IFAD
Investing in rural people

Republic of the Sudan

Integrated Agricultural and Marketing Development Project (IAMDP)

Final project design report

Main report and appendices

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Currency equivalents

Currency Unit	=	Sudanese Pounds (SDG)
USD 1.0	=	SDG 15.88

Weights and measures

1 Feddan	=	4200 sq.m

Abbreviations and acronyms

ABSUMI	Agricultural Bank of Sudan Microfinance Initiative
AFD	Agence Francais de Developpment (French Aid Agency)
AfDB	African Development Bank
AFSTA	African Seed Trade Association
APT	Adaptation Planning Team (service provider)
ARC	Agricultural Research Centre
ARP	Agriculture Revival Project
AWPB	Annual Work Plan & Budget
BIRDP	Butana Integrated Rural Development Project
CAADP	Comprehensive Africa Agriculture Development Project
CAP	Community Action Plan
CBO	community-based organization
CBS	Central Bank of Sudan
CC	Climate Change
CCU	Central Coordination Unit (MoAI, for IFAD Funded Projects)
CFSVA	Comprehensive Food Security and Vulnerability Analysis (WFP)
COMESA	Common Market for Eastern & Southern Africa
CPF	Country Project Framework (FAO)
CPIA	Country Policy and Institutional Assessment
CPP	Country Project Paper (Drought Emergencies in the Horn of Africa)
DA	Designated Account
DSF	Debt Sustainability Framework
DVA	domestic value added
DVM	Derived Variable Model
ECCA	Environmental and Climate Change Assessment
ECD	Environment and Climate Division (IFAD)

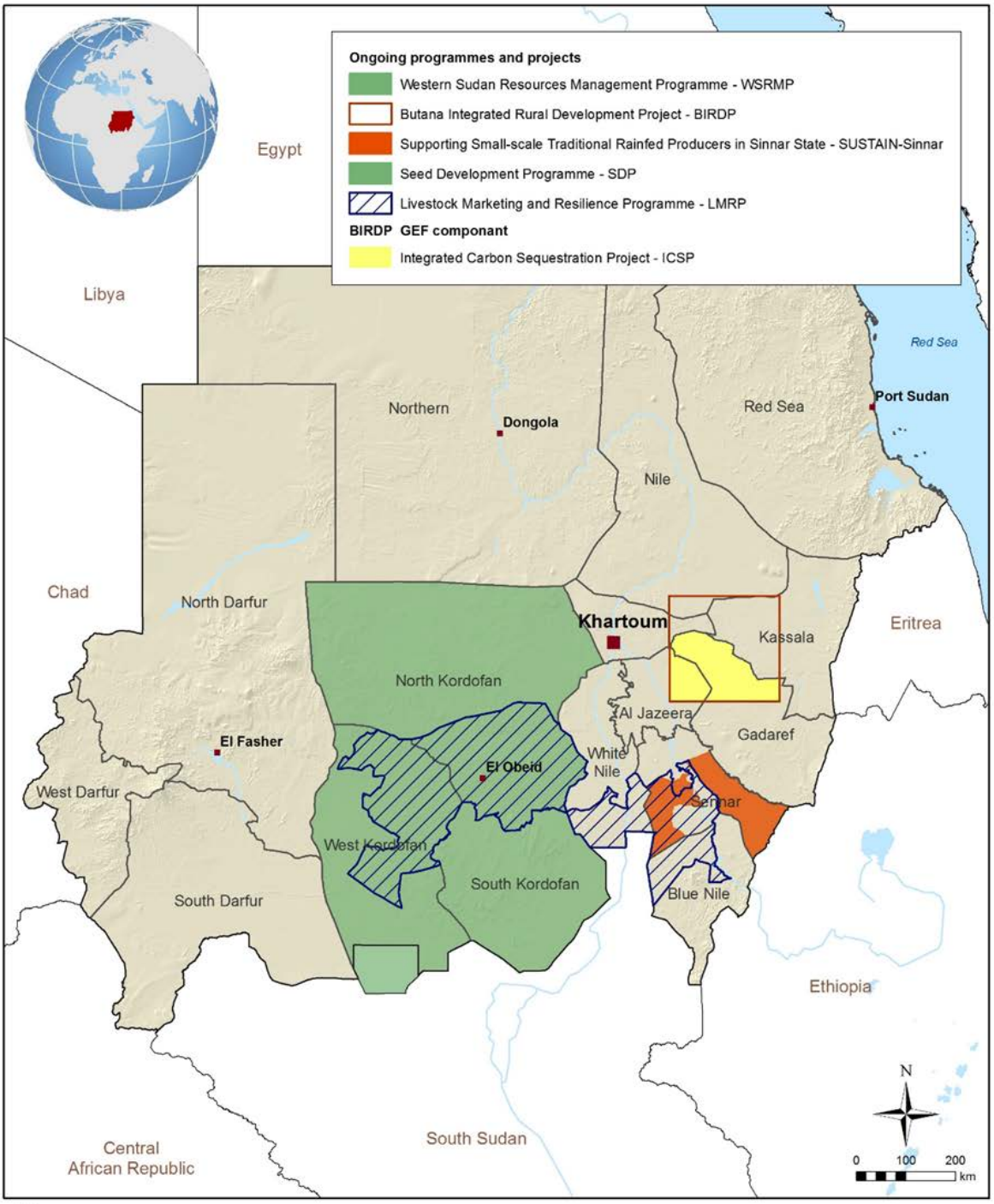
ECMWF	European Centre for Medium-Range Weather Forecasts
EFA	economic and financial analysis
EIRR	economic internal rate of return
EIU	Economist Intelligence Unit
ELP	Extension-Link Producer
EM-DAT	The International Disaster Data Base
ENABLE	Empowering Noble Agri-business Led Employment
ENRM	environmental and natural resource management
EPA	Environment Protection Act
ERP	Emergency Response Plan
ESR	Environmental and Social Review
EWS	Early Warning System
FAO	Food and Agriculture Organisation (UN)
FC	Financial Controller
FEWS NET	Famine Early Warning System Network
FIRR	financial internal rate of return
FNC	Forestry National Corporation
GALS	Gender Action Learning System
GAPA	Gum Arabic Producers Association
GAPMP	Gum Arabic Production and Marketing Project
GHI	Global Hunger Index
GoS	Government of Republic of the Sudan
GSLRP	Gash Sustainable Livelihoods Regeneration Project
HACCP/ISO	Hazard Analysis Critical Control Points/International Standardization Organisation
HCENR	Higher Council for Environment and Natural Resources (UN)
HDI	Human Development Index
HH	Household
HIPC	Heavily Indebted Poor Countries Initiative
ICB	International Competitive Bidding
ICO	IFAD Country Office
ICR	Implementation Completion Report
ICT	information communication technology
IES	Institute of Environmental Studies
IFI	Intermediate Financial Institution
IGAD	Inter-Governmental Authority on Development
IPM	Integrated Pest Management
ILPMP	Improving Livestock Production and Marketing Project
ISMGF	Innovation Scale-up Matching Grant Facility
IPRSP	Interim Poverty Reduction Strategy Paper
IRR	internal rate of return

IsDB	Islamic Development Bank
LET	Locality Extension Team
LMRP	Livestock Marketing and Resilience Project
MFU	Micro Finance Unit
MICS	Multiple Indicator Cluster Survey
MICT	Mobile Information and Communications Technology
MIS	market information system
MoAI	Ministry of Agriculture and Forestry
MAAWI	Ministry of Agriculture, Animal Wealth and Irrigation
MoFEP	Ministry of Finance and Economic Planning
MoLFR	Ministry of Livestock, Fisheries and Rangelands
MSP	Mechanised Service Provider
MoU	Memorandum of Understanding
MUVI	Manufactures Unit Value Index
NAO	National Audit Office
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NBHS	National Baseline Household Survey
NCB	National Competitive Bidding
NDDU	National Drought and Desertification Unit
NEN	Near East, North Africa and Europe Division (IFAD)
NGO	non-governmental organisation
NPPD	National Plant Protection Directorate
NPV	Net Present Value
PA	producers associations
PCU	Project Coordination Unit
PPPP	Public-Private-Producer-Partnership
RAP	Rural Access Project
RAU	Rural Agricultural Unit
RCM	Regional Climate Model
RFO	Rural Finance Extension Officer
RFU	Rural Finance Unit
RSGPMP	Revitalizing the Sudan Gum Production and Marketing Project
SGAMP	Sudan Gum Arabic Production and Marketing Project
SA	Seed Administration
SAGA	Sudan Agrochemical Association
SAI	Supreme Audit Institution
SBD	Standard Bid Document
SCCF	Special Climate Change Fund
SCF	Standard Conversion Factor

SCG	Savings & Credit Group
SDAT	State-level Development & Adaptation Team
SDP	Seeds Development Project
SEC	State Environmental Council
SECS	Sudanese Environment Conservation Society
SGG	Seed Growing Group
SHF	smallholder farmer
SIFSIA	Sudan Integrated Food Security Information for Action
SPIU	State Project Implementation Unit
SKRDP	South Kordofan Rural Development Project
SMDC	Sudan Microfinance Development Corporation
SSP	spray service provider
SUDNAIP	Sudan's National Agriculture Investment Plan
SUSTAIN	Supporting Small-scale Traditional Rainfed Producers in Sinnar State
ToT	Training of trainers
WFP	World Food Project
WSRMP	Western Sudan Resources Management Project
YABIC	Youth Agri-Business Incubation Centres

hafir	water storage structure
jubraka	gardens near the homestead
sanduq	Community-managed village microfinance system
wadi crossing	bridge built over feeder roads

Map of the project area



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.

IFAD *Map compiled by IFAD* | 01-03-2016

Executive Summary[1]

1. **Strategic context** – Sudan is endowed with 61 million ha of arable land (of which 17.4 million ha are cultivated) and 104 million livestock heads. Sudan GNI per capita was estimated at US$1920 for 2016, while inflation rate is still at double digit level (11% in 2017). The high inflation rate was driven by the recent devaluation of the local currency. Sudan economy is characterised by the existence of dual exchange rates: one official rate of 6.5 SDG per 1 USD and one commercial rate of 15.8 SDG per 1 USD. Comprehensive US sanctions on Sudan, levied in 1997 and expanded in 2006, were eased in January 2017, allowing for financial and trade transactions between US citizens and entities, and their Sudanese counterparts.

2. Agriculture is important to Sudan's economy given that: (i) agriculture accounts for nearly one-third of the national GDP; (ii) nearly half of the national workforce is engaged in agriculture (i.e. crop, livestock, fisheries and forestry production) and agro processing industries; (iii) two thirds of total population of Sudan (36.2 million) live in rural areas; (iv) the national poverty rate is 47 percent; with 58 percent of the population classified as rural poor; and (v) 3.9 million people are food insecure. The rainfed production system is an important agricultural subsector, typically divided into semi-mechanised farming, traditional crop production and livestock systems. Depending on rainfall, the rainfed subsectors contributed three-quarters of foreign exchange earnings from agricultural exports. Semi-mechanised rainfed farming is practiced by large farmers and companies with low rent leases granted by the federal government and produces 40 percent of the country's sorghum, 62 percent of sesame and 90 percent of sunflower and cotton grown in the country. Traditional rainfed farming is practiced by family households with farms ranging from two to 50 hectares in size, farming for income and subsistence. Traditional rainfed farming covers about 18 million feddans[2], growing about 95 percent of the country's millet, 38 percent of sorghum, 67 percent of groundnut and 38 percent of sesame. The subsector also grows gum Arabic, rosella and melon seeds for export.

3. **Climate change impacts in Sudan:** In Sudan, many studies have confirmed that climate change has had major impact on the fragile environments and the livelihoods of the rural poor, particularly in rainfed areas. Studies suggest that by 2060, average temperatures are expected to rise (1.5^{o}C and 3.1^{o}C) and rainfall to decrease in magnitude and frequency (about 6mm per month during the rainy season. The impact of such changes on agriculture is: (i) reduction of the area available for crop production due to a southward shift in moist agro climatic zones; and (ii) decrease in the food crop yield between 13 percent and 82 percent for sorghum and between 20 percent and 76 percent for millet, and in the production of the gum Arabic between 25 percent and 30 percent.

4. **Justification and Rationale** - Productivity in rainfed cropping systems is declining due to land degradation, reduced soil fertility, traditional tillage practices, lack of quality seed and lack of knowledge on improved management practices. Use of improved seeds, minimum tillage/water harvesting, mechanized planting, and improved weed control technologies in pilot projects have clearly demonstrated major improvements in crop yields. Other challenges facing rainfed crop production include unpredictability of rainfall that typically allows only 40 to 80 percent of the area planted to be harvested and pests and diseases (including locusts). There is an urgent need for households to diversify their sources of income and add value to what they produce. The lack of accessible rural financial services and appropriate extension are also major impediments.

[1] The mission consisted of Mr. Abdelhamid Abdouli (Mission Leader), Mr. Don Greenberg (Marketing and Business Development Specialist), Mr. Mohamed Omran (Economic and Financial Specialist), Mr. Swandip (Rural Finance Specialist), Ms. Mia Madsen (Associate Programme Officer, IFAD), Mr. Ahmed Gabir Subahi, (Country Programme Officer, IFAD) and Mr. El-Fadul Ahmed Ishag, (Programme Support Officer, IFAD). Mr. Tarek Ahmed (Country Programme Manager, IFAD) joined the mission during part of its stay in Sudan and supervised the overall mission work.
[2] One feddan is 4,200 m^2, or 1.038 acres or 0.42 ha.

5. IFAD conducted a value chain study on the three most important crops for the traditional rainfed small-scale farming in Sudan: sesame, groundnut, and sorghum (March 2017). In addition, IFAD and WB commissioned a study on gum Arabic, as input to the PCR of the IFAD-WB supported Revitalizing the Sudan Gum Arabic Production and Marketing Project which have been updated by market studies developed by the ongoing pilot AFD-financed RSGPMP. The three main conclusions of these studies: (i) the high comparative advantage of rainfed areas in Sinnar, North, South and West Kordofan in the production of the three field crops and gum Arabic agroforestry; (ii) the existence of a well-established national and international markets with increasing demand for the crops; and (iii) the importance of these crops for the livelihoods and resilience of the smallholder rainfed farmers, rural women and youth in the project area. Sesame, groundnuts and gum Arabic are the main sources of income as cash crops[3]. Sorghum is a major source of household food security, but for households with surpluses it is also an important cash crop.

6. The key findings of GAPMP and RSGPMP on gum Arabic are: (i) ensuring that higher farm-gate prices are received by producers through measures to improve quality and better market access have a large impact on profits; (ii) pre-financing of tapping operations will allow greater productivity and production and higher revenues; (iii) when producer incomes are high there is a strong desire to protect and expand planting of gum Arabic trees, with a positive impact on the environment and climate change.

7. **Project Area** – IAMDP will be implemented in the four states of Sinnar, North Kordofan, South Kordofan, and West Kordofan. The main source of livelihood among rural populations in project area is traditional rainfed agriculture (crop production, animal husbandry (mainly of small ruminants)) and forest-based activities (mainly gum Arabic).

8. **Target Group** – The IAMDP will intervene in 129 villages targeting 27,000 smallholder households, including small producers, rural women and youth (engaged as spray and mechanised service providers, and agro dealers at the village level). Of these 129, 66 villages are from the current SDP and SUSTAIN projects and 63 will be new villages. In North Kordofan state the IAMDP targets 3,343 rural HHs, of which 671 are women-headed HHs. The total number of village population targeted is estimated to be 21,412, of which 50 percent are women and 30 percent are youth. In West Kordofan IAMDP targets 1,428 rural HHs, of which 344 are women-headed. The total number of village population targeted in WK is estimated to be 9,065 of which 50 percent are women and 30 percent are youth. In South Kordofan IAMDP targets 6,026 rural HHs, of which 1,508 are women headed HHs. The total number of village population targeted in SK is estimated to be 40,045 of which 50 percent are women and 30 percent are youth. In Sinnar state IAMDP targets 15,876 rural HHs, of which 2,381 are women-headed HHs. The total population in villages targeted by the IAMDP in Sinnar state is estimated to be 82,082. Of these about 50 percent are women and 30 percent are youth.

9. The same studies concluded that there is a great wealth of traditional knowledge and skills by smallholder farmers on semi-subsistence cropping and livestock systems, under harsh climactic conditions and a non-supportive enabling environment. But these traditional knowledge and skills are not enough to break the cycle of poverty. Smallholder farmers have little technical knowledge about improved or proper, land preparation, seeds, inputs, planting, weeding, harvesting, storage, and market opportunities. They lack the business skills to make sound decisions about inputs, services, finance, and marketing, directly or through their associations.

10. The two ongoing and about to close SUSTAIN and SDP (and to a lesser extent WSRMP) projects have focusses on improving food security, incomes and resilience to shocks of the smallholder producers in rainfed areas of Sinnar, North, South and West Kordofan. However,

[3] Sudan has made remarkable progress in reducing levels of aflatoxin in groundnuts down to levels required by even the most stringent markets (e.g. the EU). Groundnut exports have increased dramatically in the past year or two, and if the 2017 season is favorable, Sudan will export over 100,000 MTS of groundnuts (compared to 3,300 MTs in 2015). Exports of groundnut oil and seedcake are also growing dramatically.

these projects were not originally designed to work through private sector service providers, nor to develop partnerships with private companies for input and/or output market access. Only at a later stage of implementation did the SUSTAIN and SDP projects succeeded in testing the model of private public partnership between farming households and the private sector suppliers of inputs (such as certified seeds, fertilizers) and services (such as chisel ploughing, spraying, etc.).

11. Building on achievements and lessons learned from implementation of SUSTAIN, SDP and WSRMP, the rationale for IAMDP is based on four main lessons learned: (i) projects support was limited to only 52 percent of reachable poor villages; (ii) adoption of improved agricultural practices is linked to exposure though demonstrations led by extension teams, but much more needs to be done on building the supply chain down to the small-scale farmers and on the private sector provision of extension services wherever possible to complement the public sector; (iii) initial adoption with limited scaling-up is mainly by large farmers (who have the financial means and ready access to required services) or by smaller farmers who access to financial and technical services; (iv) focus was more on productivity enhancement and production increase with less emphasis on post-harvest processing and marketing; and (v) rural finance is a key to enable farmers to invest in agricultural production.

12. The IAMDP will (i) consolidate the investment activities supported by the ending projects; and (ii) move from demonstration to scale-up to the same and additional geographical areas where other smallholder farmers face similar challenges on low crop productivity, limited access to market and finance, and vulnerability to climate change. IAMDP will rely on the following success factors: (i) build on the experience of previous projects in the area; (ii) involve well-capacitated communities with adequate organizational structures, and work and capacitate the already existing extension teams at the locality level; (iii) engage with emerging village-based private sector operators; and (iv) tap into the project management experience and staff dedication of the PCUs of SUSTAIN and SDP.

13. **Project's Goal and Development Objective** – The goal of the IAMDP is to '*enhance food security and reduce poverty in poor rural households'*, through investment in crop production, marketing and capacity building of public and private service providers. The Project Development Objective (PDO) and central strategy of IAMDP is to improve household incomes and resilience to climate change of the smallholder producers, rural women and youth in rainfed areas of Sinnar, North, South and West Kordofan states. Project objectives would be met through better access to improved agricultural inputs and services, enhanced business skills, access to rural finance and appropriate marketing support, and better organisation of producer's associations.

14. **Project Components** - The project's development objective will be achieved through the effective implementation of three technical components and a project management component.

15. **Component 1: Enhanced crop productivity and production.** The expected outcome is enhanced smallholder productivity, quality, and production of the main cash crops (sesame, groundnuts and gum Arabic) and sorghum as the main staple crop. The outcome will be achieved by increasing smallholders' access to an improved quality inputs and services, demonstrated to be cost-effective under local conditions, and supplied by private village or locality based service providers. Five main activities will be supported: (i) village-based private service provider and agrodealers capacity building; (ii) innovation and on-farm demonstrations; (iii) engagement with national private sector companies; (iv) gum Arabic production, productivity, and quality support; (iv) climate change resilience building; and (v) promotion of home garden (*jubraka*) cultivation for enhanced nutrition and food security.

16. **Component 2: Market linkage and value addition.** The expected outcome is higher income for the smallholder producers through improved market access, introduction and strengthening of village-based post-harvest crop storage, and introduction of value addition/market linkage

activities to increase the net returns from cash crops. Three main activities will be supported: (i) physical market access (*wadi* crossings); (ii) storage facilities development; and (iii) market linkages and value addition (village processing).

17. **Component 3: Enabling environment.** The expected outcome is improved smallholder access to finance, a higher level of smallholder business competency, and strong, active farmer producer associations with a purpose and activities that go beyond receiving project support. Two main activities will be supported: (i) farmers associations strengthening and business skills development; and (ii) improved access to locally available rural finance. Better access of the rural poor to finance would be achieved through development and strengthening of SCGs and their village level associations, and partnership with PFIs, including banks, microfinance institutions and micro insurance providers but also including value chain finance partners including suppliers of equipment and services and buyers of crops.

18. **Component 4: Project implementation** – The lead project agency will be the Federal Ministry of Agriculture and Forestry. A Project Coordination unit (PCU) will be established in El Obeid in North Kordofan State to provide overall leadership and oversight of implementation activities. The implementation activities will be conducted by the four State Project Implementation Units (SPIU), to be established one in the Sinnar State and one each in North Kordofan, South Kordofan and West Kordofan. The lead PCU would include the following key staff: principal project coordinator, a technical team led by a private sector engagement/marketing specialist, production specialist, and rural finance specialist as well as the finance manager, senior M&E and KM officer, community and gender development officer, procurement officer, and an accountant.

19. In each State SPIU, the key project staff would consist of a State project coordinator, M&E and KM officer, private sector coordinator, marketing coordinator, crop protection specialist, mechanization specialist, community and gender development officer, accountant, and rural finance officer. The required SPIU staff would be recruited on a competitive basis, including but not limited to secondment from relevant government state offices. At the field level, the multidisciplinary locality extension teams (LET) will play a key role in the project implementation at the village level. Each LET consists of the following staff: locality private sector officer/team leader, locality crop protection officer, locality mechanisation officer, locality agroforestry officer, locality marketing officer, locality rural finance and community gender development officer. Most of these teams have been trained by SUSTAIN, SDP and WSRMP on targeting and gender focus, participatory transfer of technology, management of demonstrations, and liaison with private operators but much more will need to be done by IAMDP to deepen their knowledge and to take care of the high levels of staff turnover.

20. In order to take advantage of their experience and for a fast take-off of project implementation, it would be preferable to retain the good performing and competent staff of the above mentioned positions currently in charge of management and implementation of SUSTAIN and SDP. Other required staff would be recruited on a competitive basis, including secondment from relevant government state offices.

21. **Social, Environment and Climate Assessment Procedures (SECAP)** – A project SECAP has been prepared as part of the design. Based on IFAD SECAP criteria, IAMDP has been categorized as category B, namely that it does not present any irreversible impacts on the short or long term or during construction and /or operations.

22. **Project costs and financing** – The total project costs for a period of six years are estimated at US$47.5 million. Project cost would be financed as follows: IFAD DSF grant of US$26 million, Government contribution of US$8.8 million, private sector (including agro dealers, mechanised service providers, banks) contribution of US$10.2 million, and beneficiaries' contribution of US$2.5 million.

23. **Project economic internal rate of return and net present value** – The EIRR on the investments in the IAMDP area over 20 years is estimated at 20.54 percent. The economic analysis suggests that the project is feasible and the EIRR is robust for an increase in cost, reduction of revenues or delays in benefits.

24. **Alignment with IFAD policies and strategies** - IAMDP project is in line with IFAD Strategic Framework 2016-2025, NEN COSOP for Sudan and relevant IFAD policies. The project activities, implementation arrangements and M&E system have been designed in compliance with IFAD Targeting Policy, IFAD policy on gender equality and women's empowerment and in line with the approaches outlined in the Framework for Gender Mainstreaming in IFAD investment operations. The project is designed to be consistent with IFAD's Private Sector Development and Partnership Strategy, its Rural Finance Policy and the associated Decision Tools for Rural Finance. The preliminary environmental and social category is B, considering that the project approach will promote use of climate resilient technologies of particular relevance to Sudan, IAMDP is also fully in line with IFAD's policy on Engagement in Fragile and Conflict-affected States and Situations.

Logical Framework

Results Hierarchy	Indicators						Means of Verification			Assumptions (A) / Risks (R)
	Name	Unit	Multiplier	Baseline	Midterm	End Target	Source	Frequency	Responsi-bility	
Outreach	Estimated corresponding total number of households members (CI 1.b)	Number	Household member	0	78,000	162,000				Macro-economic stability (A) US sanctions lifted (A)
	Number of households reached (CI 1.a)	Number	Household	0	13,000	27,000				
	Number of persons receiving project services promoted or supported by the project (CI 1)	Number	Person	0	26,000	54,000				
	Number of villages receiving project services promoted or supported by the project	Number	New villages	0	24	66				
		Number	Old villages	0	23	63				
Goal: Contribution to food and nutrition security and reduction of poverty in poor rural households	Percentage of women reporting improved quality of their diets (CI 1.2.8)	%	Female	0	30%	60%	▪ Project baseline study, mid-term review and completion report ▪ Specialized thematic studies	Baseline, Mid-term, Completion	PCU M&E unit	Overall political and economic situation remains stable (A)
	Percentage of targeted households with 30% increases in asset ownership index	%	Household	0	40%	80%				Stability of prices in agricultural commodities (A)
Project Development Objective: Enhanced income for smallholder farmers through access to improved agricultural inputs, climate resilient technologies, services, rural finance and marketing outlets	Number of households reporting 20% increase in income	Number	Household	0	11,000	21,600				Macroeconomic conditions remains stable (A) Climate change effects are contained (R)

Results Hierarchy	Indicators						Means of Verification			Assumptions (A) / Risks (R)
	Name	Unit	Multiplier	Baseline	Midterm	End Target	Source	Frequency	Responsi-bility	
Outcome 1: Enhanced smallholder climate resilient productivity and production	Households reporting at least a 25 % increase in production (CI 1.2.4)	%	Household	0	40%	80%	▪ Project baseline study, mid-term review and completion report	Baseline, Mid-term, Completion	PCU M&E unit	Stability of project area is not adversely affected Climate change effects are contained
	Number of households reporting adoption of new/improved inputs, technologies and practices (CI 1.2.2)	Number	Household	0	11,000	21,600				
Output 1.1: Private service provider and agro-dealer capacity built	Number of village service providers and agro-dealers supported by the project to improve their service delivery and business skills	Number	Service provider/ agro-dealer	0	20	60	▪ Project baseline study, mid-term review and completion report ▪ Specialised thematic studies			
Output 1.2: CC resilient On-Farm and Innovation Demonstrations established	Number of persons trained on CC resilient production practices and/or technologies (CI 1.1.4)	Number	Smallholder farmers	0	15,000	27,000	▪ PCU and stakeholder records	Quarterly basis	PCU M&E unit	
Output 1.3: Higher Engagement of local SMEs with National Private Sector Companies	Number of local SMEs (input suppliers, service providers) with business connections to the private sector	Number	SME	0	40	200				
Outcome 2: Higher income for smallholder producers	Percentage of smallholder farmers reporting at least 20% increase in income (Same as PDO indicator)	%	Smallholder farmers	0	40%	80%	▪ Project baseline study, mid-term review and completion report	Baseline, Mid-term, Completion	PCU M&E unit	Stability of prices in agricultural commodities

Results Hierarchy	Indicators						Means of Verification			Assumptions (A) / Risks (R)
	Name	Unit	Multiplier	Baseline	Midterm	End Target	Source	Frequency	Responsi-bility	
Output 2.1: Improved Physical Market Access (*wadi* crossings)	Number of climate resilient wadi crossings constructed	Number	Crossing	0	15	24	▪ PCU and stakeholder records	Monthly basis		
Output 2.2: Increased value added (village processing) and market linkage.	Number of climate resilient processing or storage facilities established or rehabilitated (CI 3.1.4)	Number	Storage/ processing facility	0	30	85				
Outcome 3: Sustainable pro-poor financial and organisational environment established.	Number of producer associations engaged in formal partnerships/contracts with public or private partnerships (CI 2.2.3)	Number	Producer association	0	80	130	▪ Project baseline study, mid-term review and completion report ▪ PFI records	Baseline, Mid-term, Completion Monthly basis	PCU M&E unit PFIs	Macroeconomic conditions remains stable
Output 3.1: Pro-poor financial institutions fully operational in project area.	Number of local service providers taking loans and/or loan insurance	Number	Service provider	0	30	60				
	Number of households taking crop production loans and/or crop insurance (CI 1.2.5)	Number	Household	0	15,000	25,000				
Output 3.2: Farmers associations strengthened	Number of producer's associations established and registered	Number	Producer association	0	80	130				
Output 3.3: Business oriented production and marketing systems established.	Number of smallholder farmers reporting increase in sales	Number	People	0	11,000	21,600				

**Up to 15 indicators including a few optional RIMS indicators. In addition to these, RIMS mandatory indicators must be added. **The distribution of indicators is illustrative ***Intermediate targets for the Goal and Outputs are optional.*

I. Strategic context and rationale

A. Country and rural development context

1. The Sudan's total area is estimated at 1,881,000 km2. The country is endowed with 61 million ha of arable land, of which 17.4 million ha are cultivated, 14 million ha natural pasture, and 21 million ha forests (covering about 11.6 percent of the total area of the country). The livestock population is estimated at 104 million heads.

2. Sudan GNI per capita was estimated at US$1920 for 2016, while inflation rate is still at double digit level (11% in 2017. In addition to the high and persistent inflation rate, the country faces the challenge of continuous weak local currency. Throughout the last five decades, a number of exchange rate policies have been adopted in Sudan; including fixed, floating and dual exchange rate regimes. The main goal of this policy was to reduce the external imbalances through encouraging exports, and attracting remittances of Sudanese nationals working abroad. In late 2016 the Central Bank of Sudan introduced an incentive policy and increased the exchange rate in commercial banks. As a result, the US dollar exchange rate went up in banks to SDG 15.8 in comparison with to the official rate of SDG 6.5.

3. With the loss of oil fields and production to South Sudan in mid-2011, the agriculture sector has regained its role as a major source of growth for the economy of Sudan. Agriculture and livestock are essential to Sudan's economic diversification and contribution to medium-term macro-economic stability. While these sectors presently contribute approximately 35-40 percent of Gross Domestic Product (GDP), they could contribute significantly more with greater investment and better governance. Sudan now recognizes the need for greater attention to agriculture and livestock, as reflected in its Interim Poverty Reduction Strategy Paper (I-PRSP) and the Five-year Program for Economic Reforms approved by its parliament in December 2014 (WB overview, April 2017). Despite the importance of the agriculture sector in the overall economy, rural poverty in Sudan remains high and poverty rates are substantially higher in rural areas, with 57.6% compared to 26.5% in urban areas.

4. Sudan GNI per capita was estimated at US$1920 (World Bank Atlas, 2016). The country remains a highly indebted country that has accumulated sizeable external arrears. At the end of 2015, Sudan's external debt amounted to US$50 billion (61 percent of GDP) in nominal terms, about 84 percent of which was in arrears (WB overview, April 2017). The country is eligible for debt relief under the Highly-Indebted Poor Countries Initiative.

5. Comprehensive US sanctions on Sudan, levied in 1997 and expanded in 2006, were eased in January 2017, allowing for financial and trade transactions between US citizens and entities, and their Sudanese counterparts. However, the order to ease sanctions is under six-month review and could either be rescinded or made permanent.

6. Agricultural Sector. Several reports (IFAD SUSTAIN PDR 2012, IFAD LMRP 2014, FAO Plan of Action 2015-2019, 2015) clearly indicate that agriculture is important to Sudan's economy given that: (i) the two thirds of total population of Sudan (36.2 million) live in rural areas; (ii) the national poverty rate is 47 percent; but 58 percent of the population are rural poor; (iii) 3.9 million people are food insecure (November/December 2014 IPC Report), (iv) agriculture accounts for nearly one-third of the national GDP; and (v) nearly half of the national workforce is engaged in agriculture (i.e. crop, livestock, fisheries and forestry production) and agro processing industries.

7. Challenges to the Agriculture Sector. The strengths and weaknesses of Sudan's agriculture sector reflect the need for a focus on: (i) development of technical and functional capacity for policy and planning; (ii) enhancement of agriculture productivity and production; (iii) increasing public and private sector agricultural research and development; (iv) public and private investment in rural infrastructure, e.g. irrigation systems, slaughterhouses, agro processing

facilities and markets; and (v) expanding disaster risk management to include challenges arising from climate change.

8. Climate change. In Sudan, climate change scenarios[4] were formulated for projected changes in temperatures and precipitations by 2030 and 2060 for the States of North and South Kordofan only. Although these two states are located to the west of Sinnar State, they cover the latitude zone of Sinnar State. This suggests that the temperature and precipitation change are likely to be of similar magnitude in Sinnar and Kordofan and the impacts on the agriculture sector and rural livelihoods similar. The average temperatures are expected to rise significantly relative to the baseline (1961-1990). By 2060, average temperatures are expected to rise from between 1.5oC and 3.1oC above the baseline during August (rainy season), and from between 1.1oC to 2.1oC during January (beginning of dry season). Average rainfall is also expected to reduce by about 6mm per month during the rainy season. The impact of such changes on agriculture is: (i) reduction of the area available for crop production due to a southward shift in moist agro climatic zones; and (ii) decrease in the crop yield between 13 percent and 82 percent for sorghum and between 20 percent and 76 percent for millet, and in the production of the gum Arabic between 25 percent and 30 percent (assuming no mitigation measures)

9. The rainfed sector is typically divided into semi-mechanised farming, traditional crop production and livestock system although there is a trend towards smaller-scale farmers adopting improved inputs and equipment and transitioning from subsistence to commercial production. Depending on rainfall, the rainfed subsectors contributed three-quarters of foreign exchange earnings from agricultural exports.

10. Semi-mechanised rainfed farming is practiced by large farmers and companies with low rent leases granted by the federal government. It is characterised by cheap access to land allowing unlimited horizontal expansion and a low-input/low-output system with limited concern for sustainable land management. Investors plant according to market prices and availability of loans and subsidies. Semi-mechanised rainfed farming cultivates 14 million feddans, predominantly producing commercial sorghum grain and sesame for export. The subsector produces 40 percent of the country's sorghum, 62 percent of sesame and 90 percent of sunflower and short-staple cotton grown in the country.

11. Traditional rainfed farming is practiced by family households with farms ranging from two to 50 hectares in size, farming for income and subsistence. Traditional rainfed farming covers about 18 million feddans, growing about 95 percent of the country's millet, 38 percent of sorghum, 67 percent of groundnut and 38 percent of sesame. The subsector also grows gum Arabic, rosella and melon seeds for export.

12. Productivity in rainfed cropping systems is declining due to land degradation, reduced soil fertility, inappropriate tillage practices, deteriorating seed quality and lack of knowledge on improved management practices. Use of improved seeds, minimum tillage, water harvesting, mechanized planting and improved weed control technologies in pilot projects have clearly demonstrated room for major improvements in crop yields. Other challenges facing rainfed crop production include unpredictability of rainfall that typically allows only 40 to 80 percent of the area planted to be harvested, as well as pests and diseases (including locusts). Although crop failure normally still implies fodder for livestock, there is an urgent need for households to improve their productivity, diversify their sources of income and add value to what they produce. The lack of accessible rural financial services and appropriate extension are also major impediments to adoption of improved systems technologies.

13. Institutional changes relevant to IAMDP. Four important institutional changes have been undertaken. First, the West Kordofan State, which was once dissolved and merged in North and South Kordofan States, has been reinstated to put the number of states in the country back

[4] Source: Ministry of Environment and Physical Development and Higher Council for Environment and Development, Feb 2003, Sudan's First National Communication under the United Nations Framework Convention on Climate Change.

to 18. Second, the National Forestry Administration has been taken out of the Ministry of Natural Resources and attached to the Ministry of Agriculture to form the current Ministry of Agriculture and Forests. Placement of forestry in the Ministry gives it a stronger grip on some important resources management and climate change issues. Three, a new law has been enacted that dissolves the long-time existing Farmers and Pastoralists Unions and putting in place a new setup of Agriculture and Livestock Producers' Organizations. These new Producer Organizations have the potential to provide a more effective means for farmer collaboration and access to improved inputs, services, and finance. Four, the rangelands administration has been shifted from the Ministry of Agriculture to the Ministry of Livestock and Fisheries to become the Ministry of Livestock, Fisheries, and Rangelands, and lately, Ministry of Livestock. This requires strong coordination between the two ministries as well as with the Ministry of Environment.

14. Sudan's National Agriculture Investment Plan (SUDNAIP) is a five-year investment plan which maps the investments needed to achieve the Sudan Comprehensive Africa Agriculture Development Project (CAADP) target of six percent annual growth in Agriculture GDP. The Sudan will pursue this target through allocating a minimum ten percent of its budget to the agricultural sector. SDNAIP objectives are: (i) Promotion of exports of crops and livestock with a view to safeguarding against the risks of collapse of the whole economy as a result of neglect of the agricultural sector and distortions to agricultural incentives; (ii) increasing productivity and efficiency at the production and processing stages; (iii) realization of food security and nutrition; (iv) reducing rural poverty by 50 percent by 2020, generation of job opportunities, especially for youth and women, and increasing per capita income; (v) achievement of a regionally-balanced sector and economic growth in order to encourage settlement in the rural areas; and (iv) development and protection of natural resources to ensure its renewal and sustainability.

15. Food security and nutrition. Food and nutrition security is fragile and undernourishment is widespread in Sudan. The Global Hunger Index (GHI) calculated each year by the International Food Policy Research Institute (IFPRI) rated the food security in Sudan as alarming in 2013 and 2014. Sudan could not be included in the 2015 and 2016 GHI scores because of lack of sufficient data. According to the Sudan Multiple Indicator Cluster Survey (MICS) from 2014 the prevalence of child malnutrition is high in Sudan: 33 percent of under-five children are underweight, 38.2 percent of children under-five years are stunted (too short for their age), and 16.3 percent of children are wasted (too thin for their height). The prevalence of underweight is 23.2 percent in urban area as compared to 37.1 percent in rural areas. There is also a very wide gap in child stunting between rural areas (43 percent) and urban areas (27.1 percent). Very high prevalence of children underweight can be found in the three Darfur states, West Kordofan (38.7 percent) and Kassala state (42 percent). According to FAO Sudan Plan of Action 2015-2019 approximately 2 million children in Sudan are suffering from acute malnutrition, while 500,000 children are severely acutely malnourished. The MICS 2014 survey classified coping strategies that rural households use when they don't have enough food or money to buy food as follows.

16. Land grabbing in project area. Sudan is among the global 'hotspots' for large-scale land acquisitions. According to a 2014 study by the World Bank, Sudan transferred nearly four million hectares of land (6.5% of arable land in the country) to foreign private investors between 2004-2013, more than any other country surveyed. As such, Sudan has established itself as number two in the region, second to Saudi Arabia, in attracting foreign direct investment. There is insufficient information on the impacts that realized land deals have had on the livelihoods of rural communities in project area. Mission field visits did not record any claim of land confiscation without compensation. However, some reports and studies (such as the Implication of Land Grabbing on Pastoral Economy in Sudan by Yasin Elhadary, Hillo Abdelatti, University of Khartoum, 2016) have indicated that the total grabbed land in Sudan is estimated at 2,270,000 ha and concluded "the Unregistered Land Act of 1971, Ministerial Act of 1996 and the Investment Act of 2013, have paved the way for more land grabbing in Sudan. These acts ignored completely the historical right of the local communities over land resources. Lack of

transparency, unfair compensation and limited or absent consultation of the local communities are some characteristics shaping land grabbing in Sudan".

17. South Sudan refugees. According to UNHCR and the Commission of Refugees (COR), over 23,000 South Sudanese refugees arrived in Sudan in April 2017. This brings total new arrivals in 2017 to over 108,000 and the total refugee figure to 375,000 refugees since December 2013. About 41 percent and 49 percent of the refugees live in camps and settlements, respectively. Two states, West and South Kordofan, (out of the four states covered by IAMDP) have received 28,000 refugees since beginning of 2017. According to UNHCR a WFP representative, the North Sudanese communities living in these two states are not directly affected by the influx of refugees as far as agricultural production is concerned. However, efforts to improve health service coverage for refugees and host community members in the two states are ongoing. In particular, as the rainy season is fast approaching and the risk of malaria increasing, UNHCR and health partners are working to ensure refugees receive mosquito nets and scale-up vector control activities at refugee sites. Islamic Relief Worldwide (IRW) rehabilitated 2 water yard engines to improve water access for refugees and local users. In South Kordofan, CIS rehabilitated 10 hand pumps in different areas within Abu Jubaiha town. Their work on communal showers for refugees at Sirajiya is ongoing, and have completed 22 out of 40 planned showers so far. In El Meiram, West Kordofan, Concern Worldwide began the construction of a nutrition distribution centre and operating theatre to bolster nutrition and health service delivery in a key reception area for new refugee arrivals.

B. Rationale

18. IFAD conducted a value chain study on the three most important crops for the traditional rainfed small-scale farming in Sudan: sesame, groundnut, and sorghum (March 2017). In addition IFAD and WB commissioned a study on gum Arabic, as input to the PCR of the IFAD-WB supported Revitalizing the Sudan Gum Arabic Production and Marketing Project (March 2015). The main conclusions of these studies confirmed three aspects: (i) the high comparative advantage of rainfed areas in Sinnar, North, South and West Kordofan in the production of the three field crops and agroforestry production of gum Arabic; (ii) the existence of a well-established national and international market with increased demand for the cash crops and sorghum; and (iii) the importance of these crops for the livelihoods and resilience of the smallholder rainfed farmers, rural women and youth in the project area. Sesame, groundnuts and gum Arabic are the main sources of income as cash crops. Sorghum is a major source of household food security as a staple crop, and is also an important cash crop in surplus years. Millet is an important food security crop in North and West Kordofan, but as per SDP experience, farmers to date do not wish to adopt improved technologies. They see Millet as a hardy crop that will always provide enough grain for food security and they prefer to invest their scarce resources on cash crop or Sorghum. Detailed information about the comparative advantage of these crops in the project area is presented in Appendix 4.

19. The same studies concluded a great wealth of traditional knowledge and skills by smallholder farmers on how to survive based on semi-subsistence cropping and livestock systems, under harsh climactic conditions and a non-supportive enabling environment. But these traditional knowledge and skills are not enough from the technical and business point of view. On the Technical Knowledge, the smallholder farmers have little technical knowledge about improved or proper land preparation, seeds, inputs, planting, weeding, harvesting, and storage. They lack the business skills to make sound decisions about inputs, services, finance, and marketing, directly or through their associations.

