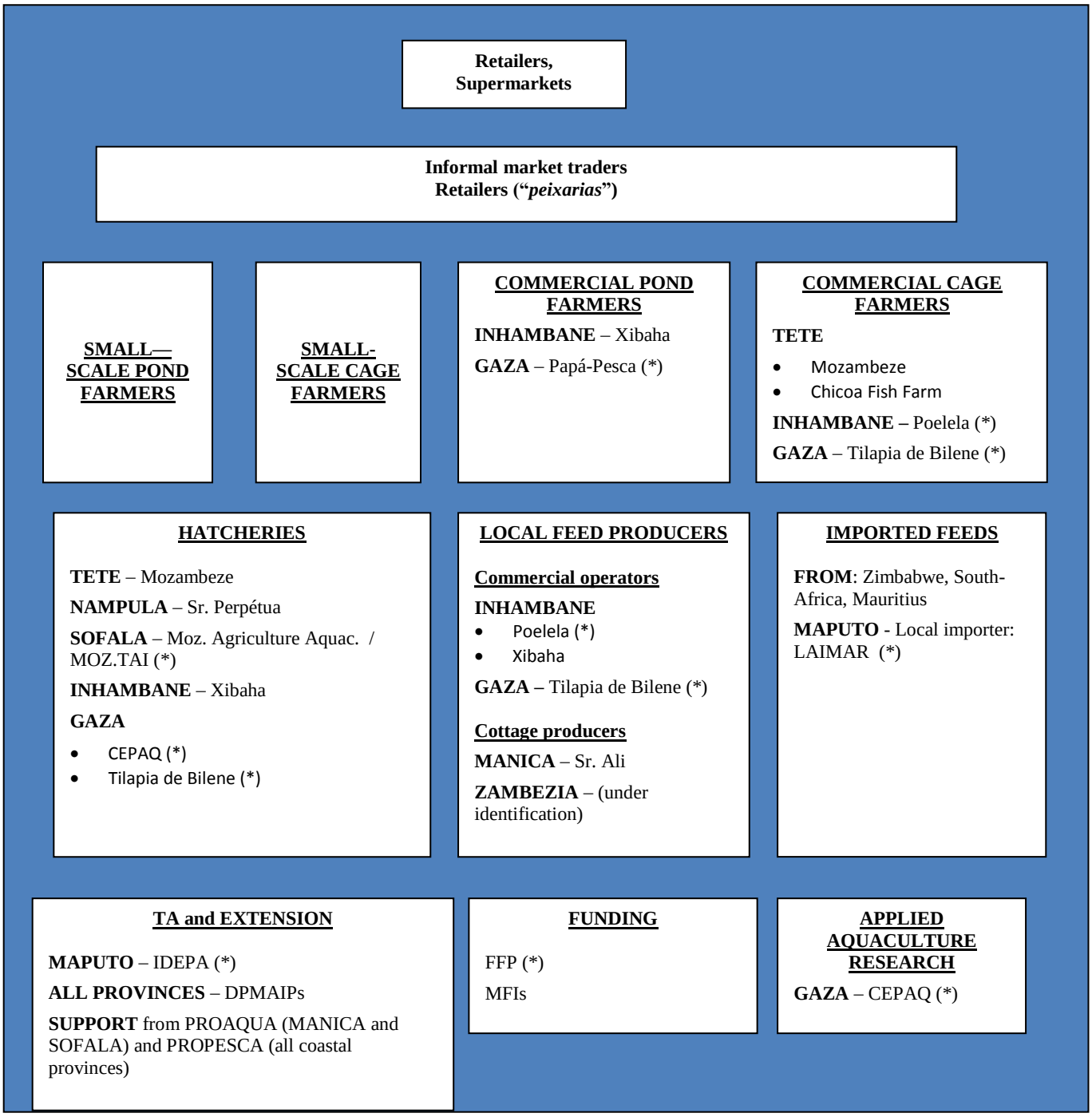
7. **In terms of fish marketing**, the relatively limited quantities produced by small-scale farmers and commercial operators are sold locally, at farm-gate, mostly to informal traders reselling on local markets; some is sold to consumers in fish outlets ("*peixarias*"), as a complement to other types of fish (namely local and imported marine

fish, imported tilapia); in the case of Tete province, part of the production is channelled to regional export markets.

8. Various segments of the marketing chain are still at a very early stage of development: the upper market of restaurants for better quality fish and added-value products (e.g. tilapia fillets) is one of the most attractive segments and may offer good potential; it is still limited (one private operator is presently developing her processing and marketing facility in Maputo). Wholesalers are also potential attractive buyers of fish, reselling and distributing the fish to a large number of retailers as a way to diversify their range of products. Supermarkets may buy fish from wholesalers but also directly from producers, whenever and wherever regular consignments can be ensured in terms of quantity and quality.

9. Table 1 hereafter presents a general overview of the existing actors of the tilapia aquaculture value chain in Mozambique. Table 6 in section I gives more detailed information on the various actors, by province.

Table 1: General overview of the present actors of the tilapia aquaculture value chain in Mozambique



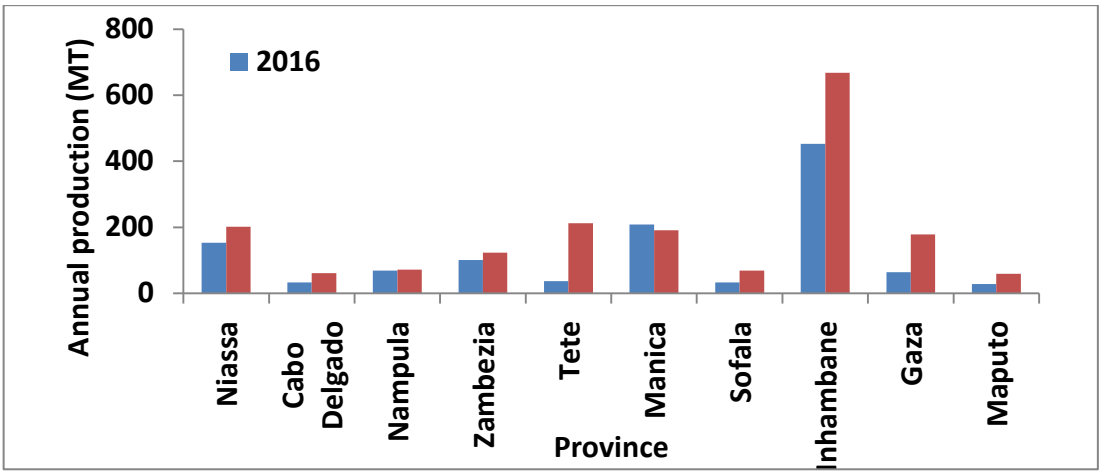
Sources: IDEPA, Study NORGESVEL Sept. 2017 and IFAD Design Mission
(*) Visited / met during or before the IFAD design mission

National Aquaculture Production[68]

10. Annual aquaculture production in Mozambique was 1,835 MT, representing about 90% of the projected and planned production for 2017. It is worth noting in the period the provinces of Inhambane, Manica, Niassa and Tete contributed to higher production volume than other provinces (Figure 1).

11. The growth in the year 2017 is attributed to: a) Mass cultivation in cages in the provinces of Inhambane, Gaza and Tete; b) Increase of the minimum size of fish ponds from surface area of 200 m² to 500 m²; c) The use of alternative diets availed at community level; c) Improvement in the collection of statistical data in the districts with the greatest potential; d) Incidence of new public-private investments mainly in the provinces of Sofala, Gaza, Maputo in fingerlings production and pond construction; e) Technical assistance to fish farmers in the construction and management, provision of fish ponds and cages; and f) Enhancement of the training of fish farmers on the handling and alternative feed production.

Figure 1: Estimated aquaculture fish production by province, 2016 and 2017



12. There was a rehabilitation of shrimp production in Zambézia with better quality larvae that survived exposure to white spot virus, having been obtained from 20 nurseries and stocked in about 120 hectares of culture facilities.

13. Information from IDEPA indicates that there has been a diversification of cultivated species in Mozambique in general, prospecting was done in four locations for the cultivation of mussels. On the other hand, a catfish production project was initiated in Tete province, constituting an easier cultivation method with higher productivity rates compared to other species such as tilapia.

14. A number of aquaculture development activities have been initiated in Mozambique in the last few years. The current status has been reviewed by IDEPA under the Ministry of the Sea, Inland Waters and Fisheries (MIMAIP). Some of these activities are highlighted below.

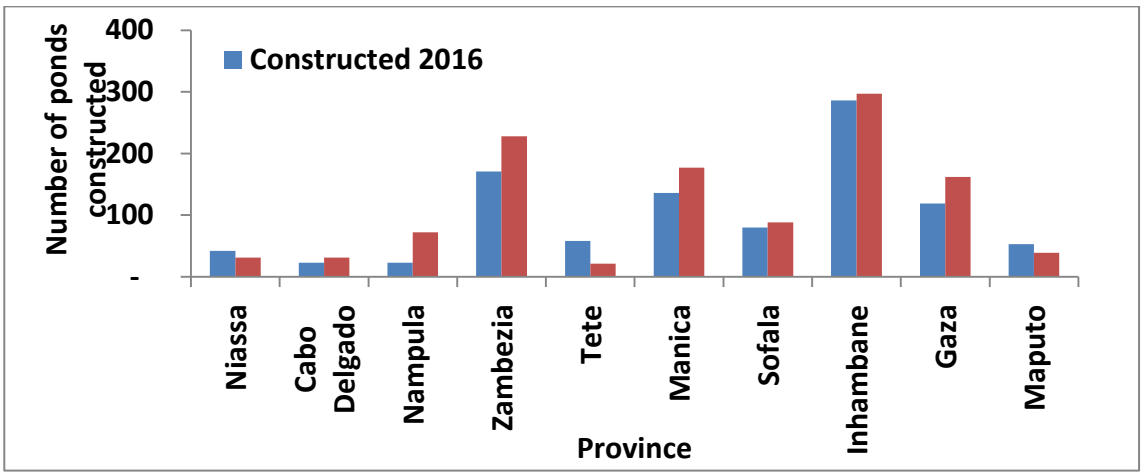
Construction and stocking of earthen ponds

15. A total of 590 fish ponds were planned for 2017 but over 1,146 ponds were constructed in various provinces. This phenomenal increase was attributed to awareness creation and launching of the challenge of production increase through the Government of Mozambique´s (GoM) Operating Plan for Food Production, as well as the approach "a leader, ten tanks" an initiative by the Head of State.

[68] IDEPA 2017 Annual Report.

16. Similarly, it was planned that about 695 fish ponds would be stocked in 2017 but a higher number of 1,694 were stocked with different fish species, realizing the high production figures of 2017. The total production by province from aquaculture is shown in Figure 2 below.

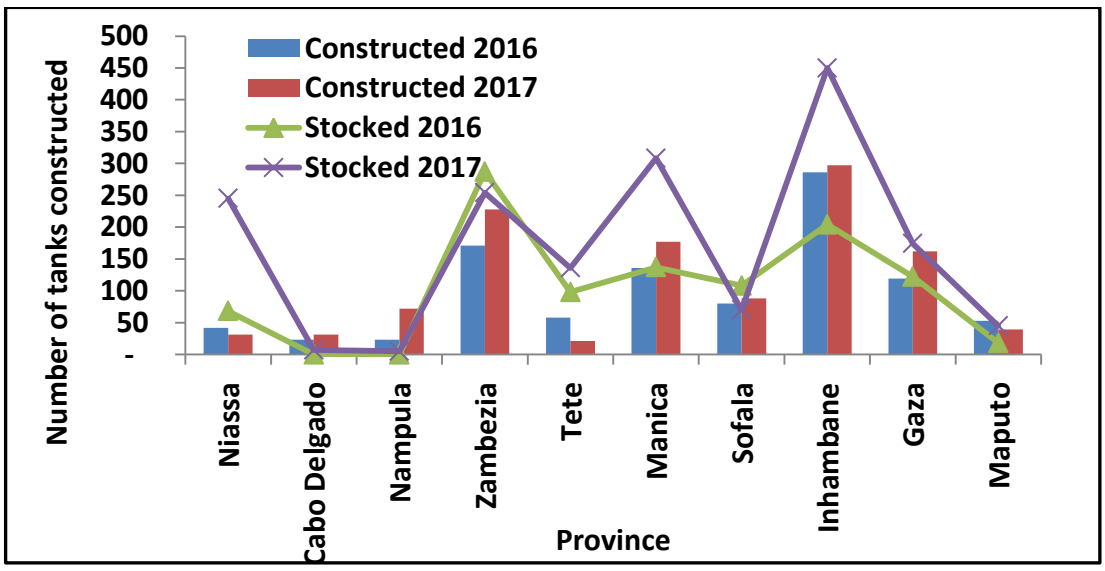
Figure 2: Estimated number of tanks constructed by province, 2016 and 2017



Construction and stocking of cages

17. About 260 fish cages were planned for construction in 2017, however a total of 350 cages were installed and stocked for production in particular in Gaza, Sofala, Inhambane, Manica, Tete, and Zambézia. This activity has gained greater momentum because cage culture is more productive and provides greater returns to fish farmers as compared to fish ponds. The gains in cage culture have been attributed to: a) Use of small production area and high-density stocking; b) Low investment for the construction of infrastructure; and c) Resilience to drought or stable availability of water for growth of fish.

Figure 3: Number of tanks constructed and stocked by province, 2016 and 2017



18. Aquapark construction plans have been laid out for Cabo Delgado, Nampula and Manica provinces. In the province of Maputo (Matutuíne District), 39 ponds have already

been constructed based on the aquapark model under continuous consultation to enhance aquaculture production. In the province of Sofala (Mwanza District) a number of ponds have been constructed based on the aquapark model and stocked with 1,026,000 fingerlings with an estimated production of 9 MT. In the province of Zambézia (Mocubela district), space has been identified and issued with an environmental license for the construction of an aquapark. Some of the plans that are already in place for aquapark development are summarized in Table 2 below.

Table 2: Plans for aquaparks development in Cabo Delgado, Nampula and Manica provinces

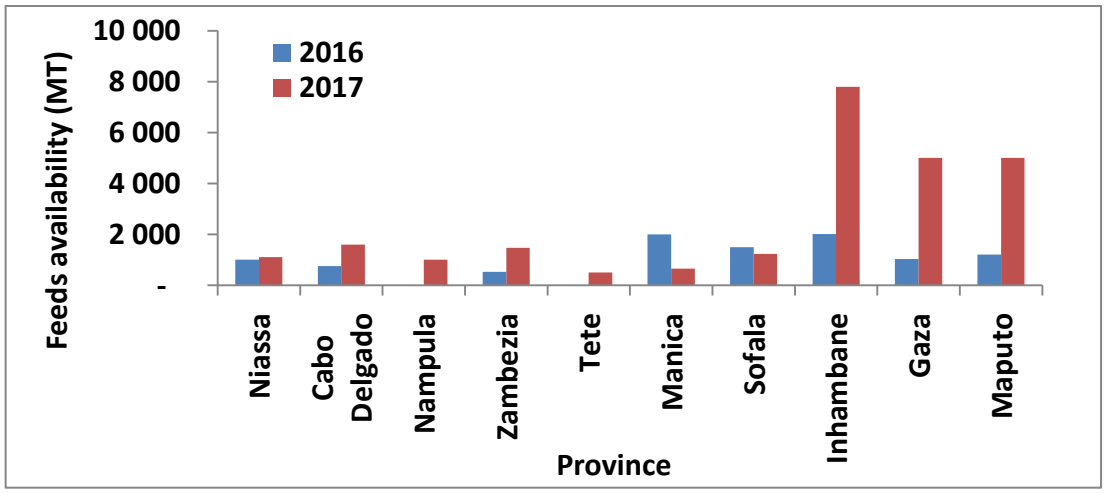
N.	SITE	DETAILS
1.	**Province**	Cabo Delgado
	District	Metuge
	Realization	1 (40 ponds)
	Plan	0%
	Comments	The selected contractor has mobilized machines to start with the activities of phase 2. It is expected that the planning activities will be finalized by the end of June 2018.
2.	**Province**	Nampula
	District	Ribáuè
	Realization	1 (40 ponds)
	Plan	0%
	Comments	Activities for phase 2 have already initiated. The payment to the contractor was made to start the opening of the first 16 of the 40 ponds planned. It is expected that the planning activities will be finalized by the end of June 2018.
3.	**Province**	Manica
	District	Sussendenga
	Realization	1 (30 ponds)
	Plan	30%
	Comments	The opening of 9 ponds has been completed and another other 21 ponds are under construction.

c. Production and availability of feed

Experimental production of feed

19. The approval of the new Customs Tariff which provides for exemption on raw materials imported for the production of fish feed, for example, fish meal, premixes and protein concentrates, motivated two feed production companies to plan to invest in a line for production of fish feed (one in Maputo province and the other in Nampula province). A number of firms are also producing fish feed for their own use in farms for fattening and fry production in: a) Tete (Mozambeze and Chicoa fish farm); b) Sofala (Mozambique Agriculture, Aquaculture); c) Inhambane (Poelela Fisheries, Piagropecus and XIBAHA); and d) Gaza (Tilapia from Bilene). The surplus of the produced fish feed has been to date been marketed in surrounding fish farms and projects. The estimated feed availability from these initiatives is shown in Figure 4 below.

Figure 4: Feed availability (MZN) by province, 2016 and 2017



20. There are a number of small-scale fish feed producers with capacities of 250-500 kg day⁻ two producers in the provinces of Manica and Zambézia, and other four in Inhambane province. Alternative production of fish feed in the aquaculture sector has also focussed on feed manufacturing training using locally available ingredients, taking as an example the "*Diet B*" demonstration capabilities to produce fish feeds from corn, bran of corn, soybean, peanut flour and seafood. In addition to these alternatives fish farmers use "*Chicken A2*" commercially available feed for feeding fish. These alternative ration feeding activities are mainly practiced in the districts of Beira, Dondo, Caia and Gorongosa. There are plans to train extension workers and technicians from the District Services of Economic Activities (SDAE) and fish farmers from other districts on these suitable and alternative fish feed formulation strategies.

Provision of feed

21. The total amount of fish feed distributed in the country in 2017 totalled 20,343 MT. This amount of feed was expected to warrant small-scale fish farming production activities in one production cycle for all stocked fish ponds.