20. The two ongoing and about to close SUSTAIN and SDP (and to a lesser extent WSRMP) projects have aimed at improving food security, incomes and resilience to shocks of the smallholder producers in rainfed areas of Sinnar, North, South and West Kordofan. However, these projects were not originally designed with realistic, complete models of commercial

scaling-up, to extensively work through private sector service providers, or develop partnerships with private companies[5]. Only at a later stage of implementation, the SUSTAIN and SDP projects succeeded in testing (albeit at a small scale) the model of private public partnership between the private sector suppliers of inputs (such as certified seeds, fertilizers) and services (such as chisel ploughing, spraying, etc.), the farmers, and the public extension. There have been some encouraging results of scale-up from the SUSTAIN project. The SUSTAIN project has reported commercial scale-up (i.e. farmers paying full commercial prices) of heavy chisel land preparation for 53,627 feddans as of the 2016/7 season. This is quite impressive, but at least 80% of this increase has come from large-scale farmers who have ready access to finance and required services. However, the large-scale farmer scale-up has provided positive impacts. The large-scale farmer scale-up is an important role model for smaller farmers, it has led to positive environmental benefits, and it has led to increase in service provision that can be accessed by smallholders, as many adopting large-scale farmers have become service providers themselves. These piloted initiatives need to be scaled-up by IAMDP at the wide smallholder level. In contrast, SDP has placed greater emphasis on ensuring that well-trained service providers offering affordable services are available to small-scale farmers and consequently has shown much higher adoption rates for improved technologies, but real change has only come in the final year of project implementation and much needs to be done to strengthen implementation models.

21. Despite substantial achievements of SUSTAIN and SDP (see Appendix 3) in demonstrating the importance of appropriate technology for sustainable rained farming, their experience has shown that technology demonstrations are a necessary but not sufficient means of encouraging adoption and scaling-up of improved agronomic inputs and methods. An efficient and smoothly functioning supply chain that can improve delivery inputs and services sustainably and cost effectively is essential.

22. Moreover, improving production and productivity is essential but not sufficient for the sustainable enhancement of the livelihoods of the rural poor. Increased crop productivity and production should be complemented with enhanced market access. The latter is an issue in the project area primarily because of the high costs imposed by the poor condition of roads, and a system of high locality and state taxes as crops move from farm to processors/exporters at state and national level (despite Federal government policy that attempts to curb excessive state taxation). Market demand is not a constraining factor for the main crops. Sesame, groundnuts, gum Arabic, and sorghum all have high demand year-round in village, state, national, and international markets. These markets always clear; however, prices are volatile throughout the year with prices post-harvest, when small-scale farmers need cash urgently, usually at the lowest point. The other key factors for scaling-up are access to sufficient levels of reasonably priced and adequately structured finance; improved farmer business skills, and dynamic farmer organizations. Together, increased productivity, value-addition, market access, financial services, stronger organizations, and business skills training will enable smallholder farmers to move from subsistence farming as a way of life to farming as a business (FAAB).

23. With regards to rural finance, the rainfed areas in Sudan suffer from the wide unavailability of formal loans for supporting agricultural activities. In the SUSTAIN and SDP project areas this gap has hardly narrowed even after these projects developed specific linkages with ABSUMI to finance the crop production needs of the target group farmers. The main reason behind the reluctance of the financial institutions to deliver crop production loans is the risky nature of rainfed agriculture which has contributed to a long history of heavy losses suffered by formal financial institutions.

24. Along the same lines, rural communities in Kordofan and Sinnar are particularly vulnerable to climate change. Their agrarian livelihoods are often beset by damaging floods and droughts

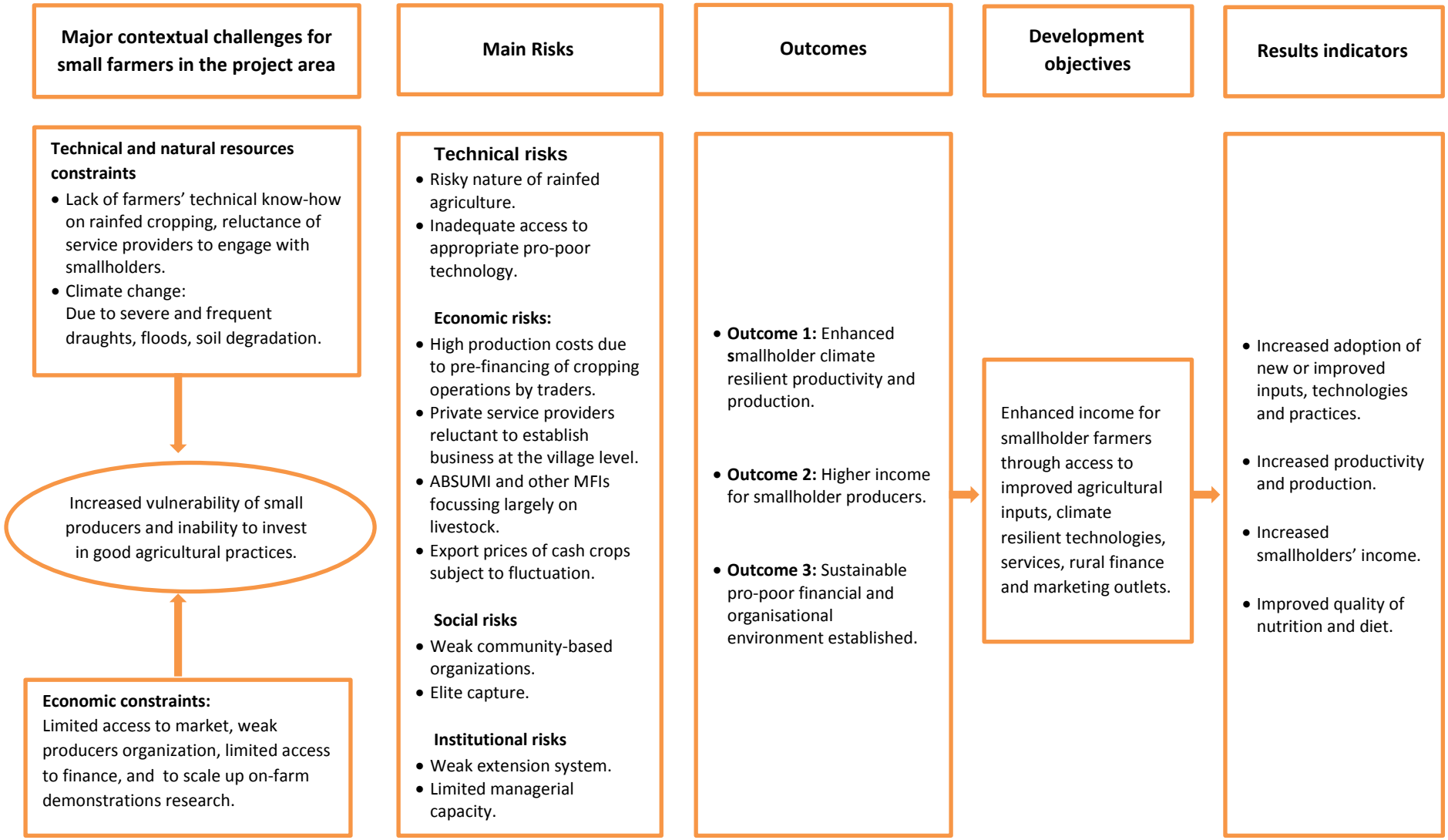
[5] The original SDP did incorporate a plan for partnerships with private seed companies. However, the original design was not feasible, and partnerships were not developed until major changes in partnership design were made after the mid-term review.

that have significant economic implications. Such climate events are expected to increase in both intensity and frequency given a changing climate in the coming decades. Many rural communities in the sub-region already face considerable socioeconomic challenges, and climate hazards, particularly major events, can tip many into extreme poverty. While most rural households have some means of managing climate and other risks through diversified farming practices, social capital networks, and reliance on public assistance, on the whole they are ill-equipped to cope with climate shocks.

25. Building on achievements and lessons learned from implementation of SUSTAIN, SDP and WSRMP, the rationale for IAMDP stems from at least four considerations to areas in need of further improvement: (i) projects support was limited to only 52 percent of reachable poor villages; (ii) the methodology for encouraging adoption of improved agricultural practices have been largely limited to exposure to demonstrations until recently, and initial adoption has been dominated by larger farmers who have the financial means and ready access to required services. However, SDP has shown that when improved technologies and services are attractively priced on a value for money basis, there is considerable demand from small-scale farmers; (iii) the projects focus was more on productivity enhancement and production increase with less emphasis on quality, post-harvest storage and processing, and better marketing; and (iv) rural finance was more oriented towards animal financing when compared to crop operations financing (most of the credit demand by clients was for financing livestock activities due to relatively low risks and high returns in a short period of time. Almost 75 percent ABSUMI's portfolio is currently concentrated on livestock production activities).

26. To this end, the IAMDP would (i) improve quality and coverage of support services to the target group by the investment activities supported by the two on-going projects in current project areas; and (ii) make a much stronger move from demonstration to scaling up to the same and additional geographical areas where other smallholder farmers face similar challenges on low crop productivity, quality, limited access to market and finance, and vulnerability to climate change. IAMDP would rely on the following success factors: (i) building on the experience of previous projects in the area; (ii) involvement of well capacitated communities with adequate organizational structures, working with the already existing extension teams at the locality level; (iii) capacitating and encouraging emerging village-based private sector operators in remote areas; and (iv) building on the project management experience and staff dedication of the PCUs of SUSTAIN and SDP.

Figure 1: Theory of Change



II. Project description

A. Project area and target group

27. IAMDP will be implemented in the four states of Sinnar, North Kordofan, South Kordofan, and West Kordofan. The number of HHs within an average village in Sinnar state is 200-300 with an average of 6-9 HH members per family. Approximately 60 percent of village populations are women, while youth represent around 65 to 70 percent. The average of female-headed households per village is 31. According to the SUSTAIN baseline survey from 2012 about 54 percent HHs in an average village population falls within the category Very Poor and Poor, while 26 percent are Moderately Poor but just barely above the poverty line.

28. In Greater Kordofan, the number of HH within an average village is 232 with an average of 6.2 HH members per family. Almost 52 percent of village population are women, while youth represent around 45 percent. The average of female-headed households per village is 6 percent. It is noted that about 55 percent of the average village population falls within the category Very Poor and Poor and 34 percent are Moderate Poor but just barely above the poverty line.

29. The main source of livelihood among rural populations in project area is traditional rainfed agriculture (crop production, animal husbandry (mainly of small ruminants)) and forest-based activities (mainly gum Arabic). The crop mix that is widely practiced in the project area is a combination of staple crops, mainly sorghum and millet, plus sesame and groundnut as cash crops. Wage labour is a major source of income during the rainy season for the landless. Livestock selling is the main coping mechanism to meet unexpected demands or crop failure.

30. **Poor smallholder farmer households.** The target smallholder farmer HHs live in areas with clay and sandy soils and usually grow food and cash crops appropriate for their conditions in fields located both close and far from their homestead, generally within a radius of 10 km. The women members of the HH have home garden (*jubraka)* land located close to the homestead where, horticulture crops and sorghum are grown for home consumption (including nutrition and food security) and sale of small surpluses. Women also have access to land to plant field crops for home consumption. The main field crops grown are sorghum, millet (on sandier soils), sesame, groundnut. Gum Arabic is harvested primarily from natural stands as well as some areas planted with encouragement of the Forestry National Corporation. Major challenges of smallholder HHs in all fours states include low agricultural productivity due to inadequate agronomical techniques, the limited use of good quality seeds, erratic rainfall, pest infestations, and declining soil fertility not countered with fertilization. In the targeted States, smallholder HHs also face drought and water shortages during the dry season due to the limited supply of water and the high cost of purchasing water when it is available. Furthermore, the lack of adequate access to sufficient productive assets prevents smallholder HHs from making maximum use of the land (draught power/machinery, good quality seeds, fertilizer, and labour). Poor households face food insecurity during about 5-6 months a year. Poor households have low or limited access to extension services and are often poorly organised. HHs usually receive low prices from the sale of their products due the fact that the HHs need to sell their products as quickly as possible after harvest to gain cash and therefore weaken their bargaining power. Lack or limited access to credit together with low levels of savings is a major constraint that prevents HHs from purchasing inputs and accessing hired machinery and labour for expensive and labour intensive farming activities – especially planting, weeding and harvesting. As a result, HHs leave part of their available land uncultivated, and underutilize the land that they do cultivate, and most of their gum Arabic trees untapped. Instead, household members engage in off-farm wage labour, for example gold mining, handicrafts and petty trade, or charcoal making and sale.

31. **Women in agriculture.** In the pastoral and traditional rainfed sector, women provide a remarkable contribution to the household's wellbeing and food security. Women's specific responsibilities include: (i) in settled farming villages women practice farming, both on the HH fields together with their husbands and on the *jubraka* land, generally up to 2 feddans (0.84 ha), where they mainly grow green vegetables, tomatoes, cowpeas, okra, sorghum and maize for both HH consumption and sale; (ii) all HH work, which includes preparing food, collecting fire wood and fetching water; (iii) childcare; (iv) rearing small animals; and (v) petty trade. The varied tasks mean that women generally work longer hours than men. In spite of their responsibilities, women access to smaller plots of land allows them to control cash income coming from petty trade and poultry rearing, but are rarely involved in decisions concerning key productive assets, such as land and livestock sale. Women also have limited decision-making power in the household or within the community. Their empowerment is hindered by a high rate of illiteracy, persisting gender inequalities perpetuated by the customary law, and early marriage. Compared to men, women earn lower incomes, but tend to allocate more of their earnings to buy food items for their HH. Women headed HH are particularly vulnerable.

32. **Rural youth,** particularly unemployed youth, and *young women*. The majority of the young people live in rural areas with no access to basic services or sustainable livelihood opportunities, limited or no employment opportunities, as well as limited access to capacity building or microfinance services that would enable them to establish their own businesses. Conflict in the country has prejudiced the chances of a whole generation of youth for educational and developmental opportunities. Unless this situation changes, the prospects are bleak for village youth in the project areas.

B. Targeting Strategy for the IAMDP

Geographical targeting

33. The IAMDP project area has been determined in close consultation with Government and Project staff from the on-going IFAD supported WSRMP, SDP and the SUSTAIN. Localities and villages have been selected on the following criteria: (i) high poverty levels and sufficient numbers of potential beneficiaries, particularly women and youth; (ii) coverage under the on-going IFAD co-financed projects and potential to capitalize on successful approaches; and (iii) potential for crop production and marketing of groundnuts, sesame, sorghum and gum Arabic. Based on the above-mentioned selection criteria the IAMDP will intervene in 129 villages (66 old and 63 new) including 27,000 households over a period of 6 years (see selection table in Appendix 2). Specific activities for new and old villages are detailed in Appendix 4. The consultations have resulted in the selection of 13 localities, in each state as follows: Sinnar state: Dinder, Dali&Mazmoum, Abu Hujar. North Kordofan: El Rahad, Sheikan, Um Rawaba. West Kordofan: Abu Zabad, El Khowai, Elsunut. South Kordofan: Elgoz, Rashad, Tadamon, Abassiya.

34. **Target Group.** The IAMDP target group is smallholder farmers, with a special focus on engaging rural women and assisting youth to be engaged as service providers, and agents at the village level). In North Kordofan state the IAMDP targets 3,343 rural HHs, of which 671 are women headed HHs. The total number of village population targeted is estimated to be 21,412, of which 50 percent are women and 30 percent are youth. In West Kordofan IAMDP targets 1,428 rural HHs, of which 344 are women-headed. The total number of village population targeted in WK is estimated to be 9,065 of which 50 percent are women and 30 percent are youth. In South Kordofan IAMDP targets 6,026 rural HHs, of which 1,508 are women-headed HHs. The total number of village population targeted in SK is estimated to be 40045 of which 50 percent are women and 30 percent are youth. In Sinnar state IAMDP targets 15,876 rural HHS, of which 2,381 are women headed HHS. The total population in villages targeted by the IAMDP in Sinnar state is estimated to be 82,082. Of these, about 51 percent are women and 60 percent are youth.

35. In all the project interventions, there is a strong focus on women who represent a specific target for IFAD, due to their traditional relevance in agricultural production, their growing social and economic responsibility, and their vulnerable position in societies.

36. **Targeting strategy.** The targeting mechanism for IAMDP will build on the IFAD gained experiences through the SDP, SUSTAIN, and WSRMP in reaching the more vulnerable categories of the rural population in the Sudan. The entry point for the Project will be organized groups of farmer producer organisations, working initially through Village Development Committees, with an emphasis on including women and youth. Females would be targeted through women and rural development dedicated organizations (saving and credit groups, ABSUMI, etc.) as these institutions facilitate independent access to land, farm equipment, credit and training for their members.

37. **Geographical targeting: Selection of the poorest villages.** This process will ensure that 129 among the poorer villages are selected by means of a structured and comprehensive socio-economic survey covering all the villages in the project areas. The villages will be rated against the following indicators: (i) percentage of poor households in the village; (ii) number of women headed households; (iii) reliance on rainfed farming and herding as the main source of livelihoods; and (iv) quality of the agricultural land and degree of erosion as manifested in the infestation with noxious weeds.

38. **Self-targeting measures.** The self-targeting of communities will involve in-depth discussion with the community members and their traditional authorities within the selected villages in order to identify the poorest members in the village. This selection will be triangulated by the village authorities and other entities active at village level such as existing Village Development structures, the Zakat Chamber, Women's Union, Farmers Organisations, etc. Main criteria for beneficiary selection are: farm size (smallholders of less than 15 feddans), potential for higher production, willingness to adopt new technologies, willingness to establish farmer producers associations.

39. The targeting and self-targeting of youth, women, and rural poor and small-scale farmers will be achieved though: (i) promotion of activities with a relatively low barrier of entry which are not attractive to large-scale agricultural enterprises; and (ii) facilitation, empowerment and capacity-building measures to encourage active participation of the target group and their organisation, in such a way to minimise elite capture. These measures include: (i) information and mobilisation campaigns through producer organisations); (ii) group-based approaches and schemes to lower entry thresholds for the rural poor; (iii) linkages with the microfinance sector to leverage their investment capacity; and (iv) institutional strengthening of groups and management training of their members, including training on the adoption of Gender Action Learning System (GALS). The GALS aims at increasing awareness of gender roles in the households and communities by improving their capacity to negotiate their needs and interests and find innovative, gender-equitable solutions in livelihoods planning and value chain development. The IAMDP will pilot the GALS methodology in Sudan along with other IFAD projects, and the results will be documented and shared within the Sudan portfolio and other NEN countries.

40. **Empowerment and capacity-building measures.** Rural community institution building activities would include: (i) mobilisation and strengthening of farmer producer organizations, with measures taken to include women and youth, amongst others, to enable them to negotiate win-win deals with off-takers; (ii) sensitisation of leaders at grassroots levels in understanding and overcoming gender and youth issues that hinder development; (iii) functional literacy training for women; (iv) sensitisation of youth on employment and business opportunities in the agriculture sector, sharing of experience among youth, and organisation of exchange visits using a peer-to-peer approach; (v) application of minimum quotas for women (50 percent target) and youth (15 percent) to serve on project supported producer organizations; and (vi) facilitate access to gas cookers as labour saving devices for women through rural finance.

41. **Gender and youth strategy.** The gender mainstreaming strategy of the project aims to enable women to access extension services as well as participate in relevant training, demonstration and scaling up activities. The gender mainstreaming strategy rests on the following: (i) tailoring the technical packages to women's needs: this justifies the inclusion of the *jubraka*; (ii) introducing post-harvest handling techniques that will enable women to extend the shelf-life, of food products as well as sell these at the market during the off season thus increasing the income generated from such activities; (iii) introducing gas stoves to save on women's labour and conserve trees. The use of gas stoves will also save women's time as they will not be going to fetch fuelwood; (iv) a quota system will be established whereby the Project will support the inclusion of youth in rural enterprise development. In addition, minimum quotas of 50 percent women and 15 percent youth will be applied to all Project-related decision-making bodies and committees to protect the interests of those target groups; (v) gender training will be delivered to the village development committees, to the extension teams, and the project management office; and (vi) the project M&E system will monitor the project outreach to women and youth and results on their, livelihoods, and access to resources. In this regard, appropriate sex and age disaggregated data indicators were included in the project log frame, and (7) promotion of GALS at implementation.

C. Development objective and impact indicators

42. **Goal.** The goal of the Project is to enhance food security and reduce poverty in poor rural households, through investment in climate change resilient rainfed crop production, marketing and capacity building of CBOs.

43. **Objectives.** The project aims at improving incomes and resilience to climate change of the smallholder farmers, rural women and youth in rainfed areas of Sinnar, North, South and West Kordofan states. Project objectives would be met through better access to improved agricultural inputs, services, and climate resilient technologies, rural finance and appropriate marketing support, and better organisation of the producers associations.

D. Outcomes/Components

Outcomes

44. Five development **outcomes** are expected:

(a) An economically viable crop production input and service system that meets smallholder farmers' and market expectations and demands is developed and operational.

(b) A rainfed production system sustainably resilient to climate change.

(c) Improved market access and prices for smallholder produce.

(d) Enhanced access to rural finance for smallholder producers and value chain actors, rural women and youth.

(e) Enhanced organizational capacity and enterprise skills of smallholder farmer's associations, including rural women producers.

Components

45. The project will have three inter-linked components and a project management component: (i) enhanced crop productivity and production; (ii) market linkage and value addition; (iii) enabling environment; and (iv) project management.

Component 1: Enhanced productivity and production

46. **Expected outcome.** The expected *outcome* of this component is enhanced smallholder productivity and production, through activities addressing smallholder farming of the three main cash and staple field crops of the region; sorghum, sesame, and groundnuts; and gum Arabic agroforestry activities. The outcome will be achieved by increasing smallholders' access to an

improved package of inputs and services, demonstrated to be cost-effective under local conditions, and supplied by village or locality based input and service providers.

Description of activities

47. Activities will build the capability of the private sector at the village, state, and national levels to develop and sustain cost-effective service delivery for smallholders, through support to government to improve the enabling environment for private sector service delivery and by providing training to service providers. The project will encourage government to restrict free or subsidized service delivery for demonstrations or for targeting poor subsistence farmers, and to use private sector service providers for this to ensure that the public sector is not crowding out the private sector.

Activity 1.1: Private sector service provider and agrodealers capacity building

48. Village and locality mechanized and/or spraying service providers, agro-dealers, and mechanics/village blacksmiths will be supported so that they will become (i) suppliers of high quality, cost-effective inputs, tools, and services on a commercial and sustainable basis that offer a clear value for money proposition to smallholders; and (ii) trusted advisors to smallholder farmers that complements and supports the public sector extension services as well as their own businesses.

Sub-activity 1.1.1: Agrodealer capacity building

49. **Agrodealer assessment.** Agrodealers in target localities will be assessed for their technical understanding of the use of inputs, store infrastructure, types of inputs stocked and supplied, relationships with national input supply companies and local government. Agrodealer assessments done for SDP and SUSTAIN will be updated and expanded.

50. **Agrodealer training.** Based on the agrodealer assessment, training and support activities will be developed that are tailored to the agro-economic conditions and needs of each locality. Agrodealers will receive training on (i) **technical issues** in the safe and effective use, storage, and handling of seeds, seed dressing, herbicides, pesticides, fertilizers, and other agricultural inputs[6]; and (ii) **business training** covering topics such as: financial management, marketing (including in-store merchandising, promotions, demonstration, advising customers), recordkeeping, management information systems, and supplier relationships.

51. **Agrodealer association formation** at the state and possibly national will be supported possibly in partnership and under the umbrella of the Sudan Agrochemical Association (SAGA). The Agrodealer Association will develop a Code of Conduct that will cover the key aspects of safe storage and marketing of seeds and chemicals. The association will represent the interests of the agrodealers in their dealings with government and suppliers. Many existing agrodealers may not qualify for full inclusion in an Agrodealer Association because of not meeting current regulatory requirements (e.g. university degree), and in consultations with SAGA, some means of including and upgrading these agrodealers in an Agrodealer Association will be incorporated (perhaps as associate members).

Sub-activity 1.1.2: Mechanized service provider (MSP) capacity building

52. **MSP assessment.** Tractor owners in the project localities will be identified, geo-referenced, and assessed, covering key issues such as owner/operator qualifications, years in business, make and types of equipment used, service provided and demand, existing relationships with

[6] All pesticides (including herbicides) must be approved by the Pesticides Council of Sudan, an inter-ministerial body with private sector participation. IAMDP will only promote herbicides and other agrochemicals that have been approved by the Pesticides Council, and only for the uses for which the chemicals have been approved. IAMDP will actively promote the use of neem and other biological pest control measures where cost-effective or otherwise required for market reasons (e.g. pursuing certified organic production).

equipment suppliers etc. Based on this assessment, tractor owners/operators will be selected as candidates for MSP training, with input from the local communities.[7]

53. **MSP training.** The project will provide training on: (i) **technical training** on tractor maintenance, equipment calibration, maintenance, and proper use of implements; and (ii) **business training** covering topics such as negotiation with suppliers, pricing and market services, and financial management. Active MSPs that have been previously trained by SUSTAIN and SDP will have access to refresher and advanced training as required.

Sub-activity 1.1.3: Spray services provider (SSP) capacity building

54. **SSP assessment.** An initial assessment of spray service providers (SSPs, referred to as IPMs by SUSTAIN and WSRMP) will be undertaken in localities and villages where IAMDP will be active, according to a phased schedule. Surveys already undertaken by SDP will be updated. This may be done in collaboration with one or more chemical and equipment suppliers who have expressed interest in collaboration.

55. **SSP training.** Each project village team (LET and VDC) will then select 2-4 youth for SSP training, based on their aptitude, prior experience, and motivation. The project will provide SSP training on: (i) **technical training** and certification on the safe and effective usage of crop protection chemicals, including: proper pest scouting techniques, selection of the proper chemical and dosage for the job, mixing chemicals and calibrating sprayers, optimal spraying conditions, and proper pre-harvest intervals; and (ii) **business skills training,** pricing and market services, record-keeping, linking with agrodealers, access to finance. Active existing SSPs will be eligible for refresher and advanced training as required.

Sub-activity 1.1.4: Village blacksmith and mechanic capacity building

56. **Village Mechanic and blacksmith assessment.** An initial assessment and geo-referencing of village blacksmiths in the localities where IAMDP will be active. This may be done in conjunction with one or more equipment suppliers who have expressed interest in collaboration and greater linkages with mechanics and blacksmiths. The assessment will cover capabilities in servicing and maintaining tractors, sprayers, and implements as well as fabrication of rudimentary spare parts and simple hand tools (e.g. the *sonki* used for gum Arabic tapping, the harvester for gum Arabic harvesting). The assessment will cover years in business, type and condition of machinery, financial strength, and motivation in participation in the project.

57. **Village mechanic and blacksmith training.** One or more mechanics and blacksmiths in each village will be selected, based on the assessment and with community input, for technical and business training and linkage with equipment suppliers.

Activity 1.2: On farm and Innovation Demonstrations

58. **Sub-activity 1.2.1: Innovation demonstrations.** Innovation demonstrations will be held in at least one location in each project locality, to demonstrate new or improved seed varieties, agro-chemicals, equipment for mechanisation from land preparation through to and including post-harvest primary processing, and methods of application[8] for the three field crops. The Innovation Demonstrations will showcase crop varieties, crop protection chemicals, fertilization, and equipment that are not in common use in the locality, but which are deemed by project

[7] All mechanised services promoted by IAMDP will follow appropriate guidelines set by the Federal or State governments. For example, the use of heavy tractors is not permitted in the more fragile sandy soils found predominantly in West and North Kordofan, and IAMDP will follow SDP and WSRMP promote lighter tractors as well as animal traction in these areas coupled with the use of the light chisel for land preparation. In the heavier clay soils, predominately in South Kordofan and Sinnar states, IAMDP will follow SP and SUSTAIN and continue to promote the use of heavy chisel for land preparation which greatly increases soil permeability, resulting in greater moisture retention in soil and less run-off and erosion. Finally, while mechanized operations usually require the removal of trees from fields, farmers will be required and incentivized to plant gum Arabic (or other appropriate species) for shelter belts with the net result that trees planted will far exceed trees removed.

[8] In all cases, the technologies demonstrated in the on-farm or innovation demonstrations, will have received approval when required, from the appropriate authority, e.g. the Federal Seed Agency for seeds of new crop varieties, and the National Pesticides Council for agrochemicals.

specialists, private companies, and ARC to have high potential for use by small-scale farmers in rainfed areas. Technologies judged as most appropriate by farmers will be incorporated into the on-farm demonstrations in the following season. The use of gum Arabic for shelter belts will be encouraged, especially in areas where mechanization will require the removal of trees from fields.

59. The Innovation Demonstrations for the field crops will be financed and managed in partnership with the participating private companies. The participating private companies will commit to ensure that any technologies demonstrated will be available for sale by local agrodealers or provided by local service providers in the following season.

60. Project support for the Innovation Demonstrations will be provided by the project for three years with an increasing level of management and financial responsibility from the private companies (and possibly, with in-kind contributions from local service providers). The guideline for project / private cost sharing split is: PY1 - 75 percent/25 percent, PY2- 50 percent / 50 percent, PY3 - 25 percent/75 percent. However, the actual level of cost sharing will be subject to negotiation, as it will vary depending on location of the demonstration, type of technology demonstrated, etc.

61. **Sub-activity 1.2.2: On-farm field crop demonstrations** at the village level will be on proven technologies that are appropriate for the locality and be hosted on farmer-managed fields. The farmers will select technologies that they have seen in the Innovation Demonstrations, and will share in the cost of the on-farm demonstrations with a target 33% farmer/67% project split (e.g. 1 feddan financed by the farmers and 2 feddans financed by the project). In the experience of SDP and SUSTAIN, demonstrations of technologies selected by the farmers, and managed and cost-shared by the farmers, on their own fields, are more likely to lead to adoption and scale-up. The on-farm demonstration farmers will have full access to the crops produced. The on-farm demonstration farmers will be encouraged to plant a minimum 10% of their land to shelter belts using gum Arabic species where and when appropriate, or other species such as Moringa oleifara.

Activity 1.3: Engagement with national private sector companies

62. Project support will accelerate, deepen, and expand private sector engagement with smallholder farmers, both directly and indirectly. Specifically, private sector companies will be encouraged to: (i) provide training, technical and financial support to agrodealers, MSPs, SSPs, and village mechanics/blacksmiths serving SHFs, as part of their ongoing business relationship; and (ii) develop and market new inputs, tools, equipment and services appropriate for SHFs that are used or sold by the service providers.

63. **Sub-activity 1.3.1: Information sharing and technical assistance/training.** As noted earlier in the lessons learned section, private companies are willing to invest in developing new products and supplying smallholder farmers on a commercial basis, provided they are convinced that there is real business potential. To accelerate this learning process the project will undertake the following.

64. **Information sharing.** The project will develop and share information on the market potential to the private sector in the form of concise reports, which will be updated regularly. Most of the information in the reports will be collected in the course of project implementation, but will need to be packaged in a manner appropriate for private sector decision making.

65. **Technical assistance and training.** Private sector companies will be trained on modern methods of marketing and distribution of goods and services designed for the small-scale farmer. For example, developing and using inventory or distributor management software systems. There will be 50%/50% cost-sharing for technical assistance provided to individual companies.

66. **Sub-activity 1.3.2: The Innovation Scale-up Challenge Grant Facility (ISCGF)** is based on the experiences that the SDP and SUSTAIN project have had working with the private sector. The degree and speed of private investment and participation in smallholder agriculture could be greatly accelerated if there is seed funding provided by the project for risker ventures that would be matched by the private sector. The ISCGF will leverage private sector interest and resources and will be based on successful models identified by a recent review of the experience of challenge grant funds.[9] The ISCGF will support private sector proposals that have a transformative impact on smallholder farmer access to inputs, tools, equipment and services, or enhanced linkages to markets (covered by Component 2: Market Access). Safeguards against the risk of elite capture will be incorporated during the proposal review process, and incorporated in the grant agreements. Cost sharing from the private sector will be at a level appropriate to the risk of the activity proposed, but in all cases the private sector will provide at least 25 percent of funding. Proposals that have higher level of private sector matching would have priority.

67. The ISMGF will provide successful applicants with a one-off, limited duration grants to stimulate innovation, research and development, and implementation of new marketing approaches. ISGMF-funded activities will be selected through an open, publicized, and competitive process. The details are presented in Appendix 4.

Activity 1.4: Gum Arabic support

68. The IAMDP gum Arabic activity will build on the accomplishments and draw from the lessons learned from the completed IFAD/World Bank GAPMP and the ongoing AFD-financed RSGPMP summarized earlier. The key findings of GAPMP and RSGPMP are: (i) higher farm gate prices can be received by producers through measures to improve quality and better market access; (ii) pre-financing of tapping operations allow greater productivity and production and higher revenues; and (iii) when producer incomes are high there is a strong incentive to protect and expand planting of gum Arabic trees, with a positive impact on the environment and climate change. RSGPMP will likely close before the start of IAMDP, however the project will monitor closely and collaborate where possible with a proposed gum Arabic support project under development by FAO for seven states in the gum belt (the Darfur and Kordofan states, and Sinnar state) that will be submitted for GCF funding late in 2017 or in 2018, and possibly effective in 2019. Component 1 Activities for gum Arabic will focus on production, productivity, and quality in the project localities where gum Arabic production is or could be an important contributor to household incomes.

69. **Sub-activity 1.4.1: Improved potential of the gum Arabic resource base.** Support will be given to Forest National Corporation (FNC), the Institute for Gum Arabic and Desertification Research Studies (IGADRS), and the private sector to identify and multiply improved landraces of gum Arabic (both the *Acacia senegalensis* producing the premium *hashab* gum, and *Acacia seyal,* producing the less expensive *talha* gum will be covered). Improved landraces may have more or higher quality gum production, may be more climate resilient, may mature more quickly, etc. In all cases consultations will be made with private sector exporters and if possible importers as to quality requirements. The seeds and seedlings of improved landraces will be made available to state level nurseries of FNC, as well as to community and individual nurseries. Other research with practical impacts on gum Arabic productivity (e.g. agronomic techniques) will be sponsored based on requests from FNC, IGARDS, or the private sector.

70. **Sub-activity 1.4.2: Technical support for community and farmer based nurseries** will be provided. Community-based nurseries may be managed by Gum Arabic Production

[9] For a review of challenge funds and recommended best practices, see the following: 1) Pompa, Claudia "Understanding Challenge Funds", ODI, October 2013 (found at http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9086.pdf; 2) Brain, A, N Gulrajani and J Mitchell: "Meeting the Challenge: How Can Enterprise Challenge Funds be made to work better", UKAID, April 2014; and 3) Moeller, O. and Akerbak, J. "Swedish experiences of challenge funds: Case of Innovations Against Poverty", GREAT Insights, Vol. 3, Issue 6, June 2014.

Associations (GAPAs) or an independent income generating opportunities for women or youth supplying seedlings for producers as local circumstances dictate. This will also include support to rehabilitating the gum nurseries at FNC state level, ensuring that they are providing the best genetic material available.

71. **Sub-activity 1.4.3: Gum Arabic Innovation Demonstrations.** At least one Gum Arabic Innovation Demonstration for gum Arabic similar to the field crops will be held in each project locality, either on private or FNC lands at easy to reach localities. Gum Arabic Production Associations will be trained in improved agronomy, tapping (e.g. use of the *sonki* developed by ARC), harvesting (e.g. use of the new harvester developed by IGADRS), grading, and storage techniques to maximize the productivity and quality of gum Arabic production, grading, and storage. The gum Arabic Innovation Demonstrations may be financed and managed in partnership with private sector partners who will be supporting activities to increase the quantity and quality of gum Arabic produced (and whom will guarantee purchase of higher quality gum at a premium to auction levels, in activities described in Component 2). Separate courses may be developed for independent tappers or sharecroppers as appropriate for the production systems in the localities (these are independent gum Arabic service providers paid either a daily wage or provided a share in the harvest).[10]

72. **Sub-Activity 1.4.4: Enhanced productivity and improved quality of gum Arabic.** Gum Arabic Production Associations will be trained in modern tapping and primary grading techniques to maximize the productivity and quality of gum Arabic production. Training will be done in partnership with private sector gum Arabic processors and exporters, several of whom have expressed an interest in supporting activities to increase the quantity and quality of gum Arabic produced in Sudan (see Component 2).

Activity 1.5: Climate change resilience building

73. The project climate risk profile was successfully raised from Medium to High after consulting with the national environmental authority in Sudan and after field proofing the H status. Consequently, it is necessary to take proactive steps to face the threats of CC in the project's areas, namely fragility and vulnerabilities. The objective of this activity is to enhance resilience of the target group and their eco systems to CC. It will also clarify the following: (i) who is at risk of what (analyzing vulnerabilities); and (ii) who is responsible and for what (institutional assessment); and define priorities (coherent and coordinated adaptation action).

74. In addition to project support on the promotion of "good agricultural practices" through involvement of the Locality Extension Teams and private service providers in the promotion of environment friendly mechanised operations for on farm CC mitigation (chisel ploughing reducing water runoff, harrowing, weeding), drought tolerant crop varieties, IPM, water conservation, gum Arabic on-farm shelter belts and rehabilitation/afforestation) at village level, the project would provide support in building capacity of policy and decision-makers and implementers from relevant government institutions (e.g. Ministry of Agriculture, Ministry of Environment, ARC, etc.) through tailored training on: (i) current vulnerability in agriculture; (ii) recommended revisions to current policies and institutions to integrate adaptation to climate change; and (iii) the standardized approach to safeguards and climate risk management. In addition, the project would provide support to analyze and synthetize existing strategies, policies, programs, reports etc. in climate change adaptation and actualize them by bridging the gaps in developing vulnerability assessment reports for the four States (North Kordofan, South Kordofan, West Kordofan and Sinnar).

Activity 1.6: Support to home garden (*jubraka*) cultivation

75. The project will support *jubraka* demonstrations in the new villages and scaling up in the old and new villages for improving women home gardens. This will be the entry point for household

[10] The costs of introducing new gum Arabic technologies are minimal; e.g., 30 SDG for a *sonki* tapping tool. Therefore, there does not appear to be a need for activities parallel to the on-farm demonstrations for the field crops.

nutrition and will supplement household incomes. Other entry points would include: capacity building on good agricultural practices; gender and climate mainstreaming, post-harvest handling techniques; time and energy saving stoves, and production and productivity of nutrient rich food crops. In order to further contribute to enhancing nutrition at the household level, the project would be promoting *jubraka* cultivation through chiselling, improved vegetable seeds, plastic sheet for lining of small irrigation pits, experimentation with simple micro-irrigation drip systems, and technical and nutrition-sensitisation training. This home based production increase would help the households in securing all the home food needs of dried okra and tomatoes, and sizeable contribution to neighbours and selling the surplus as well as the cash crops like groundnut in the local markets. The average *jubraka* size will be 0.5 feddan but the size will be determined by the participating women and technical factors (such as rainfall). A total of 150 women in the new villages and 10,000 women in the old and new villages would benefit from this activity through demonstrations and scaling up, respectively.

76. *Jubraka* scaling up in the old villages would take place largely through women training and access to rural finance, and assistance in linkage to improved markets (such as marketing dried okra in peak price periods immediately before Ramadan). The purpose of the loans will be to enhance production and income from homestead farming. Women interested in these loans can access financing for activities that enhance homestead production such as land preparation using the improved mechanised services promoted by the project, fencing equipment, digital excavation and lining. The project will specially promote the access to these loans for the excavation of ditches that can lead to supplementary irrigation for early maturing vegetables resulting in additional income and timely repayment.

Implementation arrangement for Component 1

77. Component 1 will be managed by the private sector coordinator within the PCU, who together with the production specialist will supervise, guide, and troubleshoot problems for the SPIU technical specialists. The SPIU team will be responsible for state implementation of Component 1 working through the SPIU technical staff, supported by local extension officers at the locality level. Many of these extension team members have been trained by SUSTAIN, SDP and WSRMP on targeting and gender focus, participatory transfer of technology, management of demonstrations facilities, and liaison with private sector service providers and financial institutions. They are organized into five brigades; each brigade is composed of a multi-disciplinary extension team as indicated in Section on project management and staffing. Each team will be responsible for a group of 20 villages. It will have a team leader who is responsible for the smooth operation of the team. Each extension agent will be responsible for the implementation of a monthly programme and the preparation and submission of monthly progress reports. Extension team leaders will prepare a consolidated monthly report. They will continue applying their current modus operandi introduced by SUSTAIN, SDP and WSRMP. A monthly inter and intra team coordination meeting will be organized at the SPIU level. Monthly meetings at the SPIU level will be chaired by the M&E officer with the participation of the locality extension teams. These meetings should discuss the progress made, difficulties encountered and remedies for addressing emerging problems. Detailed project staffing is presented under Section III.B.

Sequencing of activities

78. **New Villages.** For new villages that have had little or no exposure to SDP or SUSTAIN activities, project activities will be implemented as follows:

    (a) **Year 1 - Mobilization.** Farmers, rural women and youth are provided technical and business training. They visit the Innovation Demonstrations in the locality, and the On-Farm demonstrations in the nearest village. SSP and MSP candidates are selected and begin training. Early-adopter farmers are selected and with LET support choose technologies for demonstrations. Gum Arabic quality and productivity training begins.

(b) Year 2 onwards. Productivity focus. On-farm field crop and gum Arabic demonstrations are introduced based on technologies, systems, and tools selected by the farmers after their participation in Mobilization phase activities.

(c) Y**ear 3 onwards - Market access focus (see Component 2)**

79. **Old villages.** For old villages that have had substantial exposure to SDP or SUSTAIN, project activities will be implemented as shown below:

(a) Year One onwards - Productivity focus-consolidation and scaling up. For the SDP villages, refresher training for the MSPs, SSPs, and Agrodealers. For SUSTAIN villages, refresher training for the MSPs, and identification and training of SSPs and agrodealers. On-farm demonstrations.

(b) Ye**ar Two onwards - Market access focus** (described in Component 2).

Private sector service provider capacity building

80. **Business skills training.** Training of trainers (ToT) and training materials for business skills for the service providers will be developed by an international specialist with an understanding of conditions in Sudan, supported by a national FAAB specialist, using local private sector input wherever possible.

81. **Technical training** for the service providers will be provided as follows:

(a) **Spray service providers.** SSP technical training and certification programme will be designed and implemented by SAGA[11] following IPM principles, supervised by the PCU Production specialist. SAGA will work closely with the federal Pesticides Council and state level crop protection departments to ensure their buy-in and support and that all materials support the laws and regulations concerning safe handling of agrochemicals. The SAGA ToT will be delivered to master trainers drawn from individual private sector companies (members of SAGA) and from the state crop protection specialists. These master trainers will provide training of the selected village SSPs (and agrodealers, as described below).

(b) **Mechanized service providers.** MSP technical training programme and materials, and delivery of training, will be done by the PCU Production Specialist with the support of national mechanization specialists as required. All MSPs trained by the project will have access to a suitable tractor, as this is a condition of their participation in the training. Private sector equipment suppliers will be actively encouraged to participate/fund this training.

(c) **Agrodealers.** Agrodealer technical ToT and training on the safe and effective handling of agrochemicals will be developed by SAGA using the process described above for the SSPs.

(d) **Village mechanics/blacksmiths.** ToT and training materials will be developed by a national consultant for use by the LET mechanization specialists.

82. **On Farm and Innovation Demonstrations.** The production specialist will have the lead responsibility for managing the design, organization, and management of the on-farm and innovation demonstration activities who will work through state level implementation units and the LETs.

83. **Innovation Demonstrations at the locality.** In partnership with the private sector companies, IAMDP will develop one or more Innovation Demonstration plots in each project locality. The Innovation Demonstration sites will be jointly selected by the project and the private companies, and will be located in areas that are easily accessed by other farmers in the locality. The production specialists at the PCU and SPIU level will be responsible for overall design of the Innovation Demonstrations, and will liaise with the PSCs and ARC. The design of the

[11] SAGA has a world-wide program supporting safe and effective use of agrochemicals through the training and certification of SSPs. SAGA provided the master trainer for the SDP SSP ToT in 2016.