D. Fingerling production

Production of fingerlings per province

22. The sector registered a production of 3,846,317 fry of which 3,294,317 were produced in the province of Inhambane by companies Xibaha Lda (2,821,317), MozTilapia, Agapito, 407,119 fingerlings by Mozambique Agriculture and Aquaculture (MAA) Company in Sofala province, 442,000 fingerlings by companies Chicoa Fish Farm, Caliote Fresh Fish and Bronic Aquaculture 50,000 fingerlings by Aquapesca company in Zambézia province and 60,000 fingerlings produced by Chicoa renovation company in Niassa province. With this production of fingerlings, the expectation is to produce 2,000 tons of fish.

a) **Maputo:** rehabilitation of a fry production unit in Matutuíne is planned and a Memorandum of Understanding (MoU) between the IDEPA and the non-governmental organization "*Asas que curam"* (Wings that Heal) has already been signed. Funds have also been already channelled for the rehabilitation of hatchery infrastructure and nursery for fingerling production with capacity to produce about 500,000 fingerlings per month;

b) **Gaza:** Two fry production units were inaugurated in Bilene-Macia and CEPAQ respectively;

c) **Sofala:** Already operating in Beira, the company MAA is a private enterprise, with a capacity to produce about 500,000 fingerlings per month;

d) **Tete:** The Chicoa Fish Farm is also a private company, which has already started the production of fingerlings;

e) **Manica**: The Polytechnic Institute of Manica has started trial production of fry;

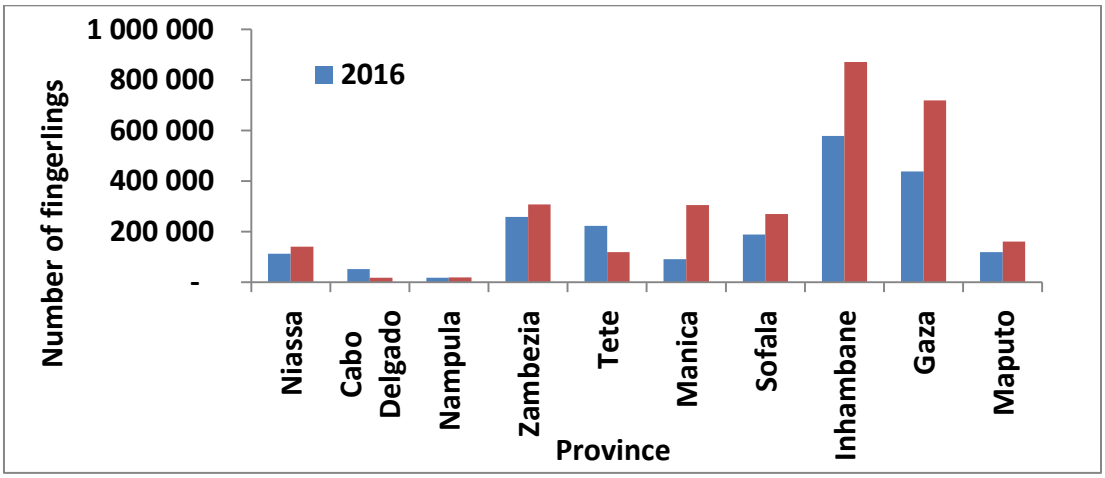
f) **Nampula:** a private centre for fingerling production has been built at Mossuril and a MoU between DPMAIP and the Polytechnic Institute of Nampula is being developed;

g) **Cabo Delgado:** The construction of a fingerling production centre in Mapupulo, in Montepuez district, has started;

h) **Niassa:** Existence of an interested operator for fingerling production.

23. The national demand for fingerlings stands at about 3,178,000; records indicate that 2,928,078 were produced and supplied in 2017[69]. From these figures, the present demand can be met by the existing production with a 20% increase in production. The operation of CEPAQ, on the other hand and private initiatives on experimental production of fry is expected to reduce the cost of fry and fingerlings substantially. The import of breeding fish will in turn improve the genetic quality of species produced locally. This measure will allow operators to produce quality fry. The following Figure 5 shows the estimated production of fingerlings by province.

Figure 5: Number of fingerlings by province, 2016 and 2017



E. Analysis of aquaculture potential

24. The potential for aquaculture production in Mozambique can be estimated from the following: a) It can be assumed that all constructed 1,146 ponds were stocked with 10,000 fingerlings that grow from 0.4 g to 400 g to produce 4,584 MT in one growing season; b) Based on only 1,694 ponds stocked (including pre-existing ones) with 10,000 fingerlings that grow from 0.4 g to 400 g to produce 6,776 MT in one growing season; or c) The number of 2,928,078 fingerlings that grow to 0.4 kg to produce 1,171 MT in one growing season.

[69] Figures related to fingerling production presented herein were extracted from IDEPA´s annual report for 2017. Discrepancies between data on fingerlings "produced" and "produced and supplied" do not tally as can be seen in paragraphs 22 and 23. It was not possible to obtain data to clarify this discrepancy during the design mission; mortality or other reasons explaining un-supplied fingerlings could explain this discrepancy.

25. Based on the present data with two growing cycles per year, the number of stocked fingerlings would yield 1,171 MT as compared to the reported annual production of 1,835 MT in 2017, accounting for possible over-estimation of 664 MT. It is assumed that the difference between estimated and actual production data is due to some of the production statistics not having been captured at national level.

26. The number of stocked ponds seems to over-estimate production by a factor of 3.7 and constructed ponds by a factor of 2.5 (4,584 MT as compared to 1,835 MT). The difference in actual production as compared to estimated production comes either from number of ponds stocked or number of fingerlings supplied and can possibly be accounted for by: a) Predation; b) Mortality; c) Low growth of less than 0.4 kg; d) The effects of feed quality and level of management.

27. It is therefore possible to double or even triple the current production by ensuring the Best Management Practices (BMP) as well as ensuring the quality of seeds, feeds and water for aquaculture. A complete analysis of aquaculture production potential is shown in Table 3 below.

Table 3: Analysis of aquaculture production potential based on reported ponds and supply of fingerlings

Production related indicators and projections	Cabo Delgado	Gaza	Inhambane	Manica	Maputo	Nampula	Niassa	Sofala	Tete	Zambézia	Grand Total
Availability of feed by province (MT)	1,600	5,000	7,800	650	5,000	1,000	1,100	1,225	500	1,468	25,343
Farmers supported by extension (No.)	67	1,118	381	182	536	126	447	795	292	468	4,412
National annual production (MT)	61	178	668	191	59	72	202	69	212	123	**1,835**
Pond construction (No.)	31	162	297	177	39	72	31	88	21	228	1,146
Ponds stocked in 2017 (No.)	7	174	450	308	45	5	245	70	136	254	1,694
Provision of fingerlings in 2017 (No.)	17,500	719,000	871,100	305,000	160,900	18,000	140,850	268,951	118,716	308,061	2,928,078
Projections											
Estimated production from fingerlings (MT)	7	288	348	122	64	7	56	108	47	123	1,171
Estimates based on stocked ponds (MT)	28	696	1800	1232	180	20	980	280	544	1016	6,776
Estimates based on all ponds (potential MT)	124	648	1188	708	156	288	124	352	84	912	4,584

Extension services and capacity development

Extension Services

29. In 2017, plans for extension service delivery were to support 4,127 fish farmers across the country with actual serviced farmers standing at 4,412 as shown in Figure 6 below.

30. Aquaculture extension aims to provide fish farmers with knowledge and methods of good fish farming practices and include activities such as: a) Technical assistance for monitoring fish ponds; b) Exchange of experiences; c) Settlement and stocking of fish ponds; d) Production of improved diets for fish; e) Promoting the construction and rehabilitation of fish ponds; f) Testing the quality of soil suitability for the practice of aquaculture; g) Demarcation of suitable areas for the construction of fish ponds; h) Assessment of water quality parameters; i) Fish feed development; and j) Both pond fertilization regimes and biometrics.

31. Gender segregated data show significant reach to female producers in Niassa (44.5%), Cabo Delgado (41.8%), Sofala (45.9%), Inhambane (46.2%) and Gaza (68.6%) as shown in the figure below.

Figure 6: Number of farmers supported by extension services by province, 2016 and 2017

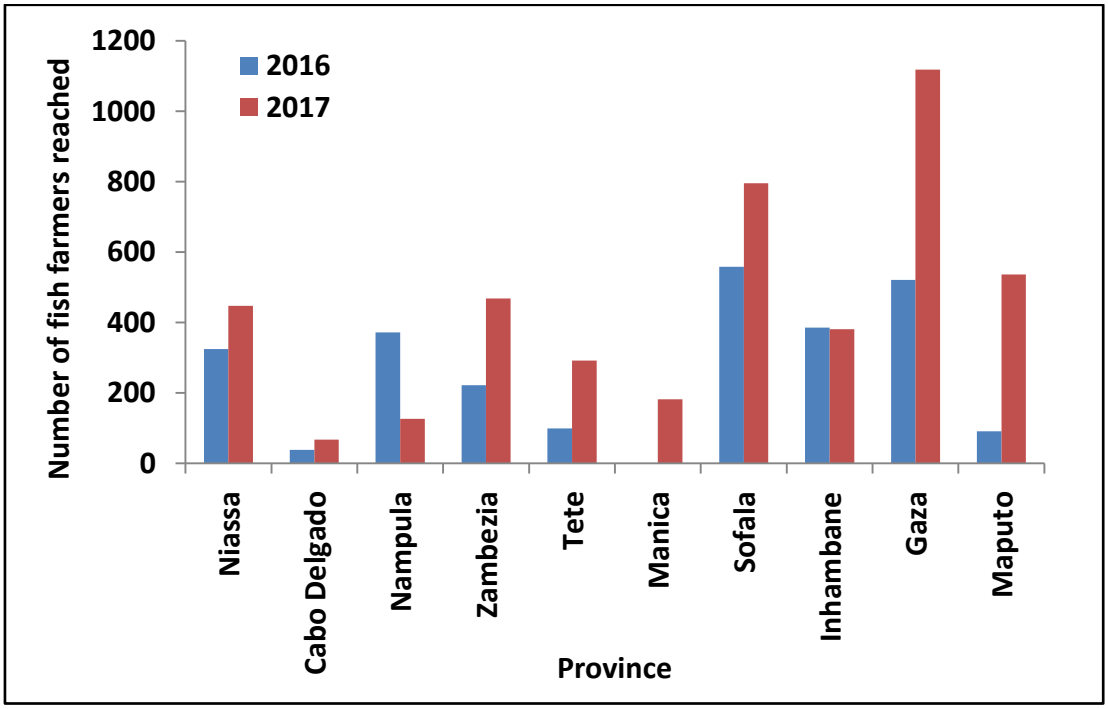
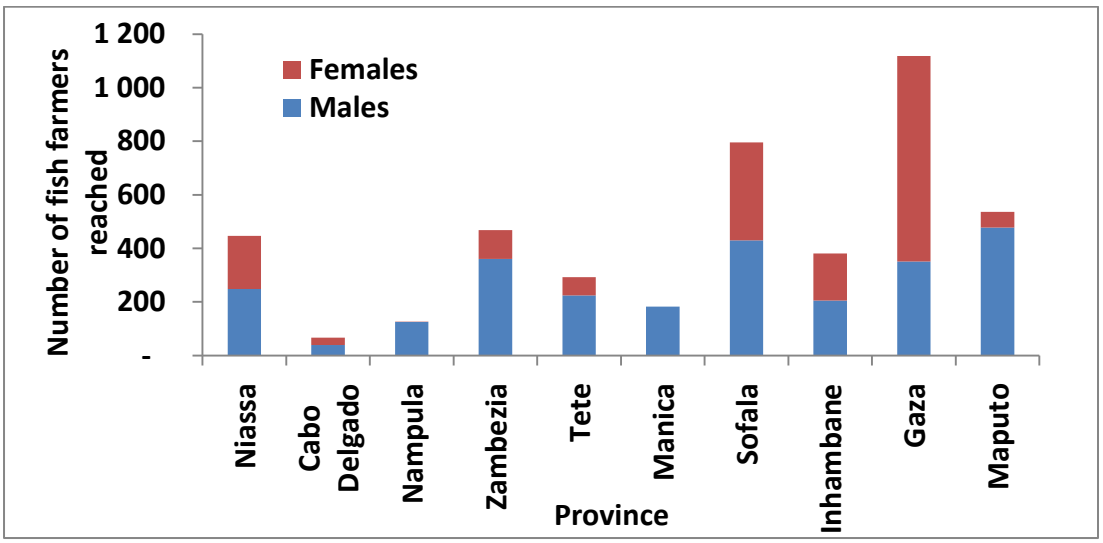


Figure 7: Number of male and female farmers supported by extension services by province, 2017



Capacity Building/Training of Staff

32. IDEPA staff has undertaken a number of long-term training courses leading to graduate or master's degrees in a number of institutions across the country. Table 5 below summarises some of these initiatives in the last six years.

Table 5: Graduate & post-graduate achievements among IDEPA staff, 2012- 18

N.	Level	Start	End	Course undertaken	Institution
FELLOW					
1	Master's degree	2016	2018	Rural development	University Eduardo Mondlane
2	Master's degree	2015	2018	Aquaculture	University of Thailand
3	Master's degree	2016	2018	Corporate Finance	University São Tomé Mozambique
4	Graduate	2017	2021	Public administration	Higher Level Institute for Public Administration
5	Graduate	2017	2021	Public administration	Higher Level Institute for Public Administration
6	Graduate	2017	2021	Public administration	Higher Level Institute for Public Administration
7	Graduate	2012	2017	Public administration	Higher Level Institute for Public Administration
8	Graduate	2013	2017	Environmental Engineering and Disaster Management	Technical University of Mozambique
9	Graduate	2016	2019	Accounting and Auditing	Higher Level Institute for Management, Trade and Finance
10	M. Professional	2017	2017	Fisheries Biology	E. Fishing
NON-FELLOW					

11	Master's degree	2016	2018	Food security	University Eduardo Mondlane
12	Master's degree	2017	2019	Public health	University Eduardo Mondlane
13	Graduate	2015	2019	Accounting and management	Higher Level Institute for Management, Trade and Finance
14	Graduate	2017	2020	Public administration	Mozambican Institute for International Relations

33. IDEPA has also undertaken a number of short-term training programmes to build the capacity of its staff to effectively deliver their mandate on aquaculture that include: a) Participation of three staff members in a course on procurement in Portugal; b) Participation on one staff member in the course of intensive and sustainable aquaculture held in the People's Republic of China; c) Participation of one staff member in a planning course given by the University of Aveiro, Portugal; d) Participation of two employees in the International Course of Sustainable Aquaculture, molluscs and microalgae in Africa administered by the Catholic University of the North in the Republic of Chile; e) participation of two employees in a fingerling course on production, maintenance of parks and aquaculture ponds in South Africa.

Fish prices

34. Some indications were collected during the design mission, as a way to situate tilapia within the range of freshwater and marine, local and imported fish, in various provinces. This information is not conclusive and will need to be systematically collected and analysed along the Project's duration against the fish production costs; the market study foreseen at the start of PRODAPE will be instrumental in that respect.

a. Prices per Location

- **CHÓKWÈ**: Papá-Pesca - production cost of tilapia: 80 MZN per kilo; sold at 100 to 160 MZN per kilo at farm gate (40-45% profit margin) (<180g: 100 MZN; 250 g: 120 MZN; 350 g: 140; >400 g: 160).
- **MACIA**: horse mackerel imported from Namibia (*carapau*): retail price 73 to 110 MZN per kilo. Fresh tilapia: 100 to 200 MZN per kilo in the local market.
- **BILENE**: Tilapia de Bilene sells at 180 MZN per kilo in Maputo (for pieces >400g, 200-250 MZN per kilo); fish is then sold at 250-300 MZN per kilo at retail level.
- **TETE and MAPUTO:**
  - Trader Daniel da Costa buys from fishermen at Cahora Bassa Lake for 100-120 MZN per kilo and sells at 200 MZN in his "*peixaria*" in Tete City and 320-350 MZN per kilo in Maputo.
  - TETE/MAPUTO – Fish processor Cândida Chamussa (Khulibwa) indicates that tilapia from Tete is sold at 260 MZN per kilo in Maputo to wholesalers; 350 MZN in local markets in Maputo.
- **MAPUTO**: SIP (national industrial fishing company) sale prices to local retailers: prawn by-catch "*banana*" 65 MZN; "*espada*" 80 MZN; "*corvina*" 120 MZN per kilo.

b. Summary

Table 4 hereafter presents a summary of prices for tilapia and other fish at various stages of the value chain (June 2018).

Table 4: Prices of tilapia and other fish at the various stages of the value chain, June 2018 (prices in MZN per kilo)

Stage of the value chain	Place and price (MZN)	Source of information	Observations
To producer	Tete (fisherman) – 100 to 120	Trader (D. da Costa)	
Farm gate	Chókwè - 100 to 160 (<180g: 100; 250 g: 120; 350 g: 140; >400 g: 160)	Papá-Pesca	Production cost of tilapia : 80
To wholesaler	Maputo - 260	Fish processor (Cândida Chamussa)	
	Maputo – 180 to 250	Tilapia de Bilene	
To consumer (retail)	Tete ("*peixaria*") - 200	Trader (D. da Costa)	
	Macia (local market) – 100 to 200	(observation by team)	Macia (imported horse mackerel in "*peixaria*") - 73 to 110
	Maputo ("*peixaria*") – 320-350	Trader (D. da Costa)	Maputo (SIP – industrial fishing company), to local retailers – prawn by-catch: "*banana*" 65; "*espada*" 80; "*corvina*" 120
	Maputo (local market) – 250-300	Tilapia de Bilene	
	Maputo (local market) - 350	Fish processor (Cândida Chamussa	

35. Average price per kilo of cultured fish at different levels can be summarized as follows:

- Production cost by commercial operators: 80 MZN
- Price to producer (fisherman in Tete) or at farm gate: 100 - 160 MZN
- Price to wholesalers: 180 - 260 MZN in Maputo
- Price to consumers: ranges from 100 – 200 MZN (small and large tilapia) in Macia and fish outlet in Tete to 250 – 350 MZN in local markets and in fish outlets in Maputo.