Innovation Demonstration sites will be undertaken by state level SPIUs with on the ground support from the LETs. Project trained agrodealers, MSPs and SSPs will be competitively selected to provide the inputs and mechanization and crop protection services. The Innovation Demonstration plots will be overseen on a regular basis by volunteer lead farmers, who will be allowed to keep the produce from the fields in exchange for their time. The project will share the costs of the Innovation Demonstration with private sector partners on a declining basis for three years, following the cost sharing guidelines, and based on MOUs which will be individually negotiated with each company.

84. **On-farm demonstrations in project villages.** During the mobilization year, the local extension specialists will review the possible agronomic package options being demonstrated in the Innovation Demonstrations with the farmers, for selection for the on-farm demonstrations in the following Productivity Focus year. Up to 20 early adopter farmers in each village that are willing to cost-share will be selected for the on-farm demonstrations. The early adopter farmers will base their decisions on technology packages to be demonstrated on the LET training sessions, organized visits to other village on-farm demonstrations, to the innovation demonstration in their locality, and when possible to villages that are already in the process of scale-up.

Engagement with national private sector companies

85. **Information sharing.** The private sector specialist, with support from the four technical specialists, will ensure the development and distribution of the assessments and studies of the information sharing sub-activity.

86. **Innovation Scaling up Challenge Grant Facility (ISCGF).** The ISCGF operations manual will be developed by an international specialist with experience in challenge funds, together with national specialists. The following is a brief summary of the main points to be included in the ISCGF manual that will be reviewed by IFAD:

(a) The IAMDP PCU will manage the day to day activities of the ISMGF, through the private sector specialist.

(b) The PCU will take steps to publicize the ISMGF to encourage relevant proposals from the widest possible base of potential promoters.

(c) Membership of the ISMGF Selection Committee will include the Federal Ministry of Agriculture and Ministry of Finance, participating State Ministries of Agriculture, and representatives of producers, private sector companies and civil society.

(d) The ISMGF Selection Committee will review proposals against the following criteria:

- **productivity and production impacts (**degree to which smallholder productivity and production will increase);
- **innovativeness (**degree in which the activity to Sudan, to the state, to smallholder farmers);
- degree of matching contribution by the private sector and farmers (the higher the better);
- **additionality** (degree to which the grant accelerates, deepens, and broadens what the private sector planned to do without the grant);
- **scalability** (degree to which positive impacts to continue to grow as a result of successful implementation; and
- **systemic impacts (**degree to which the grant will have a positive impact on systems and the environment, beyond the company and direct smallholder beneficiaries. Examples are positive environmental impacts or reforms in marketing policy.

87. If the ISCGF funding is disbursing rapidly with good results, and there is continued demand through high quality proposals of scaling up activities, the IAMDP project management and IFAD may pursue co-financing arrangements with from other donors or financial institutions.

Gum Arabic production, productivity and quality support

88. **Improved Potential of the gum Arabic resource base.** The PCU Agronomy Expert will supervise this component, working through the State Agronomy Specialist and the LET agroforestry officers to ensure that the improved *A. senegalensis* and *A. seyal* seeds/seedlings are made available to community and individual nurseries.

89. **Establishment of community and individual nurseries.** Under the guidance of the PCU and SPIU agronomists, the LET Agro-forestry Officer will work with GAPAs and individual producers who plan to upgrade/replace their trees with improved landraces. The LET credit officer will explore the business potential for woman or youth run nurseries.

90. **Gum Arabic Innovation Demonstrations**. The Gum Arabic Innovation Demonstration sites will be selected by the SPIU agronomists, in consultation with stakeholders. TOT and training materials in improved gum Arabic agronomy, tapping, grading, storing developed by the World Bank/IFAD and AFD projects, FNC, and other sources will be updated as required by a national consultant in consultation with IGADRS and the private sector. The PCU private sector expert, SPIU private sector specialists will negotiate MOUs with private sector gum Arabic buyers to assist with the development of training materials, TOT of LET officers, etc. Training of GAPAs will be done by the LETs and FNC extension agents with support as required by private sector partners.

91. **Climate change resilience building.** The project will have a long time CC/Climate Risk consultant. The trainings and demonstrations of climate change adaptation initiatives targeted at vulnerable groups will be conducted by experts specialized in adaptation. They would also be involved in coaching staff from Ministry of Environment, Ministry of Agriculture and the Agriculture Research Center (ARC) on using climate monitoring equipment and calibration, use of multiple sources of climate data for developing of climate change scenarios, impact scenarios and modelling.

92. **Support to home garden (*jubraka*) cultivation.** The LET would be responsible for demonstration of *jubraka* at rural women households. *Jubraka* scaling up will take place in all project area with LET agents and credit officers at the Locality level being in charge of training and facilitation of access to rural financing.

Component 2: Market linkage and value addition

93. **Expected Outcome.** The expected outcome of this component is higher income for the smallholder producers through improved market access, introduction and strengthening of village-based crop storage, and introduction of market linkage/value addition activities to increase the net returns from the crops grown and gum Arabic.

Activity 2.1: Physical market access (*wadi* crossings construction)

94. *Wadi* crossings will be constructed to facilitate and ease the transportation of agricultural produce to the markets and ensure the supply of agricultural inputs, fuel, spare parts of the tractors etc. to farming areas. The criteria for selecting the *wadi* crossing sites for the crossings will be: (i) on main tracks which passes through farming areas, and connect the largest number of villages to market centers, or main paved/raised gravel roads; (ii) on main tracks which are in a reasonable condition; (iii) are in suitable locations for construction i.e. the safest and economical locations; and (iv) have a low negative impact on environment.

95. Potential beneficiaries will provide input in the selection process, and must provide firm commitment to form *wadi* crossing committees that undertake routine maintenance (for which they will receive training). State governments will need to provide a firm budgetary commitment for repairs and upkeep as a condition precedent to initiating construction.

Activity 2.2: Storage facilities Development

Sub-Activity 2.2.1: Smallholder owned and operated cash crop storage demonstration facilities

96. The project will support construction of one modern village-level storage facility in each locality, capable of safe and cost-effective storage of cash and food security crops including gum Arabic. The storage facilities will have security systems that will be reviewed and approved by financial institutions. These will be designed to allow bank financing on attractive terms, secured by the stored crops. The storage facilities will be managed and operated by a registered farmer producer association (FPA) that has undergone IAMDP training in business and technical skills (see Component 3). These project-financed stores will demonstrate to farmers and financial institutions the cost-effectiveness and risks/rewards associated with crop storage. The FPAs will keep warehouse records adequate for (a) sound business management; (b) use of the facilities for obtaining post-harvest credit; and (c) for tracking the returns to storage.

97. All FPAs will receive training on analyzing costs, benefits, and risks of crop storage under the FAAB activity of Component 3. This will include the risks and returns of speculative storage of cash crops. The training will cover how to develop a business plan with estimated cash flows to be used for obtaining commercial finance.

98. The project will provide 80 percent of the construction costs of the secure storage facility. The capacity will be approximately 200 MTs (roughly equivalent to 220 bags of sesame or 100 bags of in-shell groundnuts). The farmer producer association will provide 20 percent of the costs through in-kind contributions of inputs and labor.

Sub-activity 2.2.2: Studies on storage and pricing

99. The project will commission studies on storage and pricing as required that will help refine project implementation activities such as storage structure design, siting, training, etc. The project will conduct a thorough analysis of sorghum, groundnut, sesame, and gum Arabic commodity prices and transport costs, moving up the value chain from farm gate, village market, auction/wholesale market, and FOB export, over the course of the year. This will give guidance to FPAs and financial institutions into the risks/rewards of storing crops in anticipation of higher prices.

Activity 2.3: Market linkage/value addition

100. Market linkage/value addition activities selected for project support will be based on market analysis and market demand from buyers (processors or exporters (at the state or national level).

101. **Sub-Activity 2.3.1: Market assessment studies.** As required, market assessment studies will be undertaken to identify new markets or market niches appropriate for the IAMDP crops. One example would be an assessment of the market potential for Sudan for Fair Trade, Certified Organic, or other international certification.

102. **Sub-Activity 2.3.2: Direct support for market linkage/value addition.** Buyers and FPAS/GAPAs will be provided technical, logistical, and financial support to pilot and scale-up value-addition/market linkage activities that have a high likelihood of commercial success. The goals of the market linkage/value addition activities are to provide a combination of one or more of the following: (i) higher price per unit of crop produced; (ii) greater assured volumes; (iii) technical training and support; (iv) production credit on reasonable terms.

103. For smaller, village or locality pilot demonstrations, project support will be provided for testing new systems, tools, technologies and equipment. For scale-up, commercial investment from farmers or from the private sector will be expected. For exceptional situations requiring risk reduction, the Innovation Scaling Up Challenge Grant Facility can be utilized.

104. Project support will be limited, time-bound, and focused on areas where the private sector has little expertise or could not be expected to invest (e.g. in the formation and training of FPAs or GAPAs, coordinating access to finance, locating transporters, etc.). In no case will the project play a market actor role (e.g. loan money, take on risk, provide transport services) but should focus on facilitating market actor participation in value chain upgrading.

105. Market Linkage/Value addition activities with potential linkages with external markets can be explored by the project are listed below. These are meant only to guide project managers, final selection should be made based on private sector and farmer interest.

(a) **Marketing of unrefined sesame or groundnut oil produced by village based oil processors.** Larger commercial oil refineries have indicated a possible interest in the purchase of unrefined oil from village processors, if minimum quantities can be aggregated and if the price is competitive. One company has expressed interest in sending a tanker car directly to the village for collection, and pay farmers on the spot if quality was acceptable. The seedcake by-product produced is a valuable livestock feed for local animal fattening operations, and surpluses also would find a ready market from large-scale livestock operations, which could make arrangements for bulk collection. Some degree of pre-shipment finance could be extended by the unrefined oil buyers. El Obied wholesale auction plans to add sesame and groundnut oil and seedcake as a listed commodity by early 2018; this would create an alternative market outlet for village production of these products.

(b) **Marketing of shelled groundnuts from village based shellers.** Larger exporters and processors have expressed interest in purchasing shelled groundnuts at the village level (the normal practice is to buy in-shell groundnuts because of concerns over damage caused by low quality shellers and poor storage practices). The buyer would require that the FPAs are using high quality groundnut shellers and with properly dried in-shell nuts, with technical training provided by the project with input from the buyer. The buyers would be willing to provide some degree of production finance, collect minimum quantities from primary aggregation points, provide input into shelling machine selection and purchase, and to pay in cash at prices that would be higher than selling to local traders, and comparable to El Obied or Omdurman auction prices (less transport charges and taxes incurred).

(c) **High quality gum Arabic.** A number of gum Arabic exporters have expressed interest in buying direct from GAPAs provided that they could obtain a higher quality product than what is available from intermediate traders or the auctions. They would provide pre-financing gum Arabic tapping costs (through a no-interest loan), providing mats and jute bags for grading and packing, and paying a cash price at a premium to the El Obied auction prices. In return, the project would organize and train the GAPAs in proper harvesting, sorting, cleaning, grading, and packing. In fact, the RSGPMP project has undertaken a small but successful pilot with two gum Arabic companies in North Kordofan with 13 *hashab* gum GAPAs. This could be scaled up with in all four states with many more buyers, and include *talha* gum as well which is in high demand in India.

(d) **Certified seed production.** There is ongoing interest from seed companies to purchase certified seed from smallholder groups in the SDP project areas, which is close to being on a sustainable basis. IAMDP will support additional FPAs that wish to produce certified seed under contract to private seed companies, and for local sale, and to expand the scope of to Sinnar and West Kordofan (where at least one seed company is interested in sourcing certified groundnut seed).

Implementation arrangements for Component 2

106. Overall supervision of Component 2 will be done by the private sector coordinator and marketing expert, who will coordinate and supervise a network of federal, state, and locality staff.

107. ***Wadi* crossings construction** will be supervised by the state ministries of physical planning and public utilities. Locality level engineering units will direct and supervise the maintenance process, and train the *wadi* crossing committees. Contracting firms will be competitively selected to undertake the construction work.

108. **Storage.** The crop storage demonstration facilities will be owned and operated by registered and active farmer producer associations (FPAs). One FPA per locality will be selected as the recipient of funding for the storage unit from the project, on a competitive basis, through a mechanism worked out by relevant PCU, SPIU, and LET staff. The selection will be based on a review of a simplified business plan that includes:

    (a) Realistic projections of operating, interest, maintenance, and depreciation costs (including the project-subsidized capital costs).

    (b) Realistic projections of revenues from operations. These would include reduction in crop storage losses, and projected returns from price increases.

    (c) Proof of registration as a crop production FPA, with a bank account, active for at least one cropping season.

    (d) Commitment to share business records for project monitoring and impact assessment purposes, and to host visitors from the locality.

109. The Rural Finance Specialist (Subcomponent 3.2) will coordinate with financial institutions to ensure that crop storage facilities are usable for post-harvest financing, and liaise with insurance companies about the possibility of obtaining coverage for stored crops. A local certified SSP will provide pesticide control of the storage facility as required.

110. The technical TOT and training materials for maintenance of storage, and pest control will be provided by the Marketing Expert, with input from national consultants.

111. The business TOT and training materials and methods on crop storage will be developed and tested by a national consultant (Subcomponent 3.1) with additional support as required from agricultural economists from the Federal, State, and locality levels and the state level implementation units. The actual trainings of the FPAs will be done by the LETs.

112. **Storage and financing studies.** The analysis of storage and post-harvest financing options at the locality and state level will be undertaken by a national specialist or specialists, competitively recruited.

113. The dynamic price analysis of sorghum, sesame, groundnut, and gum Arabic market prices over time will be undertaken by an international crop marketing specialist with support of one or more national crop marketing consultants, all competitively selected.

114. Marketing Linkage/Value Addition

115. **Market assessment studies** will be undertaken by an international consultant who will be partnered with a national expert consultant.

116. **The marketing linkage/value addition direct support activities** will be led at the PCU level by the private sector/marketing expert, who will be focused on structuring national and regional level partnerships, and guiding/supporting the work of the state marketing specialists. The private sector/marketing expert will initiate contacts with buyers interested in sourcing from FPAs/GAPAs. This will start with the initial contacts established by SDP (e.g. Savola for sesame/groundnut unrefined oil, Yusuf Habibi for shelled groundnuts, RANS for groundnut

seed, El Hamama for high quality *talha* gum). An international PPP consultant will support the marketing specialist in liaising and structuring pilot initiatives both locally and for international markets (especially if internationally certified production such as fair trade or organic is shown to be potentially feasible). MOUs will be negotiated with buyers to specify the roles and responsibilities of each party. To ensure that production meets market requirements, the buyers will be encouraged to provide technical training materials and TOT for the LETs and where relevant private sector service providers. IAMDP technical assistance and training for FPAs and GAPAs will be delivered by the technical and specialists on the LETs, with input as appropriate from the buyers or their agents. A limited budget for procurement of tools and equipment for pilot or first stage initiatives will be managed by the marketing expert. Scale-up of market linkage/value addition activities may also be financed by the ICGSF (described in Component 1), in conjunction with private sector, FPA/GAPA, and financial institutions.

Component 3: Enabling environment

117. **Expected outcome.** The expected outcome of Component 3 is improved smallholder access to finance, a higher level of smallholder business competency, and strong, active FPAs and GAPAs with a purpose and activities that go beyond receiving donor project support or government subsidy. This component includes two subcomponents: (i) farmers associations strengthening and business development; and (ii) access to rural finance.

Subcomponent 3.1: Farmers and farmer associations business capacity strengthened

Activity 3.1.1: Farming as a business training (FAAB)

118. The farming as a business (FAAB) curriculum developed by SDP and SUSTAIN will be expanded and improved to provide farmers and gum Arabic producers the analytical tools and concepts to plan, make investment decisions, and operate their farming and other businesses profitably. This will cover financing, operations, and marketing. After training, the smallholders and will be capable of developing simple business plans that will help them make key investment decisions (e.g. crop selection, input selection, buy/rent equipment, contract farming versus storage and independent marketing), raise finance for farm and value added activities, manage their business affairs, critically evaluate the season's results, and use the insights to plan the next year's crop.

Activity 3.1.2: FPA/GAPA capacity building

119. IAMDP will mobilize and support FPAs to become the primary means by which farmers collaborate on individual and joint farming and other business activities. Most FPAs and GAPAs have been formed at the urging of donors and government, with the primary objective the expectation of free or subsidies services. They have little independent life. However, to interact successfully with suppliers or with buyers, small-scale farmers must have a viable means of organization. Where GAPAs or FPAs do not include the poorer strata of village (and there is evidence of this in some areas), steps will be taken to either ensure their participation in existing organizations or are assisted to form their own associations. Many GAPAs have been established as cooperatives, and those that wish to will be assisted convert to the new FPA legislation.

120. The FAAB training described in described earlier in Activity 3.1.1 will provide the basic building blocks of FPA capacity building. However, under Activity 3.1.2, FPAs will also receive the following support:

(a) **FPA mobilization and organizational training** that addresses the business reasons why FPAs are formed, how they should be managed, how to select members, how individual smallholder and collective FPA businesses should interact, financing, taking advantage of incentives, rights, and obligations under the law.

(b) **Joint business activity trainings** that guide FPAs on determining when collective or collaborative action is preferred (e.g. bulk input purchase, negotiation with service

providers, storing and marketing produce) and how to ensure that individual effort is rewarded.

(c) **Apex association formation and capacity building at the locality and state level** Following the development of strong FPAs, support will be provided in the later years of the project to analyze and support formation of apex structures at the locality and state level. Topics to be covered include: (i) management, governance, and funding of apex organizations; (ii) coordination of large-scale market linkage/value addition projects; (iii) developing membership services; and (iv) government advocacy.

Implementation arrangement for subcomponent 3.1

121. Overall supervision of the Farming as a Business and Farmer Producer Association Support activities will be managed by the Private Sector Expert, who will retain a specialist national FAAB consultant.

Activity 3.1.1: Farming as a business

122. The FAAB TOT and training curriculum will be developed by a national consultant. Inputs will come from international and national consultants who develop key case studies and specialized modules (e.g. covering MSPs, agrodealers, gum Arabic sharecroppers, etc.). Where possible, input will be obtained from private sector partners. The FAAB TOT will be delivered to the LET Farming as business officers. The service business development officer will be responsible for FAAB trainings to service providers. The LET Farming as business officers will be responsible for rolling out FAAB training to FPAs and GAPAs.

123. High level FAAB sensitization sessions will be provided for state ministries of agriculture to encourage them to support to a FAAB approach towards smallholder promotion, and to roll out FAAB training for all extension teams (not just the project-supported LETs).

124. Under supervision of the PCU community development national consultant, ToT and training materials for FAAB training that can effectively reach semi-literate and illiterate farmers. A possible source material is the FAO "FAAB story book" methodology[12] developed for farmers with limited literacy.

Activity 3.1.2: Farmer producer association capacity building

125. TOT and training materials for FPA mobilization and FAAB training will be developed by a FAAB national consultant with support from an international farmer association specialist. The FPA TOT will be delivered to the project LET Farming a business officer, as well as agricultural economists from other extension teams, and possibly state level officials with the responsibility for mobilizing FPAs.

126. The FAAB national consultant will liaise, through the state implementation units, with the state government FPA mobilization committees for delivering the initial parts of the FPA mobilization and organizational training programme.

127. The Rural Finance and FAAB specialists will liaise with Nile Bank and the Agricultural Bank of Sudan, and any other potential partners in FPA capacity building, concerning ways to leverage the impact of FPA capacity building.

128. Apex Association Capacity Building at the locality and state level training materials will be developed by an international farmer organization specialist, with assistance of the FAAB specialist and a national farmer association specialist. The international specialist will design, organize, and lead an exposure tour for high performing FPAs and key government officials to a country with strong apex smallholder farmer associations that provide effective membership services and policy advocacy.

[12] "Farming as a Business Story Book", FAO, 2015.

Subcomponent 3.2: Access to rural finance

129. This subcomponent will increase smallholder farmers' access to finance for adopting improved agricultural packages**.** It will support smallholder farmers to meet their financing requirements for (i) improved **crop production** activities; and (ii) **post-harvest** marketing activities.

(a) *Improved crop production activities* will be supported by facilitating (i) smallholder farmers' access to crop production financing to increase the demand for improved crop production packages; (ii) MSPs and agro dealers access to asset financing (agricultural machinery) and working capital loans (seeds, agrochemicals) for increasing the supply of improved crop production inputs and services.

(b) *Post-harvest marketing activities* will be supported by (i) post-harvest shared marketing contracts with ABS; and (ii) access to credit from financial institutions on pilot basis against crops secured in village level storage facilities.

Improved crop production financing

Increase smallholders' access to crop production financing

130. IAMDP will increase smallholders' access to finance for adopting improved crop production practices by facilitating (i) pre-financing linkages with buyers; (ii) formal crop loans from financial institutions; and (iii) informal loans from internal capital of village savings and credit groups. These areas are described below.

131. **Pre-financing linkages with buyers.** IAMDP will strongly promote pre-financing from buyers (advance against future delivery of produce) as a major instrument for financing smallholders to adopt improved technologies. Buyer pre-financing is already visible in the French supported market focused gum Arabic development initiative in the project area. Moreover, the *sheil* system is an informal pre financing mechanism which is widely prevalent but exploitative of smallholders. IAMDP will strongly promote pre-financing from buyers while brokering buyer linkages with smallholders. The advance received by the smallholders will be settled by deducting it from the value of the produce delivered to the buyer at harvest. IAMDP will assist smallholders to negotiate market led selling price for their produce to ensure fair returns after the advance settlement. Where relevant IAMDP will link the buyer (pre-finance supplier) to MSPs and agro dealers in the project area for in-kind supply of quality inputs and services to the smallholders. It is expected that buyers will be supportive of pre financing smallholders who are already linked in previous seasons. For financing first time linkages IAMDP will support crop loans from PFIs through matching equity as described in the next section.

132. **Formal crop loans from financial institutions.** IAMDP will increase smallholders' access to formal crop loans by supporting PFIs with (i) revolving matching equity funds; (ii) TA, training, capacity building inputs; (iii) infrastructure and operations gap financing; (iv) refinancing and extension service linkages

(a) **Revolving matching equity support.** The high credit risk faced by FIs in delivering first cycle loans to smallholders, who lack credit history in high risk rainfed areas, is a major reason for the shortage of formal crop loans in the project areas. IAMDP will address this gap by providing revolving matching equity support to the PFIs specifically to finance first cycle loans of smallholders for the adoption of improved agricultural packages. The total credit funds required to finance the approved first cycle loans will be shared between the IAMDP matching equity (75%) and PFIs own funds (25%). Losses suffered on the first cycle loans will be shared in the same proportion and will reduce the PFIs' credit risk while developing new crop loan linkages. IAMDP will contribute its share directly to the PFIs. The PFI will deliver these loans using the same mechanisms used for other seasonal loan without any special conditions that subsidise smallholders' cost of funds or principal repayments.

(b) It is expected that this mechanism will link 15,000 smallholders to formal credit source with average loan size of SDG 1,500, at 24-36% profit margin. PFIs will lend to smallholders against repayment cross guarantee by group members. On successful repayment of the first cycle loan the PFI will finance repeat loans using its own sources of finance. The project will structure the funds flow in a manner that the repayments of the matching equity from clients to the PFI is available in a project account at the end of each season. IAMDP will use these funds for supporting the existing or new PFI in subsequent seasons based on performance. At completion IAMDP will transfer these funds to the CBS-MFU (refer section below on partnerships) for possible topping-up and replication across the country.

(c) **Implementation arrangements.** The project will select at least two PFIs to offer services in each project locality. ABS and ABSUMI will be pre-selected as PFIs based on their existing partnerships and investment already received from other IFAD projects (refer annex 4). Additional PFIs will be selected competitively based on (i) call for proposals and shortlisting potential PFIs; and (ii) assessment of detailed business plans (BP) submitted by the shortlisted PFIs and final selection based on criteria including (i) presence in multiple project localities; (ii) prior experience in delivering crop loans in rural areas; (iii) existing refinancing partnership with CBS, SMDC, etc.; and (iv) clear organisational strategy for developing crop loan portfolio. MFIs, commercial banks and development banks can all respond to the call for proposals (refer annex 4 for detailed PFI selection process).

(d) **Technical assistance, training and capacity building of PFIs.** IAMDP will organise TA, training and capacity building to support PFIs' to (i) refine their business plans by developing products and delivery methodologies to address the full range of MF needs by the target households including savings services and crop, livestock and microenterprise loans; and (ii) harmonise RF implementation plans with IAMDP implementation structure involving the SPIUs, and LETs. IAMDP will train the PFIs' credit officers on the improved crop production packages and,

(e) Provide them with active exposure to the demonstrations of new technologies. It will provide the PFIs with total investment estimates, cost benefit estimates and credit requirement estimates for different crop models involving the project promoted technologies. The Rural Finance Expert in the PCU and the Rural Finance Specialist in the SPIUs will anchor TA, capacity building and training activities in collaboration with local service providers mainly hired from the pool of individuals trained by previous IFAD projects for development and implementation of ABSUMI, Bara'ah and SCG models.

(f) **Infrastructure support and operations gap financing to PFIs.** The lack rural branches, inadequate transportation and high initial operations costs are some of the main challenges faced by FIs intending to expand their rural outreach. Based on performance in the first 3 years, the project may assist promising PFIs in the areas of (i) rural branch establishment by supporting their office furniture, equipment and transportation needs; (ii) technology adoption for strengthening the MIS and loan tracking systems, payment systems, integrating mobile banking and agent banking services; (iii) limited operations costs support to new rural branches of PFIs before they break even by financing partial staff costs, specially agribusiness development staff, for 1-2 years. All assets will be procured by IAMDP following IFAD procurement guidelines and delivered to the PFIs in kind.

(g) **Facilitate PFIs partnerships to refinancing and extension services.** IAMDP will facilitate partnership between the PFIs and the refinancing partners such as CBS-MFU, SMDC and commercial banks. It will also facilitate, **on a pilot basis**, PFIs partnerships with the guarantee agency and micro insurance agencies where relevant, **without direct project financial support to them**.

(h) **CBS-MFU and SMDC.** IAMDP will broker the PFIs' refinancing partnerships with CBS-MFU and the SMDC to ensure that the PFIs have sufficient access to portfolio funds for meeting

the crop loans targets in the project area for 4-5 cycles. IAMDP will build on the partnerships already established between previous IFAD projects and CBS-MFU/SMDC during the development of ABSUMI and Bara'ah. The CBS-MFU is will refinance PFIs from two sources, repayments collected on the US$100 million disbursed so far to the MFIs and additional financing of US$100 expected from the Islamic Development Bank and the Arab Fund for Economic and Social Development over the next 5 years. SMDC is willing to use a part of its US$10 million investment capital.

(i) The RF coordinator at the PCU will broker the portfolio financing partnerships between PFIs and CBS-MFU and SMDC. CBS-MFU and SMDC will be invited to participate in the selection of the PFIs, fine tuning the PFIs' business plans and developing refinancing MOUs based on the business plans. IAMDP may support the refinancing partners to improve their supervision processes and M&E systems through technology adoption and assist them to participate in exposure, capacity building and training events, based on performance. They will also be invited to participate in supervision missions and to witness the crop financing success stories in the project area. Knowledge sharing workshops and publication of information booklets will be supported to promote the diffusion of the successful financing models amongst other MFIs through the refinancing partners.

(j) **Guarantee agency.** The CBS has recently established the Guarantee Agency (GA) as an autonomous entity to provide up to 75% wholesale guarantee to MFIs seeking refinancing from commercial banks or farmers' organisations seeking loans from commercial banks. Where relevant and without project funding, IAMDP will facilitate partnerships between the GA and PFIs (also farmers' organisations) to enable the latter to borrow from commercial banks. The guarantee agency has been newly established and still has limited outreach. Depending on its responsiveness to the project needs.

(k) **Micro insurance services. Without direct funding from the project,** IAMDP will facilitate linkage between the PFIs and micro insurance companies to enable credit guarantees to the PFIs for its crop production loans. The focus of **this pilot initiative** would be on a simple limited credit insurance scheme. The role of the project will be to facilitate better terms and conditions for the credit guarantee for the PFIs considering; bulk demand for such insurance and lowered risks due to adoption of improved technologies, enhanced extension services and adoption of appropriate crop varieties e.g. pest and drought resistant.

(l) **Extension services.** IAMDP will ensure strong implementation level coordination between the Credit Officers (COs) from the PFIs and the State and Locality Rural Credit Officers (RCOs) from the project. The Rural Finance Specialist (RFS) in the SPIUs will train the State and Locality RCOs to facilitate (i) mobilisation of improved crop loan applicants; (ii) PFIs linkages to input suppliers, services providers and buyers; (iii) community sensitisation on PFIs' services, terms and conditions and group formation and financial literacy training; (iv) group formation (refer SCG development) and their training on financial literacy, business management and marketing development topics to facilitate linkage to the PFIs. PFIs will be responsible for loan appraisal, disbursements, credit monitoring and repayment collection.

133. **Informal loans from village savings and credit groups (VSCGs).** The rural finance environment in the project area is fragile with limited graduation options for MFI clients. External MFIs have been known to stop lending to even to strong clients after the last loan cycle. Secondly, for some household the entry level credit requirement for adoption of new crop technologies is very low (SDG 300-600). In such cases dependence of the financial institution has affected adoption when the FI rejected of failed to lend on time. To overcome these challenges the IAMDP will promote entry level crop financing specially for very poor households through loans from internal capital of VSCGs which have been very successful in WSRMP.

134. The project will develop men and women's VSCGs each comprising up to 20 members saving regularly SDG 20-30 per month. The accumulated savings will be used to finance individual member activities and collective group activities. The profit margins earned on the investments will be ploughed back for increasing the group capital. Strong adoption of VSCGs in a village of around 100 households has shown (in WSRMP) to generate internal capital of SDG 100,000-150,000 over 4 to 5 years which could easily finance improved crop loans for 50-60 smallholders. Some of the SCGs can choose to operate as Producers Associations (PA) and will be registered accordingly. From the onset these will function as strong institutions founded of a culture of member discipline, regular savings, business orientation and focus on internal capital generation.

135. The Locality RCOs will be responsible for SCG formation. Building on the experience of WSRMP in SCG development, the RCO will develop 1-2 SCGs in a village in the process training up to two SCG facilitators to replicate these groups in the rest of the village. Once the SCGs in the village show positive results the project will actively support the dissemination of these success stories to neighbouring villages. This will indirectly support the adoption of the crop technologies in the surrounding villages. The project will support pay limited service charges and allowances to the SCG facilitators for their services in the project villages and surrounding areas (refer annex 4 for detailed VSCG implementation guidelines).

Financing MSPs and agro input suppliers

136. Seeds and agrochemicals dealers, retailers, machinery service providers, village level spraying service providers and integrated pest management agents have limited access to finance which has restricted the availability of these services to the smallholders. IAMDP will facilitate their credit linkage to FIs in response to increased demand for their services generated through the improved crop production loans from PFIs to smallholders. The loans to agro input suppliers are expected to range from SDG 10,000-40,000 and loans to MSPs are likely to range from SDG 10,000 – 150,000 depending on the nature of the agricultural machinery.

137. In coordination with interested financial institutions (ABS, other commercial banks) IAMDP will mobilise bulk credit application from MSPs and agro input suppliers in the project area at the beginning of the season and submit these to FIs for shortlisting. The project will assist the shortlisted applicants to develop of detailed business/investment proposals and feasibility plans. These plans will indicate the (i) the demand for the inputs/services created by project activities; (ii) the training and capacity building inputs by the project to the MSPs and agro input suppliers; (iii) direct financing of the smallholders facilitated by the project to assist the payment for the services/inputs. Based on these factors the project will assist the applicants to negotiate lower physical collateral needs (where relevant for loans higher than SDG 50,000). It will also utilise the partnership with the guarantee agency to develop to cover up to 75% of the collateral requirements of MSPs and agro-dealers.

Financing post-harvest marketing activities

138. **Post-harvest shared marketing contracts with ABS.** This will be initially piloted on a limited scale. The project will facilitate contracts between the farmers and ABS agreeing that at harvest a specified number of crop sacks will be stored in the ABS storage facilities for 3-4 months after which the two parties will jointly on selling the stock based at prevailing market prices. At the time of the contract the ABS will pay a 30-50% of the current market price (at harvest) to the farmers. This access to cash will support the farmers to meet emergency expenses faced immediately after harvest without resorting to distress selling of the produce. After selling the stock and the net profits (deducting storage costs, marketing expenses by ABS) from the proceeds will be shared between the farmers and the ABS at 70:30 ratio. ABS will pay out the share of the farmers after deducting the amount already paid at the time of the contract. The project will support this arrangement by assisting the development of guidelines and contract formats, sensitising and training farmers and ABS branches on the modalities, brokering the

contracts between the ABS branches and farmers, supporting the development of collection centres and smooth delivery of the produce by farmers to ABS.

139. **Financing against crops stored in community level storage facilities.** This mechanism will also be implemented on pilot basis. Taking advantage of the presence of community level storage facilities developed in component 1, IAMDP will collaborate with ABS and other FI to develop post-harvest financing models against crops stored in these storage facilities. At the time of harvest the farmers will store their crops in the local storage facility and will approach the financial institution for loans against the stored crops as collateral. The FI will secure the collateral by putting a lock and potentially by deploying a guard at the facility. It will then supply in kind loans to meet the consumption needs and other requirements of the farmers after harvest. These contracts will usually be for 3 to 4 months after which the prices of the stored products are expected to rise. At this point the farmers will sell the produce with assistance from the bank if needed and settle their loans from the revenue generated. The average loan size will be US$15,000 for four pilots one in each state. The project will support this also as revolving matching equity.

E. Lessons learned and adherence to IFAD policies and the SECAP

140. The implementation of different IFAD and other financiers' co-funded projects has generated a series of lessons that guide the present project design and implementation. The key lessons of relevance to IAMDP have been incorporated in the design process and are summarised below. They are detailed in Appendix 3.

141. Service providers must have necessary inputs, equipment, and technical/business skills, and, be available and ready when inputs/services are required by farmers. Missing planting season is detrimental to the smallholders livelihoods.

142. Private companies will invest in marketing inputs and equipment targeted for smallholders, when (i) convinced that these farmers are a significant market; and (ii) government input subsidies are focused only on the poor subsistence farmers who would not be able to afford inputs.

143. Private companies do not find it cost-effective to invest into structures to directly provide inputs/services to smallholders; but they are interested in building the capability of local or village based input/service providers.

144. Smallholders need technical knowledge and business skills to organize themselves to be more attractive and profitable customers for local service providers, and to negotiate better prices and terms.

145. The IFAD financed development projects have focused on delivery of extension and advisory services and implementation of demonstrations. It was assumed that adoption will follow systematically with little or no post-demonstration technical support to ensure effective adoption and scaling up of the proposed technologies. There is need to include demonstration and scaling up processes.

146. Increasing climate risk necessitates a focus on resilience and adaptation. Increasing drought frequency and worsening climate change are magnifying risks to rural communities in rainfed areas.

147. Financial institutions consider first cycle loans as most risky. Although financial institutions have access to portfolio funds they are reluctant to invest in crop production activities due to the inherent risks under rainfed production systems.

148. To ensure project sustainability there is need to (i) promote strong partnerships with the private sector for the provision of highly required agricultural machinery services to increase efficiency through economies of scale; and (ii) develop the capacity of the locality extension services and

community based organisations to ensure smooth post completion and sustainability of the project activity.

149. In particular, there is need to build farmer business skills and strengthen the nascent system of Farmer Producer Associations recently mandated and being supported by the Federal government. The Farmer Producer Associations need capacity building on managerial skills improvement to provide better services to the members and to sustain their support without dependency on government support. “Farming as a Business” training for the associations would cover planning, budgeting, marketing strategies, negotiating for finance, services, markets, collective versus individual activities, cropping/livestock/collection/off-farm integration.

Adherence to IFAD policies

150. **The design of IAMDP is aligned to all relevant IFAD strategies and policies, including.** Strategic Framework 2016-25; Targeting Policy – Reaching the Poor; Gender Strategy; Rural Finance Policy, Climate Change Strategy; Environment & Natural Resource Management Policy; Policy on Supervision & Implementation Support; and Environmental & Social Assessment Procedures.

151. **The 2011 Environment and Natural Resource Management (ENRM) Policy.** *Resilient livelihoods through the sustainable use of natural assets* distil lessons learned in previous IFAD initiatives that have sought to reduce rural poverty through interventions related to the environment. The ten core principles of the IFAD ENRM Policy encapsulate both the main issues to be addressed and suggested approaches.

152. Of particular relevance to Sudan, IAMDP is also fully in line with IFAD's policy on Engagement in Fragile and Conflict-affected States and Situations, as follows: (i) project design is based on proven evidence from earlier projects (SUSTAIN, SDP, WSRMP, and Gum Arabic Production and Marketing Project) within the local context of the states of Sinnar, North, South and West Kordofan; (ii) project design addresses limited access of the rural poor to natural resources (land and water), and limited state and community capacities, as the main drivers of fragility in project area, through promotion of conservation agriculture and capacity building; (iii) fragility related outcomes are included in the project log frame to be monitored during implementation. These include resilience to Climate Change, rural women empowerment trough access to training, markets and finance, total land brought under conservation agriculture, etc.

III. Project implementation

A. Approach

153. IAMDP will be implemented over five years. Implementation arrangements for IAMDP will be set out in a Project Implementation Manual (PIM) to be finalised at project start up. Guiding principles for implementation will be: (i) a flexible approach in response to the needs of the target group and value-adders; (ii) competitive private sector led activities, driven by effective national and international market demand; (iii) inclusiveness of rural poor, women and youth, and synergies with government and donor funded programmes in project area.

154. **Potential synergies and partnership.** Synergy with IFAD-funded Livestock Marketing and Resilience Project (LMRP): covering the same project area as IAMDP, the LMRP is a recently approved seven-year IFAD-supported project, seeking to tackle rural poverty by raising the incomes of poor households whose livelihoods depend on livestock production and marketing. LMRPP aims at transforming the rural economy from subsistence to an increasingly efficient market-based system founded on the small-scale livestock sector that promotes livelihood improvement and decreases pressure on natural resources. To this end, the LMRP is helping

GOS and stakeholders on resolving various closely-interlinked problems hindering the sustainable socio-economic rural development of Sudan:

(a) the poorly-developed domestic and export value chains that generate very low real (cash) demand for livestock;

(b) the limited and declining productivity and economic carrying capacity of lands used for rainfed farming and extensive livestock husbandry;

(c) the combination of increased climatic shocks and policies that are posing an increasing threat to the livelihoods of livestock communities;

(d) the decreased availability of ecologically healthy and climate resilient rangelands and the altering of the traditional balance between pastoralists, agro-pastoralists and crop farmers, as well as disputes over the ownership and use of the dwindling natural resources; and

(e) barriers to the poor in developing viable enterprises by mobilising their own and communal resources.

155. Of particular importance on synergy between the two projects, Component 2 of LMRP (Community-led NRM and enhanced adaptive capacities), aims at supporting a community lead visioning process to prioritise priority NRM investments for building the sustainability of the livestock system. LMRP subcomponent 2.1 *community-led NRM* supports measures to install response systems and innovative solutions for climate risk mitigation. The project promote community-based natural resource management and remediation to reduce the vulnerability of settled and nomadic pastoralists by (i) establishing 300 Community Adaptive Plans (CAPs) incorporating the needs and priorities of poor women and men in all target villages; and (ii) by investing in more productive/improved rangelands and reduced resource-based conflict, through rainfall capture, rangeland rehabilitation, the eradication of invasive species, livestock water supplies, stock route restoration and dispute mediation. Under LMRP Subcomponent 2.2 *Climate Change Preparedness and Policy Facilitation*, pastoralists and decision makers will benefit from the establishment of robust information and response systems to increase the resilience of natural resource users to environmental shocks.

156. The strong synergy with LMRP would enable IAMDP target group to further enhance their livelihoods and resilience in relation to their livestock development aspects. The elements and modality of such synergy would be specified at project start-up workshop.

157. In addition, IAMDP would build synergies with the recently approved ENABLE Youth Sudan programme of the AfDB. The objective of the program is to create business opportunities and decent employment for young women and men along priority agricultural value chains in Sudan. The program is expected to train and empower 2,000 Agricultural Entrepreneurs (Agripreneurs) in Youth Agri-Business Incubation Centres (YABICs) in five states in the country. The program is expected to start in 2017 with a duration of five years. Another potential project with the AfDB but in the pipeline is the upcoming Agriculture Value Chain planned for Board consideration in 2018.

158. Another opportunity for synergy could be built with UNDP-GEF for the promotion of smallholder solar pumping irrigation systems. The project "*Promoting the use of electric water pumps for irrigation in Sudan*" is a four-year project under implementation by the UNDP and Ministry of Water Resources and Electricity since early 2017, through a US$4.4 million grant from GEF. The project aims at testing a model for using photo voltaic irrigation pumps by the smallholder farmers in Northern State, to be scaled up to other states, including IAMDP project areas.

159. Within the context of Rome-based Agencies cooperation, an important partnership would be promoted with FAO through South-South-Cooperation (SSC) involving FAO, IFAD and China. Under this programme, the decision makers at the federal and state levels and the stallholders' producers in rainfed areas will be supported through study tours to China and on the job training by Chinese expertise in IAMDP project areas. In addition, Chinese Government would

promote transfer of appropriate technologies to smallholder producers through on-farm demonstrations of machinery suitable to the fragile conditions of these poor producers. A joint IFAD-FAO-China mission will be visiting Khartoum and IAMDP project areas in September to establish an action plan for such SSC.

B. Organizational framework

160. The Inter-Ministerial Steering Committee for the IFAD co-financed projects is a standing committee that oversees all IFAD co-financed projects in the country. Specifically, for the IAMDP, its role and functions are primarily to review and approve policy recommendations emanating from the Project Coordination Unit (PCU) pertaining to the project, and steer the replication of the activities in other states. The Undersecretary of Federal Ministry of Agriculture and Forestry (MOAF) or his representative chairs this committee; the membership in this committee includes the representative of the Ministry of Finance and Economic Planning, Ministry of Irrigation and Water Resources, the State Ministries of Agriculture where IFAD co-financed projects are on-going, the Central Coordination Unit for IFAD co-financed projects. The rapporteur of the Inter-Ministerial Steering Committee is the Directorate of International Cooperation in the Federal Ministry of Agriculture and Forestry. The Inter-Ministerial Steering Committee meets twice a year and reviews the status of the whole IFAD co-financed project in Sudan.

161. A **project steering committee** (PSC) shall orient the strategy of the project, oversee planning, review progress and impact, and ensure linkages with related projects, government services and relevant VC stakeholders. The PSC shall be chaired by Minister of Agriculture and Forestry and shall meet at least twice a year.

162. **Lead project agency.** The lead project agency will be the Federal Ministry of Agriculture and Forestry.

163. **Central Project Coordination Unit.** A Project Coordination unit (PCU) will be established in El Obeid in North Kordofan State to provide overall leadership and oversight of implementation activities. The lead PCU would include the following key staff: principal project coordinator, a technical team led by a private sector engagement/marketing specialist, production specialist, and rural finance specialist as well as the finance manager, senior M&E and KM officer, community and gender development officer, procurement officer, and an accountant.

164. **State Project Implementation Units.** The implementation activities will be conducted by the four State Project Implementation Units (SPIU), to be established one in the Sinnar State and one each in North Kordofan, South Kordofan and West Kordofan. In each State SPIU, the key project staff would consist of a State project coordinator, M&E and KM officer, private sector coordinator, marketing coordinator, crop protection specialist, mechanization specialist, community and gender development officer, accountant, and rural finance officer.

165. **At the field level,** thirteen multidisciplinary LET (4 SK, 3 in NK, 3 in WK, 3 in Sinnar) will play a key role in the project implementation at the village level. At the field level, the LET will play a key role in the project implementation at the village level. Each LET consists of the following staff: locality private sector officer/team leader, locality crop protection officer, locality mechanization officer, locality agroforestry officer, locality marketing officer, locality rural finance and community gender development officer. Most of these teams have been trained by SUSTAIN, SDP and WSRMP on targeting and gender focus, participatory transfer of technology, management of demonstrations, and liaison with private operators but much more will need to be done by IAMDP to deepen their knowledge. Each extension agent will be responsible for the implementation of a monthly programme and the preparation and submission of monthly progress reports. Extension team leaders will prepare a consolidated monthly report. The staff of the Rural Agricultural Units (RAU) extension teams, to which LET belong, were selected competitively among the staff of the MAAWI. They will continue applying

their current modus operandi introduced by SUSTAIN, SDP and WSRMP. A monthly inter and intra team coordination meeting will be organized at the RAU level. Monthly meetings at the SPIU level will be chaired by the M&E officer with the participation of the extension team leaders. The meetings at the RAU and state levels should discuss the progress made, difficulties encountered and remedies for addressing emerging problems. Detailed project staffing is presented under Section III.B.

166. In order to take advantage of their experience and for a fast take-off of project implementation, it would be preferable to retain the good performing and competent staff of the above mentioned positions currently in charge of management of SUSTAIN and SDP. Other required staff would be recruited on a competitive basis, including secondment from relevant government state offices.

Central Level (in PCU at El-Obeid)	**State level** (in each of the 4 SPIUs; Sinnar, NK, SK, WK)	**Locality Level** (in each of the 13 Locality Extension Teams)
• Project coordinator, • Private Sector Engagement/Marketing specialist, • Production Specialist, • Rural Finance Specialist • Finance manager, • Senior M&E and KM officer, • community and gender development officer, • procurement officer, • Accountant	• State project coordinator, • M&E and KM officer, • private sector coordinator, • marketing coordinator, • crop protection specialist, • mechanization specialist, • community and gender development officer, • accountant, • rural finance officer	• Locality Private Sector Officer • Locality Crop Protection Officer, • Locality Mechanisation Officer, • Locality agroforestry officer, • Locality Marketing Officer, • Locality rural finance and community gender development officer.

C. Planning, M&E, learning and knowledge management

Planning

167. At inception, the PCU will review and update the logical framework during IAMDP start-up workshops with the participation of representatives from all stakeholders groups and fine-tune the first annual work plan & budget (AWPB). Thereafter, the PCU will prepare each year a consolidated AWPB incorporating the four State AWPBs generated by SPIUs for review and approval by the PSC and IFAD.

168. IAMDP decision-making will be founded on a unified PCU/SPIUs management information system (MIS) capturing data, generating reports and informing management decisions. The views and priorities of beneficiaries will be determined through interaction with economic interest groups and community structures. These planning functions will be the responsibility of the principal project coordinator and four State Project Coordinators, with the main burden of data analysis, reporting, monitoring and evaluation shared by the KM/M&E Officers. Beneficiaries will be drawn in to participatory planning and M&E processes.

169. Each SPIU will monitor progress in its intervention zone within the standardised IAMDP M&E framework and agreed set of indicators. The PCU will be responsible for consolidating the *quarterly summary progress reports* generated by each SPIU using a standard format preceded by a checklist of outstanding issues, if any, and actions taken.

170. Alongside the AWPB cycle, a comprehensive *mid-term review* will be conducted in PY3 to reassess the IAMDP design in the light of implementation experience. The reviewers may propose adjustments to the approach, activities and/or implementation arrangements for the remaining life of IAMDP and suggest revisions to project scope, objectives, components, logical framework, M&E plan, cost tables and the PIM.

171. Towards the end of IAMDP implementation, the PCU will prepare a comprehensive *project completion report* (PCR), to summarise achievements set against design intentions and assess

overall impact and prospects for sustainability of gains in the economic and social resilience of the target population. The PCR process will feature a validation workshop to provide an opportunity for stakeholders themselves to evaluate performance, to promote accountability, to identify and elaborate upon factors that will improve sustainability and to lay out key success factors and shortcomings.

Monitoring and evaluation

172. Based on lessons learned from previous and ongoing projects, IAMDP has to have its own core M&E staff at the (PCU) ; and state (SPIU) levels to supervise field activities and maintain data and records; relying on locality extension teams or staff from the State Ministries or depending on outsourcing proved to be one of the shortfalls of the system, the merit of a core team is as follows: (i) It allows the project to invest a lot on the training and orientating the teams on project goals, outputs and activities; and (ii) Guarantees accountability to the project and furthermore ensure the quality of data and timeliness, as well as feedback to management.

173. An IAMDP M&E framework will provide information on implementation progress and constant feedback into the MIS for decision-making, identifying any problem areas, evaluate the performance of implementing agencies and assess achievements at the levels of outcomes and impact. All M&E data will be disaggregated by gender, age and locality.

174. A thorough *baseline survey* will be conducted by a qualified service provider in a representative sample of communities within the targeted localities. The research will concentrate on benchmarking those aspects in which IAMDP is intended to make a difference. Interim *post-implementation evaluation* studies will be carried out by a contracted independent body under the overall responsibility of the State cadres on the completion of selected clusters of group and community interventions, concentrated on the satisfaction of beneficiaries and the number of women and youth with increased access to assets, incomes or services resulting from project support. A substantial *final impact evaluation* will be commissioned from an independent service provider at the end of implementation, mirroring the scope and methodology of the *baseline study* to the extent possible, to detect changes in selected indicators and to attempt to attribute observed changes to project interventions and/or to other factors.

Learning and knowledge management

175. IAMDP's overall learning and knowledge management strategy to capture and disseminate knowledge at various levels will focus on five priorities: (i) generating trust and fostering linkages between partners within the PPPP (Public-Private-Producer-Partnership) framework promoted by the project; (ii) managing and sharing information, knowledge and experiences; (iii) improving the effectiveness and efficiency of the private sector in adding value; (iv) conducting analysis that can provide the evidence base for policy dialogue; and (v) creating conditions for replication, further scaling up and sustainability.

176. Annual IAMDP planning workshops will provide fora for documenting lessons learned and identifying promising areas for knowledge generation, providing stakeholders with an opportunity to express needs, successes and constraints, as well as fostering collaboration and brokering partnerships. The project will collaborate and share valuable lessons with other projects by sponsoring knowledge networking through learning events, publication of "how-to" leaflets relevant to all work undertaken. Special emphasis will be placed on knowledge regarding PPPP, climate change adaptation and disaster-risk development planning.

177. Building on previous experience with IFAD-supported projects, universities and research institutions, particularly ARC, will be the major IAMDP partners for learning and KM. For example, these centers have been and still are capable of developing and showcasing crop varieties, crop protection chemicals, fertilization, and equipment that are not in common use in the locality for the rainfed sector.

D. Financial management, procurement and governance

Financial management organization and staffing

178. As mentioned in Section III.B staffing in charge of financial management will comprise of the following position at both PCU and SPIU levels:

179. At the PCU level (i) one financial manager- qualified accountant, with at least 15 years of experience in financial management, including experience in donor funded development projects; and (ii) one senior accountant – Bachelor in Accounting, with a minimum 10 years of experience in the accounting field, including experience in donor-funded development projects and their financial reporting requirements.

180. At the SPIU level, one dedicated accountant at each SPIU – Bachelor in Accounting. The accountants will be retained from on-going projects, based on performance or hired competitively from the local market. While the finance assistants are going to be sourced through secondment from respective departments of MoAF/ MoFEP. To ensure segregation of duties exists, the procurement function will be separated from those of finance. Consequently, it will be carried out by dedicated procurement staff.

181. As **a condition of disbursement, the key staff (project coordinator, finance manager, and M&E Officer) should be appointed** and in place before disbursements begin. In order to kick-start the implementation shortly after effectiveness, it is being agreed with MoFEP to retain key staff, based on performance, of on-going SDP and SUSTAIN projects.

182. Detailed job descriptions for each member of finance team will be included in the PIM, planned for finalisation at project start up. The ToRs of the key position will be granted IFAD no-objection prior to starting of the recruitment process or confirmation of currently in charged staff. The position will be hired with annual contracts renewable on satisfactory performance. Changes to seconded staff may be at the request of IFAD or GoS with agreement from the other.

Budgeting

183. The project will follow bottom-up approach in preparation of annual work plan and budget (AWPB). AWPB will be initiated at the community/locality level based on beneficiaries needs. These will be presented to the respective SPIU which will consolidate and format for submission to the PCU. All project activities will be included in the AWPB that will indicate what activities and expenditures will be implemented at Locality, State and PCU levels, and by each financing source (IFAD, counterpart funds and beneficiaries in kind and in cash contribution). Budgets will be presented in a format that presents separately the amounts on quarterly basis and by each financier. The PCU will ensure that all budgets are prepared in a consistent and timely manner for submission to the project steering committees (at local and federal levels), MoFEP and IFAD. AWPBs, once approved, will be available to all project parties. To ensure transparency, project related documentation will be circulated by PCU to all concerned staff in PCU and SPIUs.

184. The accounting system will include a budget module that will allow uploading yearly budget at the start of each financial year and consequently facilitating tracking of actual against budgeted expenditures on monthly basis and aid course corrections by management for significant variations from the budget.

Disbursement arrangements and flow of funds

185. The project will use available disbursement methods of replenishment, reimbursement and direct payments. It is expected that most expenditures will be through the designated/operating account using the Imprest mechanism. The ceiling authorized allocation will be based on budgets for six months. IFAD Client Portal (ICP) is expected to be rolled-out in country before the effectiveness date of the project. Consequently, the project will use much faster on-line submission of Withdrawal Applications (WA).

186. The project is viewed as a continuation of the on-going SDP and SUSTAIN projects, in light of this, and in order to facilitate immediate start of the project upon effectiveness, 2017 AWPB of SDP can be amended to include the costs of procuring an accounting software system and preparation of the draft PIM and submit it for IFAD concurrence. Alternatively, such costs can be included as part of the start-up costs to be incurred before the satisfaction of the general conditions precedent to withdrawal. These costs shall not exceed an amount of US$150,000. The start-up costs are intended to cover the recruitment of key personnel, the purchase and installation of appropriate accounting software, preparation of the financial management section of the Project Implementation Manual, all of which are conditions for disbursement.

187. A EUR-denominated designated account will be opened for project to receive IFAD Grant at the Central Bank of Sudan/commercial bank acceptable to IFAD with an authorised allocation to allow for six months of projected project expenditures. PCU will also open an SDG account, in a commercial bank acceptable to IFAD, into which the EUR will be converted on an as needed basis to meet eligible expenditures. Counterpart contribution will be transfer to the same account. This SDG account pool account will be the same from which all transfers to SPIUs will be affected.

188. Each of the four SPIUs will open SDG accounts in commercial banks acceptable to IFAD. Withdrawal applications will be prepared on quarterly by the PCU, on receipt of statements of expenditures and reconciliations from SPIUs.

189. The project will be allowed to use Direct Payment only for expenditures that are made in a hard currency, to parties rendering services outside of Sudan, and where the contract has been signed for payment in the hard currency to an account outside of Sudan. All goods, works and services rendered within Sudan will use the SDG for payment.

190. Replenishment Applications prepared by the PCU will be submitted to IFAD, at a minimum every quarter or when 30 percent of the designated account has been utilized for eligible expenditures, whichever occurs earlier. Details regarding the designated account allocations and SoE thresholds will be found in the Letter to the Recipient.

191. The funds flow arrangements to meet eligible project expenditures are as follow, (and set out in a chart in Appendix 7.1).

(a) A Designated Account in EUR will be held at a bank acceptable to IFAD from which drawdowns will be made to the SDG operational account.

(b) Project Operational Account A in SDG will be opened and managed by the PCU, shall receive funds transferred from the Designated Account.

(c) Project Operational Account A will be used to transfer all sources of funds to State Project Operational Accounts.

(d) States will open an SDG Project Operational Account for receipt of funds from the PCU.

(e) States will be responsible for advances and expenditures of the State Teams.

(f) The PCU, who is responsible for managing Project Account A, will ensure a timely flow of funds to the State Project Operational Account based on realistic quarterly or every six months' cash forecast.

(g) All bank accounts in the project will have at least two authorised signatories. All payments will be by bank transfers or checks, except for petty cash expenditures or expenditure related to activities implemented at community/locality level where it is not possible to pay in checks. The payment will be made through an advance to responsible staff and cleared with all supporting documents as soon as the activity is concluded. No more than one advance can be given to an individual at given time without the preceding advance is settled, unless in exceptional circumstances and upon prior approval of management. The expenditures/activities that can only be paid in cash will be reflected clearly in the PIM.

(h) The fund flow under revolving matching equity will be channelled upon by the project to the respective partner financial institutions (PFI) upon the receipt of the following: (i) The signed agreement between the project and PFIs managing the revolving matching equity for which no-objection should had been granted by IFAD and has been dully formalised; and (ii) a request from the respective PFI managing the fund specifying the amount and the bank details for the payment.

(i) Mechanism of measurement, recognition of beneficiary's and private sector cash contribution; co-financing of partner financial institutions (PFIs) towards ISMGF and revolving matching equity ; and in kind contribution are to be clearly reflected in the PIM.

(j) Counterpart fund is to be made available for the project in advance and on quarterly basis. The Central Coordination Unit to follow up with MoFEP for the timely release of funds

Internal Controls

192. Sufficient staffing at the SPIUs and the PCU will allow for appropriate segregation of duties to ensure that the following tasks are separated between staff:

(a) custody of assets;

(b) authorization or approval of related transactions affecting those assets; and

(c) recording or reporting of related transactions.

193. All internal control mechanism will be detailed within the financial management arrangement of PIM which to be prepared before disbursement begins, including those for competitive Innovation Challenge Grant Programme for private sector, producer, or private sector/producer partnership; and revolving matching equity support to partner financial institutions and its mechanism. The external audit will report any internal control weaknesses within the management letter.

194. PCU to engage a firm which is familiar in donor's procedures to prepare financial management arrangement of the PIM.

Accounting systems, policies and procedures

195. The PCU will procure well-tested LAN-based accounting software; the ToR will be cleared by IFAD. The software will be dual language and able to record and report in SDG and EUR. The accounting system will include a budgeting module, procurement and reporting module. Training on the software will be provided by the supplier to all finance and procurement staff at PCU and SPIU that will use the system. The data will be backed up on a server/ hard disk on a daily basis.

196. All accounting policies and procedures, related to the project will be clearly documented in the financial management manual, (as part of the overall PIM). The project will adopt Cash basis for accounting standard.

197. The PCU will record advances to the SPIUs as an outstanding advance, and the SPIU will book the same as an advance. The SPIU will record all expenditures as they are incurred and submit on a monthly basis, certified SoEs and reconciliations, which will liquidate the advance provided. Such advances will qualify as eligible expenditure for IFAD once the expenditure has been recorded and not at the time of payment of the advance. Beneficiaries in kind contributions will be recorded under a separate fund set up within the accounting system.

Financial reporting

198. The PCU will prepare monthly financial reports for the dissemination to the project management team (principle coordinator and state coordinators). These will be consolidated further into quarterly unaudited financial reports to be submitted to IFAD. The financial statements will be in formats acceptable to IFAD and samples of the same will be available within the financial

management manual. The financial reports will provide information to management, financiers and related parties to facilitate decision-making processes.

199. The PCU will consolidate its accounts with those of PIUs and produce audited and unaudited financial statements which, in line with IFAD's General Conditions, will be submitted to IFAD within six and four months of the end of the fiscal year respectively. The financial Statements will be prepared in accordance with the cash basis for accounting standard.

Internal Audit

200. Given the complexities and risks arising from the wide geographical spread of project activities in 17 localities/100 communities, the various implementation levels a, a full time qualified internal auditor will need to be assigned to the project by the General Directorate of Internal Audit of MoFEP.

201. Internal audit reports will be made available to PCU and SPIUs, Steering committees and MoFEP. Financial procedures (including procedures required at locality and community level) will be documented in a financial implementation manual, which will be a condition for disbursement.

202. A complaints handling system for community members will be prepared and implemented, to be monitored centrally at PCU.

External Audit

203. As the Supreme Audit Institution (SAI), the National Audit Chamber (NAC) has sufficient capacity to conduct audits based on ISA; they will be performing the external audit of the project at the Coordination unit and State/Locality and community's levels. To ensure that IFAD's requirements are met, the project will share the Terms of Reference for the audit, which will be agreed to by the NAC prior to commencement of the annual audit. The auditor and on annual basis will provide an audit report with a management letter on audit observations on internal controls. The revolving match equity fund will be audited by the external auditor as part of their annual audit and PFIs shall make available to the auditors all necessary financial information and supporting document related to the use of the fund including financial reports, bank account information and supporting documents. To ensure that audit reports are submitted to IFAD within six months after the end of the fiscal year, engagement of the auditor will commence three months before the end of each fiscal year to ensure that the NAC has scheduled the audit soon after fiscal year end.

Anticorruption and good governance framework

204. The primary responsibility of detecting fraud and corruption lies with the recipient. However, the project should note IFAD applies a Zero Tolerance Policy towards fraudulent, corrupt, collusive or coercive actions in projects financed through its loans and grants. "Zero Tolerance" means that IFAD will pursue all allegations falling under the scope of this policy and that appropriate sanctions will be applied where the allegations are substantiated. IFAD shall take all possible actions to protect from reprisals individuals who help reveal corrupt practices in its project or grant activities and individuals or entities subject to unfair or malicious allegations. Given IFAD's Zero Tolerance described above, it is important that the staff and all stakeholders of the project are familiar with IFAD's as well as national anticorruption policies and whistle blowing procedures. The IFAD anticorruption policy is available on the IFAD website at www.ifad.org/governance/anticorruption/index.htm). The IFAD website also provides instructions on how to report any alleged wrongdoing to the Office of Audit and Oversight (http://www.ifad.org/governance/anticorruption/how.htm).

205. **Taxation.** IFAD Grant proceeds cannot be utilized for the payment of taxes and custom duties.

Procurement

206. The Majority of the procurement activities under IAMDP are expected to be small in nature and value. Therefore, the project will not have big value procurement packages and specialized nature of procurement activities to attract ICB, except for procurement of vehicles, should there be any. The majority of procurement activities will be within the thresholds of NCB, national shopping (quotations), community procurement and direct procurement. Considering the relatively weak capacity at present, close monitoring by ICO will be exercised to guide the process. The project will follow the procurement thresholds as set out in the Letter to the Borrower/Recipient and in the approved Procurement Plan. Whenever possible, procurement of goods and works will be bulked into sizeable bid packages to attract adequate competition thus resulting in cost-effective and efficient procurement. Further information on procurement, related to procurement methods applicable to civils works, goods, and services, thresholds for prior and post review, etc. are presented in Appendix 8.

E. Supervision

207. IFAD would directly supervise the project at least once a year and focus on fiduciary and implementation support functions in collaboration with CPMT. In addition, and given the project challenges close technical supervision and implementation support missions would be jointly conducted by IFAD and the representatives of the federal ministry of agriculture and the four state ministries of agriculture at least once a year but also on demand. The presence of the IFAD Country Office in Khartoum will expedite these processes. The Central Coordination Unit in Khartoum would also be involved as much as possible. The supervision plan for the project's first year will be devised and validated at start-up. The first implementation support mission will take place soon after effectiveness and first disbursement, and will include an M&E specialist to help improve the M&E at central and state levels.

F. Risk identification and mitigation

208. Below are the main risks to achieving project objectives and associated mitigation measures.

Risk	Risk Mitigation	rating
Climate Change related risks: Severe drought, crop failure, and desertification negatively affecting the livelihoods of the target group, if agricultural practices are not handled properly taking into consideration the fragility of environment.	The technical packages (soil disturbance to break hardpan and store water in root zone, introduction of leguminous crops in rotation and compost in home garden, introduction of drought resistant varieties and Gum Arabic, etc.), and (ii) and climate risk insurance promoted by the project should enhance producers' resilience to CC	High
Limited capacity of MAAWI in coordination, management and promoting project sustainability	The project shall build on and take advantage of the experience gained by extension staff in the implementation of SUSTAIN, and SDP and will train staff at LET for further improvement of performance.	Low
Social capital and capabilities of the communities in new villages are limited.	Project will invest in building capacity of Saving and Credit Groups and Farmers Producers Associations	low
Reluctance of private partners and PFI to invest on demand side or lend to the private sector and VC actors	IAMDP will build the capacity of small producers as rural entrepreneurs; thus facilitating linkages with value adders/ processors and finance institutions at state and national level.	Medium
Risk of male takeover if women's economic activities increase in value and/or become more profitable	IMDP will build women associations capacities for better gender equity and advocacy, making us of GALS system.	low

IV. Project costs, financing, benefits and sustainability

A. Project costs

209. The total project costs, for a period of six years, are estimated at US$47.5 million (equivalent to SDG 1.2 billion). All costs have been estimated on the basis of prices prevailing in Sudan in August 2017 and on the basis of expected local inflation rate (around 10 percent per year over the six-year implementation period) and international inflation rate (2 percent per year over the six-year implementation period). All assumptions and parameters are presented in Appendix 9 and Appendix 10.

Table 1: Components project cost summary

	(SDG '000)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
1. Enhanced crop productivity and production	153 907	101 401	255 307	40	32	8 152	5 371	13 523	40	32
2. Market linkage and value addition	79 742	55 249	134 991	41	17	4 224	2 926	7 150	41	17
3. Enabling environment	292 428	12 432	304 860	4	39	15 489	658	16 147	4	39
4. Project implementation	84 903	11 434	96 336	12	12	4 497	606	5 103	12	12
Total BASELINE COSTS	610 979	180 515	791 495	23	100	32 361	9 561	41 922	23	100
Physical Contingencies	11 445	5 475	16 920	32	2	606	290	896	32	2
Price Contingencies	337 834	65 943	403 777	16	51	4 252	443	4 696	9	11
Total PROJECT COSTS	960 259	251 933	1 212 192	21	153	37 220	10 295	47 514	22	113

B. Project financing

210. Project cost is financed as follows: IFAD DSF grant of US$26 million, Government US$8.8 million equivalent, private sector (agridealers, mechanised service providers) US$10.2 million and beneficiaries US$2.5 million equivalent. A complete set of summary tables and detailed costs tables is presented in Appendix 9.

Table 2: Components by financiers (US$ '000)

	Private Sector		IFAD		Beneficiaries		Government		Total		For. Exch.	Local (Excl. Taxes)	Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%			
1. Enhanced crop productivity and production	94	0.6	12 564	81.8	4	-	2 701	17.6	15 363	32.3	5 837	7 919	1 606
2. Market linkage and value addition	215	2.7	5 963	74.5	465	5.8	1 360	17.0	8 003	16.8	3 126	4 047	829
3. Enabling environment	9 894	54.0	3 277	17.9	2 046	11.2	3 116	17.0	18 333	38.6	689	14 626	3 018
4. Project implementation	-	-	4 214	72.5	-	-	1 602	27.5	5 815	12.2	642	3 635	1 538
Total PROJECT COSTS	10 203	21.5	26 017	54.8	2 515	5.3	8 779	18.5	47 514	100.0	10 295	30 228	6 992

C. Summary benefits and economic analysis

211. The project would directly benefit around 27,000 households whose livelihoods depend on production and marketing of rainfed crops. To illustrate such benefits, three models, reflecting the target group situation in project area were developed.

Sinnar and South Kordofan:

(a) Model 1 (5 feddans per household) presents 20 percent of the total households (2,700 HH) and will serve 13,500 feddans;

(b) Model 2 (10 feddans per household) presents 40 percent of the total households (13,500 HH) and will serve 135,000 feddans; and

(c) Model 3 (15 feddans per household) presents 40 percent of the total households (10,800 HH) and will serve 162,000 feddans.

West Kordofan and North Kordofan:

(a) Model 1 (5 feddans per household) presents 20% of the total households (5,400 HH) and will serve 27,000 feddans;

(b) Model 2 (10 feddans per household) presents 40% of the total households (10,800 HH) and will serve 108,000 feddans; and

(c) Model 3 (15 feddans per household) presents 40% of the total households (10,800 HH) and will serve 162,000 feddans.

212. The models cover all aspects from production to marketing directly or through producer's associations. Both the financial and economic analyses are based on four crop budgets and three farm budgets. The four crops are sesame, sorghum, groundnuts and gum Arabic. The main sources of quantified benefits of IAMDP are expected to be: (i) improved production and productivity of the three models (four crops) due to the application of improved inputs and improved agricultural mechanization; (ii) improved storage facilities for sesame, sorghum, and groundnuts; and (iii) improved sales of gum Arabic to be sold to wholesalers and benefit from the price differences.

213. The three models targeted productivity and marketing improvements have been analyzed:

(a) **Model 1** (model of 5 feddans farm) planted by 1.5 feddans of sesame, 2.5 feddans of sorghum, 1.0 feddan of groundnut and receive 50 seedlings of high yield variety gum Arabic.

(b) **Model 2** (model of 10 feddans farm) planted by 3 feddans of sesame, 5 feddans of sorghum, 2 feddans of groundnut and receive 100 seedlings of high yield variety gum Arabic.

(c) **Model 3** (model of 15 feddans farm) planted by 4.5 feddans of sesame, 7.5 feddans of sorghum, 3 feddans of groundnut and receive 150 seedlings of high yield variety gum Arabic.

214. Despite applying conservative rates of yield improvement and adoption of new techniques, the project support resulted into tangible benefits to the smallholder producers. Better mechanization services and access to rural finance, storage facilities and market, would contribute to an average yield increase of 20 percent under fragile climate conditions. Village-based extension services and access to improved seeds and credit to meet operation cost would result into a progressive adoption rate as follows: 20 percent annually starting from the second year progressive of the project, i.e. first year: zero adoption, second year: 20 percent, third year: 40 percent, fourth year: 60 percent, and fifth year: 80 percent.

215. The streams of incremental benefits show highly profitable cash crops especially with high yield varieties and the use of mechanization and better storage processes. The average FIRR is around 20 percent for production and marketing, as detailed in Appendix 10.

Economic analysis of the project

216. The objectives of the economic analysis are: (i) to assess the overall program viability; (ii) to estimate the program impact by estimating the economic rate of return (EIRR) and the economic net present value (ENPV). The computation of economic costs is derived from financial project costs, by excluding transfers such as duties, taxes, and price contingencies.

217. Project economic analysis shows an initial EIRR of around 20.54 percent. The sensitivity analysis shows that the project is still feasible even the investment costs increased by 10 percent, cost of production increased by 10 percent, the revenue decreased by 10 percent or benefits delayed up to three years. The detailed assumptions and estimates are presented in Appendix 10.

Project impact on employment

218. IAMDP will create more than 3 million work-days of casual labor to work in the project area (i.e. more than 23,000 annual jobs of casual labour[13] during the five years of the project. Ranking

[13] Created jobs are estimated by assuming that a season requires 146 of work days.

the four crops based on their job creation: sorghum is the highest (more than 1.7 million work-days), groundnuts come second (more than 1.2 million workdays), then sesame is the third (more than 0.2 million work-days), and gum Arabic is the lowest one that generates casual labor (about 0.2 million work-days).

D. Sustainability

219. The project has many built-in aspects that are likely to secure its sustainability as follows. The **project approach** is to develop the competence and confidence of communities to engage in common marketing through their associations, and to strengthen private sector commercial linkages, at the same time building up the capacity and institutional know-how of Government services to interact with villagers as partners.

220. **Linkages between producers and service providers.** The project will enable the business linkages between producers and agriculture machinery operators since the demonstration phase of the technical packages. The barriers to farmers' access to timely machinery services are removed thanks to producers' organization, training of producers on how to contract and supervise the quality of works of the machinery operators, and producers' access to credit where needed to finance machinery services. The mugawala (see Appendix 4 for definition) agreement envisaged in this project is a common product proposed by banks for financing agricultural services. Group organization and availability of insurance make smallholders eligible for credit as per banks' current procedures.

221. **Access of producers to markets at a more profitable basis.** The project would promote Smallholder farmers to produce for the market at a profitable price. This would help them build a business-oriented relationship with processors and exporters.

222. **Management of physical facilities.** Marketing and storage facilities, such Sinnar crop market and village storage facilities would be owned by the Government, but leased to a private sector company with professional management and with a board consisting of private sector, FPA/GAPAs, and state government.

223. **Access of producers to rural finance** through promotion of Crop loan portfolio start-up matching grants to PFIs. In order to address the reluctance of the PFIs to lend to risky rainfed smallholder producers, the project will use a crop portfolio start-up fund for de-risking the investments of the financial institutions in crop loans. The project will use this fund to finance the PFIs to support the first cycle of crop production loans to target group farmers in the project villages specifically for the adoption of the project promoted improved agricultural packages. Such innovative initiative would help build more lasting relationship between the PFIs and the borrowers, triggering additional borrowing for production and marketing. In addition, the project will promote climate risk-based crop insurance to further mitigate PFIs risk aversion towards smallholder producers.

224. **Outreach of extension services.** The project will make use of the capacity of the extension agents achieved by SUSTAIN, SDP and WSRMP, in terms of logistics, work organization and competencies. Although the project is financing fully the recurrent costs of the teams, consideration is given to recover part of these costs from service fees charged to either farmers and their associations or private sector machinery operators.

225. **Rainfed production systems sustainability** would be enhanced through the following features: (i) farm operations (chisel ploughing, minimum tillage, etc.) would lead to better water retention and, hence, spreading the risk of shortage in rainfall; and (ii) the gum Arabic trees will modify the micro-climate and reduce the evapotranspiration, in addition to arresting and reversing the downward spiral of natural resource degradation.

Appendix 1: Country and rural context background

1. **Country context.** The Sudan's total area is estimated at 1,881,000 km^2 neighboured by seven countries: Chad and Central African Republic to the West, South Sudan, Ethiopia and Eritrea to the South and East, and Egypt and Libya to the North. The border with the Republic of South Sudan is the longest at 2,000 km. The population of the country is estimated at 36.2 million inhabitants (FAO and GOS statistics).

2. The country is endowed with 61 million ha of arable land, of which 17.4 million ha is cultivated, 14 million ha natural pasture, and 21 million ha forests (covering about 11.6% of the total area of the country), and the livestock population is estimated at 104 million heads. More than 80% of the Sudan land area is now classified as arid land, which is forcing the Government and the Agriculture population to develop drought resilient production systems and livelihoods. The high Agriculture potential areas are either suffering from conflict or they are at risk of insecurity. These areas are also referred to as the transition areas as they border the Republic of South Sudan and encompass the States of South Darfur, South Kordofan, White Nile, Sinnar and Blue Nile.

3. The secession of the South in mid-2011 caused Sudan a loss of 75% of the oil export revenues. Away from oil, agriculture and livestock are essential to Sudan's economic diversification and could contribute to medium-term macroeconomic stability. While these sectors presently contribute approximately 35%–40% of Gross Domestic Product (GDP), they could contribute significantly more with greater investment and better governance. Sudan now recognizes the need for greater attention to agriculture and livestock, as reflected in its Interim Poverty Reduction Strategy Paper (I-PRSP) and the Five-year Program for Economic Reforms approved by its parliament in December 2014 (WB overview, April 2017). The 2010 National Baseline Household Survey (NBHS, Sudan Central Bureau of Statistics) indicated a high poverty incidence of 46.5% (an estimated 14.4 million people; 26% rural and 74% urban), and an unemployment rate reaching 16.8%.

4. Comprehensive US sanctions on Sudan, levied in 1997 and expanded in 2006, were eased in January 2017, allowing for financial and trade transactions between US citizens and entities, and their Sudanese counterparts. However, the order to ease sanctions is under six-month review and could either be rescinded or made permanent.

5. According to the AfDB latest report (AfDB, African Economic Outlook, 2016), inflation declined to 16.9% in 2015, while real GDP growth remained buoyant at 5.3%, supported by agriculture, minerals, services, oil-transit fees and foreign direct investment (FDI). Growth is expected to strengthen to 6.2% in 2016 and 6% in 2017, despite the fall in oil prices, reduced gold purchases by the Central Bank and the unstable security situation.

Appendix 2: Poverty, targeting and gender

A. NATIONAL POVERTY AND GENDER ANALYSIS

1. Official figures quote the results of the 2009 National Baseline Survey which puts the national poverty ratio at 46.5%. Rural poverty in Sudan remains high and poverty rates are substantially higher in rural areas, with 57.6% compared to 26.5% in urban areas. The incidence of rural poverty is largest among agricultural households in the Red Sea State, Greater Darfur, Greater Kordofan, Blue Nile, White Nile, and Gadaref. Living standards are the main contributor to poverty, followed by health and education. These aspects are covered in the UNDP Multidimensional Poverty Index (MPI) for 2015 which estimates that in Sudan about 53.1% of the population are multi-dimensionally poor while 17.9% live near multidimensional poverty.

2. Rural poverty is closely associated with the livelihood system of rainfed agriculture. Small-scale farmers and livestock herders in the traditional rainfed sector, the landless and internally displaced people, households without assets and people in areas affected by drought and conflict are most at risk of poverty. The main constraints on rural livelihoods are access to markets, access to financial services, unpredictability of rainfall and water shortages, barriers on migratory routes for livestock, pest and disease outbreaks, and conflicts. The root causes of poverty and food insecurity includes persistent conflicts, urban bias of development, poor productivity of rural factors of production, lack of employment opportunities and the concentration of socio-economic development in a few areas. Government supported rural development projects often fail to achieve the desired results due to gaps in private sector involvement, market linkages and sustainable rural finance supply.

3. Underlying the high poverty rates is the country's relatively undiversified economy, which makes the Sudan highly vulnerable to exogenous risks such as increasingly erratic rainfall, the decline in trade and regional instability. Farmers often have to sell part of their produce immediately after harvest, when prices are at their lowest, and to buy back grain at high prices during the food insecure season (May – August). Other reported causes include the rising cost of living, particularly children's schooling and medical care, and the lack of alternative income-generating opportunities. Poor rural HHs are in a vicious circle of poverty-related low income, risk aversion, use of low input-low output technologies and resulting low incomes. The rural poor are generally obliged to produce for home consumption and sell any surpluses at low prices.

4. **Food security and Nutrition.** Food and nutrition security is fragile and undernourishment is widespread in Sudan. The Global Hunger Index (GHI) calculated each year by the International Food Policy Research Institute (IFPRI) rated the food security in Sudan as alarming in 2013 and 2014. Sudan could not be included in the 2015 and 2016 GHI scores because of lack of sufficient data. According to the Sudan Multiple Indicator Cluster Survey (MICS) from 2014 the prevalence of child malnutrition is high in Sudan: 33% of under-five children are underweight, 38.2% of children under-five years are stunted (too short for their age), and 16.3% of children are wasted (too thin for their height). The prevalence of underweight is 23.2% in urban area as compared to 37.1% in rural areas. There is also a very wide gap in child stunting between rural areas (43%) and urban areas (27.1%). Very high prevalence of children under weight can be found in the the three Darfur states, West Kordofan (38.7%) and Kassala state (42%). According to FAO Sudan Plan of Action 2015-2019 approximately 2 million children in Sudan are suffering from acute malnutrition, while 500,000 childen are severly acutely malnutritioned. Overall, 81% of the households surveyed in the 2014 MICS were having acceptable food consumption score.

5. **Gender status.** Sudan is ranked 140 out of 159 countries in the UNDP Gender Inequality Index (GII). The GII looks at three dimensions of inequality between men and women: reproductive health, empowerment, and economic activity. Another gender indicator, the UNDP Gender

Development Index (GDI) shows residual disparities between male and female. In Sudan women live longer than men (65 years versus 62.2 for men) but spend less time at school (3 mean years of schooling versus 4.1 for men) and earn less than males (1 902 compared to 5,775 GNI per capita for men). Female participation in the labor market is 24.3% compared to 72.2% for men. Nevertheless, women's empowerment is hindered by:(i) a high rate of illiteracy among women, (ii) deeply rooted cultural and traditional values that manifests, reinforce, and regenerates women subordination and men domination (iii) a customary law that attributes specific gender and age differentiated roles; (iii) marriage practices that push women into early marriages; and (iv) heavy workloads among rural women.

6. In rural areas women are generally the main contributors to the household's income and food production. Women comprise 78% of the economically active population who work in agriculture compared to only 57% of men. Their productive activities are mainly subsistence-based for home consumption. Women are also active in horticultural production, which generates relatively good income but is often ploughed back into the maintenance of the HH. Women's limited capacity and skills to embark on viable agro-based and entrepreneurial activities, lack of ownership and control over key resources like land and modern agricultural equipment, coupled with the triple roles of women, impede all efforts for rural women to graduate into the mainstream livelihood economy. The key challenges and priority needs identified by women in pastoral and agro-pastoral communities relate to marketing processes, which is carried out by men in most of the times. A major bottleneck for women is selling their processed by-products as trade in pastoral areas is very limited, mainly in weekly markets, where it is bought by consumers or retailers.

7. Rural women and youth in Sudan form the majority of the extremely poor people in the country. Due to relatively high birth rates (estimation of population growth is 2.83 in 2008 population census) children and young people constitute a large proportion of the poor in Sudan. In 2008, almost 60% of the poor were under the age of 20. Furthermore, 55% of youth aged 15 to 24 are classified as poor. This age category constitutes 23% of the entire population and makes up 21% of the total poor (2012 Interim PRSP). Women and youth poverty is closely linked to their subordinate position and the substantial gender gap which has resulted in a shortage of economic opportunities and inadequate access to productive resources, including credit, land ownership, cattle, skills and support services. The MICS 2014 survey shows that 11.9% of women aged 15-49 years were married before the age of 15. About 59.8% of young women in Sudan are literate and the literacy status varies greatly by area (79.8% in urban areas and 50% in rural areas). According to the MICS survey only 43.7% of women who stated that primary school was their highest level of education were able to read a simple statement shown to them.

B. POVERTY AND GENDER ANALYSIS IN PLANNED PROJECT AREAS

Poverty and livelihood analysis for Sinnar state

8. **Socioeconomic context.** While the State of Sinnar is not among the poorest in comparison to the rest of the fifteen states of Sudan, it ranks below the average of Sudan for such indicators as postnatal mortality, children immunisation, and chronic diarrhoea for children less than five years of age, access to potable water, access to sanitation, and access to primary education. The state population is estimated at 1.6 million. The total number of the rural population in Sinnar is 1.2 million, about 75% of the total population, living in 7 localities consisting of 700 villages. The total number of rural households is 195,800 HHs. About 44% of the state population is classified as living below the poverty line, compared to the national poverty level of 46.5%. About 51% of the population in Sinnar have agriculture and livestock as their main livelihood. The total cultivated land in Sinnar state is 5.5 million feddans divided into 3,630,621 feddans for sorghum, 600,000 feddans for millet, 676,100 feddans for sesame, 177,984 feddans for groundnuts and 415,295 feddans for gum Arabic.

9. **Village poverty profile for Sinnar state.** Due to lack of updated state level data regarding rural poverty and livelihoods of the rural population in Sinnar, the design mission collected primary data through focus group discussions and interviews with households (women, men, youth) and authorities at the village and locality level (village leaders). However, this data is purely indicative and does not carry any statistical significance.

10. The main source of livelihood among rural populations in Sinnar state is traditional rainfed agriculture (crop production, animal husbandry (mainly of small ruminants)) and, to a limited extent, forest-based activities. The crop mix that is widely practiced in the project area is a combination of staple crops, mainly sorghum and millet, plus sesame and groundnut as cash crops. Wage labour is another main source of income during the rainy season. The base rate varies for women and men (men get SDG 30/25 per day compared to women SDG 20/15 per day). Livestock production is the main coping mechanism to meet unexpected demands or crop failure.

11. The livelihood opportunities available to farming women, particularly women headed households (WHH) are limited to the rainy season only, when they cultivate an average area of 10 feddans with sorghum, sesame, millet, and groundnut. Most women have access to home gardens *(jubraka*), where vegetables are grown partly for home consumption and partly for sale. Women also collect wild okra from the fields for drying and storage. Dry okra is an important ingredient in the household diet. In the dry season, women economic activities are restricted to tending the small ruminants, making handicrafts and petty trading, collecting wood for selling and charcoal production. Women generate income from the sale of sesame, groundnut, and nearly about 50% of the production of the home garden.

12. The number of HHs within an average village in Sinnar state is 200-300 with an average of 6-9 HH members per family. Approximately 60% of village populations are women, while youth represent around 65 to 70%. The average of female headed households per village is 31. According to the SUSTAIN Baseline survey from 2012 about 54% HHs in an average village population falls within the category Very Poor and Poor, while 26% are Moderately Poor but just barely above the poverty line.

Poverty and livelihood analysis for the Greater Kordofan region

13. **Socioeconomic context**. The Greater Kordofan region, consisting of the three states of North, West and South Kordofan, has a total area of approximately 380,000 km^2. The total population is estimated to be 4.3 million inhabitants. The total number of localities and rural communities in the three states is as follows (i) NK – 8 localities and 1,308 rural communities; (ii) SK – 17 localities and 712 rural communities; (iii) WK – 14 localities and 1,490 rural communities. The large majority of the population is classified as rural, deriving their livelihood from agriculture and pastoral production.

14. The percentage of the population living in rural areas is estimated to be 80% for North Kordofan and 77% for South Kordofan. In 2009 the poverty head count per state was 58% for NK and 60% for SK. West Kordofan was included as a part of North Kordofan when the data was collected.

15. Crop farming and pastoralism are the two major livelihood systems in Kordofan. Millet is main subsistence crop in North Kordofan and the Western sector of South Kordofan where sandy soils dominate. On the sandy soils sesame and ground nuts are also grown as cash crops. North Kordofan is also widely known as the main producing area of gum Arabic in the world. In South Kordofan the Nuba of the Nuba Mountains are farming communities. South Kordofan is also one of the main areas where mechanized farming is practiced in Sudan. In recent years areas have increased dramatically owing to population growth, declining capabilities of land because of land degradation, transition to market economy, and the accelerated introduction of modern agricultural technology, namely tractors. This, together with mechanized farming, has turned to be one of the main causes of conflict between pastoralists and farmers in the region. While South Kordofan is a conflict affected state with high levels of deprivation and poor

standards, North and part of West Kordofan are drought prone and are characterized by a limited agriculture potential. Yet, agriculture incomes are comparatively higher in North and West Kordofan compared to South Kordofan due to a larger orientation in the former towards cash crops, and proximity to main commodity and livestock markets.[14]

16. Kordofan region suffers a severe problem of land degradation. Main indicators include, deterioration of water sources, removal and destruction of forests, deterioration of range and pastures, soil erosion, loss of biodiversity and conversion of vast tracts of land that were previously agricultural and pastoral into desert or desert-like conditions. The creeping process of desertification remains a major source of poverty, especially among women and children and the decreasing resilience to drought. Land degradation, together with climate change, has also brought about enormous challenges to customary land tenure regimes while contributed to the erosion of relations between social groups. The increased tendency towards arid climatic conditions along the southern margins of the Sahara has also initiated a marked shift in population and economies southwards into the savanna adding to the pressure over already degrading natural resource base.