G. Enterprise budget and production systems

Enterprise budget for earthen pond (500 m^2)

36. In Mozambique, the recommended size for earthen ponds is 500 m^2, with stocks of 10 fingerlings per m^2 to a total yield of 5,000 fingerlings. Normally a 10% fingerling mortality is assumed resulting in a final density of 4,500 fingerlings of average growth to 400 g each to yield 1,800 Kg of fish. These estimates are on the higher side and could be as low as 250 g each depending on feed used and management approach used. Assuming as average price of 175 MZN per Kg the expected total revenue is estimated at 315,000 MZN.

37. With estimated costs of 267,040 MZN returns are expected at the range of 47,960 MZN above total variable costs. The estimated fixed costs of 500 m^2 pond construction in Mozambique is 103,404.60 MZN with a depreciation of 10% per annum amounting to 5,170 MZN for the first growing cycle of 5 - 6 months and a similar cost for renovation in the second growing cycle. Earthen pond enterprises are not expected to make profit in

the first growing cycle but can register a net profit of 35,119 MZN in the second growing cycle.

Enterprise budget for fish cage (125 m^3)

38. The cage culture system consists of a 125 m^3 facility accommodating up to 10,000 fingerlings. With an allowance of 10% mortality, the expected yield is 4,500 kg of fish weighing an average unit weight of 500 g. However, weight per unit could be as low as 300 g. The main variable costs for cage culture are fingerlings and feed; a boat/canoe is required on a daily basis. The cage culture system is expected to break even on the first cycle with a net return of 80,492.50 MZN over total costs and higher returns in the second cycle estimated at 197,500 MZN.

Enterprise budget for partial supplementary feeding (500 m^2)

39. There seems to be market for small sized tilapia (125 g per unit) in Zambia, Malawi and the Democratic Republic of Congo that can be produced with adequate fertilization, feeding only during the last half of the growth cycle and using low cost supplementary feeding such as rice bran. This grade of fish could be sold for just 80 MZN.

40. A partial budget for such low-level management production systems indicate that the break-even price above variable costs could be as low as 100 MZN in the first growth cycle and 102 MZN in the second cycle. To recover both variable and fixed costs, the fish has to be sold at least for 197 MZN and 112 MZN in the first and second growing cycles, respectively.

ENTERPRISE BUDGET FOR 500 M² EARTHEN POND (FLOATING - HIGH QUALITY 32% CRUDE PROTEIN – CP - DIET)						
Item	Description	Unit	Quantity	Price/Unit	Total Cost (Cycle 1)	Total Cost (Cycle 2)
Gross Receipts						
Tilapia (4,500 @ 0.4 kg with 10% mortality)	Live weight	Kg	1,800.00	175.00	315,000.00	315,000.00
Total gross receipts					**315,000.00**	**315,000.00**
Variable Costs						
Pond Size	Earthen pond	m²	500.00			
Tilapia fingerlings(12 g @ 10 m⁻²)	Hatchery raised	Individuals	5,000.00	5.00	25,000.00	25,000.00
Pelleted diet	32% CP	Kg	1,800.00	100.00	180,000.00	180,000.00
Fertilizer	Urea	kg	250.00	20.00	5,000.00	5,000.00
	Chicken/Cow/DAP	Kg	120.00	20.00	2,400.00	2,400.00
Agriculture lime	Lime	Kg	1,200.00	3.45	4,140.00	4,140.00
Field labor: stock, feed, fertilize, harvest		MZN	10.00	300.00	500.00	3,000.00
Labour, levee repairs, after draining		MZN	20.00	500.00	10,000.00	10,000.00
Security personnel per month		MZN	4.00	10,000.00	40,000.00	40,000.00
Interest on operating capital		MZN		0.00%	-	-
Total Variable Costs (TVC)					267,040.00	269,540.00
Net Returns above TVC					47,960.00	45,460.00
Fixed Costs						
Pond construction + equipment		MZN			103,404.60	5,170.23
Depreciation					5,170.23	5,170.23
Interest on investment		MZN		0.00%	-	-
Total Fixed Costs (TFC)		MZN			108,574.83	10,340.46
Total Costs (TC)					**375,614.83**	**279,880.46**
Net returns above TC		MZN			(60,614.83)	35,119.54
Net returns 500 m²		MZN 500²			(60,614.83)	35,119.54
Breakeven price per kg sold						
Above TVC		MZN Kg⁻¹			**148**	**150**
Above TC		MZN Kg⁻¹			**209**	**155**
Breakeven yield at MZN/kg						
Above TVC		Kg 500m² Cycle			**1,526**	**1,540**
Above TC		Kg 500m² Cycle			**2,146**	**1,599**

ENTERPRISE BUDGET FOR 125 M³ CAGE (FLOATING - HIGH QUALITY 32% CP DIET)

Item	Description	Unit	Quantity	Price/Unit	Total Cost (Cycle 1)	Total Cost (Cycle 2)
Gross Receipts						
Tilapia (9,000 @ 0.5 kg with 10% mortality)	Live weight	Kg	4,500.00	175.00	787,500.00	787,500.00
Total gross receipts					**787,500.00**	**787,500.00**
Variable Costs						
Cage size	Fish cage	m^3	125			
Tilapia fingerlings (12 g @ 80 m^{-3})	Hatchery raised	Individuals	10,000.00	5.00	50,000.00	50,000.00
Pelleted diet	32% CP	Kg	4,500.00	100.00	450,000.00	450,000.00
Field labour: stock, feeding, harvesting		MZN	5.00	12,000.00	60,000.00	60,000.00
Security personnel		MZN	2.00	12,000.00	24,000.00	24,000.00
Interest on operating capital		MZN		0.00%	-	-
Total Variable Costs (TVC)					584,000.00	584,000.00
Net Returns above TVC					203,500.00	203,500.00
Fixed Costs						
Cage construction		MZN			117,150.00	6,000.00
Depreciation on 125 m^3 cage		MZN			5,857.50	
Interest on investment		MZN		0.00%	-	-
Total Fixed Costs (TFC)		MZN			123,007.50	6,000.00
Total Costs (TC)					**707,007.50**	**590,000.00**
Net returns above TC		MZN			80,492.50	197,500.00
Net returns 500 m^2		MZN 125^3			80,492.50	197,500.00
Breakeven price per kg sold						
Above TVC		MZN Kg^{-1}			130	130
Above TC		MZN Kg^{-1}			157	131
Breakeven yield at MZN/kg						
Above TVC		Kg 125 m^{-3} $cycle^{-1}$			3,337	3,337
Above TC		Kg 125 m^{-3} $cycle^{-1}$			4,040	3,371

ENTERPRISE BUDGET FOR 500 M² EARTHEN POND (FERTILIZATION AND PARTIAL FEEDING 25% CP DIET)

Item	Description	Unit	Quantity	Price/Unit	Total Cost (Cycle 1)	Total Cost (Cycle 2)
Gross Receipts						
Tilapia (4,500 @ 0.125 kg with 10% mortality)	Live weight	Kg	1,125.00	80.00	90,000.00	90,000.00
	Estimated Number of Specimen	Number	4,500.00			
	Estimated Average weight	Kg	0.125			
	Assumed Feed Conversion Rate	Rate	0.50			
Total gross receipts					**90,000.00**	**90,000.00**
Variable Costs						
Pond Size	Earthen pond	m²	500.00			
Tilapia fingerlings (12 g @ 10 m⁻²)	Hatchery raised	Individuals	5,000.00	5.00	25,000.00	25,000.00
Pelleted diet	25% CP	Kg	281.25	20.00	5,625.00	5,625.00
Fertilizer	Urea	kg	250.00	20.00	5,000.00	5,000.00
	Chicken/Cow/DAP	Kg	120.00	20.00	2,400.00	2,400.00
Agriculture lime	Lime	Kg	1,200.00	3.45	4,140.00	4,140.00
Field labour: stock, feed, fertilize, harvest		MZN	10.00	300.00	500.00	3,000.00
Labour, levee repairs, after draining	Days	MZN	20.00	500.00	10,000.00	10,000.00
Security personnel per month	Months	MZN	6.00	10,000.00	60,000.00	60,000.00
Interest on operating capital		MZN		0.00%	-	-
Total Variable Costs (TVC)					112,665.00	115,165.00
Net Returns above TVC					(22,665.00)	(25,165.00)
Fixed Costs						
Pond construction + Equipment		MZN			103,404.60	5,170.23
Depreciation					5,170.23	5,170.23
Interest on investment		MZN		0.00%	-	-
Total Fixed Costs (TFC)		MZN			108,574.83	10,340.46
Total Costs (TC)					**221,239.83**	**125,505.46**
Net returns above TC		MZN			(131,239.83)	(35,505.46)
Net returns 500 m²		MZN 500²			(131,239.83)	(35,505.46)
Breakeven price per kg sold						
Above TVC		MZN Kg⁻¹			**100**	**102**
Above TC		MZN Kg⁻¹			**197**	**112**
Breakeven yield at MZN/kg						
Above TVC		Kg 500m² Cycle			**1,408**	**1,440**
Above TC		Kg 500m² Cycle			**2,765**	**1,569**

E. Details of value chain actors and priority interventions

41. As a complement to Table 1, Table 6 gives additional information related to the main actors involved in the aquaculture value chain, their present situation and perspectives in the short term per province. It subsequently presents priority districts chosen by MIMAIP to be covered by PRODAPE and the respective actions, which are foreseen by the sector, as preliminary indications of what the Project may possibly support during its 5-year implementation period.

F. Summary analysis of the aquaculture sub-sector and PRODAPE interventions

42. Table 7 hereafter presents a summary of strengths, weakness, opportunities and threats analysis of the freshwater aquaculture sub-sector in Mozambique, and the ways PRODAPE will be involved in building on its strengths, addressing its weaknesses, building on its opportunities and mitigating identified threats. Information from this table could be used as a Monitoring and Evaluation (M&E) tool during Project implementation to assess how weaknesses are turned into strengths, opportunities are taken advantage of and threats are thwarted or mitigated.

Table 6: Existing operators per province / priority districts, and actions as defined by IDEPA

		EXISTING OPERATORS (**)			PRIORITY DISTRICTS AND ACTIONS AS DEFINED BY IDEPA - 2018 (*)	
PROVINCE	**District**	**Commercial farms, Fingerlings production, Feed production**	**Reference aquaculturists / Districts**	**Obs.**	**Summary description of priority actions**	**Indications on fish market**
SOFALA	Beira	Firm Moz Tai plans to produce fish feed and seed (under installation); has training facilities in Régulo Luís. MAA produces fingerlings in Palmeira/Beira and is seeking land for grow-out.				Beira, export
	Dondo		xxx in Dondo; grows fish		One pond aquapark, one cage aquapark, with 2 fingerling production unit; 1 feed cottage unit	Dondo, Beira; in general, good 3ry access roads
	Gorongosa				NA	NA
	Búzi				one cage aquapark with cold facilities	Sofala districts; in general, good 3ry access roads
GAZA	Chókwè	CEPAQ			NA	NA
		Papá-Pesca (with training facilities)				
		Tilapia de Bilene (Mr. Vedor) - Hatchery, cages; produces feed locally				
INHAMBANE	NA	Prof. Agapito (*) - Piscicultura integrada (ducks, rabbits); produces fingerlings			NA	NA
		Chris in Vilanculos (Xibaha). Fingerlings not 100% reversed; sells fingerlings in the whole country; accomodates students.				
		David - Moztilapia in Inhambane - produces fingerlings; produces feed experimentally (from pre-mixture made by Mereque in Maputo)				
		Arthur de la Mare - Poelela/Inharrime; produces feed from raw material from Mereque				
MAPUTO	NA	Mr. Macarino - Costa do Sol; produces his own feed			NA	NA

(*) Source: IDEPA document "Matrizes MIMAIP" - 2018 (?)
(**) Interviews of IDEPA staff, IDEPA reports and field visits

Table 7: Summary strengths, weaknesses, opportunities and threats analysis of the aquaculture sub-sector in Mozambique and PRODAPE foreseen interventions

	STRENGTHS		WEAKNESSES		OPPORTUNITIES		THREATS	
COMPONENT / Sub-Component	***Description***	***PRODAPE Actions: Building on Strengths***	***Description***	***PRODAPE Actions: Addressing Weaknesses***	***Description***	***PRODAPE Actions: Building on Opportunities***	***Description***	***PRODAPE Intervention: Mitigating the Threats***
COMPONENT 1								
Component 1.1	Recent creation of a national unit that will provide matrices and the genetic improvement of aquaculture species (CEPAQ); on-going genetic improvement program on *O. mossambicus*	(see Threats)	Inadequacy and poor quality of aquaculture inputs (fingerlings); commercial aquaculture input sector little developed	Support strategic Improvement / development of commercial and medium-scale hatcheries, in line with CEPAQ.		Promoting and facilitating linkages between CEPAQ and fingerling producers / traders in target provinces. Promoting dialogue between producers to agree on broodstock and fingerling quality standards and implementation thereof.	Operation of CEPAQ not ensured in the immediate term due to unclear funding scenario. Financial sustainability is contingent on stable financing for core activities and a realistic business plan based on market needs for quality broodstock and fingerling provision in the country.	(i) Facilitate the development of a free-market based business plan based on potential market needs for broodstock and quality fingerlings throughout the country; (ii) Support operational research activities that align to PRODAPE design to ensure that initial production capacity meets the needs of the national market.
	Production of fingerlings by some commercial and medium-size operators, namely through ProPESCA.	Further promotion / development						
Component 1.2	Experimentation on cottage-size feed production has started being promoted by IDEPA/DPMAIP staff, namely through ProAQUA.	id.	Inadequacy, poor quality and availability / cost of aquaculture feed. While sector initiative is positive, interventions appear not to be driven by a concrete strategy with clear goals and targets on how the fish feed should be structured within the aquaculture development strategy.	Support strategic improvements / development of commercial, medium-scale and cottage feed production.	Sector authorities have set good foundations for strategy development in relation to fish feed production.	Support the identification and implementation of activities to meet clear targets for different aquaculture market segments.	Engagement in fish feed production in the quantities required may not be an attractive investmentfor the private sector to meet market demand in the short term in areas close to bordering countries in light of tax exemption for imports of fish feed.	Support the production of a market study to inform a clear fish feed production strategy for PRODAPE with clearly identified locations requiring project investments over time.
	Sensitization / training on local feeding by IDEPA/DPMAIP staff, namely through ProAQUA .	id.						
Component 1.3	Construction of small-scale ponds and cages and capacity building of fish farmers by IDEPA/DPMAIP staff, namely through ProAQUA and PROPESCA.	id.	Targeting at community level has focused on reaching people / households willing to take the risk of involving in aquaculture. Poorer and more vulnerable households have largely not been reached in pond-based aquaculture production activities.	In addition to providing a detailed analysis and targeting strategy, the project will ensure that adequate technical assistance and widespread training, among other measures, are provided to sector institutions, as these constitute essential resources to make implementation of a robust and inclusive targeting strategy possible.	Existence of potential (land and water resources).	Study / mapping of site potential (done in ProAQUA area)	Climate change (drought and floods)	(see Ilário)
	Capacity building of fish farmers on pond / cage management by IDEPA/DPMAIP staff, namely through ProAQUA and PROPESCA.	id.			Existence of native species with potential for cultivation.	Further promotion / development based on local demand and standards.	(Operation of CEPAQ not ensured in the immediate term)	(see above)
			Limited understanding by sector institutions on the factors that drive beneficiary decision-making and social risks that could compromise sustained engagement in aquaculture.	Integration of training activities for sector staff and TA			Environmental pollution	Improvement of pond / cage construction and management
							Diseases of aquatic organisms	Setting up of laboratories; Definition and implementation of guidelines; see below
				Integration of a Social Mentoring package for fish farming beneficiaries.			Conflict with other sectors as regards the use of land and water; conflicts among users	Setting up of a proper coordination mechanism at provincial and district levels; see below.
							Recent import of breeders without quarantine / biosecurity controls	Definition and implementation of guidelines; see below

	STRENGTHS		WEAKNESSES		OPPORTUNITIES		THREATS	
COMPONENT / Sub-Component	***Description***	***PRODAPE Actions: Building on Strengths***	***Description***	***PRODAPE Actions: Addressing Weaknesses***	***Description***	***PRODAPE Actions: Building on Opportunities***	***Description***	***PRODAPE Intervention: Mitigating the Threats***
COMPONENT 2								
Component 2.1	Emergence of commercial private production sector (supported by bilateral donors – DANIDA, NL, GIZ, TICA, Norway), some with training facilities and capacity (Poelela/Inharrime; Papá-Pesca/Chókwè; others?);	Further promotion / development and use of their capacity for TA and training	Limited coordination between research institutions, education and research with the productive sector.	Improvement of coordination	Potential for development of Aquaparks on the basis of existing commercial operators (in Chókwè, Cahora Bassa, Inhambane - freshwater, and Inhassunge - brackishwater)	Facilitate business forums for stakeholders to discuss potential business partnerships, as required.		
Component 2.2	Some activities have already been introduced in target communities (Savings and Credit Groups, PCRs). The sector recognizes the role played by financial inclusion in fostering livelihood improvements in rural communities. Results to date, although anecdotal, appear to be encouraging.	Ensure that all communities targeted receive support in terms of promoting PCRs, though linkages with REFP. Ensure adequate coordination with other agencies that may be engaged in this activity in target communities to avoid duplication.	Weak access to credit (but some interventions financed by FFP)	Linkage with REFP	Some FSPs already working in the sector	Work with interested FSs to develop new products including digital finance and microinsurance	Reluctance of FSPs to serve 'risky' sector due to tight regulatory requirements triggered by global financial crisis	Ensure that loan repayment funds channelled back into the financial system are used to create a dedicated revolving fund to meet the needs of PRODAPE target groups beyond the project lifetime.
	GoM developed a new *Financial Inclusion Strategy*, designed to increase access to financial services from 24 to 60 per cent of the population by 2022	PRODAPE will work with financial institutions willing to open branches in the project areas						Offer flexible lending terms to FSPs
	Bank of Mozambique issues a directive requiring that a bank wishing to expand its operations must open One of its three branches in the priority districts							
			Low private investment	Linkage with REFP; intervention of other donors / funding agencies?	The banking sector (including micro-finance institutions) does not offer specific credit products catering to the needs of aquaculture farmers and entrepreneurs.	Establish linkages with REFP to provide adequate grant / credit products for aquaculture value chain development.		
Component 2.3	Emergence of commercial private production sector (supported by bilateral donors – DANIDA, NL, GIZ, TICA, Norway), some with training facilities and capacity (Poelela/Inharrime; Papá-Pesca/Chókwè; others?);	Further promotion / development and use of their capacity for TA and training	Unclear market needs / potential for different fish species, sizes and weight.	Support the conduction of a market study to ascertain market trends and set priorities.	Existence of sufficient market to absorb the fish; high demand on regional and possibly national markets	Opportunities to be further investigated through a market survey). Promotion of processing for niche high quality markets (smoked fillet etc.)	Competition with imports of subsidized / cheap fisheries products; competition with fisheries tilapia?	Market study; market and product development
	Close interaction / synergy between CEPAQ and Papá-Pesca in Chókwè; potential basis for an aquapark, including small-scale fish farmers	id.						