17. **Village poverty profile for greater Kordofan state.** Due to lack of updated state level data regarding rural poverty and livelihoods of the rural population in greater Kordofan region, the design mission collected primary data through focus group discussions and interviews with households (women, men, youth) and authorities at the village and locality level (village leaders). However, this data is purely indicative and does not carry any statistical significance. The number of HH within an average village is 232 with an average of 6.2 HH members per family. Almost 52% of village population are women, while youth represent around 45%. The average of female headed households per village is 6%. It is noted that about 55% of the average village population falls within the category Very Poor (VPHH) and Poor (PHH) and 34% are Moderate Poor (MPHH) but just barely above the poverty line.

Gender analysis for Sinnar and Kordofan states

18. Gender construction varies between completely segregated and rigid patriarchal communities to more open communities with space for women to maneuver and more flexible gender segregated community. It is observable that gender construction is more flexible in Kordofan than in Sinnar state. Child marriage is practiced in all four states; girls get married between 11 to 14 years old. An average village has no health clinic or reproductive health services or a clinic with very limited service. Hospitals are very far away. There is at least one trained midwife available per village. Boys and girls attend primary school in the villages. Boys continue with their secondary school education, outside the village, while most girls drop out and get married. Overall, education level is very low. Illiteracy rate is very high and relatively higher among women and girls compared to men and boys. Mobility of women is limited and conditioned with the permission of men (husband, father, brother, or son, in some cases neighbor in case of absenteeism of the previous guardians)[15]. This restricted women's movement hinders their access to the market. It was observed during filed visits that women are involved in village development committees and serve as demonstration farmers. Women generally attend the meetings and participate in the discussions but remain inactive in decision making level at these meetings.

19. The most common problems faced by rural women and girls are (i) fetching water and firewood which overloads women's domestic activities and are considered as health hazards; (ii) the lack of health services including reproductive health and midwifery; (iii) lack of financial resources, and knowledge to increase agricultural production. Income opportunities, especially off-farm activities are often offered at better price for men compared to women; (iv) income opportunities, especially off-farm activities are often offered at better price for men compared to women; and (v) harvest, marketing and control of income is done exclusively by men.

[14] *Population Census 2008.*
[15] Typically, and restrict practices in Sinnar state more than in Kordofan.

C. TARGETING STRATEGY FOR THE IAMDP

Geographical targeting

20. IAMDP will be implemented in the four states of North Kordofan (NK), South Kordofan (SK), West Kordofan (WK) and Sinnar state. The IAMDP project area has been determined in close consultation with Government and project staff of the on-going IFAD supported Western Sudan Resources Management Project, the Seeds Development Project (SDP) and the Supporting Traditional Rainfed Small-Scale Procedures in Sinnar State (SUSTAIN). Emphasis has been given to areas where IFAD projects are ongoing. IAMDP will in particular build on the experiences of the SDP which is aimed at promoting the adoption and marketing of improved/certified seeds in the Kordofan region and the SUSTAIN project which is focused on promoting conservation agricultural practices and strengthening links between the private sector and small holder farmers in Sinnar state.

21. Localities and villages have been selected on the following criteria: (i) high poverty levels and sufficient numbers of potential beneficiaries, particularly women and youth; (ii) coverage under the on-going IFAD co-financed projects and potential to capitalize on successful approaches; and (iii) potential for crop production and marketing of Groundnuts, sesame, sorghum and gum Arabic. Based on the above-mentioned selection criteria the IAMDP will intervene in 129 communities (66 old and 63 new) including 27,000 households over a period of 5 years. The consultations have resulted in the selection of 13 localities, in each state as follows: (i) North Kordofan: El Rahad, Sheikan, Um Rawaba; (ii) West Kordofan: Abu Zabad, El Khowai, Elsunut; (iii) South Kordofan: Elgoz, Rashad, Tadamon, Abassiya; and (iv) Sinnar state: Dinder, Dali&Mazmoum, Abu Hujar.

Table 1: Proposed IAMDP localities and communities in Sinnar state and Kordofan region

Locality	Males	Females	Total Population	# of HHs	# of targeted communities	# of old communities	# of new communities
Elrahad	3 599	3 497	7 096	1 102	9	6	3
Sheikan	3 655	3 462	7 117	1 150	7	7	0
Um Rawaba	3 637	3 562	7 199	1 091	10	6	4
North Kordofan	***10 891***	***10 521***	***21 412***	***3 343***	***26***	***19***	***7***
Elgoz	4 467	4 184	8 651	1 358	8	0	8
Rashad	4 200	4 024	8 224	1 329	7	3	4
Tadamon	2 608	2 563	5 171	823	7	2	5
Abassiya	9 003	8 966	17 999	2 516	13	10	3
South Kordofan	**20 278**	**19 737**	**40 045**	**6 026**	**35**	**15**	**20**
Abu Zabad	1 204	1 146	2 350	355	7	0	7
El Khowai	1 458	1 437	2 895	440	8	0	8
Elsunut	1 969	1 851	3 820	633	7	0	7
West Kordofan	**4 631**	**4 434**	**9 065**	**1 428**	**22**	**0**	**22**
Dinder	25 381	26 416	51 797	9 215	26	14	12
Dali& Mazmoum	11 534	12 005	23 539	5 483	12	12	0
Abu Hugar	3 306	3 440	6 746	1 178	8	6	2
Sinnar state	***40 221***	***41 861***	***82 082***	***15 876***	***46***	***32***	***14***
GRAND TOTAL	**76 021**	**75 553**	**152 604**	**26 673**	**129**	**66**	**63**

22. **Target Group.** The IAMDP will intervene in 129 villages (66 old and 63 new) targeting about 27,000 smallholder households, including small producers, rural women and youth (engaged as mechanised service providers, and agro dealers at the village level). In North Kordofan state the IAMDP targets 3,343 rural HHs, of which 671 are women headed HHs. The total number of village population targeted is estimated to be 21,412, of which 50% are women and 30% are youth. In West Kordofan IAMDP targets 1,428 rural HHs, of which 344 are women headed. The total number of village population targeted in WK is estimated to be 9,065 of which 50% are women and 30% are youth. In South Kordofan IAMDP targets 6,026 rural HHs, of which 1,508 are women headed HHs. The total number of village population targeted in SK is estimated to

be 40045 of which 50% are women and 30% are youth. In Sinnar state IAMDP targets 15,876 rural HHS, of which 2,381 are women headed HHS. The total population in villages targeted by the IAMDP in Sinnar state is estimated to be 82,082. Of these about 51% are women and 60% are youth. In all the project interventions, there is a strong focus on women who represent a specific target for IFAD, due to their traditional relevance in agricultural production, their growing social and economic responsibility, and their vulnerable position in societies

23. **Poor smallholder farmer households.** The target smallholder farmer HHs live in clay and sandy plains and usually grow food and cash crops in fields located both close and far from their homestead, generally within a radius of 10 km. The women members of the HH have home garden (*jubraka)* land located close to the homestead where, horticulture crops and millet are grown for home consumption (including food security) or sale. Women also have access to land to plant field crops for home consumption. The main crops grown are sorghum, millet (on sandier soils), sesame, groundnut, and gum Arabic. Major challenges of smallholder HHs in all fours states include low agricultural productivity due to the limited availability of good quality seeds, erratic rainfall, pest infestations, and declining soil fertility. In the targeted States, smallholder HHs also face drought and water shortages during the dry season due to the limited supply of water and the high cost of purchasing water when it is available. Furthermore the lack of adequate access to sufficient productive assets prevents smallholder HHs from making maximum use of the land (draught power/machinery, good quality seeds, fertilizer, and labour). Poor households face food insecurity during about 5-6 months a year. Poor households have low or limited access to extension services and are often poorly organised. HHs usually receive low prices from the sale of their products due to absence of organized commodity markets and the fact that the HHs need to sell their products as quickly as possible after harvest to gain cash and therefore weaken their bargaining power. Lack or limited access to credit together with poor savings is one the main constraints that prevents HHs from purchasing inputs and accessing hired machinery and labour for the more expensive and labour intensive farming activities - weeding and harvesting. As a result, HHs leave part of their available land uncultivated and engage in off-farm wage labour, for example gold mining, handicrafts and petty trade, or charcoal making and sale.

24. **Women in agriculture.** In the pastoral and traditional rainfed sector, women provide a remarkable contribution to the household's wellbeing and food security. Women's specific responsibilities include: (i) in settled farming communities women practice farming, both on the HH fields together with their husbands and on the *jubraka* land, generally 2 feddans (0.84 ha), where they mainly grow green vegetables, tomatoes, cowpeas, okra, millet and maize for both HH consumption and sale; (ii) all HH work, which includes preparing food, collecting fire wood and fetching water; (iii) childcare; (iv) rearing small animals; and (v) petty trade. The varied tasks mean that women generally work longer hours than men. In spite of their responsibilities, women have access to smaller plots of land and generally can control cash income coming from petty trade and poultry rearing, but are rarely involved in decisions concerning key productive assets, such as land and livestock sale. Women also have limited decision-making power in the household or within the community. Their empowerment is hindered by a high rate of illiteracy, persisting gender inequalities perpetuated by the customary law, and early marriage. Compared to men, women earn lower incomes, but tend to allocate more of their earnings to buy food items for their HH. Women headed HH are particularly vulnerable. They can be categorized in four main groups: (i) polygamous HH, which represent the largest segment; (ii) widows, in which the wife and the children remain attached to the late husband's relatives; (iii) women whose husbands have left; and (iv) households whose male head left temporarily to take up non-farm employment opportunities or enrolled in the army. In the absence of the husband, the HH are still under the nominal supervision of a male head, although it is up to the women to earn a livelihood and look after the children.

25. **Rural youth,** particularly unemployed youth, and *young women*. The majority of the young people live in rural areas with no access to basic services or sustainable livelihood opportunities, limited or no employment opportunities, as well as limited access to capacity

building or microfinance services that would enable them to establish their own businesses. Conflict in the country has prejudiced the chances of a whole generation of youth for educational and developmental opportunities.

Targeting strategy

26. The targeting mechanism for IAMDP will build on the IFAD gained experiences through the SDP, SUSTAIN, and WSRMP in reaching the more vulnerable categories of the rural population in the Sudan. The entry point for the project will be organized groups of farmer producer organisations, with an emphasis on including women and youth. Females would be targeted through women and rural development dedicated organizations (saving and credit groups, ABSUMI, etc.) as these institutions facilitate independent access to land, farm equipment, credit and training for their members.

27. The targeting strategy of the project involves a number of steps and iterations. These steps include the selection of poor villages using a village socio-economic survey, a self-targeting criterion where the communities within the selected villages will identify the poorest households among them; and monitoring of the poverty targeting and gender mainstreaming strategies. Main criteria for beneficiary selection are: farm size (small holders of less than 15 feddans), potential for higher production, willingness to adopt new technologies, willingness to establish farmer producers associations.

28. **Selection of the poorest villages.** This process will ensure that 129 among the poorer villages are selected by means of a structured and comprehensive socio-economic survey covering all the villages in the project areas. The survey will use a detailed questionnaire consisting of several modules. Each module contains a number of key indicators and each indicator within the module will have a minimum and maximum score. The indicators will be scored, a total score for each village calculated, villages ranked, and the first one hundred villages with the highest score will be selected 21 (the criteria which will be used in the selection of the villages is presented in Appendix 2). The villages will be rated against the following indicators: (i) percentage of poor households in the village; (ii) number of women headed households; (iii) access to drinking water for potable and livestock uses; (iv) reliance on rainfed farming and herding as the main source of livelihoods; (v) quality of the agricultural land and degree of erosion as manifested in the infestation with noxious weeds; (vi) access to health services; (vii) access to basic education; (viii) level of social capital; (ix) positive feedback to project menu of activities.

29. **Self-targeting measures.** The self-targeting of communities will involve in-depth discussion with the community members and their traditional authorities within the selected villages in order to identify the poorest members in the village. This selection will be triangulated by the village authorities and other entities active at village level such as the Zakat Chamber, Women's Union, Farmers Associations, Village Development Committees.

30. The targeting and self-targeting of youth, women, and rural poor and small-scale farmers will be achieved though: (i) promotion of activities with a relatively low barrier of entry which is not attractive to large-scale agricultural enterprises; and (ii) facilitation, empowerment and capacity-building measures to encourage active participation. These measures include: (i) information and mobilisation campaigns through producer organisations); (ii) group-based approaches and schemes to lower entry thresholds for the rural poor; (iii) linkages with the microfinance sector to leverage their investment capacity; and (iv) institutional strengthening of groups and management training of their members.

31. **Empowerment and capacity-building measures.** Rural community institution building activities would include: (i) mobilisation and strengthening of framer producer organizations, with a focus on including women and youth, amongst others, to enable them to negotiate win-win deals with off-takers; (ii) sensitisation of leaders at grassroots levels in understanding and overcoming gender and youth issues that hinder development, in particular related to land tenure; (iii) functional literacy training for women; (iv) sensitisation of youth on employment

opportunities in the agriculture sector, sharing of experience among youth, and organisation of exchange visits using a peer-to-peer approach; (v) application of minimum quotas for women (50%) and youth (15%) to serve on project supported producer organizations; and (vi) facilitate access to biogas cookers as labour saving devices for women through rural finance.

32. **Gender and youth strategy.** The analysis of women, men and youth management of productive activities reveals that women in particular face specific constraints in weeding of field crops, conserving food crops, feeding small ruminants and overall high workload. The gender mainstreaming strategy of the project aims to enable women to access extension services and rural finance as well as participate in relevant training, demonstration and scaling up activities. The gender mainstreaming strategy rests on the following:

33. Tailoring the technical packages to women's needs: This justifies the inclusion of the *jubraka*, poultry and the focus on animal nutrition; herbicides were removed from the minimum tillage packages as women strongly opposed their use for environmental, production and safety reasons.

34. Introducing post-harvest handling techniques that will enable women to extend the shelf-life of food products as well as sell these at the market during the off season thus increasing the income generated from such activities.

35. Introducing gas stoves to save on women's labour and conserve trees. The use of gas stoves will also save women's time as they will not be going to fetch fuelwood.

36. A quota system will be established whereby the project will support the inclusion of youth in rural enterprise development. In addition, minimum quotas of 50% women and 15% youth will be applied to all project-related decision-making bodies and committees to protect the interests of those target groups.

37. Gender training will be delivered at community level to the village development committees, to the extension teams, the project management office, the locality coordination committees, the State coordination committee and the Board of Directors.

38. The project M&E system will monitor the project outreach to women and results on their livelihoods, access to resources (namely extension services, demonstrations, training, insurance schemes, revolving funds established through the community environment conservation fund). In this regard, appropriate gender disaggregated indicators were included in the project logframe.

39. The extension team leaders will have both women and men staff. Women and men will be both involved in the technical subjects of extension as well as community mobilization, group organization and gender mainstreaming. Such an organization of extension teams is not new and is adopted across the various IFAD co-financed projects with satisfactory results in terms of gender mainstreaming.

40. Adoption of Gender Action Learning System (GALS). The GALS aims at increasing awareness of gender roles in the households and communities by improving their capacity to negotiate their needs and interests and find innovative, gender-equitable solutions in livelihoods planning and value chain development. The IAMDP project will finance training at three levels of implementation: First for facilitators, the IAMDP project staff and extension teams will be trained to become GALS facilitators. Over the first two years of the project, there will be two GALS trainings for facilitators with a set of 15 participants in each one. Second for champions, each facilitator will in turn train five GALS champions in each farmer producer organization. Third, the introduction of gender awareness training among new communities, refresher gender courses for project staff and implementation of the Gender Action Learning System methodology. The process of piloting GALS under IAMDP will be documented under KM activities, lessons learned and results will be disseminated with other IFAD projects in Sudan as well as other NEN countries.

Appendix 3: Country performance and lessons learned

1. Since 1979, IFAD has funded 19 projects for a total cost of US$596.2 million, of which 42% were IFAD loans, reaching 455,500 poor households (some three million people). The completion of SKRDP and GSLRP in 2012, and the transfer of one project to the South Sudan country project, reduced the portfolio to six projects in 2013: Western Sudan Resources Management Project (WSRMP), Seeds Development Project (SDP), Rural Access Project (RAP), Supporting Small-scale Traditional Rainfed Producers in Sinnar State (SUSTAIN), Butana Integrated Rural Development Project (BIRDP) and Revitalizing the Sudan Gum Arabic Production and Marketing Project (RSGAMP).

2. The RB-COSOP (2013-2018), which was extended to 2021 identified two inter-related SOs. Under SO1, the productivity of crops, livestock and forestry in rainfed farming systems were to be enhanced and made more resilient. While under SO2, the access of the poor rural households to sustainable rural finance services, markets and profitable value chains were to be increased. The performance of IFAD supported projects contributing to the two SOs has been significant.

Projects main achievements

3. Achievements and impact of SUSTAIN and SDP on productivity and production

4. A variety of improved agronomic practices have been promoted as follows:

   (a) **Seed Improved varieties.** Certified seed every year for sorghum, certified seed every 3 to 5 years for sesame and groundnuts, Certified and other improved seed leads to greater resistance to disease, greater drought tolerance, and a superior response to inputs in higher potential areas.

   (b) **Land Preparation.** Conservation Agriculture, Heavy chisel in heavier soil, Light chisel in lighter soils, Conservation Agriculture land preparation improves water infiltration and reduces erosion.

   (c) **Soil Fertility.** Crop rotation, added fertilizer (manure and purchased), both lead to higher yields, greater resilience to disease.

   (d) **Planting**, mechanized planter, conserves seed, plants in even rows easy to weed, allows easy fertilizer micro-dosing[16], less expensive (particularly groundnuts).

   (e) **Weed control**, mechanized weeding, rapid, thorough, relatively cost-effective, but requires tractor, and only practical for fields with well laid out rows. Herbicide weeding, rapid, thorough, relatively low cost-effective, does not require tractor.

   (f) **Harvesting**, mechanized, rapid, less expensive, requires a tractor.

5. **Exposure Results.** Both SDP and SUSTAIN have done a very good job at the exposing farmers to improved agronomic technologies, through project-managed as well as farmer-managed demonstrations.

6. Table 3 shows the number of farmers exposed to new technologies by the projects as of the 2016/7 agricultural season. When reviewing Table 2, it is important to note that SDP focused entirely on seed technologies until the mid-term review of late 2014, and only began very limited demonstration of chemical weed control starting in the 2015/6 agricultural season, and slightly larger demonstrations of chemical weed control in the 2016/7 agricultural season. SUSTAIN has focused on improved seed, mechanized land preparation, and crop rotation since 2012 but has not demonstrated weeding technologies.

[16] In lower rainfall areas, ARC recommends “micro-dosing” fertilizer which gives the best balance between cost and yield increases.

Table 2: Exposure to New Agronomic Practices -- SUSTAIN and SDP – as of the 2016/7 season

Technology Demonstrated	SUSTAIN Farmers	SDP Farmers
Improved Seed	41,975	20,000
Mechanized Land Preparation	41,975	3,000
Mechanized Planting	Not demonstrated	3,000
Chemical and Mechanical Weed Control	Not demonstrated	1,700
Mechanized Harvesting	Not demonstrated	850

7. **Initial Adoption.** The level of initial adoption of improved practices has been impressive in both SUSTAIN and SDP, although in most cases, supported by some element of project logistical support or subsidization. The average adoption rate reached around 65% for Sorghum, groundnuts, and sesame.

8. **Improved Productivity through adoption**. Table 3 below shows average increases in yield from technology adoption reported by SUSTAIN and SDP for the three main crops in 2016. There are limitations on the quality of the data collected, so the reported yield increases should be interpreted as indicative of a trend rather than completely reliable statistics.

Table 3: Average Yield Increases Reported for SUSTAIN and SDP farmers, 2016/7 season

Crop	SUSTAIN	SDP
Sorghum	152%	428%
Sesame	74%	5%
Groundnut	Not demonstrated	96%

9. **Scale-up.** Neither SUSTAIN nor the SDP were originally designed with realistic, complete models of commercial scale-up. Nonetheless, there have been some encouraging results of scale-up from the SUSTAIN project. The SUSTAIN project has reported commercial scale-up (i.e. farmers paying full commercial prices) of heavy chisel land preparation for 53,627 feddans as of the 2016/7 season. This is quite impressive, but most of this increase has come from large-scale farmers who have ready access to finance and required services. However, the large-scale farmer scale-up has provided positive impacts. The large-scale farmer scale-up is an important role model for smaller farmers, it has led to positive environmental benefits, and it has led to increase in service provision that can be accessed by smallholders, as many of the adopting large-scale farmers have become service providers themselves.

10. Both projects have piloted initiatives to increase the likelihood of scale-up that will be incorporated into IAMDP's scale-up strategy.

11. **Involvement of the Private Sector.** Neither SDP nor SUSTAIN were designed to work through private sector service providers, nor develop partnerships with private companies[17]. During the course of implementation, however, the project managers and supervision/mid-term review missions for both projects came to the conclusion that private service providers, and private sector partnerships – at the village, locality, and national level - would be the most effective and sustainable means of encouraging technology adoption and addressing low productivity.

12. SDP has pioneered the inclusion of private companies in demonstrations of new seed varieties, agrochemicals, and equipment. This process took extensive discussions and negotiations with

[17] The original SDP did incorporate a plan for partnerships with private seed companies. However, the original design was not feasible, and partnerships were not developed until major changes in partnership design were made after the mid-term review.

companies. Initially, the private companies rejected the idea of collaboration, as they believed that smallholders were not a viable commercial market, for one or more of the following factors: (i) traditional mindset oriented towards subsistence farming as a way of life, rather than farming as a business; (ii) lack of technical understanding of how to properly use improved inputs and services; (iii) low purchasing power; (iv) government interference in the market, particularly through the free/subsidized seed distribution programs of governments and donors; and (v) the seed companies believed that the only viable way to serve the smallholder market was to respond to donor or government seed tenders.

13. When the seed companies were convinced that SDP was taking realistic steps to encourage and empower smallholders to adopt improved inputs and services, they agreed on a provisional basis to participate. In the case of SDP, private companies and the project jointly identified the demonstration locations. The companies provided seeds, chemicals, equipment, and training/equipment operation. The project provided logistics, supervision of demonstrations, and promotional activities to ensure that the demonstrations are broadly publicized, with well-attended field days.

14. The participation of private companies has offered smallholders a much wider technology choice for their production systems. Previously, SDP demonstrations had focused exclusively on open pollinated seed varieties available in the public domain. With the inclusion of private sector companies, farmers have been exposed to a much broader range of production and productivity technologies. Where there has been strong farmer interest (e.g., for the Z2 sorghum variety with striga-tolerant traits[18] developed by the Nile Sun company), the private sector will take steps to develop the supply chain to the farmer.

Table 4: Private Sector Participation in SDP Demonstrations

Company	Seeds	Agrochemicals	Equipment
CTC	Hybrid Sorghum	Herbicides – selective/non-selective	
Dal Engineering	n/a	n/a	Groundnut Planter Groundnut Harvester
ASSCO	Sorghum OPV Pigeon Pea	n/a	n/a
El Douma	n/a	Herbicides - selective/nonselective	n/a
Nour Agroscience	n/a	Herbicides - selective/nonselective	n/a
Katbase	n/a	n/a	Small-scale tractors, chisels, planters, harvesters
Nectar Africa	Sorghum proprietary OPVs	Herbicides – selective/non-selective	n/a
Nile Sun	Sorghum Proprietary OPVs and Hybrids Sunflower	Herbicide – selective	n/a

15. Despite the successes of the SDP/private sector demonstrations in exposing farmers to a much wider variety of new technologies, there have been many logistical and organizational problems during implementation of demonstrations. Mostly, these were due to the heavy reliance on the state locality extension teams (LETs) for implementation, as mandated by the project design. Also, there was an insufficient emphasis on training farmers in the *business* aspects of adopting technology, and, in ensuring that farmers from surrounding villages had an opportunity to visit during field days. These shortcomings are to be addressed by SDP in the 2017/18 agricultural

[18] Striga (or witch weed) is a genus of parasitic weed that is a serious economic pest for sorghum in Sudan.

season, but there is a need for more improvements for these demonstrations to have maximum impact.

16. **Mechanized service provider programmes.** SUSTAIN pioneered identifying and working with village or locality based mechanized service providers (MSPs) to provide services for on farm demonstration of deep chisel land preparation (18,575 feddans demonstrated as of 2016/7 season). The use of village mechanized service providers was not by design, but by necessity. The original SUSTAIN design had sought to contract the nationally-based service providers who normally provide services to the government and large-scale farmers. The larger service providers were interested in providing service to smallholders. However, even village-based MSPs have tended to give priority to their own fields, and those of their larger neighbors.

17. SDP adopted and greatly expanded the concept of village mechanized service providers pioneered by SUSTAIN. The innovations included: (i) light chisel land preparation for the lighter, sandy soils that prevail in North Kordofan; (ii) mechanized planting (mechanical and pneumatic planters); (iii) mechanical weed control (inter-row cultivators); (iv) mechanical harvesting (groundnuts and sesame); and (v) mobile threshing using the tractor power take-off in 2017/2018 season.

18. Despite many difficulties faced in identifying and properly training MSPs by both SUSTAIN and SDP, farmer acceptance of MSP services is widespread and enthusiastic because of time and labor savings, lower costs, and higher yields. Looking across both projects, the two services with the clearest improvement so far over traditional practices are: (i) *heavy chisel land preparation in clay soils for sorghum and sesame*, leading to greater water infiltration and higher yields greatly outweighing the extra costs compared to the use of the traditional wide-level disc; and (ii) *mechanical planting of groundnuts in sandy soils*. This has proven much faster, enabling farmers to catch more of the rains in the growing period, uses less seed and places it at the optimal depth for germination and emergence, and produces regular furrows easier to weed; all leading to greater yield and lower costs. The inter-row cultivator for the mechanical removal of weeds has proved problematic. The operation could only be done in fields that had completely straight and regularly spaced crop rows.

19. SDP experience in the first year of the MSP activity (2016/7 agricultural season) identified a number of factors that were not completely addressed by the MSP selection process and training program that will need to be factored into IAMDP design: (i) MSP tractors were of inadequate size, or poor condition, or missing key functions such as functioning hydraulics required for certain operations; (ii) the LET mechanization specialists had difficulty properly calibrating the planter to handle light seed, especially sesame seed; (iii) poor linkages were established with suppliers and servicers of agricultural equipment, and thus low levels of service or technical support, leading to inefficiencies; (iv) MSPs tended prioritized providing services to larger-scale farmers, as they were easier and less expensive to serve; and (v) gaps in MSP business skills; inadequate marketing, pricing, financial management.

20. SDP, in fact, plans to take steps to address the shortcomings with the MSP program during the final year of SDP implementation. These include refining training programs, facilitation of linkages with financial institutions to enable purchase of new equipment, and training and organized smallholders to clean and consolidate their fields to make it easier to attract MSPs and lower the cost of service.

21. **Spray Service Providers Programme.** SUSTAIN identified village youth, equipped them with knapsack sprayers, and trained them to provide insecticide spraying for *jubraka*[19], stored crops, and for household pests. These youth were referred to as Integrated Pest Management (IPM) agents. They were *not* trained or equipped to provide weeding services using herbicides. In SUSTAIN, a total of 795 farmer-owned grain stores were treated by IPM agents, with an 8% reduction in losses for sesame, and 12% reduction in losses for sorghum. Over 75% of the

[19] *Jubraka* are gardens near the homestead.

IPMs reported purchasing additional pesticides with their own funds, which seems to indicate that farmers are paying for the IPM services. [20]

22. SDP, in contrast, focused on herbicide control of weeding. SDP trained youth identified by the village as potential spray service providers (SSPs). The youth were trained and equipped with knapsack sprayers in the safe and effective use of chemical weed control, using IPM principles, with ToT provided by the Sudan Agrochemical Association (SAGA[21]) working closely with the state crop protection units. SDP also provided business skills training. In general, the villagers had a strongly positive reaction to the herbicide weeding, as it was seen to be quicker and less expensive than manual weeding. The SSPs themselves were optimistic about the business potential of providing chemical weed control.

23. There were a number of logistical and organizational shortcomings during the initial year of the SSP program (the 2016/7 agricultural season) due to inadequate project management, which will be addressed by the project in the 2017/18 season. Common problems that the SSPs encountered include: (i) insufficient *practical* experience in applying chemicals and troubleshooting problems, training provided by the project was mostly theoretical; there was no actual hands-on training applying herbicides to weeds in the field; (ii) limited availability of LET crop protection specialists to supervise spraying; (iii) limited contact and arrangements with local agro-dealers for resupply of agrochemicals; (iv) inadequate business skills in pricing, marketing, cash management, financing, etc.; and (v) lack of finance for equipment and chemical purchases.

24. **Agrodealer programmes.** Agrodealers are locality-based suppliers of seeds, fertilizers, crop protection agrochemicals, and other inputs.

25. SUSTAIN has undertaken a limited assessment of agro-dealers in the project localities in Sinnar state, but has not yet actively supported them.

26. SDP has undertaken an assessment of agrodealers in the project localities in preparation for involving them in project activities. The SDP assessment of agrodealers found varying levels of skill and experience ranging from traders with primary education to those with agricultural degrees. SDP found that most agrodealers: (i) Stock a narrow variety of seeds and chemicals, and are not aware of new seed varieties and agrochemical products that may be of value to their smallholder clients. A few stocked fertilizers, but mostly for vegetable growers not field crops; (ii) have little technical expertise, and thus are not able to provide farmers advice, or store or handle agrochemicals or seeds safely, and have not been provided much technical support from their suppliers or donor/government programs; (iii) have a strong interest in learning more about new seed varieties and herbicide types and usage; (iv) have limited business skills and capacity (e.g. do not keep business records, no marketing or promotional campaigns); and (v) outside of trade credit from some suppliers, have no access to finance. It should be noted that many agrodealers expressed reservations about assuming debt beyond trade credits, and most were highly reluctant to extend credit to their customers.

27. SDP provided business skills training ("Agrodealer as a Business") training to 17 agrodealers, which was very well received by the agrodealers. After the training, they indicated better relationships with suppliers and customers. All started keeping written records, and they perceived a need to form a trade association to exchange information, advocate with government, and possibly negotiate bulk purchases.

28. SDP sponsored an exposure visit for 13 agrodealers to Khartoum, after the 2016/7 season, to meet the national offices of the major seed and chemical suppliers. The private companies greatly appreciated the interest and visit of the agrodealers, and indicated they intended to

[20] WSRMP also trained IPMs, but the approach was to provide a social rather than a business service. WSRMP IPMs have generally not been active after project completion.
[21] SAGA is a member of Crop Life, the international trade association of the agrochemicals industry. Crop Life has introduced an SSP program successfully in a number of African countries including Ethiopia, Zambia, Cote d'Ivoire, and Nigeria.

better support the agrodealers technically, so that they may be reliable sources of technical advice for smallholders in general, and of course better marketers of their own products. For agrodealers with an established track record of sales over more than one season, the companies expressed willingness to improve the trade credit terms offered. As a result of the visit, many new business relationships were struck between the agrodealers and the larger companies.

29. Despite the initial SDP successes, however, there is great room for improvement in agrodealer support programs, and ensuring more profitable connections with their smallholder customers and large-scale suppliers.

Achievements and impact of SUSTAIN and SDP on marketing

30. SUSTAIN post-harvest activities focused on improvements in crop storage and physical market access. The project does not facilitate market linkages or value addition for field crops. SDP's post-harvest activities focused initially on marketing linkages for certified seed, and only since 2015/6 were efforts made to establish pilot initiatives for grain market linkages.

31. **Crop storage.** SUSTAIN's primary intervention for storage was the introduction of pesticide treatment in grain houses, applied by the project-trained and equipped IPM Agents. A total of 795 grain stores were treated; over 80% of the grain stored was sorghum, only 4% was sesame (groundnuts are not commonly grown in Sinnar state). The IPMs did not treat grain stored in the underground matmuras.

32. As a result of the IPM treatment, sorghum losses in storage, on average, declined from 14% to 2%, and average sesame losses declined from 9% to nearly 0%. SUSTAIN Impact assessment report (2015) concluded that nearly half of the households reported improvements in food security, a third reported higher incomes, and over 20% improvements in seed security. However, the cost-effectiveness of the storage intervention cannot be assessed, as calculations were not made of either the net savings from reduced grain spoilage or the average costs of using the IPM agents. Over 75% of the IPM agents reported that they purchased pesticides (after depleting the "starter kit" provided by SUSTAIN), which indicates that farmers view the savings from the service worthwhile and worth paying for.

33. **Physical market access.** SUSTAIN has built 32 *wadi* crossings that have greatly improved access to over 180 villages isolated during the rainy season. These have reduced travel time from 30% to 50% according to the villagers, and over half the farmers interviewed perceived a benefit from this. As a result, the costs of transporting inputs and services to the communities, and moving agricultural produce from the communities, have been reduced, but these have not been quantified by the project. *Wadi* crossing maintenance has been a major issue, with many of showing signs of serious erosion after only one rainy season. *Wadi* crossing committees were established and trained by the project to handle routine maintenance have been formed, but the more serious water damage observed could not have been prevented by routine maintenance. The Sinnar State Ministry of Physical Planning and Public Utilities has agreed to take over upkeep of the crossings as of early 2017, but this has not yet materialized.

34. **Market linkages.** SDP has successfully brokered market linkages between smallholder producers of certified seed and private seed companies. Seed growing groups have sold nearly 28 tons of certified seed to three seed companies, with lesser but significant quantities of seed sold to neighbors. Two of the seed companies (ASSCO and RANS) provided some input finance (seed and field inspection costs), two of the companies provided on-farm collection (Nile Sun and RANS), and two entered into firm pre-season contracts (ASSCO and RANS). The prices paid to farmers is about 15% above the grain market auction price, with deductions made for inputs and transport. SDP has not analyzed the net benefits to farmers of the certified seed market linkage, but both companies and the seed grower groups are pleased and plan to increase production in the 2017/2018 season.

35. To achieve this, a considerable amount of SDP resources has been invested in organizing and providing the specialized training for the seed growing groups, and arranging for the Federal Seed Administration to undertake the necessary field inspections for certification. Seed companies are not willing to take on this role. One of the seed companies, in fact, does not work with the smallholder seed grower groups, but from individual medium-scale farmers.

36. SDP has made initial attempts to broker linkages between grain growing groups and buyers of groundnuts, colored sesame, and sorghum. There was interest at the national level from two large processors of groundnuts, and at the state level from a large merchant/exporter in North Kordofan. The main interest of these buyers was in sourcing groundnuts of higher quality, especially with lower levels of aflatoxin. The companies were willing to provide technical support on production and storage, guarantee a price based on the auction markets, and send trucks to collect the groundnuts provided a critical mass was aggregated. SDP was prepared to help with organizing groups, and providing technical/business training for the grain groups to produce high-quality, low-aflatoxin groundnuts. Because of the high costs from the opaque system of state and local taxation, the buyers could not offer a higher price than local traders, and in fact would only offer the auction price. Without a price premium, or other incentive, the grain grower groups were not interested in taking the trouble and expense of producing a higher quality crop.

Achievements and impact of SUSTAIN and SDP on farmer association formation and strengthening

37. SDP began implementation well before the Farmer Producer Association legislation was enacted and implemented, and during the period in which the Sudan Farmers Union was in decline due to an adverse relationship with government. Therefore, SDP focused on establishing project-organized Seed Grower Groups and Grain Producer Groups that have no legal or formal standing. These groups were mostly formed as a means to receive training, obtain project sponsored resources, and access MFI credit, and have little if any internal business motivation. Groups are formed and sometimes only operate for a year before they become inactive. Currently, there are 8 Seed Grower Groups and 76 Grain Producer Groups, but these are only active intermittingly. The strongest are the Seed Grower Groups that are growing certified seed for sale to private seed companies, as there is a business motivation to collaborate closely.

38. The SUSTAIN experience is much the same as SDP. A total of 496 “interest groups” of smallholder farmers were formed with no legal or formal standing. The interest groups were formed to receive training, visit demonstrations, and coordinate access to project services and MFI credit. They have little or no independent activities.

39. The SUSTAIN and SDP project managers, and IFAD, agree that IAMDP should focus on mobilizing and empowering FPAs rather than continue with project-driven group formation.

Achievements and impact of SUSTAIN and SDP on farming as a business (FAAB)

40. The MTR missions for SDP and SUSTAIN (2014 and 2015) observed that uptake of demonstrated technologies (and therefore greater productivity) was hindered to a marked degree by the lack of business acumen. Both projects had focused on demonstrating the *agronomic* value of improved seed, inputs, and services – e.g., increased yield per feddan. The *economic* value was not addressed. However, improved inputs and services are often more expensive or require more cash upfront than using saved seeds and manual labor. Unless farmers are convinced that they will be financially better off by using these improved products and services, they will not borrow or invest their own funds. Most farmers do not have the business skills to evaluate the financial impacts of adopting improved seed, other inputs, or services except in situations where the agronomic difference is quite dramatic (e.g. use of the deep chisel plow in heavy clay soils).

41. Since 2015, both SUSTAIN and SPD have introduced “Farming as a Business” (FAAB) training for farmers. As of 2017, SDP had provided FAAB TOT to 33 agriculture economics specialists of the NK and SK LETs, who in turn provided FAAB training to over 1300 smallholders, 24 SSPs, and 17 agrodealers (MSPs were not trained).

42. As of 2016, SUSTAIN had provided FAAB TOT to 35 LET officers, who have rolled out the FAAB training as part of the general farmer field school training, reaching 41,975 smallholders. SUSTAIN has not provided FAAB training to MSPs or IPM agents.

43. FAAB training appears to have brought farmers to a higher level of business competency but the actual impact has not been adequately quantified. FAAB training has been enthusiastically received by smallholders, and when questioned farmers could cite specific examples of where the FAAB training had enabled them to make a better business decision. Interestingly, especially for women, the FAAB training was as helpful for starting or improving non-farm business activities as it was for agricultural activities.

44. There are shortcomings with the FAAB training. SDP and SUSTAIN have not developed specific business cases for FAAB training that center around making decisions about the technologies demonstrated by the projects. Therefore, the depth of impact of the demonstrations has been limited. Also, the FAAB training materials do not effectively reach Illiterate or semi-literate farmers.

45. Encouragingly, the concept of FAAB has been accepted at the state level; the government of North Kordofan have asked for FAAB training for all the extension teams. The University of Kordofan in El Obied has created a department of Farming as a Business, based on one faculty member’s work for SDP on FAAB.

Achievements and impact of Gum Arabic Production and Marketing Project

46. The Gum Arabic Production and Marketing Project (GAPMP), jointly funded by the World Bank and IFAD, was implemented by the Forests National Corporation (FNC) from 2009 through 2015. GAPMP covered eight localities in North, South, and West Kordofan states as well as Sinnar, Blue Nile, and White Nile states. Three of the project localities overlap with the IAMDP localities. The Institutional support and capacity building component financed 180 GAPAs supported through micro-finance mechanism and 58 GAPAs who had received matching grants for implementation of their priority intervention, such as water, tractors, or GA storage facilities. Those activities directly benefited more than 17,000 beneficiaries, including 24% of which were women. Out of the 180 GAPAs that received grants for micro-finance 10 were implemented by pure female members. In addition, about 1,110 GAPAs’ members or technical staffs have been trained since the beginning of the project on different topics including agro-forestry, FM, business management, etc. and 165 GA producers participated in 11 exchanges visits to learn from other GAPAs experiences. GAPMP activities contributed to an increase in the GAPA share of the FOB price of gum Arabic from 10% to 65%. GAPA gum Arabic sales increased 25%, and net income increased 73%. GAPMP contributed to improved tapping, grading, and storage practices but the quantitative impact of these interventions was not assessed.

Achievement and impact of rural finance initiatives: ABSUMI, Baraah and SCGs

47. **ABSUMI model.** The ABSUMI model was developed by IFAD in 2010 in collaboration with CBS. It is based on the Sanduq initiative promoted by IFAD in many projects in NENA region. Offering Islamic sharia-compliant credit, savings and microinsurance, particularly to women, ABSUMI was created within the Agricultural Bank of Sudan through a pilot phase in two locations in North and South Kordofan. When it began in 2010, ABSUMI was built upon the proven "village sanadiq" model and incorporated a range of strategic innovations and unconventional business practices including group guarantees and effective training. It entered the microfinance market through the bottom layers of the economic pyramid by providing smaller loans and serving the poorest segments of the population. Loans support small agricultural activities, livestock fattening and rearing, and a range of microenterprises such as

petty trading, tea stalls and brick-making. The improved information-dissemination and training paired with the confidence in the model and the presence of enabling regulatory framework resulted in the success of the initiative. At present ABSUMI had a total of 10 units spread across 10 Localities in 5 states namely North Kordofan, West Kordofan, Sinnar, White Nile and Khartoum. They cover a total of 323 villages reaching around 30,000 members through 1,800 groups. Since inception, these units have disbursed over SDG 150 million through 100,000 loans a majority of which has supported clients in the IFAD villages. Overall, ABSUMI's repayment performance is almost 98% and most of the units, especially older ones which have completed 3-4 years of operations are financially sustainable. ABSUMI's success has been driven by its business plan approach, professional management through managers with banking background, doorstep delivery of services, women's groups, strong group solidarity and group guarantee culture. Most of the credit demand by clients was for financing livestock activities (75%) due to relatively low risks and high returns in a short period of time.

48. **Baraah model.** In 2010 Baraah was established by the IFAD supported South Kordofan Rural Development Programme (SKRDP. Baraah was established as a licensed, professionally managed, central microfinance institution owned by the communities it served. Baraah has also partnered with the SDP for disbursing crop production loans to SDP target group farmers for the adoption of SDP promoted crop production packages. In general, Baraah has demonstrated considerable flexibility in adjusting its products and methodology to farmers' needs. Unfortunately, soon Borah's area of operation was engulfed in armed conflict and the environment of insecurity. However, in spite of these obstacles Baraah has succeeded in maintaining its operations and has reached about 7,000 households maintaining a portfolio of around US$1.5 million with more than 95% repayment rate. Baraah's community owned structure and management through locally recruited staff contributed to its will to continue operations even under adverse circumstances. After the closure of SKRDP, Baraah has consolidated its relationship with the CBS-MFU and has received up to US$1 million as portfolio financing over the last four years. The Baraah model has been used as a template by the CBS for developing business plan of several other MFIs that were licensed over the last 3-4 years

49. **The SCG model** has been successfully implemented by Western Sudan Resources Management Programme (WSRMP) in the Greater Kordofan Region. In this model voluntary groups of up to 20 members were formed for the purpose of mobilising savings and internal credit. At present SCGs include 23,000 members [90% women], organised into 1,357 SCGs in 264 communities spread across 19 localities in the North, South and West Kordofan States. Together they have mobilised around SDG 3 million as internal savings and have cumulatively disbursed around SDG 85 million as internal credit from group funds maintaining a repayment rated of 99%. Initially each member saved around SDG 5 - 20 per month across different groups which has now increased to 20-30 SDG. The SCG have demonstrated excellent results with some villages mobilising internal capital as high as SDG 150,000 from 3-4 SCGs that could be used for financing crop production activities.

Lessons learned from IFAD portfolio

50. Some key lessons arising from projects under the current RB-COSOP period, that are applicable to IAMDP, are as follows:

51. For smallholders to benefit from private service providers (i) the service providers must have necessary inputs, equipment, and technical/business skills, and, be available and ready when inputs/services are required by farmers; and (ii) smallholders need to be organized to be more attractive and profitable customers, and have ready access to finance.

52. Private companies will invest in marketing inputs and equipment targeted for smallholders, when they are convinced (i) smallholders have the knowledge and purchasing power to be a significant market; and (ii) government input subsidies are focused only on the poor subsistence farmers who would not able to afford inputs.

53. Private companies, however, largely do not find it cost-effective to invest into providing inputs/services to smallholders; but are interested in investing in the capability of local or village based input/service providers.

54. Free or subsidized input/service provision by the federal or state governments is inefficient and unsustainable. When applied indiscriminately, it (i) crowds out village-based service delivery; and (ii) discourages private investment in the supply chain.

55. The government and university research institutes have been and still are capable of developing valuable new seed varieties (particularly open pollinated varieties) and other technologies for the rainfed sector, but are not able or willing to invest in the steps to bring these to market to benefit smallholders.

56. The increasingly high costs and scarcity of labor availability are major constraints to increased production and productivity, and have led to a strong interest in MSP and SSP services.

57. Access to land for expansion is rarely a significant constraint, and mechanization and spray service provision will help expand production as well as productivity.

58. Inputs and services must be tailored for the agro-climactic conditions and smallholder aspirations in the localities. For example, lower-potential areas where agroforestry is important may find animal powered services (e.g. the “curiat plow”) more appropriate than mechanization. Similarly, areas with scattered smaller fields may best be served by smaller tractors than the standard 70-80 hp tractor.

59. GAPA structure and leadership were crucial to success. Some GAPAs turned out to be controlled by powerful families not actually involved in gum Arabic collection, that were merely interested in matching grants or microfinance. The best performing GAPAs were those with 100% women members.

60. Financial constraints limited the ability of GAPAs to purchase gum Arabic from members, so that members needed immediate cash they had to sell to traders offering lower prices.

61. Self-reliance was not inculcated in all of the GAPAs. Many GAPAs continued to request project support, and did not use the matching grants/microfinance as seed capital to ensure their own commercial sustainability.

62. Post-project sustainability of services and infrastructure requires private delivery mechanisms and community ownership. Unpredictable public financial support and problematic operation and maintenance create risks for sustainability of public services, (extension and infrastructure). Projects should promote local extension networks with payment for services and private sector partnerships, and build up local capacity and ownership.

63. Increasing climate risk necessitates a focus on resilience and adaptation. Increasing drought frequency and worsening climate change are magnifying risks to rural communities in rainfed areas.

64. Community Based Organisations (Producers’ associations). The formation and/or strengthening of local institutions such as the village development committees (VDCs), GAPAs and crop producers associations is critical in empowering the intended beneficiaries to exploit fully the economic and financial potential of the project, mobilise and/or attract funding/investment for their communities, manage common infrastructure facilities and engage in income generating activities.

65. Financial institutions consider first cycle loans as most risky: Experiences of SDP and SUSTAIN indicates that although financial institutions have access to portfolio funds they are reluctant to invest in crop production activities due to the inherent risks. This hesitation is especially directed at small farmers in the rainfed areas who are considered riskier as they follow traditional agricultural methods and do not have any prior banking experience. Consequently, financial institutions are deterred from financing the first cycle loans to such

clients. This can be overcome by financing the first loan cycle using project funds according to the demand of the clients and supplying subsequent repeat loans to these farmers, on successful repayment of the first cycle, using portfolio funds belonging to the financial institutions.

66. In addition, project partnership with a single financial institution restricts flexibility: Experiences of SDP indicates that project partnership with a single financial service provider is restrictive and does not allow flexibility for greater access to financial services by target group. The lack of competition amongst MFIs allows the interest rate to the borrowers to go unchallenged.

67. Investments in *wadi* crossing that allow year round access on crucial feeder roads have lowered the costs of market access and input supply. A concrete and realistic program of upkeep is essential to ensure these investments continue to benefit farmers.

68. The traditional means to store crops post-harvest are satisfactory in terms of physical protection of the commodity, although improvements in management can result in economically significant savings in crop losses. The traditional village level storage facilities are not suitable for post-harvest financing using crops as collateral. Without this type of post-harvest finance, farmers are not able to hold cash crops in anticipation of price increases, due to indebtedness to Sheil merchants or MFIs, and the pressing need for cash for household and other requirements.

69. Farm gate prices for crops are reasonable when compared to the major auction and wholesale market prices (less logistical and other costs and normal trader margins). Similarly, the auction and wholesale prices reflect international market prices (less logistical and other costs and normal trade margins). Farmers are well aware of auction and wholesale market prices at any given time, this information can be obtained by any villager with access to a mobile phone. Most farmers have a general conception that prices immediately after harvest are increasingly higher with each passing month, and do not appreciate the high degree of volatility. Storing crops in anticipation of higher market prices can be risky and incurs expense, and could lead to foregoing other more lucrative opportunities such as animal fattening.

70. Increased production of sorghum, sesame, groundnuts, and gum Arabic can be absorbed by local, national or international demand. International demand for Sudan crops would likely increase further if US sanctions against Sudan are lifted. The Agricultural Bank of Sudan Strategic Reserve buying operations are scheduled to continue in the medium term, and this will serve as a further source of demand, especially for sorghum[22].

71. There are a number of value-addition activities that could be undertaken at the village level that if structured effectively, could have the potential to reach national or international markets. These include: village-level pressing of sesame and groundnut for unrefined oil and seedcake livestock feed, proper grading for gum Arabic, shelling for groundnuts, and if US sanctions are lifted, obtaining internationally recognized certifications (e.g. Organic, Fair Trade). Some value-added products may be exempt from some or all of the local and state road taxes/fees; this would increase the likelihood of establishing market linkages with the formal sector. However, local markets for value-added products are limited and mostly already captured by existing small-scale operations owned by the local merchants or wealthier farmers.

[22] Strategic Reserve sorghum is released on to the domestic market only when there are shortages that threaten food security. In other years, the Strategic Reserve exports sorghum to the Gulf States, South Sudan, Somalia and other markets where sanctions are not a limiting factor. In 2017, the Strategic Reserve reports that they plan to export approximately 1 million metric tons of sorghum.

Appendix 4: Detailed project description

Component 1: Enhanced Productivity and Production

1. **Expected Outcome.** The expected *outcome* of this component is enhanced smallholder productivity and production, through activities addressing smallholder farming of the three main cash and staple field crops of the region; sorghum, sesame, and groundnuts; and gum Arabic agroforestry activities. The outcome will be achieved by increasing smallholders' access to an improved package of inputs and services, demonstrated to be cost-effective under local conditions, and supplied by village or locality based input and service providers.

Background and Rationale

Key Crops for IAMDP

2. **Sorghum** is the most important staple crop of South Kordofan and Sinnar State smallholder farmers, and the second most important staple crop of North Kordofan and West Kordofan. Nationally, smallholder farmers produce less than a third of the sorghum crop, the balance comes from the irrigated sector and from large-scale semi-mechanized farmers in the rainfed areas. Sorghum grain is stored at household level throughout the year for food security and as a form of savings, and when required some quantities may be sold to meet household expenses. Sorghum finds a ready market at any time of year through local village and locality markets, and the larger wholesale markets in El Obied in North Kordofan (serving South Kordofan), Nihud (West Kordofan), Gadarif in Gadarif (serving Sinnar), and in Omdurman

3. Globally, Sudan is a top five producer of sorghum with nearly 4 million MTs annually, although there are large weather-determined variations in supply. Because of supply variations, and high domestic demand as the main staple food and for livestock (sorghum is the most common energy source for cattle and poultry feed), sorghum grain is exported only intermittently and only to regional markets. The 2016/2017 season was unusually favorable and there are substantial surpluses for exports. The Strategic Reserve (managed by the Agricultural Bank of Sudan) plans to export approximately one million MTs of sorghum grain to South Sudan and Somalia for human consumption, and to the Gulf States for animal feed. Beyond the region, there is a large international market for sorghum that could be tapped by Sudan provided that it can be produced cost-effectively.

4. Private companies are actively interested in developing and marketing new varieties of sorghum, as there is a significant market for certified OPV seed, and increasingly for certified hybrid seed[23]. There is also substantial interest in importing/producing other inputs and equipment for sorghum cultivation, harvesting, and processing.

5. **Sesame** is the most important smallholder cash crop in Sinnar and South Kordofan, and the second most important cash crop for smallholders in West and North Kordofan. Sesame, with a high protein and oil content, contributes to food security and nutrition within the rural household, although it is primarily grown as a cash crop. White sesame varieties are used domestically for confectionary products, but mostly white sesame is exported. The colored varieties of sesame are crushed for oil, in the village and in larger factories, but increasingly large quantities are also exported to India and other destinations. The sesame seedcake remaining after crushing for oil is a valuable livestock feed used by villagers as well as by larger commercial livestock operations.

6. There is a ready, year-round market for sesame at village markets, at the auction houses in El Obied, Nouhud (West Kordofan) and Gadarif, and in the main wholesale market at Omdurman.

[23] Sorghum is significantly cross-pollinating crop, with substantial deterioration of desired attributes in saved seed from one generation to the next, so recycling of seed is not recommended.

Prices can be quite volatile, because of its strong international demand, and volatile supply (globally, it is mostly grown by smallholders in rainfed areas that are subject to considerable weather-induced production fluctuations).

7. Sesame is primarily a crop of smallholders, in Sudan, and internationally. Sesame is very labor intensive during certain parts of the production cycle, and large-scale operations find it difficult to mobilize large amount of farm labor required during peak labor demand.

8. Sudan is the world's largest exporter of sesame[24], in terms of value of the crop, and equal to India and Ethiopia in terms of volume exported. The quality of Sudan sesame, particularly from the project area, has slipped to an extent in recent years. The main problems are (i) inadvertent mixing of higher value white sesame with lower valued colored varieties resulting in lower prices received; and (ii) improper use of pesticides post-harvest to prevent insect infestation of drying sesame, resulting in higher residue levels than allowed for some of the more lucrative markets (e.g. Japan). The US sanctions on Sudan limit the addressable market for Sudan's sesame. If US sanctions are lifted, and if Sudan can address the problems of color grading and pesticide residues, the potential for increased sesame exports are high. Sesame oil exports are low, but are on an upward trend.

9. There is private sector interest in developing agrochemicals and equipment for sesame production, especially for harvesting and threshing. Private sector interest in improved seed is low, outside of limited sales to the GoS and donors for relief efforts. This is because sesame is a largely self-pollinating crop, with low effective demand for certified seed, and there is little private seed company interest in improving and marketing seed varieties for the commercial market.

10. **Groundnuts** are the most important cash crop for smallholders in the sandy soils of North and West Kordofan, and are also important in parts of South Kordofan and Sinnar. In Sudan, large quantities of the smaller Spanish varieties of groundnuts are grown by smallholders in the rainfed areas. Relatively small quantities of the larger Virginia varieties are grown in the irrigated sector.

11. There is a ready, year-round market for smallholder groundnuts at village markets, at the auction house in El Obied, and in the main wholesale market at Omdurman.

12. Groundnuts, high in protein and oil, are important for food security and nutrition for smallholders. Crop residues have a high livestock feed value. In fact, sales of groundnut "hay" made from the crop residue often makes the difference between profitable and unprofitable production of groundnuts by smallholders, especially those using less productive traditional agronomic systems.

13. Most of Sudan's groundnuts are crushed for oil, both at the village level and in larger factories, with lesser amounts processed as a form of peanut butter (*dakwa*), or roasted and eaten as a snack. The seedcake after groundnut oil crushing is a highly valuable livestock feed, sought after by smallholder livestock owners, large livestock operations, and is also exported.

14. In the 1970s, Sudan was among the top two exporters of whole groundnuts. Sudan's exports dropped precipitously until recently, and Sudan became a minor player in the global groundnut market, exporting on average about 1,000 MTs/year. A major factor that depressed Sudan's exports has been the inability to comply with increasingly stringent aflatoxin regulations, as well as the impact of US sanctions which limits the addressable market. However, this has changed dramatically over the past two years. The 2016/2017 season was reported to be exceptionally good in terms of quantity and quality (low aflatoxin levels). Traders estimate that as much as 100,000 MTs will be exported in 2017, which would likely place Sudan amongst the top five groundnut exports globally and would be the highest levels of exports achieved since the 1970s. Market reception has been excellent. Exporters report that exports of 300,000 MTs just

[24] Myanmar is not captured in the official statistics; unofficial estimates place it as a producer/exporter equal to Sudan.

for China will be possible in the 2017/8 season. If sanctions are lifted, the potential for Sudan groundnut exports would be much higher. Sudan's exports of groundnut oil and seedcake are also trending upwards.

15. There is strong private sector interest in developing agrochemicals and equipment for groundnut production by smallholders, especially for planting and harvesting, both of which are highly labor-intensive operations. Groundnut seed, however, is strongly self-pollinating, and seeding rates are very high, so the effective demand for certified seed is quite low. As a consequence, there is little private seed company interest in improving and marketing certified groundnut seed except small quantities for the GoS and donor relief efforts.

16. **Gum Arabic.** Sudan supplies about 70% of the world's supply of gum Arabic, and it is the second most important agricultural export after sesame. About 160,000 metric tons of gum Arabic are produced, with 120,000 exported according to official statistics (significant quantities of gum Arabic are smuggled and are not captured in the official export statistics).

17. Collecting or tapping gum Arabic is a significant source of income for communities in all the project area, and is especially important livelihood diversification activity in drought years when crop harvests are lean. Up to a million households in Sudan depend partly on gum Arabic for their livelihoods, where it contributes up to 40% of household earnings.

18. The most important variety of gum Arabic from Sudan is *hashab* gum, from Acacia senegalensis. There have been extensive planting programs of *A. senegalensis* since the 1950s, but plantations have been neglected or removed during periods of low prices (when there was heavy state interference in the market) and converted to crop agriculture. The *talha* variety of gum Arabic from *Acacia seyal* is also increasingly important, especially for the Indian market, although prices are lower. There have not been significant tree planting programs for *A. seyal*. Gum Arabic production has a positive impact on the environment as the acacia trees maintain natural forest cover. They are leguminous and fix nitrogen, thus they improve soil fertility. Because of their long lateral root system, water run-off is reduced, and wind erosion is mitigated.

19. There is a ready, year-round market for both *hashab* and *talha* from village traders and at the auction markets in El Obied, Nihud (West Kordofan), Gadarif, and in Omdurman. However, major production areas of Sinnar state are not well served, with the closure of the Wad al Nil market in the 1990s.

20. Sudan had developed a complete protocol of *hashab* gum Arabic husbandry from seed collection, nursery techniques, planting, tending, tapping, collection, grading, processing, and marketing but these have not kept up with technology improvements and shifting market demands. Improvements in tapping, collection, and grading for both varieties to better meet market requirements will have a large impact on prices received by farmers. Many gum Arabic producer associations (GAPAs) are quite weak (see farmer producer association discussion following). Greater value addition in Sudan (spray-drying) and direct marketing to major consumer countries (two French companies dominate gum Arabic value added products and re-export very large quantities to other European countries and the US) will have positive effects on smallholders.[25]

The key challenge: low productivity

21. A primary barrier to smallholder's successful participation in these value chains is very low on-farm productivity. In Sudan, the primary factor contributing to low productivity is the low uptake of agronomic practices that are appropriate for the prevailing agro-climactic conditions.

[25] Even though gum Arabic has been exempted as a *product* from US sanctions, the general financial sanctions placed on Sudan make it difficult for US companies to purchase directly from Sudan. However, there are reports that a spray-drying plant with 5,000 MTs annual production capacity has been commissioned in Khartoum in August 2018.

22. For the most part, improved agronomic practices are well-known within the local research community and in the private sector of Sudan, but have not been adopted and scaled up by the rainfed sector, particularly smallholders. In brief, the primary reasons that smallholders have not adopted improved agronomic practices include: (i) lack of knowledge about improvements, their benefits and potential risks, and their impact on household incomes; (ii) inadequate access to cost-effective inputs and services; (iii) a subsistence-oriented rather than business-oriented approach to farming; (iv) inadequate market access leading to low farm gate prices that do not sufficiently reward investments in productivity; and (v) inadequate access to finance to apply desired improvements to their fields.

Component 1 - Description of activities

23. Component 1 activities will build the capability of the private sector at the village, state, and national levels to ensure sustainable and cost-effective service delivery for smallholders that will continue after project support. Component 1 will support and work through the government to improve the enabling environment for private sector service delivery by providing training, facilitative, and troubleshooting support services for the service providers. The project will encourage government to restrict free or subsidized service delivery for demonstrations or for targeting poor subsistence farmers, and to use private sector service providers for this to ensure that the public sector is not crowding out the private sector. Six main activities will be supported through Component 1:

Activity 1.1: Private Service Provider and Agrodealer Capacity Building

Activity 1.2: On-Farm and Innovation Demonstrations

Activity 1.3: Engagement with National Private Sector Companies

Activity 1.4: Gum Arabic Support

Activity 1.5: Climate Change Resilience Building

Activity 1.6: Home Garden (*jubraka*) Cultivation Support

Activity 1.1: Private sector service provider and agrodealer capacity building

24. Village and locality mechanized service providers and spray service providers, village mechanics/blacksmiths, and agrodealers will be supported so that they will become (i) suppliers of high quality, cost-effective inputs and services on a commercial and sustainable basis; and (ii) trusted advisors to SHFs in their fields of expertise, complementing and supporting the public sector extension services.

Sub-activity 1.1.1: Agrodealer capacity building

25. **Agrodealer assessment.** Agrodealers in the project localities will be assessed for their technical understanding of the use of inputs, store infrastructure, types of inputs stocked and supplied, relationships with national input supply companies, government, or other certifications, etc. The assessments already done for SDP and SUSTAIN will be updated and expanded.

26. **Agrodealer training.** Based on the agrodealer assessment, training and support activities will be developed that are tailored to the agro economic conditions and needs of each locality. Agrodealers will receive training on (i) **technical training** based on IPM principles in the safe and effective use, storage, and handling of seeds, seed dressing, herbicides, pesticides, fertilizers, and other agricultural inputs[26]; and (ii) **business training** covering topics such as: financial management, marketing, merchandising, promotions, demonstration, advising customers, record keeping, management information systems, and supplier relationships.

[26] All pesticides (including herbicides) must be approved by the Pesticides Council of Sudan, an inter-ministerial body with private sector participation. IAMDP will only promote herbicides and other agrochemicals that have been approved by the Pesticides Council, and only for the uses for which the chemicals have been approved.

27. **Structured agrodealer visits to Khartoum** to meet and interact with national seed and agrochemical private sector companies with the goal of developing stronger, mutually beneficial linkages. From this agrodealers should be able to negotiate better terms of trade, promotional/ demonstration support, technical training, and in-shop informational materials that will enable them to serve smallholders more effectively and profitably.

28. **Agrodealer association formation**, possibly in partnership and under the umbrella of the Sudan Agrochemical Association (SAGA, see Implementation Arrangements below for details of this collaboration). Amongst other activities, the Agrodealer Association could develop a Code of Conduct that will cover the key aspects of safe storage and marketing of seeds and chemicals. The Association will represent the interests of the agrodealers in their dealings with government and suppliers. Many smaller agrodealers may not qualify for full inclusion in an Agrodealer Association because of not meeting current regulatory requirements (e.g. University degree), and in consultations with SAGA, some means of including and upgrading these agrodealers in an Agrodealer Association will be incorporated (perhaps as Associate members).

Sub-activity 1.1.2: Mechanized service provider capacity building

29. **MSP assessment**. Tractor owners in the project localities will be identified and assessed, covering key issues such as owner/operator qualifications, years in business, make and types of equipment used, service provided and demand, existing relationships with equipment suppliers, where equipment is serviced. Based on this assessment, training will be developed, targeted as required to the locality.

30. **MSP training**. Tractor owners or operators will be selected as candidates for MSP training by the local communities. MSPs previously trained by SUSTAIN and SDP may also be covered, as their technical and business training was incomplete in many ways. The two most promising MSP trainees in each village will be contracted by the project to provide services for the Innovation and On-Farm Demonstration activities during the full intervention phase in year two (see Activity 2 below). Mechanized service provider candidates in the selected villages will receive: (i) **technical training** covering topics such as: tractor maintenance and troubleshooting, and calibration, maintenance, and proper use of implements, and (ii) business training covering topics such as negotiation with suppliers, pricing and market services, using village agents, and financial management.

31. **MSP exposure tours** and introductions to the national equipment suppliers for the development of stronger linkages including better terms of trade, promotional/ demonstration support, technical training, and informational materials.

Sub-activity 1.1.3: Spray services provider capacity building

32. **SSP assessment.** An initial assessment of spray service providers (SSPs, referred to as IPMs by SUSTAIN and WSRMP) will be undertaken in localities and villages where IAMDP will be active. Surveys already undertaken by SDP will be updated. This may be done in collaboration with one or more chemical and equipment suppliers who have expressed interest in collaboration.

33. **SSP training.** Each project village will select two to four village youth as candidates for SSP training, based on their aptitude, prior experience, and motivation. The agro-climatic and market conditions in the locality, will shape the emphasis of the training. For example, in more productive areas with larger farm sizes, SSPs may be trained on the use of motorized mist-blowers or tractor-mounted sprayers. The two most promising SSP trainees will be selected to provide services for the innovation and on-farm demonstration programmes (see Activity 1.2 below). The SSP training will cover: (i) technical training and certification on the safe and effective usage of crop protection chemicals, including: pest scouting techniques, selection of the proper chemical and dosage for the job, mixing chemicals and calibrating sprayers, optimal spraying conditions, and pre-harvest intervals; and (ii) business skills training, pricing

and market services, record-keeping, linking with agrodealers, access to finance. Active existing SSPs in old villages will be eligible for refresher and advanced training as required.

Sub-activity 1.1.4: Village blacksmith and mechanic capacity building

34. **Village mechanic and blacksmith assessment.** An initial assessment and geo-referencing of village blacksmiths in the localities where IAMDP will be active. This may be done in conjunction with one or more equipment suppliers who have expressed interest in collaboration and greater linkages with mechanics and blacksmiths. The assessment will cover capabilities in servicing and maintaining tractors, sprayers, and implements as well as fabrication of rudimentary spare parts and simple hand tools (e.g. the *sonki* used for gum Arabic tapping, the harvester for gum Arabic harvesting). The assessment will cover years in business, type and condition of machinery, financial strength, and motivation in participation in the project.

35. **Village mechanic and blacksmith training.** One or more mechanics and blacksmiths in each village will be selected, based on the assessment and with community input, for technical and business training and linkage with equipment suppliers.

Activity 1.2: Innovation and On-Farm demonstrations

Sub-activity 1.2.1: Innovation demonstrations

36. Innovation demonstrations will be held in at least one location in each project locality, to demonstrate new or improved seed varieties, agro-chemicals, equipment, and methods of application[27]. The Innovation Demonstrations will showcase crop varieties, crop protection chemicals, fertilization, and equipment that are not in common use in the locality, but which are deemed by project specialists, private companies, and ARC to have high potential. The most successful technologies from the Innovation Demonstrations – that is, those technologies judged as most appropriate by farmers – will be incorporated in the on-farm demonstrations in the following season. The use of gum Arabic for shelter belts will be encouraged, especially in areas where mechanization will require the removal of trees from fields.

37. The Innovation Demonstrations will be financed and managed in partnership with the participating private companies. The participating private companies will commit to ensure that technologies demonstrated that are accepted by a significant number of farmers will be available for sale by local agrodealers or provided by local service providers by the following season. Private companies that do not make a good faith effort to honor this commitment will be dropped from participation in future innovation demonstrations, as it is not worthwhile to demonstrate products that won't be readily available to smallholders.

38. The LETs will use the Innovation Demonstrations as a primary case study for teaching of agronomic and FAAB training of farmers in the locality. The business case for each innovation will be explained, and then evaluated against actual results experienced during the production and marketing season.

39. Project support for the Innovation Demonstrations will be maintained for three years with an increasing level of management and financial responsibility from the private companies (and possibly, with in-kind contributions from local service providers). The guideline for project/private cost sharing split is: PY1 75%/25%, PY2 50%/50%, PY3 25%/75%. However, the actual level of cost sharing will be subject to negotiation, as it will vary depending on location of the demonstration, type of technology demonstrated, etc.

Sub-activity 1.2.2: On-farm demonstrations

40. On-farm demonstrations, at the village level, will demonstrate, on farmer-managed fields, proven technologies that are appropriate for the locality. In the experience of SDP and

[27] In all cases, the technologies demonstrated in the on-farm or innovation demonstrations, will have received approval when required, from the appropriate authority, e.g. the Federal Seed Agency for seeds of new crop varieties, and the National Pesticides Council for agrochemicals.

SUSTAIN, demonstrations that are managed by the farmers on their own fields are most likely to lead to adoption. Early-adopter farmers willing to cost-share with the project and host training and field days will be selected for the on-farm demonstrations. These early adopter farmers will manage their fields, use project-trained input and service providers, and share the costs with the project. The On-Farm Demonstration farmers will have full access to the crops produced. The on-farm demonstration farmers will be required to plant an appropriate part of their land to shelter belts using gum Arabic species where and when appropriate, or other beneficial species such as *Moringa oleifara*.

41. In addition to demonstrations of technologies, the on-farm demonstrations will be used for the farming as a business training (part of Component 3) for all project participants in the village, with project-guided analysis on budgeting, record keeping, and assessing costs, risks, and returns (through the farming as a business activities of Component 3). Special field days will also be organized for nearby villages in the locality at key points in the farming cycle (land preparation, planting, weeding, and harvesting). The information will be collected and analyzed by IAMDP and government officials to ensure objectivity and it will be available publicly (e.g. an IAMDP website).

Activity 1.3: Engagement with national private sector companies

42. Project support will accelerate, deepen, and expand private sector engagement with smallholder farmers, both directly and indirectly. Specifically, private sector companies will be encouraged to: (i) provide training, technical and financial support to agrodealers, MSPs, SSPs, and mechanics/blacksmiths serving SHFs or other service providers, as part of their ongoing business relationships; and (ii) develop and market new inputs and services appropriate for SHFs

Sub-activity 1.3.1: Information sharing

43. As noted earlier in the lessons learned section, private companies are willing to invest in developing new products and supplying smallholder farmers on a commercial basis, provided they are convinced that there is real business potential. TA national workshop summarizing the lessons learned from the private sector partnerships of SDP, SUSTAIN, and other donor projects in Sudan and elsewhere will be organized and held in Khartoum.

44. To accelerate this learning process, the project will develop and share the information to the private sector in the form of concise reports, which will be updated regularly. Most of the information in the reports will be collected in the course of project implementation, but will need to be packaged in a manner appropriate for private sector decision making:

(a) **SSP assessment** covering experience, training, certification, equipment, volume of business, etc. This report will be prepared after a critical mass of SSPs have been trained and are providing services on the ground.

(b) **Agro-dealer assessment** covering technical understanding of the use of inputs, store infrastructure, types of inputs stocked and supplied, relationships with national input supply companies, government, or other certifications, etc.

(c) **MSP assessment** owner/operator qualifications, years in business, make and types of equipment used, service provided and demand, existing relationships with equipment suppliers, where equipment is serviced and updated.

(d) **Village blacksmith and mechanic assessment** will identify and assess the skills, experience, shop condition, tools, spares etc. of village blacksmiths and mechanics, focusing on their ability to provide primary service and simple spares for sprayers, tractors, and implements.

(e) **Smallholder farmer productive base assessment** at the state and locality level which describes the productive capacity of the smallholder and other rainfed sector – crops/varieties grown, acreage, soil types, rainfall, roads, and other infrastructure.

45. **Sub-activity 1.3.2: Technical assistance and training.** Private sector companies will be provided technical assistance on an individual as requested based or collectively trained on modern methods of developing, producing, packaging, marketing and distribution of goods and services designed for the small-scale farmer. Examples include:

    (a) Using inventory, distributor, or customer management software systems.

    (b) Packaging, marketing, and promotions/cross-promotions for smallholders.

    (c) How to sell to or buy from farmer associations.

46. There will be a target 50%/50% cost-sharing for training or technical assistance provided to individual companies. Training programs will be developed by the project on as-needed basis, requests for technical assistance from private companies will be evaluated by the project.

Sub-activity 1.3.2: The Innovation Scale-up Challenge Grant Facility (ISCGF)

47. Sub-Activity 1.3.2 will support individual private sector companies, or partnerships of companies and smallholder producers in scale-up initiatives that will have a deep and sustainable positive impact on smallholders, or for the village-based service providers that directly support smallholders.

48. The **Innovation Scaling up Challenge Grant Facility (ISCGF)** will be the main vehicle for project support. The ISCGF will support all three components of the project, but is described in detail here. The ISCGF concept evolved from the experiences that the SDP and SUSTAIN project had working with the private sector. The project managers and IFAD support teams observed that the degree and speed of private investment and participation in smallholder agriculture could be greatly accelerated with seed funding to buy down risk that would unlock much greater investments by the private sector. The design of the ISCGF was developed in a way to leverage private sector interest and resources, after a careful review of the experience of challenge grant funds.[28]

49. The ISCGF will provide resources for proposals that improve SHF access to inputs and services, or strengthen linkages to markets. The private sector will provide at least 25%, but proposals that have higher level of private sector matching would have priority.

50. ICGMF-funded activities will be selected through an open, publicized, and competitive process. A few examples of possible projects that *could* be funded are outlined below. These examples have been discussed at a conceptual level with private sector companies during the course of SUSTAIN and SDP project implementation, as well as during the design missions for IAMDP. The examples below only cover Component 1. Component 2 detailed project description will also include examples of possible projects for market access and value addition.

    (a) **Accelerated development and release of new seed varieties appropriate for the smallholder rainfed sector.** This would include cost-sharing support for training in new breeding techniques, access to germplasm outside of Sudan, specialized equipment for research and multiplication. There is particular interest in the development of open pollinated and hybrid sorghum varieties that have drought-tolerant, striga-tolerant, or high-yielding traits.

    (b) **Mobile tractor and equipment servicing facilities capable of providing complete servicing and repairs at the locality level.** These mobile servicing facilities would increase the efficiency and profitability of MSP provided services, resulting in better service to smallholder farmers, and would be a profit center or marketing activity for equipment suppliers. Currently, only the large scale semi-mechanized sector has ready access.

[28] For a review of challenge funds and recommended best practices, see the following: 1) Pompa, Claudia "Understanding Challenge Funds", ODI, October 2013 (found at http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9086.pdf) and 2) Moeller, O. and Akerbak, J. "Swedish experiences of challenge funds: Case of Innovations Against Poverty", GREAT Insights, Vol. 3, Issue 6, June 2014.

(c) **Training of village mechanics and blacksmiths** to provide simple repairs and stock certain types of spares for tractor, implements, and sprayers and linkage to regional (or mobile) centers for repairs that cannot be handled at village level**.** This would increase the efficiency and profitability of MSPs, and create additional business opportunities and jobs for village mechanics and blacksmiths.

(d) **Establishment of a seed processing plant** based in South Kordofan (where none presently exists), with equipment capable of producing smaller package sizes appropriate for smallholder farmers. This would result in lower seed prices for South Kordofan farmers, and create new opportunities for smallholders that have specialized in seed production (e.g. the seed grower groups established by SDP).

Activity 1.4: Gum Arabic support

51. The IAMDP gum Arabic activity will build on the accomplishments and draw from the lessons learned from the completed IFAD/World Bank GAPMP and the ongoing AFD-financed RSGPMP summarized earlier. The key findings of GAPMP and RSGPMP are: (i) higher farm-gate prices can be received by producers through measures to improve quality and better market access; (ii) pre-financing of tapping operations allow greater productivity and production and higher revenues; and (iii) when producer incomes are high there is a strong incentive to protect and expand planting of gum Arabic trees, with a positive impact on the environment and climate change. RSGPMP will likely close before the start of IAMDP, however the project will monitor closely and collaborate where possible with a proposed gum Arabic support project under development by FAO for seven states in the gum belt (the Darfur and Kordofan states, and Sinnar state) that will be submitted for GCF funding late in 2017 or in 2018, and possibly effective in 2019. The Component 1 Activities for gum Arabic will focus on production, productivity, and quality in the project localities where gum Arabic production is or could be an important contributor to household incomes.

52. **Sub-activity 1.4.1: Improved potential of the gum Arabic resource base.** Support will be given to FNC, the Institute for Gum Arabic and Desertification Research Studies (IGADRS), and the private sector to identify and multiply improved landraces of gum Arabic (both the *Acacia senegalensis* producing the premium *hashab* gum, and *Acacia seyal,* producing the less expensive *talha* gum will be covered). Improved landraces may have more or higher quality gum production, may be more climate resilient, may mature more quickly, etc. In all cases consultations will be made with private sector exporters and if possible importers as to quality requirements. The seeds and seedlings of improved landraces will be made available to state level nurseries of FNC, as well as to community and individual nurseries. Other research with practical impacts on gum Arabic productivity (e.g. agronomic techniques) will be sponsored based on requests from FNC, IGARDS, or the private sector.

53. **Sub-activity 1.4.2: Technical and financial support for community and farmer based nurseries** will be provided. Community-based nurseries may be managed by Gum Arabic Production Associations (GAPAs) or an independent income generating opportunities for women or youth supplying seedlings for producers as local circumstances dictate. This will also include financial support to rehabilitating the gum nurseries at FNC state level, ensuring that they are providing the best genetic material available.

54. **Sub-activity 1.4.3: Gum Arabic Innovation Demonstrations.** At least one Gum Arabic Innovation Demonstration for gum Arabic similar to the field crops will be held in each project locality, either on private or FNC lands at easy to reach localities. Gum Arabic Production Associations will be trained in improved agronomy, tapping (e.g. use of the *sonki* developed by ARC), harvesting (e.g. use of the new harvester developed by IGADRS), grading, and storage techniques to maximize the productivity and quality of gum Arabic production., grading, and storage. The gum Arabic Innovation Demonstrations may be financed and managed in partnership with private sector partners who will be supporting activities to increase the quantity and quality of gum Arabic produced (and whom will guarantee purchase of higher quality gum

at a premium to auction levels, in activities described in Component 2). Separate courses may be developed for independent tappers or sharecroppers as appropriate for the production systems in the localities (these are independent gum Arabic service providers paid either a daily wage or provided a share in the harvest).[29]

55. **Sub-Activity 1.4.4: Enhanced productivity and improved quality of gum Arabic.** Gum Arabic Production Associations will be trained in modern tapping and primary grading techniques to maximize the productivity and quality of gum Arabic production. The training will be done in partnership with private sector gum Arabic processors and exporters, several of whom have expressed an interest in supporting activities to increase the quantity and quality of gum Arabic produced in Sudan (see Component 2).

Activity 1.5: Climate change resilience building

56. The project climate risk profile was successfully raised from medium to high after consulting with the national environmental authority in Sudan and after field proofing the H status. Consequently, it is necessary to take proactive steps to face the threats of CC in the project's areas, namely fragility and vulnerabilities. The objective of this activity is to enhance resilience of the target group and their eco systems to CC. It will also clarify the following: (i) who is at risk of what (analyzing vulnerabilities); (ii) who is responsible and for what (institutional assessment); and define priorities (coherent and coordinated adaptation action).

57. In addition to project support on the promotion of agricultural "good practices" through involvement of the Locality Extension Teams at village level, the project would provide support in building capacity of policy and decision-makers and implementers from relevant government institutions (e.g. Ministry of Agriculture, Ministry of Environment, ARC, etc.) through tailored training on: (i) current vulnerability in agriculture; (ii) recommended revisions to current policies and institutions to integrate adaptation to climate change; and (iii) the standardized approach to safeguards and climate risk management.

58. In addition, the project would provide support to analyze and synthetize existing strategies, policies, programs, reports etc. in climate change adaptation and actualize them by bridging the gaps in developing vulnerability assessment (VA) reports for the four States (North Kordofan, South Kordofan, West Kordofan and Sinnar). The VA reports would provide information from which the climate risk assessment could draw, and so it would be optimal to conduct these prior to the climate risk assessment. These VAs would be carried out in as participatory a fashion as is possible, and would also serve as capacity development and sensitisation exercises for project and other stakeholders on climate resilience, including the socially disaggregated nature of climate vulnerability. Although IAMDP with its CC-related activities will address the adaptive capacity of the productive environment/ecosystem and their resistance to CC, these activities would not be sufficient in finding spatial and sustainable solutions to the nexus water -soil – biomass in a broader sense. They would act as a demonstration and pilot initiative. On a larger scale the GCF project will be needed in parallel /supplement to the IAMDP in rainfed agriculture areas and beyond.

Activity 1.6: Support to home garden (*jubraka*) cultivation

59. The project would support *jubraka* demonstrations in the new villages and scaling up in the old and new villages for improving women home gardens. This would be the entry point for household nutrition. Other entry points would include: capacity building on good agricultural practices; gender and climate mainstreaming, post-harvest handling techniques; time and energy saving stoves, and production and productivity of nutrient rich food crops. In order to further contribute to enhancing nutrition at the household level, the project would be promoting *jubraka* cultivation through chiselling, improved vegetable seeds, plastic sheet for lining of small irrigation pits and technical and nutrition-sensitisation training. This home based production

[29] The costs of introducing new gum Arabic technologies are minimal; e.g., 30 SDG for a *sonki* tapping tool. Therefore, there does not appear to be a need for activities parallel to the On-Farm Demonstrations for the field crops.

increase would help the households in securing all the home food needs of dried okra and tomatoes, and sizeable contribution to neighbours and selling the surplus as well as the cash crops like groundnut in the local markets. The average *jubraka* size is 0.5 feddans. A total of 150 women in the new villages and 10,000 women in the old and new villages would benefit from this activity through demonstrations and scaling up, respectively.

60. *Jubraka* scaling up in the old villages would take place largely through women training and access to rural finance. The purpose of these loans will be to enhance production and income from homestead farming. Women interested in these loans can access financing for activities that enhance homestead production such as land preparation using the improved mechanised services promoted by the project, fencing equipment, digital excavation and lining. The project will specially promote the access to these loans for the excavation of ditches that can lead to supplementary irrigation for early maturing vegetables resulting in additional income and timey repayment.

Implementation arrangement for component 1

Activity 1.1: Private sector service provider and agrodealer capacity building

Sub-activity 1.1.1: Agrodealer capacity building

61. **Agrodealer assessment survey** instruments will be designed by the PCU Experts. They will build on and improve the earlier SDP and SUSTAIN agrodealer survey instruments, and obtaining input from private sector agrochemical and input suppliers, SAGA. The agrodealer assessments will be undertaken at locality level by the LET Crop Production Officers, who will receive any necessary training from the PCU, with spot checking and troubleshooting support from the SPIU Specialists.

62. **Agrodealer training.** Based on the findings of the assessment, the Agrodealer TOT and training materials will be developed by the PCU Crop Protection and Farming as a Business National Consultant. The actual agrodealer training will be delivered by a combination of PCU and SPIU specialists. However, training on the safe and effective use and storage of agrochemicals will be designed and undertaken by SAGA (see below).

63. **Structured agrodealer visits to Khartoum** will be organized by the PCU Crop Protection Officer and crop protection national consultant, after consultations with private sector partners, and after the national private sector partnership workshop (see sub-activity 1.3.1).

64. **Agrodealer association formation** will be led by the private sector/marketing officer with the support of the other experts and international/national consultants, and will take place after the first two years of project implementation. This will be done in close consultation with SAGA and with the more active and engaged agrodealers supported by the project.

Sub-activity 1.1.2: Mechanized service provider (MSP) capacity building

65. MSP Assessment survey instruments will be designed by the national mechanisation consultant. The assessment survey instrument will build on and improve the earlier SDP and SUSTAIN mechanised service provider survey instruments, and will obtain input from private sector equipment suppliers. The assessments will be undertaken be at locality level by the LET locality mechanisation officers, supervised and guided by the SPIU mechanisation officers. The locality mechanisation officer (LMO) will receive training from the PCU and SPIU, with spot checking and troubleshooting support from the SPIU mechanisation officer.

66. The Mechanisation Service Provider (MSP) technical ToT and training program and materials will be undertaken by the PCU national Mechanization consultant, who will consult closely with the Federal and State level mechanisation departments as well as private sector equipment suppliers. The business ToT training components will be developed by the FAAB national consultant. In each village, the MSPs will be selected for training by the LET LMO, with input from the community. All selected MSPs must own or have access to a suitable tractor (e.g.

minimum horsepower, functioning hydraulics, etc.). Training will be done by the SPIU mechanisation officer and LET locality crop protection officer (LCO).

67. **Sub-activity 1.1.3: Spray services provider (SSP) capacity building.** The SSP technical training and certification program will be designed and implemented by SAGA[30], with whom the project will negotiate a grant for this purpose to cover the costs of developing and testing ToT, training, and certification materials. SAGA who will work closely with the federal Pesticides Council and state level crop protection departments to ensure their buy-in and support for both the training and certification programs. The SAGA ToT will be delivered to trainers drawn from individual private sector companies (members of SAGA) as well as the SPIU and LET crop protection officers, assisted by the state crop protection specialists. These trainers will provide the training to SSPs and agrodealers, as well as any interested farmers. SAGA will handle all aspects of implementing the SSP certification program.

Sub-activity 1.1.4: Village blacksmith and mechanic capacity building

68. **Village mechanic and blacksmith assessment.** The village blacksmith/mechanic assessment survey instrument will be designed by the national mechanisation consultant. The consultant will obtain input from private sector equipment suppliers. The assessments will be undertaken be at locality level by the LET mechanisation officers, supervised and guided by the SPIU mechanisation officer. The local officers who will receive training from the PCU and SPIU.

69. **Village mechanic and blacksmith training.** Technical ToT and training program and materials will be undertaken by the PCU national Mechanization consultant, who will consult closely with the Federal and State level mechanisation departments as well as private sector equipment suppliers. The business ToT training components will be developed by the FAAB national consultant. In each village, the village mechanics/blacksmiths will be selected for training by the LET officers, with input from the community. All selected blacksmiths/mechanics must have a minimum level of experience and capability, which will be determined during project implementation. Training will be done by the SPIU Officer and LET mechanisation officers.

Activity 1.2: On-farm and innovation demonstrations

70. The PCU Crop Protection Officer will have the lead responsibility for managing the design, organization, and implementation of the Innovation and on-farm demonstration activities, working through the SPIU specialists and LET officers.

Sub-activity 1.2.1: Innovation demonstrations

71. The PCU Private Sector Officer will initiate and develop partnerships with the private sector companies to develop one or more innovation demonstration plots in each project locality. The innovation demonstration sites will be jointly selected by the project and the private companies, and will be located in areas that are easily accessible to other farmers in the locality. The project and private companies will jointly bear costs, in a manner specified in negotiated MOUs, following current SDP practice.

72. The PCU private sector officer will be responsible for overall design of the innovation demonstrations, and negotiation of MOUs with the private companies ensuring the greatest level of commitment in terms of inputs, technology assistance, and cost sharing. The officer will consult closely with ARC to obtain their latest guidance. The SPIU specialist will supervise and support the selection of the innovation demonstration sites at locality levels, with support from the LETs. The SPIU will negotiate with project trained agrodealers, MSPs and SSPs will to provide the inputs and mechanization and crop protection services. The innovation demonstration plots will be managed on a day-to-day basis by volunteer lead farmers in the

[30] SAGA is a member of the industry association CropLife, which has a world-wide SSP program supporting safe and effective use of agrochemicals through the training and certification. SAGA provided the ToT trainer for the SDP SSP activity in 2016 and 2017 seasons.

village nearest the demonstration, who will be allowed to keep the produce from the fields in exchange for their time. The project will bear the costs of the innovation demonstration on a declining basis for three years, following the cost sharing guidelines, and based on MOUs which will be individually negotiated with each company.