	STRENGTHS		WEAKNESSES		OPPORTUNITIES		THREATS	
COMPONENT / Sub-Component	***Description***	***PRODAPE Actions: Building on Strengths***	***Description***	***PRODAPE Actions: Addressing Weaknesses***	***Description***	***PRODAPE Actions: Building on Opportunities***	***Description***	***PRODAPE Intervention: Mitigating the Threats***
COMPONENT 3								
Component 3.1								
Component 3.2	Existence of institutions aimed at the promotion and development of aquaculture; commitment to adopt strategies in different domains to address bottlenecks in the value chain.	Capacity enhancement in technical and social domains.	Reduced number of aquaculture technicians and extension workers	Capacity enhancement of IDEPA, DPMAIP and SDAE staff			(Diseases of aquatic organisms)	(see above)
	Recent creation of a national unit that will provide matrices and the genetic improvement of aquaculture species (CEPAQ); on-going genetic improvement program on *O. mossambicus*	(see Threats)	Limited coordination between research institutions, education and research with the productive sector; but good interaction / synergy between CEPAQ and Papá-Pesca in Chókwè	Facilitate the improvement of coordination			(Conflict with other sectors as regards the use of land and water; conflicts among users)	(see above)
			Limited capacity of research on aquaculture (IIP)	Capacity enhancement of IIP			Controversial introduction of T. nilotica north of Zambeze River	Definition and implementation of guidelines
							(Operation of CEPAQ not ensured in the immediate term)	(see above)
Component 3.3	Existence of specific legislation and favourable policies	Continue working with sector institutions to institutionalise approaches with successful results	Legal and normative framework that does not fully address the current challenges; in particular for biosecurity	Improvement of legal and normative framework			(Diseases of aquatic organisms)	(see above)
							(Retraction of investment due to the global financial crisis)	(??)
	Existence of customs and tax incentives for the development of aquaculture (in particular for the import of fish feeds and raw ingredients for feed production)		Poor linkages between evidence from the ground and sector policy development (development of approaches and strategies)	Support active knowledge management and learning events			(Conflict with other sectors as regards the use of land and water; conflicts among users)	(see above)
							Recent import of breeders without quarantine / biosecurity controls	Definition and implementation of guidelines
							(Controversial introduction of T. nilotica north of Zambeze River)	(see above)

G. Data collection and monitoring

43. Aquaculture data can be one difficult to collect due to the wide distribution of suitable sites for pond construction. However, the current approach of centrality and concentration provides a good avenue for designing and implementing suitable aquaculture data systems in relation to different production aspects.

44. Data collection is simplified by standardizing the pond sizes to 500 m^2 at all sites. However, site specific data has to be collected for the different culture systems, inputs, management approaches and yields. Additionally, some information would be required in water resource utilization and types of feed used.

45. Datasets can then be stored in either excel spread sheets but eventually require a custom designed database ideally with GIS information to enable spatial and temporal analysis of the aquaculture sub-sector as a whole. No single database can be recommended but this can be designed with inputs from the users who could be IDEPA, Provincial Administration and District Administration Staff. The database must bear in mind that fish farmers, traders and other stakeholders could also be interested in the data.

46. A general guideline is provided herein on the type of information that should be collected and the procedures that may guarantee systematic, timely and accurate data collection.

H. Lessons Learnt from Other Aquaculture Interventions

47. Successfully supporting the development of aquaculture in Mozambique depends as much on understanding the context, the wide range of actual and potential stakeholders and integrating lessons from on-going and past experiences in aquaculture interventions in Mozambique and beyond. This section of the document presents detailed information on lessons learnt considered in PRODAPE design.

48. IFAD has supported the fisheries and aquaculture sector of Mozambique since 1993 through six projects, which provide valuable lessons and experiences. In particular, lessons from the two most recent projects, PROAQUA and PROPESCA, have been taken to guide PRODAPE design. The design also paid attention to the lessons from other key players in the country, especially the Norwegian funded programme *Support to the Fisheries Sector of Mozambique* (2013-2017) and IFAD aquaculture programmes in other African countries as well as the Evaluation Synthesis of IFAD activities in small-scale fisheries, aquaculture and Coastal Zones. Key lessons include the following:

a) **Comprehensive approach to farmers "capacity building"**. The constraints presented by aquaculture in are multi-dimensional; projects in Mozambique highlight that beneficiaries require a comprehensive response to capacity building, which includes: technical and simple business training, access to inputs (in particular seed and feed) to meet the needs of a full production cycle until when farmers have sold their first harvest, financial inclusion to expand production and investments along the value chain and linkages to markets.
b) **Duration to have an impact.** Aquaculture is relatively new in IFAD programmes and it is often the first time to be introduced to some of IFAD beneficiaries. It takes time for any new technology or farming practice to be understood, accepted, adopted and the impacts realised. It is often a false expectation that aquaculture will take root and impacts seen immediately. In fact, experience shows that it may take at least three years of continuous capacity building, mentoring and extension support for aquaculture to take root, especially among smallholders.
c) **Working with farmer organizations**. Lessons from IFAD-supported projects in the country demonstrate that it is more cost-effective to promote capacity

building and access to other project opportunities through farmer organizations. Groups have been used in on-going aquaculture projects in Mozambique as an entry point to initiate savings and credit activities and to address nutrition mainstreaming, with very positive outcomes.

d) **Technical assistance.** Experience from other IFAD aquaculture projects (e.g. AFAP in Angola) tells that it may take quite a significant amount of time and effort to procure international technical expertise, which can greatly disrupt planned aquaculture production plans. Clear plans for technical assistance requirements should be developed early and be appropriately sequenced to match technical assistance service provision with aquaculture production training needs, to lead to expected benefits.
e) **Promoting knowledge-based aquaculture.** Experience from other IFAD aquaculture programmes (e.g. in Eritrea) shows the importance of incorporating research into aquaculture programmes. Interventions that involve introduction of new technologies will necessarily require piloting of technologies on a small small-scale and evaluation of the technical and economic viability before roll out.
f) **In-country capacity to support aquaculture.** Experience from PROAQUA and PROPESCA shows that there is inadequate aquaculture technical capacity at sub-national level (provincial and district level) to meet farmers' training needs. Key constraints include the existence of limited human resources and limited availability of means of transport both for extension and other technical staff.
g) **Getting appropriate production models.** Lessons from PROAQUA show that farmers who integrate their ponds in the wider agricultural set-up, for instance, by applying livestock wastes in the ponds, have better returns. Integration must be simple and logical, avoiding unnecessary complexity. Similarly pond size is a major factor, with larger ponds generally providing better cost-benefit results.
h) **Business approach to aquaculture.** Lessons from other IFAD programmes (e.g. ABDP in Kenya) underline the importance of a business approach to aquaculture and linking smallholder producers with good productivity levels with larger commercial players, input suppliers, technical assistance and other services.
i) **Integrating nutrition.** Nutrition education as stand-alone activity has limited impact as nutrition is multi-dimensional and involves various sectors. IFAD´s comparative advantage is in the implementation of strategic nutrition sensitive actions that address issues of access, availability, affordability and use of nutrient-rich foods along value chains, which are complemented by nutrition education activities.
j) **Lessons from Norwegian project in Mozambique.** Norwegian support to the aquaculture sector in Mozambique highlights a tendency by the implementing entities to use development programmes as budgetary support, as opposed to development, making it difficult to realise concrete results. Furthermore, public administration institutions have insufficient capacity to promote aquaculture, carry out fish inspection, research and to enforce laws and regulations relating to aquaculture. Lack of formal credit hinders the evolution of subsistence aquaculture to commercial levels, while there are inherent difficulties in obtaining strategic inputs for aquaculture.
k) **Long-term commitment.** In their recent evaluation synthesis of IFAD global engagement in fisheries, aquaculture and Coastal Zones, Mozambique was cited as a successful case. Long-term commitment of IFAD and the GoM to the fisheries sector was highlighted as a key factor for success of IFAD support that has contributed to preventing the dispersion of experiences and competences acquired over time and enabled their consolidation in new successive projects.
l) **Social inclusion.** Experience in the country demonstrates that without explicit strategies to reach the poor, vulnerable HHs, women in disadvantaged position and youth, their engagement remains marginal. More, differentiated labour availability, gender roles, poverty levels and interests can constitute barriers to

engagement and need to be taken into account in designing appropriate approaches and support packages for the less easy to reach to effectively engage in aquaculture.

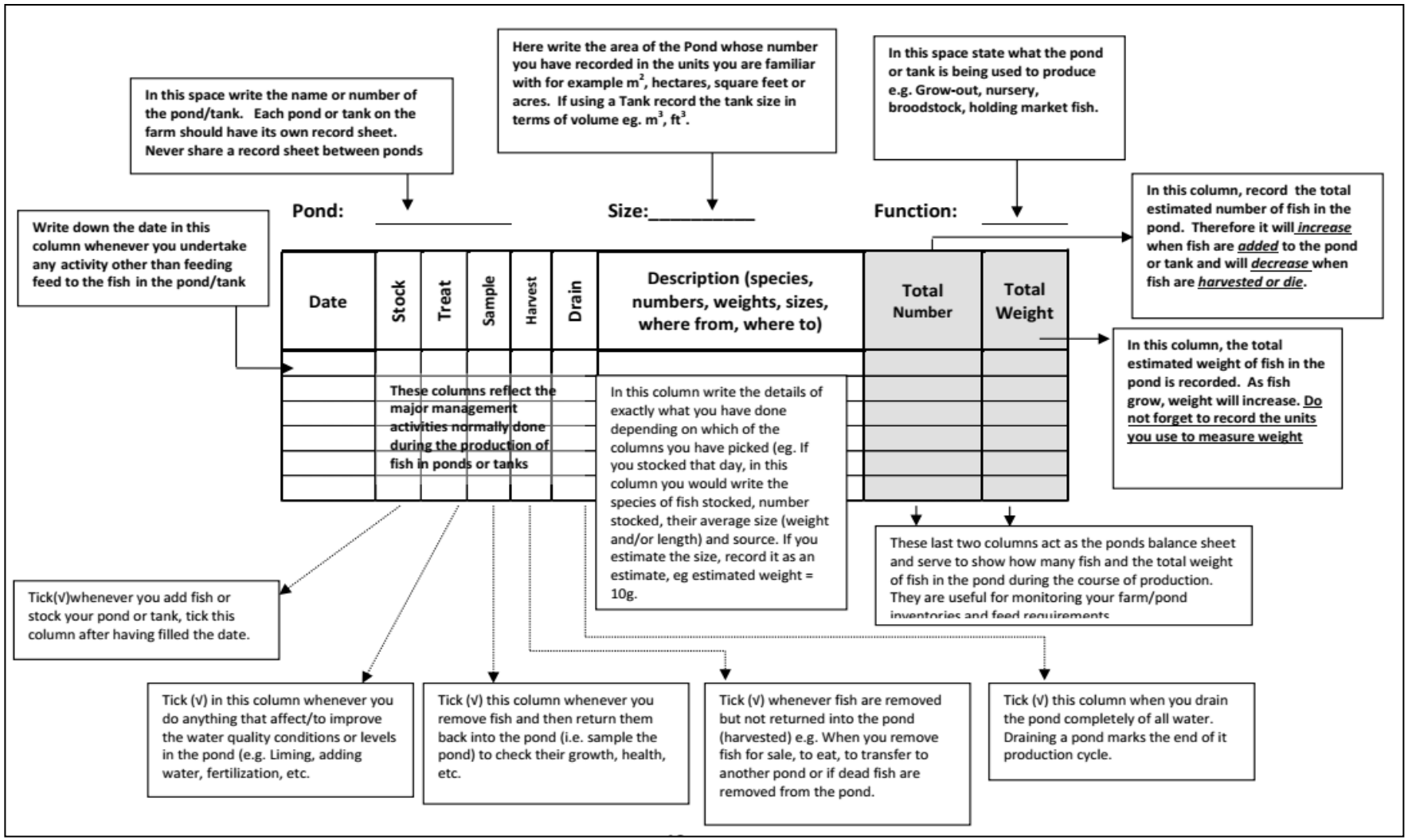
m) **Linkages with PROAQUA and PROPESCA.** PROAQUA and PROPESCA are the on-going IFAD interventions in the country that are most relevant for PRODAPE. The new project design draws on the lessons mentioned above as well as on the experiences, capacities and systems developed by the two earlier projects. Specific linkages include: (i) IDEPA, which implemented both projects, has been retained as PRODAPE implementation agency, ensuring a rich institutional memory, experience and networks; (ii) PRODAPE has included all PROAQUA districts among its targeted areas, ensuring continuity of support for aquaculture to take root; (iii) PRODAPE will build on and scale up the extension model developed by PROAQUA and PROPESCA, retaining some of the trained extension workers and community networks; (iv) PRODAPE will adopt and scale up the processes for organizing and building the capacity of PCRs, and retain the networks and some of the experienced PCR facilitators; (v) PRODAPE will continue to strengthen and work with the inputs suppliers and service providers that were identified and supported by the two projects; (vi) PRODAPE has adopted the farmers input support model used, with some modification particularly in the provision of inputs for a complete fish production cycle (one-off inputs provision has proved to result in significant gaps); (viii) PRODAPE will use the results of studies to ensure knowledge-based implementation (e.g. zoning and mapping potential areas for aquaculture, appropriate models for fingerlings and fish feed study and aquaculture cost-benefit study).

Template for pond record management sheet

Pond: Size: _____. Function:

Date	Stock	Treat	Sample	Harvest	Drain	Description (species, numbers, weights, sizes, where from, where to)	Total #	Total Weight

Use the pond management sheet



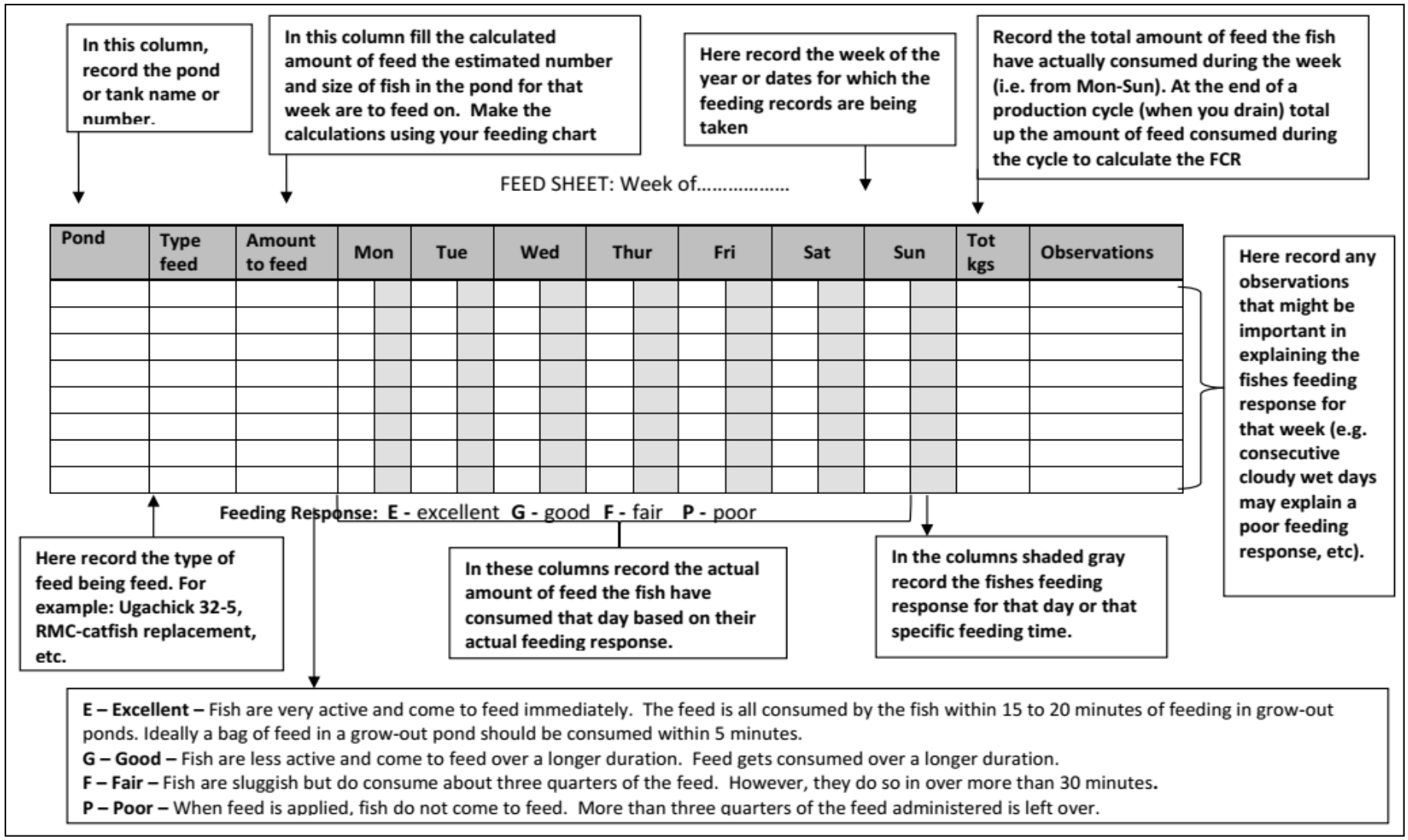
Feeds record sheet

FEED SHEET: Week of.....

Pond	Type feed	Amount to feed	Mon		Tue		Wed		Thur		Fri		Sat		Sun		Tot kgs	Observations

Feeding Response: **E -** excellent **G -** good **F -** fair **P -** poor

Use of the feed record sheet



Pond production plan

ITEM	DESCRIPTION	QUANTITY	COST
1. POND PROFILE			
Pond Area (m^2)	Measure only the ponds *water surface area* when pond is full		
Average Pond Water Depth (m)	Measure water depth at about three intervals from inlet to outlet then get the average		
Pond Volume (m^3)	$= \frac{h[(A1 + A2) + (A1 \times A2)]}{3}$ **Where**, **A1** = area at water surface, **A2** = area of pond bottom, **h** = average water depth		
2. WATER REQUIREMENTS			
Expected water demand (m^3/cycle)	= pond volume **X** 3		
Inflow Quality (ppm) (alk/hrd)	Record your water quality parameters for alkalinity and hardness if available		
3. STOCKING			
Ponds Carrying Capacity (kg)	Record your ponds carrying capacity for the species and kind of fish being stocked (*see feed chart*)		
Targeted Market Size of Fish or Desired Size at Harvest	Record your targeted average size of fish at harvest		
Number of fish to be Stocked	= Pond Carrying Capacity (kg) **+ 10%** Targeted Size at Harvest (kg)		
Stocking Density (No. Fish/m^2)	= Number of Fish Stocked Total Pond Water Area (m^2)		
4. GENERAL POND MANAGEMENT			
Estimated pond lime requirement (kg)	Varies depending on the pond soil pH. New ponds often require liming.		
Estimated fertilizer requirement (kg)	Varies depending on pond conditions. Earthen nursery ponds and tilapia grow-out pond perform best in green water even when artificial feed is used.		
5. FEED REQUIRMENTS			
Type of feed to feed	This depends on the size of the fish. Use the feed chart as a guide.		
Total amount of feed required during the cycle (kg)	For grow-out ponds on commercial pellets, base it on the **maximum acceptable FCR = 2**. Therefore, multiply your expected final pond biomass X 2		
6. EXPECTED DURATION OF PRODUCTION CYCLE			
Expected Duration of Production in weeks	*Use your feeding chart as a guide* = Weeks (Age) at Targeted harvest Size **-** Weeks (Age) at Stocking		
Production days	= No. of weeks calculated above X 7		
7. LABOUR REQUIREMENTS			
Labour for pond preparation and stocking			
Daily labour for feeding, checking screens, inlet/outlet pipes, etc.			
Extra labour during sampling and harvesting (as well as cost of hiring associated equipment)	It is recommended that grow-out ponds are sampled once a month		
Regular pond and channel maintanence			
8. MARKETING REQUIREMENTS			
Transport			
Communication			

Health record

Date	Species	Pond/tank	Age of stock	Condition Observed	No. of Cases	Treatment Given

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Poverty Targeting And Nutrition

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Poverty, Targeting and Nutrition

1. This appendix presents information, analysis and strategy for PRODAPE design in relation to poverty, social inclusion (including gender and women) and nutrition. Information is presented in three sections: (i) Poverty and social inclusion; (ii) Mainstreaming nutrition; (iii) Addressing social risks. As noted in the PDR, the mitigation of common social risks and mainstreaming nutrition was integrated into PRODAPE design as a sub-component in itself.

I. POVERTY AND SOCIAL INCLUSION

A. Demography and Poverty

2. According to the last population census conducted in Mozambique, the country is home to 28.9 million people; projections indicate that the population could more than double by 2050. Demographic distribution of the population is highly differentiated with the Provinces of Nampula and Zambézia not being the most populous but also the most densely populated[12].

3. Mozambique´s population is predominantly young (between 60-70% of the population being aged 0-35 (final data from the 2017 census yet to be released). According to the Human Development Index, Mozambique ranks 181/187 countries[13], due to high illiteracy rates (41%)[14], coupled to low enrolment in and poor quality of education. Life expectancy has been affected by the country´s generalised HIV epidemic currently standing at 55 years of age[15]. Twenty-five per cent (25%) of households (HHs) in Mozambique are headed by women[16]. Households are in average comprised of 4.7 people[17].

Table 1: Population and poverty data per target provinces

Target Region / Province / District	Population 2017	Population density (people / km2) 2017	% People living in poverty 2015 (%)
NORTHERN REGION			
Niassa	1,865,976	14.5	60.6%
Cabo Delgado	2,333,278	28.2	44.8%
Nampula	6,102,867	74.8	57.1%
Zambézia	5,110,787	48.7	56.5%
CENTRAL REGION			
Manica	1,911,237	31.0	41.0%
Sofala	2,221,803	32.7	44.2%
Tete	2,764,169	27.4	31.8%
SOUTHERN REGION			
Gaza	1,446,654	19.1	51.2%

Sources: (i) INE (no date), Censo 2017, Quarto Recenseamento Geral da População e Habitação. Divulgação dos Resultados Preliminares; (ii) MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.

[12] INE, (no date). Censo 2017, Quarto Recenseamento Geral da População e Habitação. Divulgação dos Resultados Preliminares.
[13] UNDP, 2016. Human Development Report 2016, Mozambique. Briefing Note for Countries on the 2016 Human Development Report.
[14] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[15] PEPFAR, 2017. Mozambique Operational Plan (COP/ROP) 2017, Strategic Direction Summary.
[16] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[17] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.

B. Poverty

4. **Poverty levels and distribution**. Mozambique has made encouraging progress in poverty alleviation over a period of 18 years (1996-2014) with a 25 point drop in poverty over that period. However, despite the encouraging macro-economic environment the country enjoyed for a couple of decades, up to 2014, poverty reduction has not seen the same pace of improvement: poverty reduced in only five points between 2009 and 2014. Forty-six per cent (46.1%) of the population still lives under the national (consumption) poverty line. In fact, the absolute number of people living in poverty in 2015 is actually higher than in 2009, due to the low percentage decrease in poverty over the period. Opportunities for the poor have not been equal to those of the non-poor.

5. Poverty alleviation efforts have generated better results in the Southern Region of the country (partly attributed by a higher degree of urbanization), followed by the Central Region. However, the same does not hold true for the Northern Region, where poverty has actually increased from 45% to 55%.

6. Poverty is primarily rural (50.1%), this is especially true in isolated areas in which assets are not only harder to acquire but also it is more difficult to generate returns from them[18]. The current scenario is Mozambique is thus one of increasing disparities.

7. Key determinants of poverty in Mozambique include location of residence, low education, low profitability livelihood strategies (especially subsistence agriculture) and high dependency ratios[19]. Poverty is similar across male and female HHs, but can be lower among females headed ones[20].

8. According to the World Bank, the depth of poverty in Mozambique is higher than international standards, meaning that most people living under the poverty line in Mozambique actually live in a situation of extreme poverty[21]. This is in fact consistent with data produced under the national Demographic Health Survey (IMASIDA) of 2015 in relation to poverty quintiles, revealing that 55% percent of the rural population falls into the two lowest poverty quintiles[22].

9. **Multidimensional poverty (MDP).** HHs in Mozambique are not only affected by consumption poverty; multidimensional poverty (MDP) is also prevalent affecting human development, health and standards of living of Mozambicans[23]. Despite significant investments in infrastructure over the past 25 years, access to quality services continues being challenging. According to the MDP report of 2017, over 69% of the Mozambican population encounters MDP deprivations – which is substantially higher than other countries with high-income poverty levels (examples of other countries MDP levels for the same period include Swaziland 16%, Tanzania 56% and Malawi 53%)[24].

10. In this context, poor rural HHs face a steep hill out of poverty. Overcoming poverty in such a context requires increasing the profitability of livelihood activities to a level in which people can meet the triple challenge of: (i) meeting their basic needs – including access to food and basic services; (ii) investing to improve their living standards and accumulate productive assets; and (iii) continuously improving their livelihood strategies.

[18] MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.
[19] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.
[20] MEF, October 2016. Pobreza e Bem Estar em Moçambique: Quarta Avaliação Nacional. Inquérito ao Orçamento Familiar – IOF 2014/15.
[21] WB, October 2016. Accelerating Poverty Reduction in Mozambique: Challenges and Opportunities.
[22] INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[23] Oxford Poverty and Human Development Initiative, 2017. Mozambique Country Briefing. Multidimensional Poverty Index Data Bank. OPHI, University of Oxford.
[24] University of Oxford, 2017. OPHI Country Briefings 2017 for Malawi, Mozambique and Tanzania.

C. Rural Livelihoods

11. Seventy-five per cent of the country´s population is involved in agriculture with subsistence agriculture being the main driver of rural livelihoods. Seventy per cent (70%) of agricultural plots are up to 2 ha and only 3% are over 5 ha. Maize, cassava, beans and groundnut are the main staple crops, while sugar cane, sesame, mango and coconut constitute the main cash crops. Low input use, low yield, rain-fed agriculture, low access to extension and financial services and to markets, and little bargaining power continue driving HH level agriculture.

12. Fisheries plays an important role in the livelihood strategies of people living in coastal districts of the country. It is estimated that about 350,000 people participate in production, processing and sale of fish in Mozambique. It is estimated that over 90% of fish production activities come from artisanal fisheries.

13. The culture of freshwater species such as tilapia has been practiced for some decades in Mozambique, whereas the cultivation of marine species has emerged over the last five years. Aquaculture practices range from extensive farming (tilapia and seaweed) with few inputs and modest output, to semi-intensive farming (shrimp) with high inputs and high output[25].

14. The low production, productivity and profitability of smallholder livelihood strategies continue locking smallholders in poverty. Despite years of investment in the smallholder segment this reality remains relatively unchanged. Paradoxically, approximately 93% of agricultural production and 90% of fishing activities in the hands of smallholders[26].

15. Albeit the strong reliance on agriculture and fisheries, off-farm activities such as casual low paid labour, informal trade and remittances also play an important role in the HH economy and actually account for a good proportion of HH revenue[27]. Women´s and men´s participation in different livelihood activities have shown minor shifts in recent years even though agriculture continues being driven by women, while fisheries and aquaculture is led by men. Men are moving out of agriculture, when other opportunities arise, especially into non-agricultural self-employment and the private sector. At the same time women´s participation in agriculture dropped from 89% to 75%, which is attributed to increased participation in informal trade from 5.5% to 12%[28].

16. Adverse climatic conditions, combined with other activities providing low returns and the lack of profitable alternatives and low asset base of the majority of rural dwellers, limits the ability of smallholder farmers to make sustainable economic progress and enhance resilience to shocks.

17. In offering access to a new livelihood activity, such as aquaculture, enables HHs to diversify activities and spread risk. However, for the activity to succeed at HH level and for smallholders to sustain their engagement and be able to capture expected benefits in the short, medium and long term, it is important that concerted efforts are invested to addressing all elements in the value chain related to inputs for engagement and outputs to markets. In this sense, PRODAPE´s comprehensive value chain approach aligns well to beneficiary needs. It will be critical however that all interventions are well coordinated and offered at the right time and in the right quantities and quality. Just as

[25] Technoserve. 2017. Aquaculture Industry Strategic Plan – Final Report. The sector could provide cheap source of protein, improve the population's diet, create jobs, generate income and promote regional development.
[26] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[27] Ibid.
[28] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.

important is that smallholders, due to their intrinsic vulnerability, receive assistance in overcoming common social risks that could hinder HH socio-economic progression.

D. Common Shocks / Risks Affecting Rural Livelihoods.

18. **Adverse weather conditions / pests.** Droughts, floods and cyclones recurrently affect Mozambican smallholders. Localized floods occur almost every year, causing multiple casualties and loss of economic assets. Droughts, "late rains" also lead to loss of crops, seeds and animals, and generate pockets of food insecurity throughout the country. Cyclones are common and have the same effects along coastal districts of the country. Because of the already low resource base, those endowed with more assets in rural areas resort to selling assets to smooth consumption.

19. Pests constitute the second major threat to rural livelihood activities; low access to inputs and extension services exacerbates vulnerability in this respect[29].

20. **Loss of labour force at HH level.** The temporary or permanent loss of labour force at HH level constitutes the prime internal shock faced by smallholder households in Mozambique. Mozambique´s generalized HIV epidemic constitutes one of the major threats in this respect; approximately 1.9 million people are HIV positive in the country. In Mozambique HIV transmission is driven by heterosexual contact, due to inconsistent condom use. 29% of new infections are among sex workers and their clients, 26% occur in people in stable relationships and 23% due to multiple concurrent partnerships[30].

21. HIV prevalence increased from 11.5% to 13.2% between 2009 and 2015 among people aged 15-49. Women continue being harder hit by HIV: prevalence rates continue being persistently higher among women (15.4% vs.10.1% in men at national level, and 13% vs. 9% in rural areas). People with the highest prevalence rates include those aged 35-39, people who are separated / divorced / widowed and people who only have primary education, but the highest prevalence rates are among those in the highest wealth quintiles. Young women aged 15-24 are also particularly vulnerable to HIV acquisition with a prevalence rate of 9.8% versus 3.2% among their male peers[31], highlighting the role of transactional and intergenerational sex mainly driven by poverty and economic incentives.

22. Mozambique adopted the UNAIDS 90-90-90 2020 targets meaning that 90% of those positive should know their HIV status, receive treatment and be virally (HIV) suppressed. To achieve this, the country also adopted the "Test and Treat" HIV treatment protocol, with the aim of enrolling HIV positive people on ART as soon as they are identified HIV positive. This measure aims to suppress viral load with ART serving as the prime means of avoiding HIV transmission.

23. Seventy-eight per cent of women reporting being HIV positive are on Anti-Retroviral Treatment (ART) against 68% among men, and trends are for enrolment in treatment to be lower among poorer socio-economic groups.

24. While it is anticipated that substantial gains will be obtained from newly adopted treatment guidelines in line with international strategies and protocols, along with the foreseen expansion of HIV services, positive health outcomes require addressing behavioural transmission risks. In Mozambique, key areas requiring specific interventions are: (i) increase demand for HIV testing; (ii) getting pregnant women, young women and adult men into HIV treatment; (iii) encouraging retention to treatment from onset of treatment; and (iv) couple disclosure.

[29] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.
[30] PEPFAR, 2017. Mozambique Operational Plan (COP/ROP) 2017, Strategic Direction Summary.
[31] INE and INS, March 2017. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015. Relatório de Indicadores Básicos de HIV.

25. Widespread poverty, gender inequality, lack of time and availability of limited resources among women – including time - to take care of themselves, zero-status disclosure related stigma, and lack of access to sufficient food to take with ARVs, could be some of the reasons explaining the disproportionate vulnerability and effects of HIV and AIDS on women.

E. Women and Youth

26. **Women**. Women in Mozambique play a leading role in managing their homes, rearing their children and feeding their families. However, gender roles abscrived to women result in them facing multiple barriers towards gender equality, including lower education, access to opportunities and income than men. Illiteracy among women is much higher than among men (54% vs. 27%)[32]. Women have lower participation in formal employment than in Sub-Saharan Africa (14% versus 21%, respectively)[33] and are greater hit by HH or climatic changes and are also the prime victims of gender based violence[34].

27. Women have limited ownership and control of productive resources, have smaller plots of farmed land and tend to own animals of low economic value. Access to agricultural inputs is limited among women as these are mainly used for the production of cash crops that are largely in the hands of men. Even if women play a leading role in day-to-day food production, men´s role at specific times of the agricultural cycle is essential for smallholder farming, fisheries and aquaculture.

28. Women´s role in aquaculture can involve feeding, selling and processing fish. However, aquaculture ponds "belong" to a woman´s husband. During the fieldwork for this design mission it was observed that women tend to play a more prominent role in productive livelihood activities and even control assets and at least part of the resulting benefits as HH livelihood strategies diversify and several activities generate returns and in turn increase HH wellbeing. This is especially the case when husbands are already engaged in a profitable activity and they perceive benefits to supporting their wives personal and economic development. In this context, it is probable that as HH strategies are strengthened and income levels improve, married women engage in aquaculture, as true beneficiaries in their own right.

29. The rapid field assessment conducted in the context of this project design indicates however that the same is likely not to be the case among the poorer potential married PRODAPE beneficiaries. In fact, the establishment of quotas for women within the project faces a high risk of husband´s "sending" their wives to apply for the project to get access to this benefit, when in fact, husbands will "own" and control the aquaculture ponds and associated benefits.

30. Women´s active participation in community groups and the degree to which their voices are heard and taken into account in development processes varies widely from community to community and largely depends on the value attributed by individual groups and community leaders. However, cultural roles and tradition generally emphasize men´s dominance in such spaces. Interestingly though, a study conducted in 2017 indicates that women have greater levels of participation in decision-making related to agriculture than would have been thought given the overall trends in women´s participation in decision-making at HH and community level[35].

[32] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[33] Ibid.
[34] INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[35] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.

31. Intra-HH food distribution in rural areas tends to favour men, a trend which can be enhanced in situations of food insecurity, exposing women, including pregnant women, as well as children, to higher levels of nutritional deficiency.

32. Interviewees reached during the design mission indicated that tensions and an increase in gender-based violence could be attributed to sudden increases in HH income and women´s increased access to opportunities.

33. Different sources indicate that women headed smallholder HHs account for 23%-38% of HHs in the country[36]. Lack of access to male labour among women headed HH contributes to the gender gap in the productivity of rural livelihood activities; male headed HHs are estimated to have 57% more labour power than female headed ones[37].

34. The Ministry of Gender, Children and Social Action leads efforts in promoting gender equality and empowering women. The country has seen some progress in producing sector specific gender policies and strategies and in identifying focal points for gender mainstreaming within government institutions. IFAD is currently supporting the finalization of a gender strategy and action plan for the agriculture sector for the period 2016-2025. A gender strategy and action plan was developed for the fisheries sector under PROPESCA for the period 2015-19[38] and serves as a good basis for the identification of current needs, constraints and opportunities for different social groups and the development of sector wide commitments to render the fisheries and aquaculture sector more socially inclusive. The MIMAIP currently has very limited capacity in terms of gender mainstreaming (and promoting social inclusion more broadly).

35. **Youth**. The country´s youth policy considers youth as being people aged 15-35[39]. Illiteracy is lower among youth (23%) than among adults (51%)[40]. Enrolment in primary education has increased substantially in Mozambique but quality of education and completion rates continue being lower than desired. In fact, while continuity into secondary education has also increased dropout rates are still alarmingly high. Vocational training opportunities for youth have grown in the past few decades but are still not adequate to provide youth without completed secondary education with the skills required by the labour market[41].