Sub-Activity 1.2.2: On-farm field crop demonstrations in project villages

73. The on-farm crop demonstrations are done in villages that have an opportunity to follow the Innovation Demonstrations or on-farm demonstrations the previous year. The LET specialists will review with the villagers the possible agronomic package options for the on-farm demonstrations in the following year. A target 20 early adopter farmers willing to cost-share will be selected for the on-farm demonstrations.

74. These early-adopter farmers in each project village will provide 3 feddans of land each for the on-farm demonstrations. The project will finance the improved package for 2 feddans; and the farmer will be required to cost-share and pay the costs of an additional 1 feddan (through self-financing or through a PFI).

75. Inputs and service services for the on-farm demonstrations will be organized by the LETs, who will arrange contracts with agrodealers for inputs, and SSPs and MSPs for services. The agrodealers, SSPs, and MSPs will be selected by a streamlined competitive process to be developed by the PCU, and will be open to those service providers and agrodealers who have successfully completed the technical and business trainings described (and in the case of SSPs, have been certified by SGA). The LET officers will supervise the on-farm demonstrations, and will escalate any problems to the SPIU specialists and the PCU experts as required.

76. Other farmers in village, or nearby villages, will be allowed to make their own contracts directly with agrodealers, SSPs and MSPs, independent of the on-farm demonstrations. These farmers will not be subsidized by the project, and the LETs will only provide limited supervision, as they must focus on the on-farm demonstrations. These farmers will be encouraged to the extent practical to adopt the same package of inputs and services provided to the on-farm demonstrations.

77. The LETs will organize field days for the surrounding villages at critical points in the production cycle (e.g. land preparation, planting, weeding, harvesting). The on-farm demonstration farmers will be required to keep complete and accurate records of the amount and costs of inputs used, as well as yields. The LETs will use these records for M&E purposes and also for farming as a business training sessions (see Component 3).

Activity 1.3: Engagement with national private sector companies

78. **Sub-activity 1.3.1: Information sharing.** The PCU Private Sector Officer with support from an international consultant, will design and organize the private sector partnership workshop in the first year of the project. The PCU Private Sector Officer with the other Experts and national consultants will develop and distribute of assessments and special studies for sharing sub-activity. These reports will be concise and oriented towards busy private sector decision makers. The exact topics will be determined as an outcome of the national workshop, and may include subjects such as:

(a) Project strategy, activities, and accomplishments.

(b) Smallholder location, landholdings, production, productivity.

(c) Lesson learned working through service providers to market to smallholders.

79. **Sub-activity 1.3.2: Technical assistance and training.** The PCU Private Sector Officer will identify and develop training programs for private sector companies on modern methods of marketing and distribution of goods and services designed for the small-scale farmer. The Private Sector may draw upon the support of the other PCU Experts, and national and

international consultants. The topics will be selected as a result of the national conference, and as matters arise through project implementation. Technical assistance will be developed at the request of individual companies or trade associations. There will be a target 50%/50% cost-sharing for technical assistance provided to the private sector.

80. **Sub-activity 1.3.3: The Innovation Scale-up Challenge Grant Facility (ISCGF).** The details of the ISCGF will be contained in an ISCGF operations manual will be an integral part of the project implementation manual. The following is a brief summary of the main points to be included in the ISCGF manual that will be reviewed by IFAD:

(a) The PCU private sector officer will manage the day to day activities of the ISMGF.

(b) The PCU will take steps to publicize the ISMGF to encourage relevant proposals from the widest possible base of potential promoters.

(c) Membership of the ISMGF selection committee will include the Federal Ministry of Agriculture and Ministry of Finance, participating State Ministries of Agriculture, and representatives of producers, private sector companies and civil society (NGOs and farmers producers associations).

(d) The ISMGF Selection Committee will review proposals against the following criteria:

- **productivity and production impacts -** the degree to which smallholder productivity and production will increase);
- **innovativeness –** the degree in which the activity to Sudan, to the state, to smallholder farmers);
- degree of matching contribution by the private sector and farmers - the higher the better;
- **additionality** - the degree to which the grant accelerates, deepens, and broadens what the private sector planned to do without the grant;
- **scalability** - the degree to which positive impacts to continue to grow as a result of successful implementation; and
- **systemic impacts** - the degree to which the grant will have a positive impact on systems and the environment, beyond the company and direct smallholder beneficiaries. Examples are positive environmental impacts or reforms in GOS crop marketing policy.

81. If the ISCGF funding is disbursing rapidly with good results, and there is continued demand through high quality proposals of scaling up activities, the IAMDP project management and IFAD may pursue co-financing arrangements with from other donors or financial institutions.

Activity 1.4: Gum Arabic production, productivity and quality support

82. **Sub-activity 1.4.1: Improved potential of the gum Arabic resource base.** The PCU agroforestry national consultant will develop the program of support to IGADRS or FNC to improve the genetic potential of the gum acacia landraces, consulting closely with private sector gum buyers, processors, exports, and farmers. Distribution of the improved genetic material will be coordinated at the state level by the SPIU national agroforestry consultants and at the locality level by the LET agroforestry officer.

83. **Sub-activity 1.4.2: Establishment of community and individual nurseries.** Under the guidance of the PCU and SPIU agroforestry national consultants, the LET Agroforestry Officer will work with GAPAs and individual producers who plan to upgrade/replace their trees with improved landraces. The LET private sector coordination officer will explore the business potential for woman or youth run nurseries. The PCU and SPIU national consultants will review requests from the state-level FNCs as to rehabilitation of their nurseries, with a view to ensuring

that a high quality of seedling and seed production, adequate distribution mechanisms, and possibilities of public/private partnerships.

84. **Sub-activity 1.4.3: Gum Arabic Innovation Demonstrations/GAPA trainings.** The Gum Arabic Innovation Demonstration sites will be selected by the PCU and SPIU agroforestry national consultants, in consultation with stakeholders including active GAPAs. TOT and training materials in improved gum Arabic agronomy, tapping, grading, storing developed by the World Bank/IFAD and AFD projects, FNC, and other sources will be updated as required by the national consultants in consultation with IGADRS and the private sector. The private officers at the PCU and at the SPIUs will negotiate MOUs with private sector gum Arabic buyers to assist with the development of training materials, TOT of LET officers, etc. Training of GAPAs will be done by the LETs and FNC extension agents with support as required by private sector partners. The need for separate training courses for gum Arabic sharecroppers/tappers (i.e. those without their own trees) will be assessed by PCU community development national consultant in consultation with other technical team members.

Activity 1.5: Climate change resilience building

85. The project will hire a consultant on a retained basis for the implementation of CC resilience and capacity building activities. The trainings and demonstrations of climate change adaptation initiatives targeted at vulnerable groups, that are largely included in component one for conservation agriculture, will be conducted by experts specialized in adaptation in full coordination with LET officers. They would also be involved in coaching staff from Ministry of Environment, Ministry of Agriculture and the Agriculture Research Center (ARC) on using climate monitoring equipment and calibration, use of multiple sources of climate data for developing of climate change scenarios, impact scenarios and modelling.

Activity 1.6: Support to home garden (*jubraka*) cultivation

86. The extension agents at the LETs would be responsible for demonstration of *jubraka* at rural women households. Scaling up will take place in all project area with LET agents and credit officers at the Locality level being in charge of training and facilitation of access to rural financing.

Component 2: Market linkage and value addition

87. **Expected outcome.** The expected outcome of this component is higher income for the smallholder producers through improved market access, introduction and strengthening of village-based crop storage, and introduction of value addition/market linkage activities to increase the net returns from the crops grown and gum Arabic collected by smallholder producers. Three main in activities will be supported through Component 2:

Activity 2.1: Physical market access (wadi crossings).

Activity 2.2: Storage facilities development.

Activity 2.3: Value addition (village processing) and market linkage.

Background and rationale

88. Smallholders are not maximizing their income from cash and staple crop production due to storage and marketing constraints. They experience significant amounts of post-storage loss for sorghum and millet, the two primary food security crops, due to inadequate physical storage facilities. Both sorghum and millet can be readily sold for immediate cash requirements. Financial constraints compel them to sell cash crops immediately after harvest, when prices are often the lowest. A complex and opaque system of taxation of road transport by local governments often makes direct linkages between smallholder and processor or exporter expensive, and entrenches a network of middlemen who often add little value other than the ability to evade taxation. The great potential for value-addition opportunities for state, national, and international markets are not captured. These issues are explored in more detail below.

89. **Storage.** Because of the prevailing arid conditions in Sudan, post-harvest losses of staple crops are not as serious an issue for smallholders as they are in different climates. The crops are commonly stored in simple storage rooms or in the farmer's house. Storage methods can be improved. SUSTAIN found that by when an IPM agent applied pesticides to farmers' grain stores, sorghum losses were reduced by about 12% and sesame losses by 8%.

90. Larger quantities of sorghum not required in the immediate future are often buried underground using the *matmuras* technique. In this case, physical losses from larger vermin are eliminated, and the low oxygen/high carbon dioxide environment greatly reduces insect damage, but the quality of the grain as food or feed can deteriorate, particularly if there is water infiltration. The Agricultural Bank of Sudan claims that sorghum in *matmuras* can be stored 10 years or more, with no loss in grain quality[31]. However, visual inspection of sorghum stored in a village *matmuras* by members of the design team showed a darkening of the grain, and a musty smell which could indicate mold damage and the risk of mycotoxins such as aflatoxin, which is poisonous to animals and humans in higher doses, and a carcinogen in lower doses. The aflatoxin issue is addressed as a separate topic later.

91. Groundnuts present a special risk –when not properly dried and stored, groundnuts can be infected by the aspergillus mold, resulting in aflatoxin, a potent carcinogen.

92. **Finance.** Smallholders are often compelled to sell cash crops immediately after harvest, when prices are usually lowest, because of pressing financial considerations (loan repayments and immediate cash needs). Therefore, they are not able to store part of the crop to wait for better prices. Stored cash crops are in the hands of merchants at the village, locality, or state level.

93. Neither the traditional above-ground or *matmuras* storage methods allow for stored grain to be used as collateral for obtaining post-harvest finance. This would alleviate the pressure on smallholder to sell when prices are very low. In order to accept stored grain as collateral for loans, financial institutions require fully secured, above-ground, and modern grains stores either under the bank's control, the control of a trusted third party, or under joint control; e.g., with two locks that ensure that both farmer and banker are present when crops are deposited and withdrawn. This kind of secure storage facility is not currently available at the village level. The Agricultural Bank of Sudan and other larger banks can provide a stored crop financing at their own warehouses, in exchange for share of the profit when the crop is sold. The timing and nature of the sale is beyond the control of the farmer. However, most smallholders are not aware of this kind of bank financing, would not be organized sufficiently to take advantage of it even if they were, and in any event would not likely trust this type of financing because the marketing decisions are outside of their control.

94. **Prices.** Farm gate prices are in line with prices prevailing at the auction markets. Table 1 below shows the specific example of sesame prices in Gadarif state. Using the FOB price as a benchmark, the difference between farm gate and Gadarif auction price is only 15 percentage points – and half of this is taken up by transport and taxes/fees. According to this data, the farm gate prices received by smallholders are not unfair at the time crops were marketed. However, more analysis needs to be done, as this does not reflect price differentials over time – it is very likely that the price differential widens considerably during the immediate post-harvest period when farmers are forced to sell.

Table 1: Farm gate & Auction Prices (Relative to FOB Export Price, Sesame, Gadarif)

	SDG/MT	% of FOB Price
Farm gate Price	11,110	78%
Market Price	13,200	93%
Marketing Costs		
Handling/Grading	82	1%

[31] The Agricultural Bank of Sudan currently has over 200,000 tons of sorghum in *matmuras* storage.

Packaging	60	0%
Certificates	26	0%
Transport & Tax	179	1%
Handling & Port Fees	55	0%
State Export Fee	11	0%
Insurance	204	1%
Total Cost	13,817	98%
FOB Price	14,160	
Source:	World Bank Sudan, Economic Memorandum, 2015	

95. Storing crops in anticipation of price increases later in the year involves expense, and can be quite risky, especially for unsophisticated smallholders who are not involved in marketing on a day to day basis. Prices can be highly volatile, and depending on the month of sale, smallholders can be worse off than if they sold immediately after harvest. The SDP Value Chain Study Analysis addressed this issue. In Gadarif, a farmer that held sorghum stocks from harvest in November 2015, and then sold at the peak price the following year in July 2016 would have earned a gross return of 19% over an 8-month period. This may seem attractive, but if the farmer had financed this storage by borrowing from an MFI at an effective 30% annual rate, the interest costs would have been 20%, and the farmer's net return would have been -1%. If storage costs and losses were considered, the return would be even less. For the 2014/2015 marketing season, the returns to storage appeared to be even more disappointing. The best a farmer could have done was achieving a nominal 14% return on investment by storing sorghum and selling in the peak price month of October 2015. However, the financial carrying costs of that investment using MFI funds would have been 30%, resulting in a 16% loss. Sales at any other month would have yielded worse results, and again, this is not counting storage expenses and losses.

96. When farmers hold grain in storage, they forego potentially more attractive investment opportunities such as animal fattening that could bring higher (and more reliable) rates of return than speculative crop storage. For example, SUSTAIN reported that smallholders earned from 24 to 64% on an annualized basis from their investments animal fattening activities (although it is not clear whether the cost of finance was included).

97. Nonetheless, farmers invariably express a strong desire to store at least part of their cash crops in anticipation of price increases.

98. **Market linkages.** Large processors have expressed the desire to purchase crops and gum Arabic directly from producers for two main reasons: (i) to obtain a level of quality or variety that is not readily available from the auction and wholesale market; and (ii) to lower costs by removing middlemen that add little or no value. An important barrier to structuring these market linkages has been that the processors are forced to bear the full burden of the state and local taxes moving from the farm to the processing plant. These state and local taxes can be avoided by middlemen. Because of the higher costs, the processors were not able to commit to paying a better price to farmer, and thus farmers were not interested in making commitments with no reward. Formal market linkages for these crops may be more likely in the context of value-added products that may be exempt or more lightly impacted by taxes.

99. **The El Obied and Gadarif auction** markets are scheduled for conversion to electronic exchanges, and will be managed as a public/private partnership. The new exchanges may offer better opportunities for direct access by smallholders, and improved prices for farmers. The El Obied auction will handle sesame, groundnuts, sorghum, and gum Arabic as well as unrefined sesame and groundnut oil. The Gadarif auction will focus on sesame and sorghum. The minimum lot size to sell on the electronic changes is 15 MTs, which is beyond the scope of individual farmers, but could be achieved by farmer producer associations marketing collectively.

100. **Value addition.** There are many opportunities to introduce value addition at the farm or village level:

(a) **Grading.** Smallholders are often unaware of how to grade properly to meet market requirements. Perhaps more importantly, they are rarely rewarded by higher prices if they do grade properly, as they sell through middlemen who are not willing or prepared to set differentiated prices for different grades.

(b) **Shelling (groundnuts).** If groundnuts are shelled at the village level, transport costs per sack from village to market would be reduced by approximately 50% (using the Shalaby village in West Kordofan as an example, this would save about 550 SDG/MT transporting to the El Obied auction). However, shelling must be done properly or there will be significant damage to kernels that will more than offset savings in transport costs. Also, groundnuts are more prone to deterioration and aflatoxin infestation after shelling, particularly low-quality shelling and especially if the groundnuts are not properly dried before shelling. As a result, traders do not generally want to buy village-shelled groundnuts. If shelling was done with high quality equipment, and was done immediately before marketing, or perhaps in the presence of traders, smallholders would be in better position to capture additional value.

(c) **Aflatoxin free.** In principle, aflatoxin-free groundnuts should receive a higher price from processors or exporters, because of reduction in grading and disposal costs. Large buyers are willing to provide technical training materials and posters for minimizing aflatoxin. However, the value chain as currently structured does not reward farmers for taking the effort to produce aflatoxin-free groundnuts; attempts to establish direct village-processor linkages run into the local and state tax issue described above. Nonetheless, Sudan has managed to make excellent progress in this area, as noted earlier, and exports of groundnuts have expanded dramatically.

(d) **Oil production.** Currently, both sesame and groundnuts are crushed at the village level using either small-scale diesel or traditional camel powered oil presses, usually owned by local merchants. These village oil presses produce unrefined oil, with the remaining seedcake a valuable by-product for livestock feed. The potential market for both unrefined oil and seedcake could be large if efficiency of production and collection systems was adequate, as larger oil refineries may be interested in buying the crude oil, and commercial livestock operations would be interested in the seedcake.

(e) **Flour production.** Sorghum is milled into flour at many villages using small-scale diesel-powered mills owned by local merchants. The market for village-milled flour is limited, local and the market is saturated by existing village-based mills. The larger flour marketing companies are not interested in purchasing village-milled flour.

(f) **International certification.** Crops and gum Arabic produced and marketed in compliance with internationally certified Organic or Fair Trade standards could *potentially* offer a means for farmers to achieve higher farm gate prices. For certified organic groundnuts, farm gate prices can be 100% higher than paid for conventional groundnuts. The higher farm gate prices of certified crops must be weighed against additional expenses and opportunity costs (e.g. lower yields) borne by the farmer. Significant amounts of certified organic sesame are produced in the Tigray region of Ethiopia, bordering Sudan. In Sudan, the only known examples of international certification of the IAMDP crops is for Fair Trade Gum Arabic, is on a small scale, and for certified organic sorghum, on a very small scale. If US sanctions on Sudan were lifted, this situation could possibly change[32]. Towards this end,

[32] US sanctions specifically exempt gum Arabic and other agricultural products can also be exempted. In practice, however, the broad financial sanctions mean that direct trade between the US and many other developed countries and Sudan is complex and expensive.

IAMDP would conduct a study in year one of implementation aimed at identifying these and other opportunities for organic and/or Fair Trade certification.

Component 2 - Activity description

Activity 2.1: Physical market access

101. ***Wadi* crossings** will be constructed to facilitate and ease the transportation of agricultural produce to the markets and ensure the supply of agricultural inputs, fuel, spare parts of the tractors etc. to farming areas.

102. The criteria for selecting the *wadi* crossing sites for the crossings will be:

(a) On main tracks which passes through farming areas, and connect the largest number of villages to market centers, or main paved/raised gravel roads.

(b) On main tracks which are in a reasonable condition.

(c) Are in suitable locations for construction i.e. the safest and economical locations.

(d) Have a low negative impact on environment.

103. Potential beneficiaries will provide input in the selection process, and must provide firm commitment to form *wadi* crossing committees that undertake routine maintenance (for which they will receive training). State governments need to provide a firm budgetary commitment for repairs and upkeep as a condition precedent to initiating construction.

Activity 2.2: Storage facilities development

Sub-activity 2.2.1: Smallholder owned and operated cash crop storage demonstration facilities

104. This sub-activity will support construction of one modern village-level storage facility in each locality, capable of safe and cost-effective storage of cash and food security crops. These will serve as demonstrations of the business case for modern crop storage and financing.

105. The storage facilities will have security systems that will be reviewed and approved by financial institutions. This will allow bank financing on attractive terms, secured by the stored crops. The storage facilities will be managed and operated by a registered farmer producer association that has undergone IAMDP training in business and technical skills (see Component 3).

106. These project-financed stores will demonstrate to farmers and financial institutions the cost-effectiveness and risks/rewards associated with crop storage.

107. The project will provide 80 percent of the construction costs of the secure storage facility. The capacity will be approximately 200 MTs (roughly equivalent to 220 bags of sesame or 100 bags of in-shell groundnuts). The farmer producer association will provide 20 percent of the costs through in-kind contributions of inputs and labor.

108. The final design and construction will depend to an extent on local conditions and materials. At a minimum, it is assumed that the storage will be block-built, with a floor of good quality concrete, a door that will fit tightly to prevent entry of rodents and allow a double locking system, and ventilation openings screened to keep out birds, with no gaps between the wall and the roofing sheets.

109. All farmer producer associations will receive training on analyzing costs, benefits, and risks of crop storage under the FAAB activity of Component 3. This will include the risks and returns of speculative storage of cash crops. The training will cover how to develop a business plan with estimated cash flows to be used for obtaining commercial finance.

110. The project will arrange for visits from smallholders and their FPAs to the project storage facilities, and the FPA managers of the facility will review their experiences with the facilities.

The project team will compare the storage facilities' business plans with actual experiences to make an assessment about the feasibility of village-based storage. If the storage facility business case is positive without subsidies, the project will support other FPA to establish linkages with financial institutions.

Sub-activity 2.2.2: Studies on storage and pricing

111. The project will commission studies on storage and pricing as required that will help refine project implementation activities such as storage structure design, siting, training, etc. Topics will include:

(a) **Analysis of storage and post-harvest financing options** at the state and locality level.

(b) **Dynamic price analysis of crop prices and transport costs.** A thorough analysis of sorghum, groundnut, sesame, and gum Arabic commodity prices and transport costs, moving up the value chain from farm gate, village market, auction/wholesale market, and FOB export, over the course of the year. This will give a better insight into the risks/rewards of storing crops in anticipation of higher prices for farmers and financial institutions.

Sub-activity 2.2.3: Sinnar State crop market rehabilitation

112. The project will commission a feasibility study for the rehabilitation of the Wad-al-Nil crop and gum Arabic market in Wad-al-Nil in Sinnar state. Wad-al-Nil is south of Sinjah, and strategically located in the heart of the gum belts of Sinnar and Blue Nile States, and traditionally has been a market center. As presently conceived, the physical facility would be owned by the Government of Sinnar, but leased to a private sector company with professional management and with a board consisting of private sector, FPA/GAPAs, and state government. The local government has already located a four hectare parcel of land for this purpose.

113. The feasibility study would develop a business plan for the sustainable and commercial operation of the market. If the business plan is accepted by the key stakeholders, the project would require a firm financial commitment. The project would then finance 80% of the construction costs as well as provide technical assistance and training for management and potential users of the market.

Activity 2.3: Market linkage/value addition

114. Market linkage/value addition activities selected for project support will be based on market analysis, and usually, if not always, in the context of actual market opportunities with buyers (processors or exporters) at the state or national level. Buyers and farmer producer associations will be provided technical, logistical, and financial support to pilot and scale-up value-addition/market linkage activities that have a high likelihood of commercial success. Project support will be structured through informal MOUs for pilot initiatives, and from the Innovation Scaling up Challenge Grant Facility for scaling-up pilot initiatives.

115. **Sub-Activity 2.3.1: Market assessment studies.** As required, market assessment studies will be undertaken to identify new markets or market niches appropriate for the field crops and gum Arabic. One important study is analyzing smallholder access and utilization of the main wholesale and auction markets in greater Kordofan (Nihud, Rahad, El Obied) and make recommendations for improvements. One example of an international market assessment would be an analysis of market potential for Sudan for Fair Trade, Certified Organic, or other international certification system. These studies will guide implementation of other Component 2 activities.

116. **Sub-Activity 2.3.2: Direct support for market linkage/value addition.** Buyers and FPAS/GAPAs will be provided technical, logistical, and financial support to pilot and scale-up value-addition/market linkage activities that have a high likelihood of commercial success. The goals of the market linkage/value addition activities are to provide a combination of one or more

of the following: (i) higher price per unit of crop produced; (ii) greater assured volumes; (iii) technical training and support; (iv) production credit on reasonable terms.

117. For smaller, village or locality pilot demonstrations, project support will be provided for testing new systems, tools, technologies and equipment. For scale-up, commercial investment from farmers or from the private sector will be expected. For exceptional situations requiring risk reduction, the Innovation Scaling up Challenge Grant Facility will be utilized (see Component 1).

118. Project support will be limited, time-bound, and focused on areas where the private sector has little expertise or could not be expected to invest (e.g. in the formation and training of FPAs or GAPAs, coordinating access to finance, locating transporters, etc.). In no case will the project play a market actor role (e.g. loan money, take on risk, provide transport services) but should focus on facilitating market actor participation in value chain upgrading.

119. Market Linkage/Value addition activities with potential linkages with external markets can be explored by the project are listed below. These are meant only to guide project managers, final selection should be made based on private sector and farmer interest.

(a) **Marketing of unrefined sesame or groundnut oil produced by village based oil processors.** Larger commercial oil refineries have indicated a possible interest in the purchase of unrefined oil from village processors, if minimum quantities can be aggregated and if the price is competitive. One company has expressed interest in sending a tanker car directly to the village for collection, and pay farmers on the spot if quality was acceptable. The seedcake by-product produced is a valuable livestock feed for local animal fattening operations, and surpluses also would find a ready market from large-scale livestock operations, which could make arrangements for bulk collection. Some degree of pre-shipment finance could be extended by the unrefined oil buyers. The El Obied wholesale auction plans to add sesame and groundnut oil and seedcake as a listed commodity by early 2018; this would create an alternative market outlet for village production of these products.

(b) **Marketing of shelled groundnuts from village based shellers.** Larger exporters and processors have expressed interest in purchasing shelled groundnuts at the village level (the normal practice is to buy in-shell groundnuts because of concerns over damage caused by low quality shellers and poor storage practices). The buyer would require that the FPAs are using high quality groundnut shellers and with properly dried in-shell nuts, with technical training provided by the project with input from the buyer. The buyers would be willing to provide some degree of production finance, collect minimum quantities from primary aggregation points, provide input into shelling machine selection and purchase, and to pay in cash at prices that would be higher than selling to local traders, and comparable to El Obied or Omdurman auction prices (less transport charges and taxes incurred).

(c) **High quality gum Arabic.** A number of gum Arabic exporters have expressed interest in buying direct from GAPAs provided that they could obtain a higher quality product than what is available from intermediate traders or the auctions. They would provide pre-financing gum Arabic tapping costs (through a no-interest loan), providing mats and jute bags for grading and packing, and paying a cash price at a premium to the El Obied auction prices. In return, the project would organize and train the GAPAs in proper harvesting, sorting, cleaning, grading, and packing. In fact, the RSGPMP project has undertaken a small but successful pilot with two gum Arabic companies in North Kordofan with 13 *hashab* gum GAPAs. This could be scaled up with in all four states with many more buyers, and include *talha* gum as well which is in high demand in India.

(d) **Certified seed production.** There is ongoing interest from seed companies to purchase certified seed from smallholder groups in the SDP project areas, which is close to being on

a sustainable basis. IAMDP will support additional FPAs that wish to produce certified seed under contract to private seed companies, and for local sale, and to expand the scope of to Sinnar and West Kordofan (where at least one seed company is interested in sourcing certified groundnut seed).

Implementation arrangement for Component 2

120. **Activity 2.1: Physical market access – *wadi* crossings.** The PCU civil engineering national consultant will provide planning and oversight for the *wadi* crossings. The *wadi* crossings construction will be supervised by the respective state ministries of physical planning and public utilities. The state's locality level engineering units will direct and supervise the maintenance process, and train the *wadi* crossing committees on maintenance. Contracting firms will be competitively selected to undertake the construction work, with the PCU civil engineering providing quality control and oversight on the competitive process, contractor implementation, and local community maintenance.

Activity 2.2: Storage facilities

Sub-activity 2.2.1: Smallholder owned and operated cash crop storage demonstration facilities

121. The crop storage demonstration facilities will be owned and operated by registered and active farmer producer associations (FPAs) that have successfully completed FAAB training (see Component 3). One FPA per locality will be selected as the recipient of funding for the storage unit from the project, partly on the basis of location, but also through a limited competitive process. The competitive process will be designed by the PCU private sector/marketing officer, and managed by the SPIU marketing specialist and supported by the LET marketing officers. It will be based on a review of a simplified storage business plan that includes:

(a) Realistic projections of operating, interest, maintenance, and depreciation costs (including the project-subsidized capital costs).

(b) Realistic projections of revenues from operations. These would include reduction in crop storage losses, and projected returns from price increases.

(c) Proof of registration as a crop production FPA, with a bank account, active for at least one cropping season.

(d) Commitment to share business records for project monitoring and impact assessment purposes, and to host visitors from the locality.

(e) Commitment to provide 20% of the storage unit cost (this can be donated labor or materials).

122. The PCU rural finance specialist (RFS) will coordinate with financial institutions to ensure that the design and operation of the locality-based crop storage facilities are usable for post-harvest financing, and liaise with insurance companies about the possibility of obtaining coverage for stored crops.

123. A SAGA-certified SSP will provide pesticide control of the storage facility as required, funded by the FPA managers.

124. The technical TOT and training materials for the technical aspects of storage operations will be developed by the PCU Private Sector/Marketing Officer (ME) with the help of state Marketing Officer, with input from national consultants as required.

Sub-activity 2.2.2: Studies on storage and pricing

125. The PCU ME will develop the terms of reference for the studies on storage, dynamic pricing, and post-harvest financing options with the help of an international consultant, and the studies will be undertaken by an international with local consultants.

Sub-activity 2.2.3: Sinnar State crop market rehabilitation

126. An international and local consultant, assisted by the PCU civil engineering national consultant, will undertake the feasibility study for the rehabilitation of the crop and gum Arabic market in Wad-al-Nil in Sinnar state. The team will work closely with the key stakeholders; merchants, farmers, gum Arabic producers, and the state and local governments.

127. If the feasibility study business plan is accepted by stakeholders, then the necessary technical assistance and training will be developed by the private sector/marketing officer with the assistance of international and national consultants, and the construction would be overseen by the civil engineer national consultant.

Activity 2.3: Market linkages/value addition

128. **Sub-Activity 2.3.1: Market assessment studies**. An international consultant will work with the CPU to develop the topics and terms of reference for the national and international markets for the field crops and gum Arabic. The studies will be undertaken by a combination of national and international expert consultants. The international market assessment studies should be implemented when international sanctions are lifted, or it is clear that such a study would be useful under the current sanctions regime.

129. **Sub-Activity 2.3.2: Support for market linkage/value addition.** The CPU private sector/marketing officer will initiate contacts with buyers of value-added production that could be interested in establishing sourcing from farmer producer associations. This will start with the initial contacts established by SDP (e.g. Savola for sesame/groundnut unrefined oil, Yusuf Habibi for shelled groundnuts, RANS for groundnut seed). An international PPP consultant will support the marketing specialist in liaising and structuring pilot initiatives locally if required but especially for international markets.

130. The CPU private sector/marketing officer (ME) will negotiate MOUs with buyers to concretize pilot initiatives that will test the viability of the market linkages. The MOUs will clearly specify the roles, responsibilities, contributions of buyers, farmers, and the project. To ensure that production meets market requirements, the buyers will help assist in providing technical training materials and TOT for the SPIU MS and LET MEs. Technical assistance and training for farmer producer associations will be delivered by the technical and FAAB specialists on the LETs, with input as appropriate from the buyers or their agents. A limited budget for procurement of tools and equipment for pilot initiatives will be managed by the Marketing officers.

131. The Innovation Scaling up Challenge Grant Facility (ISCGF) will be the main vehicle for project support of scaling-up value addition/market linkage pilot activities.

Component 3: Enabling environment

Expected outcome

132. The expected outcome of Component 3 is improved smallholder access to finance, a higher level of smallholder business competency, and strong, active farmer producer associations with a purpose and activities that go beyond receiving project support. This component includes two subcomponents:

(a) Subcomponent 3.1: Farmers associations strengthening and business development

(b) Subcomponent 3.2: Access to rural finance.

Rationale

133. Three key enabling environment factors required for successful smallholder value chain integration are finance, strong farmer associations, and business skills.

(a) **Sustainable access to rural finance at the level of production, processing and marketing.** The rainfed areas in Sudan suffer from the wide unavailability of formal loans

for supporting agricultural activities. In the SUSTAIN and SDP project areas this gap has hardly narrowed even after these projects developed specific linkages with ABSUMI to finance the crop production needs of the target group farmers. The focus has been on livestock financing.

(b) **Strong farmer associations.** Individually, smallholders do not have enough land, crops, or purchasing power to be of much interest to suppliers of goods or services, or purchasers of their outputs. Therefore, their costs of production are high, their marketing options are limited and they are often subject to predatory action from local merchants.

(c) **Business skills**. Smallholders lack the skills to analyze and solve business problems or take advantage of business opportunities. Without these skills, it is difficult for them to make the transition from being subsistence-oriented farmers who market occasional surpluses, and they remain in poverty.

Subcomponent 3.1: Farmers associations strengthening and business development

134. Two main activities will be covered by the subcomponent:

(a) Activity 3.1.1: Farming as a business promotion

(b) Activity 3.1.2: Farmer producer association capacity building

Background

Farmers associations

135. The political economy of farmer associations in Sudan has been fraught. In 2014, the Federal government dissolved the Sudan Farmers Union, due to growing concerns about its perceived involvement in political activities. To replace the Sudan Farmers Union, the Federal Government passed the Farmer Producer Association (FPA) legislation in 2015. A minimum of seven farmers who jointly pledge assets can form an FPA, and then open a bank account, and conduct business as agricultural or livestock focused group. FPAs can enter into joint ventures with private companies.

136. In principle, the FPAs are exempt from import duties and export taxes, but it is not clear whether these incentives have become operational. The FPA legislation allows for the creation of apex associations, which would give the FPAs an organizational vehicle that could transact business at a larger scale, or be an advocate for farmer interests with government at all levels. According to the law, a minimum of 11 active FPAs can form a locality association, 5 locality associations can form a state level association, and 5 state associations can form the national association. However, the government is not currently encouraging the formation of these apex structures, and the Gezira irrigation scheme to be the only area in which an apex association has been known to be formed.

137. The state governments have formed FPA mobilization committees, chaired by the Minister of Agriculture, and managed by the Registrar (Ministry of Justice) to facilitate the registration process. These committees have successfully mobilized thousands of FPAs in each of the states. Initially, there was resistance to forming FPAs from the old membership of the Sudanese Farmers Union, but now it seems to be widely accepted.

138. Very little training or support has been provided to the FPAs through the government. Most of the newly formed FPAs are not very active, as many were formed in anticipation of receiving government benefits or finance which have not been forthcoming. The Central Bank of Sudan has established a guarantee fund that covers FPAs borrowing from banks, but FPAs are required to have a minimum of 20 members, and must borrow a minimum of SDG 1 million. The stronger FPAs are livestock rearing groups and farmers on the irrigation schemes. In both cases, the farmers have tangible assets (animals, land) that can be pledged to facilitate lending. Land tenure on rainfed lands is ambiguous, with some control with locality authorities and some with the local shaykh, and is not useful as collateral.

139. In North Kordofan, nearly 1,500 FPAs have been registered, about 400 involved in livestock and the balance in cropping. As in Sudan generally, the livestock and irrigation scheme FPAs are reported to be the most active. There are notable exceptions, such as the quite active groundnut seed growers FPA of Um Sawadeen village in North Kordofan. The state government has an agreement with Nile Bank and the Agricultural Bank of Sudan to provide finance and training, but nothing concrete from this agreement has happened as of May 2017.

Farming as a business skill

140. Agricultural economics is a well-defined discipline in Sudan, and indeed agricultural economists are on many of the locality extension teams. However, the concept of "Farming as a Business" for the smallholder rainfed farmer is new. Smallholder rainfed farmers have been regarded by the government, extension teams, and private companies as primarily subsistence farmers that occasionally produce some surplus for the market.

141. In fact, most smallholders grow some cash crops exclusively for the market. They are quite interested in moving beyond subsistence and investing in new technologies and services so that they may increase productivity, expand production, and receive more value from marketing or value-added activities. Business skills are essential to make the right decisions about crop choice, input regime, marketing, storage, etc.

142. Similarly, village based and locality service providers are essentially small businesses, but often have rudimentary or no formal business skills. Most agrodealers, for example, have no records, no marketing programme, no financial management systems.

Subcomponent 3.1 - Description

Activity 3.1.1: Farming as a business promotion

143. The farming as a business (FAAB) curriculum developed by SDP and SUSTAIN will be expanded and improved to give smallholders the analytical tools and concepts to plan, make investment decisions, and operate their farming businesses profitably over the entire production cycle. This will cover financing, operations, and marketing. After training, the smallholders will be capable of developing simple farm business plans that will help them raise finance, manage their business affairs, and critically evaluate the season's results, and use the insights to plan the next year's crop.

144. The FAAB training will use simple mini-case studies to bring together the theoretical concepts, so that in a concrete fashion will help the smallholder think through key investment decisions, with the following as examples of the mini-case studies.

(a) **Input decision** (i) farm-saved seed versus improved OPV or hybrid seeds; (ii) fertiliser micro-dosing versus no fertilization; and (iii) production for specialized markets (e.g. seed) versus for commodity grain markets.

(b) **Agronomic management decisions.** (i) land preparation and planting techniques: manual, animal or mechanized; (ii) weed control: manual, animal, mechanized or chemical herbicides; and (iii) harvesting methods: manual or mechanized.

(c) **Post-harvest operations.** (i) crop storage as a business: risks, costs, and rewards of crop storage; and (ii) marketing strategies: village market versus auction sales; collective versus individual.

(d) **Alternative cropping and non-farming business decisions.** (i) animal fattening: using surplus grain, stalks, seedcake, etc.; and (ii) value addition: local oil pressing.

145. An introduction to FAAB training will be provided to officials at the state level. The project will help the state level staff provide FAAB training session to extension teams in non-project localities.

Activity 3.1.2: Farmer producer association capacity building

146. IAMDP will mobilize and support FPAs to become the primary means by which farmers coordinate and receive inputs and service delivery, negotiate with buyers, as well as receive project services. Both crop and gum Arabic FPAs will be associated, and existing GAPAs that are not registered under the new law will be assisted to convert to FPAs. Formation of savings and credit groups will continue, as these do not conflict with FPAs; these support savings and credit for consumption and non-agricultural business activities, and are essential for implementation of the microfinance strategy.

147. FPA capacity building will be primarily implemented through the FAAB training described in Activity 2. However, under Activity 3, FPAs will also receive:

(a) **FPA mobilization and organizational training** that addresses the business reasons why FPAs are formed, how they should be managed, how to select members, how individual smallholder and collective FPA businesses should interact, financing, taking advantage of incentives, rights, and obligations under the law.

(b) **Apex association formation and capacity building at the locality and state level** Following the development of strong FPAs, support will be provided to analyze and support apex association at the locality and state level. Topics to be covered include: (i) management, governance, and funding of apex organizations; (ii) coordination of large-scale market linkage/value addition projects; (iii) developing membership services; and (iv) government advocacy.

(c) **Exposure tour to country with strong apex farmer producer associations.** The leaders of FPAs that are considering or have started apex FPAs, and state/federal government officials, will participate on an exposure tour in a country with strong apex smallholder farmer associations that provide effective membership services and policy advocacy.

148. The project will work with other entities that are providing or could provide support for building the capacity of the FPAs to leverage this assistance. In North Kordofan, for example, discussions will be held with the Agricultural Bank of Sudan and Nile Bank (who have an agreement with the state government to build the capacity of the FPAs).

Implementation arrangement for subcomponent 3.1

149. Overall supervision of the Farmer as a Business and Farmer Producer Association Support will be managed by the national FAAB consultant reporting to the private sector specialist who will work through federal, state, and locality structures.

Activity 2: Farming as a business

150. The FAAB TOT and training curriculum will be developed by the FAAB national specialist. Inputs will come from international and national consultants for the case studies and for the specialized modules (e.g. covering MSPs, FPAs, etc.), as well as from private sector partners. The FAAB TOT will be delivered to LET private sector officer or other team members selected for their interest and aptitude for business, as well as capability. These LET members will then be responsible for rolling out the training to smallholders, FPAs, and service providers. Training sessions will be provided for the federal and state ministries of agriculture to enable them to adopt a FAAB approach towards smallholder promotion, and to roll out FAAB training for all extension teams (not just the project-supported LETs).

151. The FAAB and community development specialists will develop materials for FAAB training is delivered to effectively reach semi-literate and illiterate farmers while avoiding stigma. A possible source material is the FAO "FAAB Story Book" methodology[33] developed for farmers with limited literacy.

[33] "Farming as a Business Story Book", FAO, 2015.

Activity 2: Farmer producer association

152. **FPA mobilization and organizational.** TOT and training materials will be developed by the FAAB specialist with support from a national farmer association specialist. The FPA TOT will be delivered to the project LET FAAB specialists, as well as agricultural economists from other extension teams, and possibly state level officials with the responsibility for mobilizing FPAs.

153. The FAAB specialist will liaise, through the state implementation units, with the state government FPA mobilization committees for delivering the initial parts of the FPA Mobilization and Organizational training programme.

154. The rural finance and private sector specialists will liaise with Nile Bank and the Agricultural Bank of Sudan, and any other potential partners in FPA capacity building, concerning ways to leverage the impact of FPA capacity building.

155. **Apex association capacity building** at the locality and state level training materials will be developed by an international farmer organization development specialist, with assistance of the FAAB specialist and a national farmer association development specialist. The international specialist will design, organize, and lead the exposure tours to neighbouring countries, such as Egypt, Ethiopia, Morocco, etc.

Subcomponent 3.2: Access to rural finance

Background

156. **Acute shortage of formal credit in the project area.** There is an acute shortage of formal credit supply in the project areas. It is estimated that less than 5% (around 5,000 farmers) target group households have accessed formal crop loans in the project area. One major reason for this gap is the supply driven approach followed by financial institutions (FIs) such as the Agricultural Bank of Sudan (ABS) whereby crop loans were used to finance traditional crop production methods without linking them to the adoption of improved practices to increase production, profitability and post-harvest returns to smallholder farmers. Historically, the FIs suffered heavy losses from this approach due to poor crop production, crop failure, marketing failure and wilful non-repayment. For example, ABS has an average repayment rate of only 70% (50% in Sinnar region) on such loans. The high credit risk along with the remoteness, infrastructure gaps and security risks faced in the rural areas have discouraged FIs from investing in the rainfed crop production activities. The shortage of formal credit often forces smallholder farmers to approach *sheil merchants* to provide cash advance against forward purchase of standing crops at prices much lower than the market price at harvest. Small farmers often use a majority of their produce at harvest to settle the *sheil* advances. The revenue earned on the remaining production drastically reduces their own net returns and keeps them in poverty.

157. **CBS steps to mitigate the shortage of MF services:** The Central Bank of Sudan (CBS) has adopted a supply driven approach to mitigate the shortage of microfinance (MF) services in the country. It has (i) licensed 35 new microfinance institutions (MFI) over the last 3-4 years resulting in 4 MFIs in the Sinnar region namely Sinnar State MFI, Irada MF initiative, Women and Youth Association and ABSUMI and 6 MFIs in the Kordofan region namely Mishkat, the Sudanese Rural Development Company (SRDC), Al Garrah, Al Massarra, Ibdaa Microfinance Bank and ABSUMI. Most MFIs have sufficient liquidity having received SDG 0.5–1.0 million from the CBS over the last year as refinancing support; and (ii) instructed all CBs to lend 12% of their portfolio for MF activities through direct lending or by refinancing MFIs. However, these funds are largely unutilised as CBs do not have rural branches and MFIs lack the collateral required to access these funds. To overcome this challenge the CBS has recently established the Guarantee Agency as an autonomous entity to provide up to 75% wholesale guarantee to MFIs seeking refinancing from CBs or farmers' organisations seeking loans from CBs; and (iii) partnered with the Arab Fund for Economic and Social Development and the Islamic Development Bank to supply US$100 million to the MFI sector over the last 3 years through the

Microfinance Unit of the CBS (CBS-MFU) and another US$100 million investment planned over the next 3 to 5 years.