36. Agriculture, the informal sector and small and medium sized enterprises continue constituting the main avenues for youth. Youth lack some forms of capital, such as financing, and social capital to access the few opportunities available in rural areas. Approximately 37% remain unemployed. Entrepreneurship constitutes the driving strategy promoted by the GoM towards youth employment[42].

37. Youth are not homogeneous, according to anecdotal evidence collected in the field during the design mission youth aged 15-24 are more interested in activities that generate quick returns; their interest in longer term cycle opportunities such as aquaculture is generally contingent on their engagement in other activities with quick wins. While this is partly explained by interests, the weight played by the lack of capital

[36] (i) CGAP, 2016. National Survey and Segmentation of Smallholder Households in Mozambique. Working Paper; (ii) Morgado, J. and Salvucci, V., December 2016. Gender Divide in Agricultural Productivity in Mozambique. United Nations University – UN WIDER. Wider Working Paper 2016/176; and (iii) INE and MISAU, February 2018. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique (IMASIDA) 2015 Relatório Final.
[37] Morgado, J. and Salvucci, V., December 2016. Gender Divide in Agricultural Productivity in Mozambique. United Nations University – UN WIDER. Wider Working Paper 2016/176.
[38] Ministério das Pescas, 2014. Estratégia de Género e Plano de Acção do Sector das Pescas 2015-2019.
[39] Ministério de Juventude e Desportos, February 2012. Política da Juventude (Revista). Versão 1.
[40] Danish Trade Council for International Development and Cooperation, 2017. Labour Market Profile Mozambique 2017.
[41] Ibid.
[42] Ibid.

of most rural youth (human, social, financial and material) should not be underestimated.

38. Youth aged 24-35 have more stable livelihoods and are interested in agriculture and other rural livelihood activities. In fact, they are the social group with the largest plots of farmed last among smallholders in Mozambique and are more likely to take risk and are better off than their older smallholder peers[43].

39. Without being specifically targeted rural youth have a limited opportunities to access rural development opportunities. Creating an enabling environment for youth to engage in rural entrepreneurship is crucial. The situation of young women deserves special attention, as they are seldomly targeted by development interventions; early pregnancies are common in rural areas. Youth do not generally participate in political and local planning processes; the voice of youth is overrun by that of older men.

F. Socio-Economic Stratification of the Population

40. Rural HHs in Mozambique can be divided into four socio-economic strata, namely: a) Very poor subsistence smallholders; b) Smallholders battling to make ends meet; c) Entrepreneurial smallholders; and d) Economically stable rural dwellers.

41. Economically active households comprise some smallholders battling to make ends meet those in more favourable positions.

Table 2: Socio-economic characterization of rural smallholder HHs in Mozambique

Poorest			Wealthiest
Very poor subsistence smallholders	Smallholders battling to make ends meet	Entrepreneurial smallholders	Economically stable rural dwellers
-Reliance on agriculture (most less than 1 ha of land, other 1-2 ha), selling at times some of the harvest to meet immediate needs; provide labour to others -Income is insufficient to meet basic needs, including food for consumption -Regularly food insecure -Are headed by people aged >35 -High dependency ratios (large number of children) -Includes single headed HHs that have been severely affected by an internal shock, including HIV/AIDS -Include illiterate and low HH heads with very low education -Tend to not participate in community groups -This group constitutes a high proportion of subsistence rural HHs	-Involved in agriculture (<2 ha) or fisheries and other natural resource based livelihood activities -Some of these HHs are engaged in small scale fish farming -Generate income from more than one income stream including agriculture (<2 ha) / fisheries / aquaculture but cannot meet all basic needs -Are the group most affected by shocks -Can experience acute food insecurity -Generally headed by people >35 -HH size is smaller -Participation in traditional community savings and credit groups	-Engagement in agriculture for 6-10 years with largest size plots among smallholders (most <3 ha) -Can hire outside labour - Have 3+ livelihood activities, including aquaculture -Are generally headed by younger people (<35) -More favourable dependency rations -30-40% have secondary education -Generally capable of spreading and dealing with risks	-Have steady income streams and assets -Income derived both from farm and off-farm activities -Low dependency ratios -Most have secondary education

G. PRODAPE Targeting Strategy

42. **Project targeting strategy.** The PRODAPE targeting strategy involves geographic and beneficiary targeting and is complemented by the integration of gender and youth transformative approaches and measures to ensure effective social inclusion in project activities and generation of associated benefits.

[43] CGAP, June 2017. Understanding the Demand for Financial, Agricultural and Digital Solutions from Smallholder Households: Insights from the Financial Diaries and Household Survey in Mozambique.

43. The project will include a set of empowering, enabling and procedural measures to promote socio-economic, gender and youth engagement and mitigate common social risks identified during project design. A comprehensive set of measures will be put in place to mobilize, apply, and select project beneficiaries to ensure transparency and accountability to local community members and project staff. A grievance mechanism will enable community members to submit concerns with the project or any of the processes employed by it.

44. **Geographic targeting.** PRODAPE will be targeting eight of 10 provinces of the country, with a total of 23 target districts, in line with GoM priorities, namely:

- Niassa Province: Lago, Lichinga and Mecanhelas Districts.
- Cabo Delgado Province: Metuge, Mueda and Balama Districts.
- Nampula Province: Mossuril, Ribaue and Larde Districts.
- Zambézia Province: Milange, Nicoadala and Mocubela Districts.
- Tete Province: Cahora Bassa, Magoé and Maravia Districts.
- Manica Province: Sussundenga, Vanduzi, Gondola and Mossurize Districts.
- Sofala Province: Beira, Dondo, Gorongosa and Buzi Districts.

45. The project will adopt a progressive implementation approach, whereby operations will start in key locations in line with the following criteria: (i) favourable natural conditions for aquaculture in ponds; (ii) the existence of water bodies capable of providing sufficient water for aquaculture activity; (iii) the existence of potential markets; (iv) unfavourable socio-economic conditions among local populations (high poverty levels), food and nutrition insecurity; and (v) the existence of access roads, which could be subject to improvements to warrant access throughout the year. The districts chosen in which to initiate activities being: Lago, Baloma, Ribaue, Milange, Cahora Bassa, Sussundenga and Beira. Interventions in six of the seven initial districts (all except Beira, will include a fish production component).

46. Expansion into other districts listed herein will occur once the aquaculture value chain in these districts is operational. Lessons drawn in these districts will inform expansion on the basis of local demand.

47. However, once the results of final assessments of damage caused by cyclones Idai and Kenneth to aquaculture infrastructure are available, target areas of intervention could be adjusted.

48. The ESMF will establish the overall framework for project operations among the 23 target districts. This information, along with demand expressed from districts will support the decision-making process to identify districts to be contemplated in the second and third batch of expansion. The phased implementation approach aims to consolidate supply and demand approaches towards effective and efficient value chain functionality. Lessons learnt and best practices will be integrated into the project as it expands from a set of districts to another.

49. The same criteria will be used to identify specific target locations within the aforementioned Districts. Relevant excluding criteria will also be taken into account to ensure that the project remains Category B (for example, the project cannot operate in conservation areas or in areas with marine water).

50. Also, in the event that communities affected by large scale economic activities, including extractive industry projects, whose livelihood strategies have largely deteriorated as a result of these projects comply with all technical criteria stipulated above, they will be given priority over other communities.

51. The implementation of activities at community level will also follow a progressive approach through the incremental reach of beneficiaries in communities targeted. The first round of support in each target community will include financial inclusion activities and engagement of easier to reach beneficiaries.

52. **Direct targeting of beneficiaries**. The project aims to reach 88,900 people within communities, along the aquaculture value chain and in relevant sector institutions. PRODAPE was designed under an inclusive targeting approach. Specific measures were integrated to ensure that poor and vulnerable groups, such as HHs severely affected by HIV and the disabled can access project opportunities. At community level, beneficiaries will participate in project activities based on self-selection within project-supported areas, based on pre-established eligibility criteria.

53. Table 3 illustrates the range of beneficiaries that will be reached by PRODAPE over the course of the project lifetime.

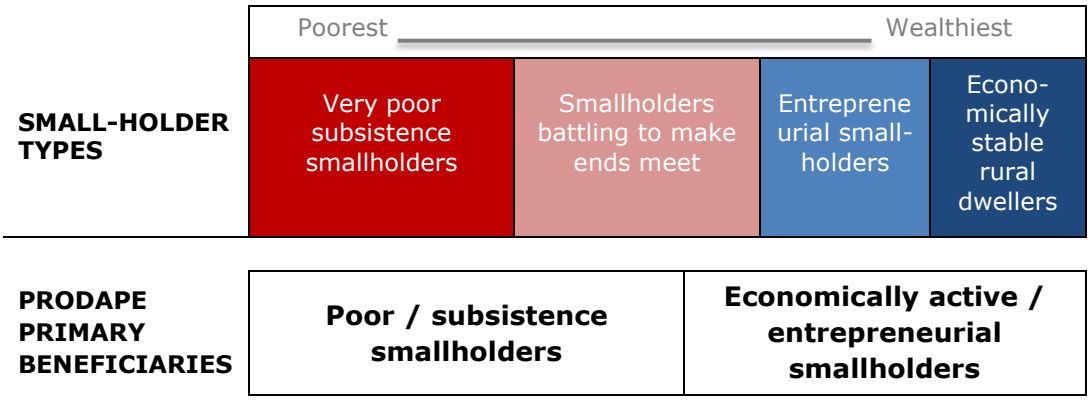
Table 3: Summary of PRODAPE beneficiaries at community and institutional level

COMMUNITY LEVEL BENEFICIARIES				INSTITUTIONAL LEVEL BENEFICIARIES
PRE-PRODUCTION	PRODUCTION	HANDLING AND PROCESSING	MARKETING	
PRIMARY BENEFICIARIES (13,000 people) **7,000** smallholders who will start aquaculture production activities; and **6,000** smallholders already engaged in aquaculture production				Approximately **500** people in / related to the sector will receive training from PRODAPE
SECONDARY BENEFICIARIES (2,500 people) **2,500** rural entrepreneurs already engaged in / who wish to be engage in levels of the aquaculture value chain other than production				
250 Extentionists & **30** Graduates who will engage in the level of the value chain of their choice				
An additional **2,000** people are expected to be reached through nutrition related interventions				

(i) Community level beneficiaries:

- Smallholder aquaculture farmers. This group comprises poor / subsistence smallholders and economically active / entrepreneurial smallholders requiring support to engage in the aquaculture value chain.

Figure 1: PRODAPE primary beneficiaries vis-à-vis smallholder categories



PRODAPE will reach a total of 7,000 people to engage in smallholder aquaculture production over the course of five years, through earthen ponds (60%) and cage culture (40%).

Table 4: Detail of PRODAPE beneficiaries to be reached per year

Type of aquaculture producer	Total Target	Yr1	Yr2	Yr3	Yr4	Yr5
Pond-based	4.200	-	1.400	1.400	1.400	-
Cage aquaculture	2.800	-	500	1.150	1.150	-
TOTAL	**7.000**	-	1.900	2.550	2.550	-

EARTHERN PONDS: Targeting quotas to be applied for the smallholder aquaculture producers being: 40% poor / subsistence smallholders and 60% economically active / entrepreneurial smallholders. Across all socio-economic strata 20% of beneficiaries will be women headed HHs, 10% youth aged 18-24 and 30% youth aged 25-35.

Table 5: Expected participation rate of different social groups as primary beneficiaries

Type of aquaculture producer	Total Target	Poor / subsistence smallholders	Economically active / entrepreneurial smallholders	Female Headed HHs 20%	Youth 18-24 10%	Youth 25-35 30%
Pond-based	4.200	1.680	2.520	840	420	1.260
Cage aquaculture	2.800	-	2.800	560	280	840
TOTAL	**7.000**	**1.680**	**5.320**	**1.400**	**700**	**2.100**

Specific support packages have been developed for the different socio-economic groups engaging in the production of cultured fish with the use of earthen ponds, as depicted in Table 6.

Table 6: Packages developed for HHs of different socio-economic groups to enable engagement in aquaculture production through earthen ponds

	SUPPORT PACKAGE FOR 1ST POND		SUPPORT AVAILABLE BEYOND THE FIRST POND
	POOR / SUBSISTENCE SMALLHOLDERS	ECONOMICALLY ACTIVE / ENTREPRENEURIAL SMALLHOLDERS	
Characteristics	• Food insecure; only 1-2 meals a day • Provide labour to others and engage in agriculture / fisheries / aquaculture marginally • ATT: some of these HHs could be labour constrained. • Have fewer assets and worst living conditions than the rest of the community	• Mostly food secure 2-3 meals / day • Have some surplus which is channelled to markets • Have various income generating activities	Beneficiaries of any socio-economic background, who already have one aquaculture pond and wish to expand their activity.
Support available	PACKAGE INCLUDES: • Participation in PCR group required • Provision of an aquaculture pond; if no labour constraints are faced, beneficiary must participate actively in the digging of the pond as part of the team provided by a private sector service provider **AND BE PAID FOR IT** (*Exception: HH head is affected by illness, disability, is a women-headed HH or headed by person >50. These HHs will not provide labour*) • Fingerlings for first cycle • Feed for first cycle	PACKAGE INCLUDES: • Participation in PCR group highly recommended • Provision of tools for the construction of aquaculture ponds. • Fingerlings for first cycle • Feed for first cycle	**RESOURCES AVAILABLE INCLUDE:** • Technical assistance • Aquaculture feed • Fingerlings • Financial products specific for the aquaculture value chain

Other beneficiaries will also include rural HHs already engaged in aquaculture production as they will benefit from improvements at other levels of the aquaculture value chain generated by the project, with support indicated in Table 5 under (support available beyond the first pond). It is expected that at least 40% of smallholders owning / managing aquaculture ponds in the target areas will progressively expand from 1 to 2-3 ponds over the project lifetime.

CAGE PRODUCTION: All beneficiaries will be economically active, to ensure that they are able to present a 20% contribution of all initial capital costs and input costs for the first production cycle, as well as have been granted approval for financial support from REFP.

Rural aquaculture entrepreneurs. Comprise individuals wishing to engage in levels of the aquaculture value chain other than production but require external support to do so. Fifty per cent (50%) of financial products targeting the value chain will be attributed to women. Specific opportunities and products will also be developed to meet the interests and capacities of youth of different ages. This beneficiary group will also include existing private sector entrepreneurs.

A portion of the youth reached at community level as fish producers or entrepreneurs will benefit from participating in a youth champion led intervention widely used by the International Labour Organization (ILO, Start Your Own Business).

- Young Graduates. PRODAPE will also target between 5-10 fresh graduates with aquaculture degrees to engage in the value chain, striving to attain a gender balance. In addition to being offered the support packages offered to any beneficiary, they will benefit from coaching and mentoring activities from specialized institutions. Efforts will be made to attain a gender balance.

- Extensionists. Extentionists will also be given the opportunity to engage in aquaculture activities through the same approaches as community level beneficiaries. A total of 250 extensionists will receive PRODAPE support. The measure is intended to enable these players to participate in commercial activity within the aquaculture value chain. The approach replicates similar positive experiences used in the agriculture sector in the country.

- Broader communities and individuals working in markets targeted by PRODAPE. The following activities are expected to reach and benefit the wider communities and markets targeted by the project: (i) The promotion of PCRs; (ii) Nutritional activities; and (iii) Water and sanitation improvements in markets and training of traders in fish handling techniques and business development.

(ii) Institutional level beneficiaries. Staff of all institutions involved in the project will benefit from capacity building interventions including exposure visits to locations of successful aquaculture activities. Extensionists will be provided with opportunities to engage in aquaculture activity.

H. PRODAPE Social Inclusion Strategy

54. The PRODAPE will integrate a comprehensive social inclusion strategy to ensure that HHs of different socio-economic groups, women, gender dynamics, youth and other vulnerable groups are all accounted for. The strategy includes:

(a) Parity of employment between men and women at the PCU and technical assistants hired with PRODAPE funding.

(b) Training of all project staff at national level, implementing agencies and relevant stakeholders on social analysis, as well as youth and gender sensitive programming.

(c) PRODAPE human resource policies and procedures are gender sensitive.

(d) Establishing targeting quotas for poorer community members who would likely otherwise not be reached; identification and provision of specific support packages that cater to the needs of each social group at different levels of the aquaculture value chain.

(e) Ensuring that all activities at local level start with obtaining buy in from local structures, and specifically, support towards social inclusion. Specific issues to be highlighted in that process include:

- Participatory socio economic, gender and youth analysis at community level;
- Agreement on the criteria for selection of beneficiaries who will receive different support packages promoting meaningful participation of youth in project and local governance processes;
- Agreement on how project information can be disseminated to ensure that all social groups receive project information;
- Agreement of project related processes involving all social groups targeted (men and women of different socio-economic groups, gender and age);
- Participatory assessment of other common social risks and barriers identified in project design that could compromise sustained participation in project activities; and
- Agreement on how the PRODAPE grievance mechanism will work.

(f) Implementation of inclusive project information dissemination, participatory planning and monitoring throughout the lifetime of the project.

(g) Integration of a *Social Mentoring* intervention to address pressing social risks and barriers constraining sustainable engagement of youth and women and enjoyment of benefits to be generated by the project.

(h) Collection, analysis and use of disaggregated data by socio-economic group, gender and age.

(i) Monitoring targeting goals per social group and targeting effectiveness; use of information to fine tune programme strategies.

(j) Monitoring intended and unintended changes in gender relations and common areas of gender inequality.

(k) Earmarking funds for qualitative special studies to improve understanding of specific issues related to social inclusion.

(l) Production of knowledge and sharing lessons learnt in the domain of social inclusion with stakeholders at national level.

II. MAINSTREAMING NUTRITION ACROSS THE VALUE CHAIN

A. Introduction

55. In 2015, Mozambique reached the Millennium Development Goal of halving the number of hungry people in the country; chronic food insecurity now sits at 24% down

from 61% in 1997[44]. Despite these impressive achievements, significant challenges to food and nutrition security are still encountered. The situation is made worse by inflation and a rise in food prices, recording a five-year high in October 2016[45]. According to the 2018 Cost of Hunger in Africa study, Mozambique loses more than 10.9 % of its annual GDP due to chronic malnutrition, the equivalent to a yearly loss of MZN 62 billion (about USD 1.6 billion).

56. In alignment with the GoM vision, the Mission underscores the importance of aquaculture in poverty reduction, food and nutrition security. In light of this, and based on experience, PRODAPE will mainstream nutrition; as a result, rather than only promoting activities at community level such as nutrition education and demonstration of nutritious cooking practices, the project will embed nutrition throughout the value chain. The project will focus on nutrition-sensitive strategies that increase supply, add nutritional value and increase demand of aquaculture fish.

57. Small-scale farmers will be enabled by the social behaviour change communication (SBCC) activities to address individual barriers tied to knowledge, skill, attitudes and motivation for consumption of diversified diets. To address other underlying causes of malnutrition, the project will use the nutrition governance structures in place to engage in sector coordination with the health, education, agriculture and relevant programs implemented by the nutrition partners' forum implementing agencies. Social Mentoring support will be offered to rural aquaculture producer households within the farmers clustered groups to tackle social risks such as lack of adequate planning and use of resources at household level, gender inequality and HIV and AIDS.

58. Finally, PRODAPE will monitor nutrition outcomes resulting from project interventions and contribute to achieve the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PAMRDC) objectives. The aim of these endeavours is to contribute to good nutrition through consumption of fish and fish-based products as an entry point to improved and diversified family diet.

B. Food and Nutrition Status in Mozambique

59. Mozambique has a three-fold nutritional burden (chronic undernutrition, micronutrient deficiency and emerging issues with overweight and obesity in urban areas). Nationally, 43% of children under the age of five are stunted, 6% are wasted and 15% are underweight. Low birth weight in Mozambican children is estimated at 14%, indicating that malnutrition affects children from conception and while in their mother´s womb[46]. Adolescent pregnancies contribute significantly to low birth weight. Malnutrition levels vary across the country; stunting prevalence is highest in the Provinces of Cabo Delgado (53%), Nampula (55%), Zambézia (45%), Tete (44%), Manica (42%) and Sofala (35%) and highest number of families with limited economic access to a nutritious diet.

60. Fish is the main source of animal protein for the coastal areas, providing vitamins and minerals, especially omega-3. Freshwater aquaculture fish, mainly tilapia, is not widely eaten in comparison to marine fish. The main barrier to fish consumption is accessibility, affordability and preference to other food, especially in rural areas located far from the sea and dependent on agricultural crops. Iron, Iodine and Vitamin A constitute the main micronutrient deficiencies[47]. The prevalence of overweight and obesity among women is reportedly increasing nationwide but is highest in the Southern Provinces and in urban areas, affecting over a third of women.

[44] The State of Food Insecurity in the World 2015 – SOFI.
[45] https://tradingeconomics.com/mozambique/inflation-cpi
[46] MISAU, INE and ICFI. 2013.
[47] SETSAN, 2013.

61. High levels of rural poverty, low HH purchasing power, limited access to markets, high post-harvest losses and weather-related hazards (droughts, floods and cyclones) continue to put significant pressure on food and nutrition security of the population. The causes of malnutrition in all its forms are driven by several factors:

(i) Nationally, 42% of the population lives more than 30 minutes walking distance from a market and 76% more than 2km from any road. As a result, large portions of the population are unable to sell produce, earn an income or purchase more nutritious foods.

(ii) The poorest do not produce enough food, do not have reliable income sources, and suffer disproportionately from diseases due to inadequate access to quality health care and sanitation.

(iii) Dependence on monotonous diets with limited diversified protein and micronutrients.

(iv) Cultural factors influence food consumption both in terms of the food that is eaten from what is available to HHs, when certain foods are eaten and in relation to food distribution at HH level.

(v) Women are overloaded with tasks, constrained by gender norms, and given limited access to and control over resources.

(vi) Limited access to nutrition and consumer awareness information on nutrition.

62. Barriers to diverse and nutritious diets have been highlighted by 2018 Fill the Nutrient Gap Mozambique studies and the in-depth review of the 2018 Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PARMDC).[48] This underscores that there is a pressing need to ensure appropriate nutrition interventions are in place for vulnerable populations including quality health and nutrition services.

C. National nutrition policies, strategies and governance

63. **Policies and strategies.** The GoM is committed to tackling food and nutrition security. This commitment is reflected in the Five-Year Plan of the GoM (PQG 2015-2019), which includes the reduction of chronic undernutrition as an indicator in the human and social development pillar. It is further supported by the National Strategy for Food Security and Nutrition policy (ESANII 2008-2015)[49] and the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PAMRDC 2011–2020) that aim to reduce stunting in children under five; wasting in pregnant and lactating women and girls and in children under two are recognized as at-risk groups for stunting.

64. The Communication and Advocacy Plan in the PAMRDC is supported by the Communication Strategy for Social Behaviour Change Communication (SBCC) for the Prevention of Malnutrition in Mozambique (2015-2019)[50]. In addition, food security and nutrition from fish is one of the development objectives of the Fisheries Master Plan 2010-19 (PDP) and is also accounted for within the PAMRDC. Finally, the Food Fortification Strategy (COMFAM) supports the scale up of industrially processed fortified cereal flours, particularly wheat flour and edible oils.

65. **Nutrition governance.** The Scaling Up Nutrition (SUN) movement started in 2010; Mozambique was one of the early riser countries committing to the movement and its objective, namely to end malnutrition in all of its forms. The movement has 10 principles of engagement and consists of four stakeholder networks, namely the United

[48] 2018 In-Depth Review of the Multisectoral Action Plan for the Reduction of Chronic Undernutrition in Mozambique 2011 – 2015 (2020)'.
[49] ESAN III (2018-2025) is currently under development.
[50] Estratégia de Comunicação para a Mudança Social e de Comportamento para a Prevenção da Desnutrição em Moçambique (2015-2019).

Nations, donors, private sector and civil society. SETSAN with the Ministry of Health (MISAU) coordinates the SUN movement and its networks through a technical working group. The Executive Director of SETSAN is the SUN focal point. A similar coordination structure has been replicated at provincial level with the recently -decreed provincial and district steering committees for food and nutrition security (CODSAN and COPSAN)[51]. Despite the structural components in place, PAMRDC 2018 review findings[52] show that persistent gaps still exist at national, provincial and district level in distinguishing nutrition security from food security. As such, it is difficult to accurately assess progress in addressing chronic undernutrition, as data is non-comparable and many times missing.

Mainstreaming Nutrition within PRODAPE

66. The investment focus of the PRODAPE has enormous potential to contribute to the increase in fish production to meeting the country´s growing demand for fish. The PRODAPE project will improve nutrition outcomes by using *nutrition-sensitive impact pathways* and *nutrition-sensitive strategies* that increase supply, add nutritional value and increase demand of aquaculture fish and associated value-added products. The PRODAPE will provide 2,000 women, youth and men with targeted support to improve their nutrition. Overall however, it is expected that 13,000 beneficiaries from the 24 target districts benefit from nutrition related activities.

67. Integrated impact pathways embedded in PRODAPE are as follows:

(a) **Consumption pathway (among producers).** The PRODAPE will focus on farmers as producers and consumers by introducing nutrition and consumer awareness around fish as a driver for diet diversity among producers and encouraging fish consumption planning vis-à-vis channelling fish into markets. Also, diversified production systems will be encouraged among beneficiaries engaged in aquaculture (fish production and agriculture activities) to increase the quantity and nutrient-rich quality of diverse foods available to the HH year-round.

(b) **Income pathway.** The PRODAPE will support the strengthening / emergence of credit and savings groups (PCRs) in all communities targeted by aquaculture production activities. These activities will also include household budgeting and business planning. The project will encourage use of associated profits to address malnutrition by addressing health, nutrition and care necessities.

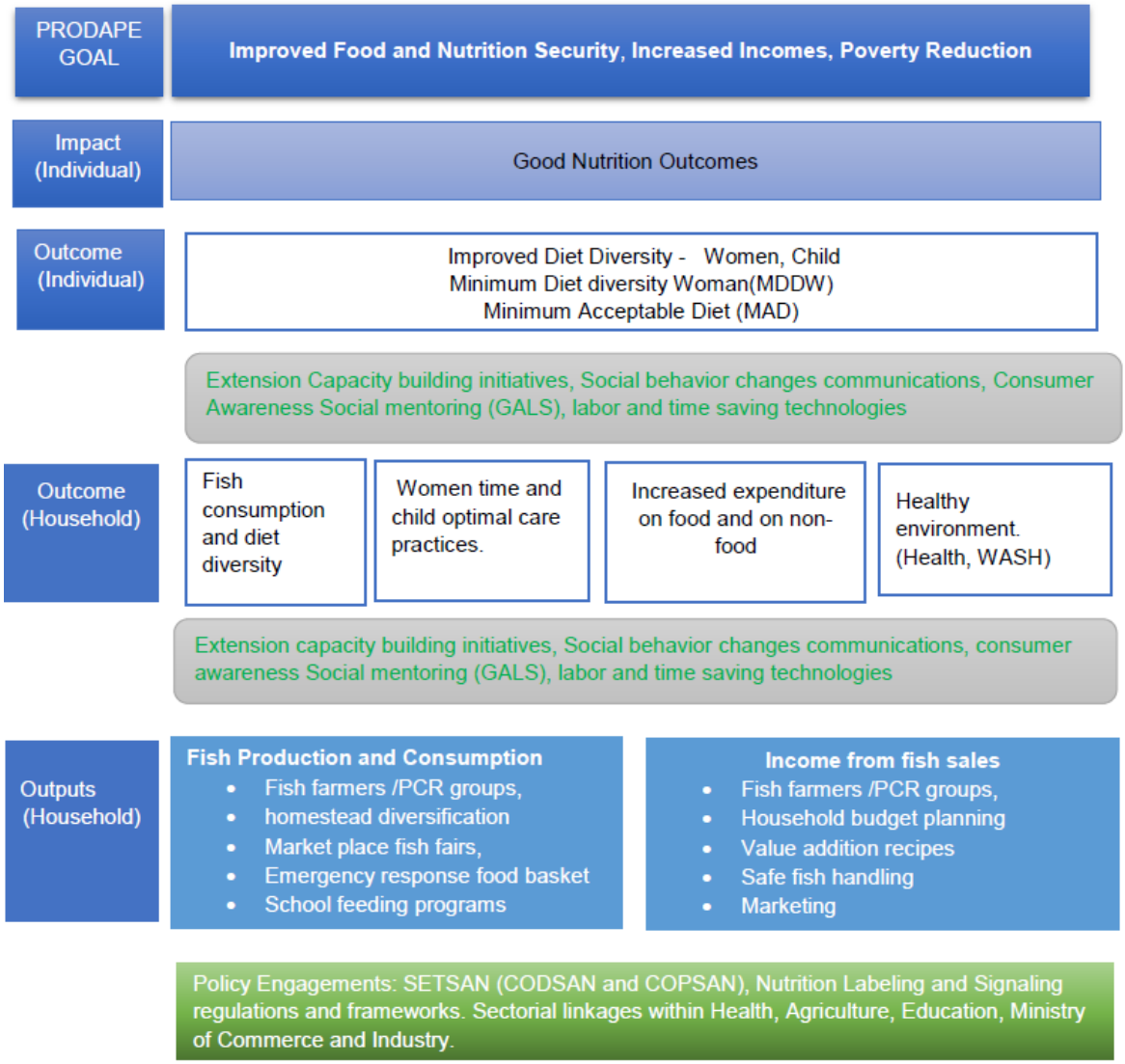
(c) **Market pathway.** The PRODAPE will work all across the aquaculture value chain to address supply and demand constraints. This is expected to increase availability of and access to aquaculture fish in markets. A consumer awareness study on cultured fish and other products will be conducted as part of the initial market survey to be conducted by the project to establish consumer awareness levels and on the basis of that, delineate effective strategies for demand creation for the purchase of aquaculture fish in the target districts.

The project team shall develop linkages with the World Food Programme (WFP) for the fish farmers and cottage fish industries to explore the possibility of tapping into the *diversified diets food baskets e-voucher scheme* for emergency response and school feeding programs, so create yet another market for aquaculture producers.

[51] December 6th, 2017, the Council of Ministers (Decree N. 69/2017) approved the creation of the National Council for Food and Nutrition Security (CONSAN).
[52] In-Depth Review 2018 of the Multisectoral Action Plan for the Reduction of Chronic Undernutrition in Mozambique 2011 – 2015 (2020)'.

In addition, fish farmers with support from the project can benefit from the Mozambique Scaling-Up Nutrition Business Network platform to access technical assistance / services on nutrition marketing including safe food handling and packaging that preserves the nutritional value of fish, frameworks for adherence to mandatory minimum requirements for nutrition labelling and market place support activities for demand generation.

Figure 2: PRODAPE integrated impact pathways for nutrition



68. PRODAPE interventions will be implemented through the use of nutrition sensitive strategies, namely, SBCC and consumer awareness activities, institutional capacity building activities on nutrition mainstreaming approaches, and food and nutrition security policy support. To address other underlying causes of malnutrition, the project will use the nutrition governance structures in place to engage in sector coordination with the health, education, agriculture and relevant programs implemented by agencies in the context of the Nutrition Partners Forum.

69. **SBCC activities.** Project extension staff will engage and support small-scale aquaculture farmers with nutrition education and consumer awareness information and activities focused on ensuring that farmers and their HHs consume fish produced and use

the income from the fish and fish products to access other diverse nutrient-dense food, with the aim of improving the quality of their diets. The intention is for them to also become change agents within their communities and use the marketing of their produce to increase demand, consumption and utilisation of fish at community level. Some of the suggested SBCC activities include:

(a) **Farmer clusters and/or the PCR group nutrition education sessions:** Using the farmer clusters and/or the PCR groups as entry points, the nutrition education activities will include nutrition-specific content on: a) nutritional value of fish; b) fish safety; c) fish benefits for the family, especially for the 1,000-days group[53]; and d) demonstration of improved recipes for preparing cultured fish[54]. Activities will be implemented from the onset and throughout the production and marketing cycles.

(b) **Marketplace awareness and communication content and materials.** To address issues related to aquaculture fish acceptability in coastal areas and address cultural habits that inhibit the consumption of fish in inland areas, as well as promote fish production and overall fish consumption the project will: (1) develop, multimedia messages, creative print materials such as scripts, stories, lyrics, agendas, discussion guides and slide shows tailored to rural communities; (2) take advantage of local fish fairs to promote tilapia and establish promote fish processing and value addition; (3) add to the on-going marketplace communication activities to emphasize the prevention of chronic malnutrition through community drama / theatre, interactive storytelling, music and road shows. National events such as health and nutrition weeks and the SETSAN "Month Dedicated to Feeding" *(Mês da Alimentação)* offer a wider geographical and thematic focus opportunity for community awareness on the use of aquaculture fish and associated products to improve HH diet. The project team will contribute on the production of content and the social mobilization activities for the events in target districts; (4) explore use of the district and provincial community radios that benefited from the Millennium Development Goals program (MDG1c)[55] radio station training support and the MISAU "One Minute on Nutrition" (*Um Minuto de Nutrição*) initiatives to convey the fish-related nutrition messages.

(c) To support wider coverage and dissemination of information on aquaculture fish consumption, the project team could explore the provision of tilapia and catfish-related content on production, consumption and marketing to community mother, infant and young child nutrition extension teams (SDMAS) to use during home visits and to the Nutrition Partners Forum organisation working on nutrition-specific and nutrition-sensitive intervention in the districts to integrate health, school and community nutrition activities.

70. **Institutional capacity building on nutrition mainstreaming.** To facilitate quality extension services within the sector a nutrition specialist will be hired to support the PCU in planning, implementing and monitoring nutrition outcomes within PRODAPE. An overall capacity assessment planned for the extension team and provincial and district directorates will also elaborate on the nutrition capacity gaps. In collaboration with SETSAN, Ministry of Agriculture National Directorate for Agriculture Extension Department of (DNEA), and MISAU, specific content for the aquaculture sector will be developed and included in the overall aquaculture extension services training plans. A nutrition focal point will join the extension master training team that will train target provincial directorates of Ministry of Sea, Inland Waters and Fisheries (DPMAIPs) and extension staff at district levels and the project team. The training will be done at the

[53] Adolescents, pregnant, lactating women and children 6-23 months.
[54] Nutrient-dense recipes that use fish as base ingredient and or fish value added products.
[55] Accelerating progress towards the achievement of the Millennium Development Goals1c in Mozambique (MDG1c) 2013-2018.

district level to avoid the cascading training of trainer model to avoid the potential loss of technical knowledge and skills along the training chain.

71. **Food and nutrition policy support.** The DPMAIPs and district level nutrition focal points will monitor and manage the data collection and utilisation of the routine nutrition outcome data. The data will then be reported and monitored against the aquaculture planned activities within PARMDC at district, provincial and national level. In this regard the project will support districts and provincial directorates to engage in the food and nutrition policy alignment. This is in line with planning and monitoring activities stipulated for the recently decreed provincial and district steering committees for food and nutrition security (CODSAN and COPSAN)[56]. The project will also engage with the food and nutrition evaluation assessment and surveys working group chaired by SETSAN department of evaluation.

72. **Do no harm considerations.** The time spent by women participating in project activities could have a negative effect on breastfeeding and other childcare responsibilities assumed by women. The project will mitigate these harms by ensuring that the organisation of the PRODAPE activities are well coordinated and take place at times which are convenient for women. In addition, the introduction of timesaving technologies for food processing, such as solar dryers and cool boxes, as well as for marketing, including mobile phone marketing, will be explored by PRODAPE.

73. A social and gender analysis will be carried out by the project to determine trends in the distribution of aquaculture related benefits at HH level to develop strategies to ensure equitable intra-household access to resources and benefits.

D. Partnerships and linkages

74. Synergies with initiatives in other donor-supported projects/programmes working in target PRODAPE locations will help maximize nutrition outcomes by leveraging facilities and other resources already in place, among which:

(a) Ministry of health provincial directorate and district services. In provinces with persistently high stunting levels, such as Niassa, Cabo Delgado, Nampula and Zambézia, small-scale aquaculture farmers with HH members who are pregnant, lactating, with children under-five and/or adolescents will be linked with on-going child and maternal health support services in their areas, as needed. This will be achieved thorough collaboration with community health workers (in Mozambique APEs) and the district women's health and social services (SDSMAS) extension teams.

(b) Nutrition sector partners. The following table elaborates potential linkages which could be explored by PRODAPE with Nutrition Partners Forum members for projects planned from 2019 through 2022[57]:

Organization and Partner	Project / Programme	Area of Linkage / Partnership	Province / District
IFAD-funded projects			
IFAD	Nutrition Community of Practice IFAD projects	Sharing lessons learnt and experience on mainstreaming strategies in Mozambique and diet diversity baseline and end line surveys	

[56] December 6th, 2017, the Council of Ministers (through Decree No. 69/2017) approved the creation of the National Council for Food and Nutrition Security (CONSAN).
[57] Nutrition Investment Overview Mozambique 2018.

Organization and Partner	Project / Programme	Area of Linkage / Partnership	Province / District
	PROMER	Agricultural diversification	Cabo Delgado / Balama Niassa / Lichinga
	PROCAVA	Agricultural diversification	65 districts in Northern and Central Mozambique
Rome-Based Agencies			
WFP	Emergency response program School feeding program	Institution markets for the aquaculture fish through the e-voucher scheme	Emergency response district in the north and central(TBC)
Nutrition Partnership Forum			
GAIN (DFID)	Catalysing private sector in scaling up nutrition 2016-2021 -SUN Business Network-Mozambique	Investment fund and technical assistance to increase safe nutritious diets through private sector engagement and demand generation through market place support	Nampula, Cabo Delgado, Tete, Niassa, Sofala , Manica and Zambézia
USAID	Community nutrition 2019-2024	SBCC, nutrition services through the national health system	Nampula / Murrupula, Meconta, Mogovolas and Larde
UNICEF/ EU / WB funds	Health and nutrition, behaviour change communication for nutrition 2017-2012	Specific community nutrition activities, SBCC platforms and WASH services	Nampula / Monapo and Ribáue Zambézia
DFID SCI-HKI	Linking Agriculture to Nutrition 2017-2022	SBCC, promotion of orange fleshed sweet potato and farmer field schools	Tete and Manica
The Spanish Red Cross	Health and Nutrition 2019-2022	Water, sanitation and hygiene promotion	Cabo Delgado

E. Institutional and Implementation Arrangements

75. The PRODAPE PCU will hire a nutrition specialist officer to manage day-to-day activities related to nutrition. The nutrition specialist will work with the DPMAIPs, who are responsible for the coordination, implementation and progress of nutrition mainstreaming actions for the project at local level. The SDAE extension workers are the front-line team for PRODAPE and will be supported trained and mentored on nutrition-sensitive interventions by the nutrition specialist and the DPMAIPs nutrition focal points.

76. The contributions of PRODAPE interventions will be monitored through periodic project-specific monitoring activities as well as SETSAN biannual surveys. The baseline survey on knowledge, attitudes and practices and diet diversity surveys will provide

benchmark data to measure changes related to nutritional outcomes in the project target areas. IFAD Mozambique´s Nutrition Community of Practice will enable sharing information, best practices and networking within IFAD funded programs (PROMER[58] and PROCAVA[59]) as well as establishing linkages with nutrition specific / sensitive programmes.

77. Planning, implementation and monitoring of social behaviour change from the multimedia and marketplace campaigns will be done in collaboration with the Ministries of Health, Agriculture, Education, Commerce and Industry, SETSAN, SUN business network and community activists.

F. Nutrition Indicators

78. Diet diversity measured at the individual level has been repeatedly validated as predictive of diet quality and is associated with nutritional status across a range of countries and contexts[60]. A positive association has also been shown between higher diet diversity and reduced prevalence of stunting and underweight among children under five. The same applies to diet diversity and mean micronutrient adequacy for women and children. The following indicators will be used by PRODAPE to track nutrition results:

Impact indicators	**Per capita consumption of aquaculture fish**
Outcome indicators	**Percentage of smallholder women of reproductive age with increase dietary diversity (at least 5 food groups)** *Dietary Diversity Scores consist of a simple count of the different food groups that a HH or an individual has consumed over a given period (usually 24 hours). These scores have been used by the MGD1c project. Future plans for SETSAN biannual evaluations to incorporate MDDW.*
Output indicators	• Number fish (kg) reserved for household consumption per production cycle • Types of fish value added products with proper nutrition labelling and signalling • # of nutrition campaigns, events, awareness raising sessions and trainings conducted • Number of persons / HHs provided with targeted support to improve their nutrition (gender and age disaggregated data) • # of government staff trained in nutrition-sensitive food systems • # of nutrition-related progress reports generated for SETSAN, CODSAN and COPSAN • Fish-related nutrition content developed, publications and policy briefs produced and disseminated

III. ADDRESSING SOCIAL RISKS

79. An analysis of social risks which could undermine primary beneficiary engagement in project supported activities and/or limit beneficiary HH socio-economic progression led the identification of the following:

a) Individual HHs seek individual solutions to common problems;

[58] The Rural Markets Promotion Programme.
[59] Inclusive Agri-food Value-chains Development Programme.
[60] Compendium of indicators for nutrition-sensitive agriculture FAO 2016.

b) Lack of joint planning at HH level;

c) Potential increase of HH tensions and gender inequality with increased income flows among married beneficiaries;

d) Increased risk of HIV acquisition by women; limited health seeking behaviour among HIV positive pregnant women, youth and men. Threat of poor health with deteriorating health if treatment is not initiated and sustained;

e) Food insecurity and malnutrition associated with lack of production of food for consumption by participating households and an increase in food prices.

80. Whether organized under cluster models or around aquaparks, smallholder aquaculture farmers face greater challenges than the rest of the actors in the value chain due to their socio-economic vulnerability. Engagement in aquaculture will require organization to address challenges and take advantage of opportunities. The *Social Mentoring* intervention aims to support farmers in this respect by working at two levels:

i) Aquaculture producer groups (in clusters or aquaparks). Activities will instil joint planning, collaboration and equip them to identify common problems and joint solutions.

ii) Individual aquaculture producers receiving PRODAPE support. Activities would aim to address social risks that could hinder beneficiary ability to sustain engagement and limit socio-economic progression: (i) absence of joint HH plans; (ii) gender inequality; (iii) malnutrition; and (iv) HIV and AIDS.

81. The proposed *Social Mentoring* activity, specifically catered to the risks identified among small aquaculture farmers is facilitative in nature. The intervention is based on the Gender Action Learning System (GALS)[61] broadly used by IFAD, together with Stepping Stones[62], an effective facilitative methodology used in HIV programmes and the integration of information and messages used in the country to fight malnutrition. Activities will be imparted by facilitators trained under PRODAPE and enable participants to develop realistic plans, better take advantage of existing opportunities and make decisions on how to avoid social risks identified.

[61] IFAD, October, 2014. Case Study: Gender Action Learning System in Ghana, Nigeria, Rwanda, Sierra Leone and Uganda. Gender, Targeting and Social Inclusion.
[62] http://steppingstonesfeedback.org Accessed 16th July 2018.

Table 6: Key information in relation to four key social risks faced by project beneficiaries at HH level to be addressed by the Social Mentoring intervention

	Lack of joint household plans	Gender inequality	HIV and AIDS[63]	Malnutrition
CHALLENGES	- High poverty levels push HHs to rely on day to day opportunities - Resources tend to be scattered and poorly coordinated and not strategically used for HH progression	- Women have more responsibilities and tasks than men and are the prime food producers at household level - Decision making is primarily by men - Lack of control of resources / benefits	- 13.2% HIV prevalence[64] - Challenges: • Enrolment in and adherence to treatment • Stigma / discrimination • Vulnerability of women, and children • HIV disclosure affects women • Food availability and consumption patterns	- 43% chronic malnutrition - 54% maternal anaemia, iron, iodine and vitamin A[65] - Challenges: • Limited physical and economic access to diverse, nutritious diets • Limited diversified protein and micronutrient • Cultural influence on diets/caring practises • High disease burden
PROPOSED SOLUTIONS	- Empower HHs to produce HH plans and identifying solutions to the four social risks identified herein (and others)	- HH members analyse the impacts of gender inequality on individual benefits and HH progression and identify corrective measures to issues deemed relevant	- Sensitization on HIV testing, treatment and adherence - Sharing information on existing HIV services - Tearing down barriers to disclosure / discrimination - HIV/AIDS & gender inequality - Nutrition in the context of HIV and AIDS	- Targeted nutrition education on nutritional value of fish, fish safety, consumption benefits especially the 1,000 days group[66] - Demonstration of improved aquaculture fish recipes[67] - Partnerships with relevant sectors

82. Issues to be included in the *Social Mentoring* intervention will include:

    a. Development of a household vision;

    b. Household planning: use of resources and opportunities available, including remittances;

    c. Identifying and addressing common barriers for household progress (including common areas of gender inequality);

[63] Instituto Nacional de Saúde, Instituto Nacional de Estatística (INE), ICF Internacional, 2015. Inquérito de Indicadores de Imunização, Malária e HIV/SIDA em Moçambique 2015. Relatório Preliminar de Indicadores de HIV.
[64] Mozambique recently adopted the HIV Test and Treat Strategy, which entails getting HIV positive patients into anti-retroviral treatment as soon as diagnosed. As is the case in other HIV high-burden countries, treatment is considered to be the prime prevention strategy.
[65] In-Depth Review 2018 of the 'Multisectoral Action Plan for the Reduction of Chronic Under-nutrition in Mozambique 2011 – 2015 (2020)'.
[66] Adolescents, pregnant and lactating mothers and children aged 6-23 months.
[67] Nutrient dense recipes that use fish as base ingredient and or fish value added products.

d. Provision of basic information on HIV prevention and clinical HIV services close to the community, including, as relevant: HIV testing and counselling, HIV care and treatment, community services and support groups (if any) and use of services;

e. Importance of pregnant women, youth and men testing and using clinical HIV services and adhering to anti-retroviral treatment;

f. Couple disclose of sero-prevalence; overcoming HIV stigma and discrimination;

g. Provision of basic information to prevent malnutrition and linkages, as appropriate.

83. *Social Mentoring* activities will be implemented by trained Mentors. *Social Mentoring* activities will be imparted to primary beneficiary producer groups, in groups, in whichever way they are organized for the purposes of accessing project opportunities related to aquaculture production. It is expected that groups will consist of 25 members. However, more focused attention will be given to "more at risk beneficiaries", considering that these will primarily be the poorest HH (those receiving the highest level of support to engage in aquaculture), but it could also include beneficiaries that are not among the poorest but require additional assistance in overcoming challenges and capitalizing opportunities due to enhanced exposure to a given social risk. These beneficiaries will receive additional support at HH level. It is expected that the proportion of beneficiaries requiring this level of additional support will represent 20% of the total number of beneficiaries receiving Social Mentoring support.

84. Evidence shows that when implemented correctly, the impact is such that there is a multiplier effect at community level as beneficiaries themselves target others spontaneously. As such, the project will only target 50% of groups in each community and 50% of individual beneficiaries requiring additional support at HH level and will work with those targeted directly by Mentors so that once the "graduate" they replicate the same process among the remaining 50% of groups and individual beneficiaries requiring additional support.

85. Activities at group and HH level will both be implemented for a period of 12 months. It is expected that after this time groups and individuals targeted will "graduate" out of *Social Mentoring*. Each Mentor will cover three groups (and the estimated 20% of group members requiring HH level support, i.e., five people in each group, totalling 15 HHs) in a period of 12 months.

86. All information related to the prevention, treatment of and discrimination in the context of HIV, as well as nutrition, included in *Social Mentoring* activities will be aligned with GoM guidance documents and duly coordinated at local level with other players working towards common goals.

Attachment 1: Detailed population data per target district PRODAPE.

Target Province	Target District	Population 2017
Niassa	Lago	163,982
	Lichinga	213,361
	Mecanhelas	296,908
Cabo Delgado	Metuge	89,122
	Balama	180,957
	Mueda	217,641
Nampula	Larde	85,971
	Mossuril	142,787
	Ribáue	290,244
Zambézia	Mocubela	110,857
	Nicoadala	180,686
	Milange	619,275
Tete	Magoé	91,313
	Marávia	131,685
	Cahora Bassa	132,972
Manica	Vanduzi	124,064
	Sussundenga	168,200
	Gondola	201,735
	Mossurize	219,551
Sofala	Buzi	177,348
	Gorongosa	182,226
	Dondo	184,458
	Beira	533,825
Gaza	Chókwè	240,244

IFAD
Investing in rural people

Mozambique

Small Scale Aquaculture Promotion Project

Project Design Report

Annex: Moz Prodape Pdr Annex Partnerships For Aquaculture Development

Document Date:	24/07/2019
Project No.	2000001979
Report No.	5075-MZ

East and Southern Africa Division
Programme Management Department

Annex: Partnerships for Aquaculture Development

Business partnerships, including Public-Private-Partnership (PPP) and Outgrower schemes has been identified as the effective strategies with potential for the development of aquaculture value chain in the following areas:

a) Development of quality fish seed system. Based on the notion of centrality and concentration, PRODAPE will support the development of one main hatchery in each target province. Where private operators are already engaged in fingerlings production and need to scale up or improve their production capacity and/or quality to match increasing demand for fish seed, PPP in the forms of Joint Venture (JV) arrangements or grants/conditional transfers will be considered. Under the JV arrangements, government and the private sector will agree to jointly own the hatchery, invest their funds (as equity) and share profit from operations under the private sector operator (PSO)'s management. It could be a temporary or tenured JV where a terminal date is set for the winding down of the relationship and appropriation of the project's assets & liabilities by the PSO. It could also be a permanent JV where a Joint Venture Company is formed to drive the relationship. Under the grant or conditional transfer, government may agree to invest PRODAPE fund in the private sector hatchery without expecting any direct financial returns provided the PSO meet some conditions – usually aimed at generating public goods, which in this case is high quality affordable fingerlings for small-scale fish farmers.

For the targeted provinces where private facilities for fish seed production do not exist, constructing and privatizing government-owned facilities and services is an attractive option. In consultation with potential private companies, PRODAPE will explore suitable PPP arrangements, including Management/Service contract or outsourcing, long-term concession and lease contracts to engage PSO to improve efficiency and effectiveness. The Lease option allows the government to own and finance the construction (capital) phases of the project but leases (rents) it out to a PSO for a fixed income to government. The PSO finances the operations (recurrent aspects) of the projects and earns the net returns after paying the rentals. Under the long-term concession arrangement, government owns and finances the construction (capital) phases of the project but grants a PSO the permission (concession) to run it. The PSO finances the operations (recurrent aspects) of the project. The government's remuneration is structured to be a combination of a fixed concession fee and a variable dividend from the profit generated from the project. In some cases, the PSO will be expected to upgrade the facilities either from its own resources or by ploughing part of the dividend due to government back into the project.

b) Development of large commercial fish feed production: To develop the fish feed production capacity in the country, it is envisaged that PRODAPE will support

(i) on-farm feed formulation for smallholder farmers with 1-3 ponds to supplement fish nutrition and quality;

(ii) entrepreneurial "cottage" fish feed production among small and medium scale producers;

(i) large commercial fish feed production through PPPs to achieve economies of scale and lower production costs.

With respect to the latter option, the project will establish a PPP with two existing poultry/livestock feed producers (possible the ones established in Maputo and Tete) to set up fish feed production lines. A PPP arrangement in the form of JVs will be explored with existing animal feed producers and other emerging commercial operators who are setting-up their own production capacity on the basis of imported raw materials/and or local products. PRODAPE will support 40% of the investment costs for establishing fish seed production (with maximum contribution not exceeding USD 250,000), with the private sector contributing the remaining investment cost through equity or loan.

PRODAPE will facilitate access to loan funding through financing instruments available under REFP or Agri-Business Capital (ABC) Fund.

c) Access to input and output markets. PRODAPE will facilitate access of small-scale farmers to input and output markets through development of business partnerships with medium/large commercial aquaculture operators in the form of outgrower schemes. Such schemes can improve smallholder access to quality inputs (fingerlings and fish feed), extension services for improved or best aquaculture management practices, finance, post-harvest handling and marketing infrastructure. PRODAPE will support development of at least one outgrower scheme in each targeted district. In general terms, for a typical outgrower scheme, two main contracts are to be signed, one that is expected to rule the use of a grant based on a well-defined business plan signed between PRODAPE and the commercial aquaculture operator; and another signed between the commercial operator and the aquaculture small scale farmers. The latter contract will be a fish purchase agreement that will ensure a market for the sales of the small aquaculture producers at market prices and the provision of technical support and quality inputs. It is expected that these two contracts will enhance the ability of the commercial operator (aggregator) to get long-term commercial co-financing for the development of his/her productive infrastructure. It will also enhance the ability of small aquaculture producers to get working capital from commercial sources. Key obligations of the aggregator under the outgrower scheme contract will be to coach farmers in all technology aspects of establishing and operating aquaculture ponds, do procurement of fish feed and fingerling inputs of appropriate quality, verification that such inputs comply with best technical standards, and do the marketing and sales activities for all participant aquaculture farmers. The commercial operator will commit to buy fish from the small pond aquaculture producer fish outputs at market prices. The obligation of the aquaculture pond producer will be to supply the aggregator with a given volumes of fish of an agreed quality, within a given timeframe. He/she will also commit to adopting the promoted technological know-how using quality inputs (feed and fingerlings) procured by the aggregator.

Funding for establishment of outgrower schemes includes investment financing for the commercial operator, which will be documented in the business plans presented by the commercial operator in response to calls for proposals issued by PRODAPE. It is expected that investments in a commercial operator's typical business plan include a warehouse with cold storage and an area for fish feed storage, a refrigerated truck, outlet furniture and motorbikes. It will also give a description of how he/she will conduct business, where the farmers are located and where the target market is located, the area they will cover, how the farmers are going to produce fish, pond and cage management, etc. Financing from PRODAPE will include a maximum 45% grant of the commercial operator. PRODAPE will finance the two-year cost of five technical extensionists who will work hand-in-hand with the small-scale farmers, coaching them operations and management of the aquaculture production processes. After the second year, the cost of the technical extensionists will pass to form part of the fixed cost staff of the commercial operator, to help him/her on the management of all aspects of the value chain management. To receive funding from the ABDP, the commercial operator can be organized either as a limited liability company or as a cooperative, both managed professionally.

For outgrower schemes in the aquaculture chain to work, banks and other private sector financiers will provide working capital to small aquaculture producers and long-term funding for the commercial operator. It is expected that commercial operators will commit equity funding in addition to grants from PRODAPE and loans from banks. The participation of private financiers will be the actual test of commercial viability of the outgrower model.