158. **CBS and IFAD project partnerships.** In 2007 the CBS established within it a Microfinance Unit (MFU) to ensure special focus on MF sector development. The MFU's main responsibilities are policy development, licensing MFIs, supervision and refinancing MFIs. The CBS also supplied the initial capital for the establishment of the Sudanese Microfinance Development Company (SMDC) as an autonomous entity for refinancing MFIs using government, donor and private sector investments. Over the last 5-6 years various IFAD supported projects (WSRMP and SKRDP) have partnered with the CBS-MFU and the SMDC to launch three successful rural MF delivery models. These are (i) the Agricultural Bank of Sudan Microfinance Initiative (ABSUMI, 2011) as a special MF programme within the ABS; (ii) Bara'ah (2009-10) as a community owned MF model; and (iii) Village Savings and Credit Groups (VSCGs, 2011-12) for internal capital formation in rural communities. The IFAD supported projects contributed technical assistance and infrastructure support; CBS supplied portfolio funds, licensing and supervision; SMDC provided additional portfolio funds and ABS supported portfolio funds and operations costs.

159. **ABSUMI model.** ABSUMI's objective is to provide rural finance services at the bottom layers of the rural economic pyramid through strong focus on women, high credit discipline and savings habits. At present ABSUMI has 10 units across 10 Localities in 5 states namely North Kordofan, West Kordofan, Sennar, White Nile and Khartoum. They cover a total of 323 villages reaching around 30,000 members through 1,800 groups. These units have disbursed over US$25 million through 100,000 loans a majority of which has supported clients in the IFAD villages. Overall, repayment performance is almost 98%. Its loan sizes range from SDG 1,000 - 6,000 for 6-12 months at 30-36% profit margins (VSCGs, 80-100%; sheil merchants, above 100%) which is aimed to cover all costs and make ABSUMI sustainable by assisting new units to breakeven in 2-3 years. So far 5 out of the 10 units are operationally self-sustainable.

160. Loans are delivered to individual members organised in solidarity groups of 20 members against group guarantee and without any physical collateral. The ABSUMI loans finance crop and livestock production activities, petty trading activities, micro-enterprises, butane gas stoves, paravets and integrated pest management service providers at the village level. It follows a savings led approach offering upfront, compulsory and voluntary savings products. Savings funds account for about 10-15% of the lending portfolio. The portfolio is heavily concentrated on livestock loans (75%) as crop loans are considered more. ABSUMI units are physically separated from the ABS branches and comprises a unit manager who is supported by a group of 5 to 10 credit officers. ABSUMI's experiences with financing crop production loans is described later.

161. **Bara'ah model.** Bara'ah was established in 2010 by the IFAD-SKRDP as a licensed (by CBS), professionally managed, central MFI owned by the communities it served. It is located in the Al Rashad locality of South Kordofan State and serves 3-4 neighbouring localities in the State. It received initial capital from SKRDP and additional financing from CBS-MFU and SMDC and has reached about 7,000 households with a portfolio of around US$1.5 million and around 95% repayment rate. Baraah's community owned structure and management through locally recruited staff has contributed to its sustainability even in an environment of insecurity. Bara'ah's loans range from SDG 1,000-6000 and support small agricultural activities, livestock related activities and small enterprises at 24-30% profit margins. It is operationally sustainable. The Baraa'h model has been used as a template by the CBS for developing business plans and licensing several other MFIs.

162. **Village savings and credit groups model.** The VSCG model has been successfully implemented by IFAD-WSRMP in the Kordofan region. In this model voluntary groups of up to 20 member were organised and encouraged to practice regular internal savings (US$1-1.5 savings per month per member) and credit activities (5-10% profit margin per month). Both

these activities have cumulatively helped to mobilise internal capital is around US$1 million in 1,357 VSCGs with 23,000 members [90% women], in 264 communities across 19 localities in the North, South and West Kordofan States. They have cumulatively disbursed around US$13 million as internal credit/investment with 99% repayment rate. In some villages 3-4 VSCGs have together accumulated around US$25,000 as internal capital in 3-4 years of operation reducing credit dependence on external FIs. They have also started pooling resources to finance community level investments such as water points. Men's VSCGs have started emerging. The VSCGs provide loans to members at 5-10% monthly profit margin for 2-3 months for a variety of activities including crop production, livestock fattening and small businesses such as bread making, clothes selling and grocery shops. Their operations costs are very limited and thus the profit margins fully cover their costs making them fully sustainable. Excess earning are added as group capital and used to disburse additional loans.

163. WSRMP implemented the VSCG model alongside ABSUMI in order to attract ABSUMI to WSRMP villages and form linkages with the already existing VSCGs based on their internal credit history. This was a major success and helped ABSUMI to anchor itself easily in around 50 WSRMP villages followed by expansion in the neighbouring villages. Special conditions were established to ensure that VSCGs were linked to ABSUMI within 2-3 months of formation. After linkage the VSCGs continued their internal savings and credit activities in parallel to ABSUMI activities. Linkage of ABSUMI/MFIs to VSCGs has proven essential for sustainability of services. This is because ABSUMI has stopped lending to some old groups after they completed the final loan cycle and without the internal capital from the VSCG activities these groups would have collapsed. Unfortunately, the SUSTAIN and SDP designs did not include the VSCG model. Thus, the smallholders in the target villages are completely dependent on external credit which suffers from uncertain supply and rigid terms that affect the full adoption of improved crop production technologies.

164. **Experiences with SUSTAIN and SDP on crop production loans.** In the Sinnar region ABSUMI offered crop production loans (2015 onwards) to assist the scaling-up of conservation agricultural practices successfully demonstrated by the SUSTAIN project. In the Kordofan region ABSUMI designed and offered a special seasonal crop loan product (2015 onwards) for adoption of improved agricultural practices by SDP farmers. This involved loans to men or women's groups, repayment of the loan at harvest that linkage to adoption of improved production technologies.

165. However, in both the cases the off-take of these loans have been very limited (around 2,000 in Sennar and 3,000 in Kordofan regions). The main reasons for low off-take is related to the limited adoption of the improved technology by the rainfed farmers making the first cycle loans to new clients very risky. The risk is enhanced as these loans are not backed by physical collateral or crop micro insurance products. The rainfed crop insurance market is not well developed and though some insurance companies offer crop insurance products they have poor rural outreach which affects verification and settlement of claims. High premium of around 7% (50% government subsidy available), claim rejections and delay in claim settlements have eroded the interest of rainfed farmers in micro-insurance services.

166. However, once the first cycle linkage is established ABSUMI/MFIs smoothly disbursed the following cycles based on repayment performance. Other causes for low-offtake included (i) lack of supply of improved crop production inputs and services; (ii) lending only through women's groups (in Sinnar) while farmers were mainly men; (iii) recovery of 50% loan through monthly instalments which is linked to crop maturity (in Sinnar); and (iv) poor coordination between SUSTAIN/SDP extension officers and ABSUMI credit officers leading to gaps in planning and client mobilisation.

Subcomponent 3.2 description

167. This subcomponent will increase smallholder farmers' access to finance for adopting improved agricultural packages**.** It will support smallholder farmers to meet their financing requirements for (i) improved **crop production** activities and (ii) **post-harvest** marketing activities.

(a) **Improved crop production activities** will be supported by facilitating (i) smallholder farmers' access to crop production financing to increase the demand for improved crop production packages; (ii) MSPs and agro dealers access to asset financing (agricultural machinery) and working capital loans (seeds, agrochemicals) for increasing the supply of improved crop production inputs and services.

(b) **Post-harvest marketing activities** will be supported by (i) post-harvest shared marketing contracts with ABS; and (ii) access to credit from financial institutions on pilot basis against crops secured in village level storage facilities.

Improved crop production financing

Increase smallholders' access to crop production financing

168. IAMDP will increase smallholders' access to finance for adopting improved crop production practices by facilitating (i) pre-financing linkages with buyers; (ii) formal crop loans from financial institutions; and (iii) informal loans from internal capital of village savings and credit groups. These areas are described below.

Pre-financing linkages with buyers

169. IAMDP will strongly promote pre-financing from buyers (advance against future delivery of produce) as a major instrument for financing smallholders to adopt improved technologies. Buyer pre-financing is already visible in the French supported market focused gum Arabic development initiative in the project area. Moreover, the *sheil* system is an informal pre financing mechanism which is widely prevalent but exploitative of smallholders. IAMDP will strongly promote pre-financing from buyers while brokering buyer linkages with smallholders. The advance received by the smallholders will be settled by deducting it from the value of the produce delivered to the buyer at harvest. IAMDP will assist smallholders to negotiate market led selling price for their produce to ensure fair returns after the advance settlement. Where relevant IAMDP will link the buyer (pre-finance supplier) to MSPs and agro dealers in the project area for in-kind supply of quality inputs and services to the smallholders. It is expected that buyers will be supportive of pre financing smallholders who are already linked in previous seasons. For financing first time linkages IAMDP will support crop loans from PFIs through matching equity as described in the next section.

Formal crop loans from financial institutions

170. IAMDP will increase smallholders' access to formal crop loans by supporting PFIs with (i) revolving matching equity funds; (ii) TA, training, capacity building inputs; (iii) infrastructure and operations gap financing; and (iv) refinancing and extension service linkages.

171. **Revolving matching equity support:** The high credit risk faced by FIs in delivering first cycle loans to smallholders, who lack credit history in high risk rainfed areas, is a major reason for the shortage of formal crop loans in the project areas. IAMDP will address this gap by providing revolving matching equity support to the PFIs specifically to finance first cycle loans of smallholders for the adoption of improved agricultural packages. The total credit funds required to finance the approved first cycle loans will be shared between the IAMDP matching equity (75%) and PFIs own funds (25%). Losses suffered on the first cycle loans will be shared in the same proportion and will reduce the PFIs' credit risk while developing new crop loan linkages. IAMDP will contribute its share directly to the PFIs. The PFI will deliver these loans using the same mechanisms used for other seasonal loan without any special conditions that subsidise smallholders' cost of funds or principal repayments.

172. It is expected that this mechanism will link 15,000 smallholders to formal credit source with average loan size of SDG 1,500, at 24-36% profit margin. PFIs will lend to smallholders against repayment cross guarantee by group members. On successful repayment of the first cycle loan the PFI will finance repeat loans using its own sources of finance. The project will structure the funds flow in a manner that the repayments of the matching equity from clients to the PFI is available in a project account at the end of each season. IAMDP will use these funds for supporting the existing or new PFI in subsequent seasons based on performance. At completion IAMDP will transfer these funds to the CBS-MFU (refer section below on partnerships) for possible topping-up and replication across the country.

Implementation arrangements of Subcomponent 3.3

173. The project will select at least two PFIs to offer services in each project locality. ABS and ABSUMI will be pre-selected as PFIs based on their existing partnerships and investment already received from other IFAD projects. Additional PFIs will be selected competitively based on (i) call for proposals and shortlisting potential PFIs; and (ii) assessment of detailed business plans (BP) submitted by the shortlisted PFIs and final selection based on criteria including (i) presence in multiple project localities; (ii) prior experience in delivering crop loans in rural areas; (iii) existing refinancing partnership with CBS, SMDC, etc.; and (iv) clear organisational strategy for developing crop loan portfolio. MFIs, commercial banks and development banks can all respond to the call for proposals.

174. **Partnership with ABS and ABSUMI.** IAMDP will give special attention to developing strong partnerships with ABS and ABSUMI given ABS' strategic focus on agricultural loans and building on the long history of IFAD projects' partnership and investments in these institutions. The traditional microfinance window of the ABS is active in financing crop loans using the salem methodology. However, its outreach to the poor farmers is limited by the lack of presence on the ground in rural interior villages which has also affected its credit performance. On the other hand ABSUMI has a strong village level presence and better banking relationship with the target group clients. However, it does not offer salem loans and is not focused on the needs of farmers who require larger loans. Traditional ABS branches are present in almost all the localities in the project and their general investment products can support mechanised service providers and agro dealers to increase the supply of project promoted inputs and services in the project areas. Given these opportunities, the project will promote strong collaboration between ABS branches, ABS traditional microfinance window and ABSUMI through the following mechanisms;

175. **Promote the linkage of ABSUMI graduate clients to ABS.** Stronger collaboration between ABSUMI and ABS will be promoted to ensure that the clients graduating from ABSUMI with very strong credit history are linked to ABS financing to support the further growth of their businesses. The project will encourage mechanisms for greater participation of ABS in tracking the growth of the economic activities of ABSUMI financed clients. It will support the development of investment plans by promising ABSUMI clients who are in the third or fourth cycle detailing their business objectives and growth plans after graduating from ABSUMI and specifying the financial requirements from ABS in order to achieve the targets of these investment plans. The project will provide technical assistance and training to ABS to develop financing packages to support the investment plans of the graduating clients.

176. **Facilitate performing ABSUMI borrowers linkage to ABS for salem loans.** Those ABSUMI clients who having successfully completed 2 to 3 cycles of crop production loans based on ABSUMI murabaha lending mechanism and are considered less risky for obtaining salem loans will be linked to the ABS traditional microfinance window for this service. The ABSUMI credit officers will facilitate this process in collaboration with the investment officers in the ABS branches. Details of different financing mechanisms are detailed later.

177. **Technical assistance for machinery financing.** The project will hold awareness and training sessions for the staff in the ABS branches in the project area highlighting the opportunity for

financing machinery service providers and agro dealers. It will share the list of MSPs and agro dealers compiled by the project with these branches. Additionally the project extension officers will promote ABS financing amongst MSPs, agro-dealers and related service providers at the village level. The project will support the development of investment plans by MSP and agro dealers. These will highlight how credit support from ABSUMI and other PFIs to the target group farmers will increase demand for their inputs and services and will also help in generating cash flows that can help in the repayment of the loans in a timely manner (refer financing for agrodealers and MSPs presented later).

178. **Financing mechanisms.** The project will facilitate the PFIs to finance target group farmers mainly based on murabaha, salem and mugawala contracts.

179. **Murabaha based financing.** The PFIs will support the target group farmers to access improved inputs such as seeds, seed dressing and agrochemicals by offering products mainly based on murabaha contracts. In this arrangement the PFI will purchase the inputs required by the clients from agro dealers and will sell these to the clients after adding a markup. The receivables from the client will be collected according to pre-defined repayment terms. It is well known that the perception of high credit risk is one of the main factors that deter financial institutions from crop production. Murabaha based lending will be emphasised as it involves in-kind supply of the inputs to the farmers and reduces the risk of diversion of the borrowed funds to other activities by the clients. This modality will be emphasised especially for financing new clients who do not have prior credit history with crop production loans and are considered more risky. Overall, this will assist PFIs to increase their agricultural financing outreach.

180. **Salem based financing.** Farmers repeatedly demand loans in cash as it allows them more flexibility and also because it makes it easier for them to make labour payment for activities such as manual weeding and harvesting. In order to address this demand the PFIs will consider providing cash loans as incentive to those farmers who achieve timely repayment over initial 2-3 credit cycles. The cash loans will be structured mainly based on salem contracts. In this mechanism the PFI will disburse cash to farmers against the forward sales of the crop at salem prices declared by the government before harvest. After harvest the farmers will deliver the produce in kind to the PFI using the salem prices per bag.

181. **Mugawala based financing.** The PFIs will support target group farmers to adopt machinery services such as tillage, planting, harrowing, spraying, mechanical weeding and harvesting. Mugawala contracts will be the preferred arrangement for financing such activities. Engagement of manual labour can also be addressed through mugawala contracts. In this mechanism the PFI will directly and immediately pay the service provider supplying these services to a group of farmers and will then recover the sum from the farmers along with a mark-up according to predefined repayment agreement.

182. **Partnership with other PFIs*:*** The target of the project will be to have at least two PFIs available to offer services in each project locality. Based on a call for proposals IAMDP will shortlist potential PFIs based on the following criteria:

(a) wide geographical presence across different states and across multiple project localities.

(b) prior experience in successfully delivering crop loans in rural areas.

(c) high levels of internal liquidity or existing partnership with refinancing sources such as CBS and SMDC that can generate funds for financing target group farmers.

(d) Flexible and less bureaucratic decision-making process regarding the adoption and implementation of fine-tuned crop production loan products and methodologies.

(e) Experience of partnerships with IFAD projects and understanding of IFAD project policies and procedures.

(f) Expanding rural portfolio with strong financial performance.

(g) Presence of clear organisational strategy and commitment to developing crop production financing portfolio.

(h) Availability of sufficient infrastructure and staff resources to reach between 500-1000 clients in select project target villages without any infrastructure or operations support from the project.

(i) Low interest rate relative to other potential partners.

183. **Investment plan/business plan based approach.** The above conditions will be finalised in discussion with the CBS-MFU and the SMDC and potential partners will be shortlisted based on discussions with the CBS-MFU and the SMDC. The shortlisted MFIs will be invited to an information session where they will be presented with the scope of the project and the financing requirements for the target group clients. The information session will also be attended by representatives of the CBS MFU and SMDC. Based on the information about the project and its requirements the shortlisted MFIs will be requested to submit business plans addressing the following points:

(a) overall background information about the ownership, management structure, products and delivery methodology, implementation arrangements, partnerships, external funds flows and financial performance of the MFI.

(b) the products and the methodology that will be offered by these MFI for enabling technology adoption by the project target group farmers for increasing profitability from crop production activities. The nature of contractual arrangements to be supported in order to finance the clients should be clearly defined along with the profit margins and profit-sharing arrangements.

(c) The overall engagement plans of the shortlisted MFIs in the project villages including crop production loans, other credit products, potential saving services and insurance service facilitation.

(d) Service delivery arrangements including the details of the branch structures, field visits and village level service delivery, monitoring and repayment collection methodology that will be adopted.

(e) Projections of the growth in outreach of the services of the MFI in and around the project villages over the next 3 to 5 years.

(f) Financial plan with projections of growth in the portfolio, operations costs, revenue and profitability and credit performance in terms of repayment rate and portfolio at risk to be achieved over 3-5 years.

(g) Volume of portfolio and operations financing that will be required in order to fund the growth in outreach, the sources of such financing, infrastructure requirements and human resource additions and nature of technical assistance, training and capacity building required for achieving the outreach targets.

184. The project will ensure that the activity of the financial partners is not just confined to crop loans but encompass the full range of demand driven services and products in the rural setting. These will include savings services, seasonal loans for normal crop production activities, livestock production loans and credit for supporting small enterprises and services. In addition, the project will facilitate the PFIs to develop methodologies that are sustainable and can continue without project support even after the end of the project.

185. The project will assess the proposals submitted by the MFIs and in discussion with the CBS and the SMDC finalise the first set of partners. The selected PFIs will be invited to technical session to refine and finalise their investment plans for partnering with the project. The quantum of portfolio support required from the CBS and SMDC will be determined. At the end of the technical session the partners and the project will sign a memorandum of understanding

defining their activities, roles and responsibilities. The CBS and SMDC will also be a signatory to this MOU expressing commitment to fund the portfolio financing needs of the PFIs for meeting their outreach targets in the project area. The same process will be followed for including additional partners in subsequent years of the project depending on the growth in credit demand in the project areas.

186. **Access to portfolio funds.** The PFIs will be responsible for mobilising the portfolio funds according to the investment plans and signed MoUs with the project. These funds will either be a part of their existing liquidity or contributed by CBS-MFU/SMDC. The nature of partnership between CBS MFU/SMDC is described in later sections in this report. Where required, the project will assist the PFIs to develop and strengthen the relationships with CBS-MFU and SMDC by providing technical assistance to strengthen the funding proposals to CBS-MFU/SMDC, supplying necessary information and data requirements for such proposals and brokering negotiations between the PFIs and the apex financing institutions.

187. **Access to operations fund.** In general the PFIs will be responsible for bearing all operations costs related to the management of their financial operations in the project area including, staff salaries, transportation, stationery and other administrative expenses. The projections of the operations costs in the investment plans prepared at the beginning of the partnerships will serve as the basis of estimating the operations costs involved. If a partner MFI is successful in achieving its targets for the first 1 to 2 years including the credit performance targets then the project may consider financing a part of its operations costs for further expansion in outreach to new areas as a part of the incentive package for developing the crop financing outreach of PFIs. IAMDP support to operations costs will not exceed 50% of the incremental costs for expanding outreach to new project villages for a maximum of two years.

188. **Technical assistance, training and capacity building of PFIs.** IAMDP will organise TA, training and capacity building to support PFIs' to (i) refine their business plans by developing products and delivery methodologies to address the full range of MF needs by the target households including savings services and crop, livestock and microenterprise loans; and (ii) harmonise RF implementation plans with IAMDP implementation structure involving the SPIUs and LETs. IAMDP will train the PFIs' credit officers (CO) on the improved crop production packages and provide them with active exposure to the demonstrations of new technologies. It will provide the PFIs with total investment estimates, cost benefit estimates and credit requirement estimates for different crop models involving the project promoted technologies. The RFE in the PCU and the RFS in the SPIUs will anchor TA, capacity building and training activities in collaboration with local service providers mainly hired from the pool of individuals trained by previous IFAD projects for development and implementation of ABSUMI, Bara'ah and VSCG models.

189. With regards to training of the PFIs, the project will organise training sessions for developing basic knowledge and understanding of the PFI credit officers regarding the adoption details and benefits of the project promoted improved crop production packages. The project will also facilitate strong and active exposure of the PFI management and the credit officers to the on and off farm demonstrations particularly the practical application of the improved services and inputs including improved land preparation techniques, improved seeds, application of seed dressing, weeding using manual and chemical methods, harvesting, threshing and packaging inputs. The exposure to these demonstrations should convince the PFIs management and the credit officers that (i) it is practically possible for the target group farmers to implement the project supported improved crop production practices in their farms; (ii) the adoption of these improved technologies can substantially increase the production of the farmers; (iii) the increase in production can generate higher cash flows that can reduce the risk of non-repayment on crop production loans; and (iv) developing a portfolio of crop production loans can be a good business strategy specially when linked to the adoption of the improved crop production packages by farmers. Based on training and exposure to the demonstrations

the project will assist the PFIs to develop or fine tune existing crop production credit products and delivery methodologies.

190. **Infrastructure support and operations gap financing to PFIs.** The lack rural branches, inadequate transportation and high initial operations costs are some of the main challenges faced by FIs intending to expand their rural outreach. Based on performance in the first 3 years, the project may assist promising PFIs in the areas of (i) rural branch establishment by supporting their office furniture, equipment and transportation needs; (ii) technology adoption for strengthening the MIS and loan tracking systems, payment systems, integrating mobile banking and agent banking services; (iii) limited operations costs support to new rural branches of PFIs before they break even by financing partial staff costs, specially agribusiness development staff, for 1-2 years. All assets will be procured by IAMDP following IFAD procurement guidelines and delivered to the PFIs in kind.

191. **Facilitate PFIs partnerships to refinancing and extension services.** IAMDP will facilitate partnership between the PFIs and the refinancing partners such as CBS-MFU, SMDC and commercial banks. It will also facilitate PFIs partnerships with the guarantee agency and micro insurance agencies where relevant, **without direct financial support to them**.

192. **CBS-MFU and SMDC.** IAMDP will broker the PFIs' refinancing partnerships with CBS-MFU and the SMDC to ensure that the PFIs have sufficient access to portfolio funds for meeting the crop loans targets in the project area for 4-5 cycles. IAMDP will build on the partnerships already established between previous IFAD projects and CBS-MFU/SMDC during the development of ABSUMI and Bara'ah. The CBS-MFU is will refinance PFIs from two sources, repayments collected on the US$100 million disbursed so far to the MFIs and additional financing of US$100 expected from the Islamic Development Bank and the Arab Fund over the next 5 years. SMDC is willing will use a part of its US$10 million investment capital.

193. The RF coordinator (PCU) will broker the portfolio financing partnerships between PFIs and CBS-MFU and SMDC. CBS-MFU and SMDC will be invited to participate in the selection of the PFIs, fine tuning the PFIs' business plans and developing refinancing MOUs based on the business plans. IAMDP may support the refinancing partners to improve their supervision processes and M and E systems through technology adoption and assist them to participate in exposure, capacity building and training events, based on performance. They will also be invited to participate in supervision missions and to witness the crop financing success stories in the project area. Knowledge sharing workshops and publication of information booklets will be supported to promote the diffusion of the successful financing models amongst other MFIs through the refinancing partners.

194. **Guarantee agency.** The CBS has recently established the Guarantee Agency (GA) as an autonomous entity to provide up to 75% wholesale guarantee to MFIs seeking refinancing from commercial banks or farmers' organisations seeking loans from commercial banks. Where relevant the project will facilitate partnerships between the GA and PFIs (also farmers' organisations) to enable the latter to borrow from commercial banks. The guarantee agency has been newly established and still has limited outreach. Depending on its responsiveness to the project needs.

195. **Micro insurance services.** The project will facilitate linkage between the PFIs and micro insurance companies to enable credit guarantees to the PFIs for its crop production loans. The role of the project will be facilitate better terms and conditions for the credit guarantee for the PFIs considering; bulk demand for such insurance and lowered risks due to adoption of improved technologies, enhanced extension services and adoption of appropriate crop varieties e.g. pest and drought resistant.

196. **Extension services.** IAMDP will ensure strong implementation level coordination between the COs from the PFIs and the State and Locality RCOs from the project. The RFS in the SPIUs will train the State and Locality RCOs to facilitate (i) mobilisation of improved crop loan

applicants; (ii) PFIs linkages to input suppliers, services providers and buyers; (iii) community sensitisation on PFIs' services, terms and conditions and group formation and financial literacy training; and (iv) group formation (refer VSCG development) and their training on financial literacy, business management and marketing development topics to facilitate linkage to the PFIs. PFIs will be responsible for loan appraisal, disbursements, credit monitoring and repayment collection.

Informal loans from village savings and credit groups (VSCGs)

197. The rural finance environment in the project area is fragile with limited graduation options for MFI clients. External MFIs have been known to stop lending to even to strong clients after the last loan cycle. Secondly, for some household the entry level credit requirement for adoption of new crop technologies is very low (SDG 300-600). In such cases dependence of the financial institution has affected adoption when the FI rejected of failed to lend on time. To overcome these challenges the IAMDP will promote entry level crop financing specially for very poor households through loans from internal capital of VSCGs which have been very successful in WSRMP.

198. The project will develop men and women's VSCGs each comprising up to 20 members saving regularly SDG 20-30 per month. The accumulated savings will be used to finance individual member activities and collective group activities. The profit margins earned on the investments will be ploughed back for increasing the group capital. Strong adoption of VSCGs in a village of around 100 households has shown (in WSRMP) to generate internal capital of SDG 100,000-150,000 over 4 to 5 years which could easily finance improved crop loans for 50-60 smallholders. Some of the SCGs can choose to operate as Producers Associations (PA) and will be registered accordingly. From the onset these will function as strong institutions founded of a culture of member discipline, regular savings, business orientation and focus on internal capital generation.

199. The locality RCOs will be responsible for VSCG formation. Building on the experience of WSRMP in VSCG development, the RCO will develop 1-2 VSCGs in a village in the process training up to two VSCG facilitators to replicate these groups in the rest of the village. Once the VSCGs in the village show positive results the project will actively support the dissemination of these success stories to neighbouring villages. This will indirectly support the adoption of the crop technologies in the surrounding villages. The project will support pay limited service charges and allowances to the VSCG facilitators for their services in the project villages and surrounding areas.

200. Broadly, the groups will use three approaches for financing improved crop production using their internal capital.

(a) The first approach will involve direct lending to the members and earning a profit margin on this investment from the clients mainly through murabaha, mugawala and salem contracts. Murabaha contracts will be used for enabling member to purchase inputs such as seeds and seed dressing while mugawala will be used for enabling their access to mechanised services such as land preparation and spraying. Additionally, in those villages with good storage facilities the groups can practice salem lending for financing cash loans mainly for hiring manual labour for weeding and harvesting activities.

(b) The second approach will involve a group collectively investing in a crop production activity by hiring a larger land area. The management of this activity will be entrusted to 2-3 members under musharaka contract whereby the profits will be shared between the group and the managers in a fixed ratio.

(c) The third approach will involve the group members opting for collective but decentralised farming, producing the same crop separately in land belonging to each member but each adopting the same improved crop production package. This will help to better organise the delivery of the project supported services and inputs, potentially lowering their costs. It will

also lead to increased production thus contributing to overall increase in the profitability of the members.

201. ***VSCGs and producers associations.*** Some of the VSCGs can choose to operate as Producers Associations (PA) and will be registered accordingly. From the onset these will function as strong institutions founded of a culture of member discipline, regular savings, business orientation and focus on internal capital generation. They will also serve as good examples to other PAs in the village by demonstrating the benefits of member discipline, group cohesion, regular group activities, off-season internal credit practices, regular savings and internal capital development. These factors will support the institutional strengthening of the PAs. Their strong, vibrant nature and internal credit history will assist in developing external linkages to formal financial institutions and will contribute to the sustainability of the PAs after the project.

202. The VSCG implementation process will be as follows:

203. ***Selection and training of VSCG facilitators.*** The rural finance extension officer (RFO) in a locality extension team will be responsible for VSCG formation in any village. The person will begin the process by selecting two VSCG facilitators in each village and training them on the objectives, benefits and process of group formation and management. Details regarding VSCG facilitators are presented later in this paper. The RFO will directly form the first two VSCGs in a project village assisted by the VSCG facilitator. Thereafter, the VSCG facilitator will be responsible for developing additional groups in the village under the supervision of the RFO.

204. ***Group formation criteria.*** Only women's groups will be promoted during the first year and men's groups will be formed from the second year onwards. The broad criteria for the formation of VSCGs will be (i) maximum 20 members; (ii) members drawn from the same neighbourhood; (iii) only one member per household; (iv) homogeneous economic conditions of members; and (v) members committed to regular savings. Each VSCG will select two office bearers comprising a group leader and an assistant group leader using literacy as key criteria and rotating the positions periodically.

205. ***Group formation process.*** The group formation process will start with village awareness meetings for generating awareness about the VSCG methodology and its benefits. This will be followed by presenting the VSCG formation guidelines to community members based on their willingness to form VSCGs. The community will be provided with a 2-3 week period for initial group formation on voluntary basis strictly following the group formation criteria. Thereafter the RFO will verify that the newly formed groups comply with the group formation criteria. Additional 1-2 weeks will be allowed to the communities for final group formation after addressing the gaps identified during group verification.

206. ***Group training.*** The RFO and the VSCG facilitators will train the newly formed groups on savings and credit activities and other group functions. This training will orient the members to (i) group rules, regulations and byelaws focusing on the importance of financial discipline, regular group activities, and development of business orientation; (ii) savings and credit activities; and (iii) record keeping mechanisms. The group training will be based on the contents of the revised VSCG manual which will incorporate experiences of the WSRMP and the LMRP supported VSCG interventions.

207. ***Internal savings guidelines.*** During the basic group training each group will incorporate in its byelaws detailed terms and conditions for internal savings which will include the following (i) each group will independently decide the amount to be saved by its members and each member will save the same amount agreed upon by the group; (ii) it will be compulsory for each group member to save regularly into the group savings fund; (iii) group meetings will be held at least once a month during which member savings will be collected; (iv) gap in savings by any member or will not be allowed; (v) In dry seasons, when household cash flow reduces, the group can jointly decide to reduce the savings per member, but, savings will not be stopped

under any circumstance; (vi) the groups will accumulate their savings and not cash-out at the end of specific periods; (vii) those groups which want to use the savings for social purposes such as marriages and festivals will be encouraged to save additional sums to develop funds for social and emergency expenses without reducing the core savings funds; and (viii) financial penalties will be imposed for violating group norms.

208. ***Internal credit guidelines.*** The internal loans from the group funds will be used to finance crop production loans as well as other activities depending on member requirements. The project will guide the groups on different mechanisms for financing crop production loans specially assuring their *shariah* compliance which is often a primary concern amongst VSCGs. The project will also expose the VSCGs to the demonstrations of the technological packages, improved crop production techniques and their impact on increasing production.

209. The project will advise the VSCGs that at least for the first three years the earnings from investment activities should be accumulated as group capital. The groups will be free to set their own profit margins in negotiation with the clients. Experience shows that this usually ranges between 5-10% per month and is accepted by the clients. However, the project will guide the groups to offer flexible repayment terms where required depending upon the nature of the activities financed and their cash flows.

210. ***Group registration.*** Initially the VSCGs will operate as informal groups undertaking savings and credit activities amongst group members. Over time, as they stabilise the project will facilitate their registration at the State level preferably as producers associations. The project will support the registration costs of those groups which (i) successfully use their internal funds for supporting the adopting of improved crop production technologies by individual members; and (ii) have some experience of successfully investing the internal funds in collective farming activities; (iii) plans to expand their collective farming initiatives. The project will actively link these VSCG producers associations to external sources of credit for expanding their farming activities.

211. The project will develop detailed reporting formats which will be used by the locality RFOs to capture the performance figures of the VSCGs on a quarterly basis. The village level VSCG facilitators will assist the extension officers to collect the data from the VSCGs.

212. ***Development of VSCG facilitators.*** At the village level the project will develop VSCG facilitators who will be responsible for the replication of the VSCGs within the village and also for providing business services to the groups especially assisting in their market linkage. The Key responsibilities of VSCG facilitators will be as follow:

213. ***Replication of the groups in the project villages.*** The first 1-2 groups in any project village will be formed by the RFO. After this the VSCG facilitators will be responsible for formation of additional VSCGs in the village with close guidance and monitoring by the RFO. The development of the groups through the facilitators will not only reduce the cost of VSCG development but will also improve ownership of the group by the communities. It will make management support to the groups available from within the community and in the process will support their sustainability after the project. In general, VSCG facilitator will act on voluntary basis for replicating the groups within the project villages. However, the project will actively promote a system of payment by groups for the services of the VSCG facilitators.

214. ***Replication of the groups in neighbouring villages.*** Once the VSCGs in the village show positive results the project will actively support the dissemination of these success stories to other villages resulting in demand for this intervention in these surrounding villages. The VSCG facilitators from the project villages will be a key resource person for working together with the RFO to select VSCG facilitators in the surrounding villages and for facilitating training workshops for the facilitators in the surrounding villages. Furthermore, the facilitators from the project villages will carry out follow-up visits to the neighbouring villages to assist the newly trained VSCG facilitators to develop the first 1 to 2 VSCGs in their villages.

215. ***Marketing services to VSCGs.*** Where relevant the VSCG facilitators will provide marketing services to the VSCGs and to the individual members. For example, the person will organize transportation, broker supply of inputs, assist in fetching the best price for marketable produce, organize the supply of inputs and generate orders/marketing linkages for clients against the payment of service fees or commission. The presence of the VSCG facilitators would also potentially allow their utilisation as agents by mechanised service providers and agro dealers intending to expand their market in the project villages.

216. ***Assist in village level data collection.*** The VSCG facilitator will also be the focal point for the RCO in coordinating rural finance related activities at community level. The person will be trained on data collection formats related to rural finance and other relevant aspects of the project which will finally support the project M and E system.

217. ***VSCG facilitator selection criteria.*** Up to two VSCG facilitators per project village will be selected by the RCO just after village selection. The criteria used for this selection will include (i) resident of the same community; (ii) good interpersonal skills; (iii) respected by the community; (iv) good relationship with community members; (v) preferably youth, physical fit to visit different parts of the community and also other surrounding communities; (vi) willingness to develop the VSCG system at the village level; and (vii) preferably owning a motorbike or animal drawn transport for facilitating movement within and between the communities.

218. ***Training and exposure of the VSCG facilitator.*** The RCO will train the VSCG facilitators on V objectives, development process and management procedures for key savings and credit activities including VSCG book keeping and reporting, loan appraisals and conflict resolution mechanisms. The VSCG facilitators will be sent on exposure visit to WSRMP villages with strong VSCGs to interact with the experienced VSCG facilitators in these villages. After going through these steps the VSCG facilitators will closely assist the RCO to develop the first 1-2 groups in any project village. After this the VSCG facilitator will be responsible for formation of additional VSCGs in the village with close guidance and monitoring by the RCO.

Financing MSPs and agro input suppliers

219. Seeds and agrochemicals dealers, retailers, machinery service providers, village level spraying service providers and integrated pest management agents have limited access to finance which has restricted the availability of these services to the smallholders. IAMDP will facilitate their credit linkage to FIs in response to increased demand for their services generated through the improved crop production loans from PFIs to smallholders. The loans to agro input suppliers are expected to range from SDG 10,000-40,000 and loans to MSPs are likely to range from SDG 10,000 – 150,000 depending on the nature of the agricultural machinery.

220. In coordination with interested financial institutions (ABS, other commercial banks) IAMDP will mobilise bulk credit application from MSPs and agro input suppliers in the project area at the beginning of the season and submit these to FIs for shortlisting. The project will assist the shortlisted applicants to develop of detailed business/investment proposals and feasibility plans. These plans will indicate the (i) the demand for the inputs/services created by project activities; (ii) the training and capacity building inputs by the project to the MSPs and agro input suppliers; and (iii) direct financing of the smallholders facilitated by the project to assist the payment for the services/inputs. Based on these factors the project will assist the applicants to negotiate lower physical collateral needs (where relevant for loans higher than SDG 50,000). It will also utilise the partnership with the guarantee agency to develop to cover up to 75% of the collateral requirements of MSPs and agro-dealers.

Financing post-harvest marketing activities

Post-harvest shared marketing contracts with ABS

221. This will be initially piloted on a limited scale. The project will facilitate contracts between the farmers and ABS agreeing that at harvest a specified number of crop sacks will be stored in the

ABS storage facilities for 3-4 months after which the two parties will jointly on selling the stock based at prevailing market prices. At the time of the contract the ABS will pay a 30-50% of the current market price (at harvest) to the farmers. This access to cash will support the farmers to meet emergency expenses faced immediately after harvest without resorting to distress selling of the produce. After selling the stock and the net profits (deducting storage costs, marketing expenses by ABS) from the proceeds will be shared between the farmers and the ABS at 70:30 ratio. ABS will pay out the share of the farmers after deducting the amount already paid at the time of the contract. The project will support this arrangement by assisting the development of guidelines and contract formats, sensitising and training farmers and ABS branches on the modalities, brokering the contracts between the ABS branches and farmers, supporting the development of collection centres and smooth delivery of the produce by farmers to ABS.

Financing against crops stored in community level storage facilities

222. This mechanism will also be implemented on pilot basis. Taking advantage of the presence of community level storage facilities developed in component 1, IAMDP will collaborate with ABS and other FI to develop post-harvest financing models against crops stored in these storage facilities. At the time of harvest the farmers will store their crops in the local storage facility and will approach the financial institution for loans against the stored crops as collateral. The FI will secure the collateral by putting a lock and potentially by deploying a guard at the facility. It will then supply in kind loans to meet the consumption needs and other requirements of the farmers after harvest. These contracts will usually be for 3 to 4 months after which the prices of the stored products are expected to rise. At this point the farmers will sell the produce with assistance from the bank if needed and settle their loans from the revenue generated. The average loan size will be US$15,000 for four pilots one in each state. The project will support this also as revolving matching equity.

Appendix 5: Institutional aspects and implementation arrangements

1. Numerous ministries and government institutions at the federal and state levels are involved in the development of rainfed agriculture.

Federal Institutions

2. **Ministry of Finance and Economic Planning.** MOFEP is the designated representative of the Government of Sudan for international economic relations, donors' coordination, borrowing and provision of counterpart funding to projects including IFAD-supported projects. MOFNE also provides funds to the states for their recurrent operation and maintenance and to localities through the state governments for similar purposes.

3. **Ministry of Agriculture and Forestry.** MOAF is responsible for formulating national agricultural policy including that for gender equity, forests through the Forestry National Corporation, coordination between the state ministries of agriculture and acting as a technology authority and transfer agent for crop production, range and pastures.

State Institutions

4. **Ministry of Finance and Manpower.** The states' MFMP have four main departments, each headed by a director: finance, economic planning, investment and trade. The finance department is responsible for budgeting and financial resource allocation including salaries of civil servants. The economic planning department is responsible for development planning at state level, supervision of development projects with multi-sector components, and projects implemented by NGOs and UN agencies. The financial base of the states comprises land sales, fees and commodity price differentials. These fall far short of the states' recurrent budget requirement, which needs to be supplemented by the Federal Government's transfers through the State Support Fund.

5. **Ministry of Agriculture, Animal Wealth and Irrigation.** The MAAWI in each state has overall responsibility for rural resource development in the fields of agricultural services, extension, horticulture and plant protection as well as natural resources management including the development of, animal resources, range and pastures, and forestry. It functions independently except for activities related to plant protection, animal epidemic disease control, conservation and forestry, and research where staffs are seconded from the Federal MOAF, MOAR, ARC and FNC.

6. **Extension and technology transfer.** In 2001, the Minstry of Agriculture and Forests upgraded the extension department into a Technology Transfer and Extension Administration (TTEA). This measure was taken in recogntion of the cenral role of extension in improving agricultural production and food security. The main objective was to bridge the gap between agricultural research and extention. In accordance with the decentralization of local government, the TTEAs were established at state level, with extension staff based in localities and rural administrative units. The MAAWIs are now responsible for the provision of extension services, but their capacity to do so is limited. While they do have some staff with technical training, they lack logistic support, appropriate equipment, and means of transportation. The Agriculture Revival Programme (ARP) – the main Government investment programme to boost agricultural growth - went further in the decentralization process, and called for the establishment of extension and other agricultural services at the village level through a network of community-based extension services and other service providers

7. **Ministry of Engineering Affairs and Physical Planning.** The MEAPP has overall responsibility for state civil works including rural roads and rural water supply. Of special interest is the state water corporation (SWC) in each state, which is responsible for boreholes

operation and maintenance and its supply through pipelines to the towns in the project area and hand pump installations in villages. It is also responsible for issuing licenses for water facilities, for setting the water prices, for regulating the water sector, and for arbitrating conflicts with users. MEAPP capacity is limited and there is a general deterioration in the rural facilities under its control, and there are problems of transparency in its operations.

8. **State Commission for Strategic Planning.** This Commission meets semi-annually at state level and is composed of state ministers, parliamentary leaders and local leaders. Its main aim is to develop long term strategy for the development of the state and review the state investment and budget projects for their consistency with the long term strategy. This Commission has the potential to become the forum for state wide coordination among the executive, legislative and civil society bodies on policy, budgetary and operational issues.

9. **Farmer Producer Organisations (FPO).** In the past farmers in Sudan were organised in different farmer unions (pastoralist union, horticulture union, mechanised farmers union, rainfed producers unions etc.) led at a higher level by the general Farmer's Union at Federal level. In 2011 the Farmer's Union was replaced by a Council for Agricultural and Livestock Producers. Similarly, farmers were encouraged to register as Producer organisations under the Owners of Animal and Agricultural Production Professions (Organisations) Act under the auspices of the Federal Ministry of Justice. The Act stipulated the organisation of farmers under the following groups (i) Agricultural producer organisations; (ii) Livestock producer organisations; (iii) Water user organisations. A new law on the registration of agricultural and livestock producer organisations was adopted in 2015, which is expected to be beneficial for farmers mainly with regard to finance opportunities and insurance. According to figures from the Federal Ministry of Agriculture and Forestry up to date around 45% of the Sudanese farmers are registered in farmer producer organisations. At Federal level the number of registered producer organisations are 21,200 (as of June 2017). Of these, 20% are livestock producer organisations and 80% are agricultural producer organisations. The federal law is applicable at state level. In Sinnar state the number of registered producer organisations are 2,035. The SUSTAIN project has so far registered 155 farmer producer organisations. In greater Kordofan, the number of registered farmer organisations are 1,190 (700 in South Kordofan, 143 in West Kordofan, and 347 in North Kordofan. The SDP project has so far registered 272 farmer producer organisations

10. **Village Development Councils (VDCs**) have been implemented widely in IFAD project in Sudan as the community level as village-based institutions registered under the State Law for Community Development Committees. They consist of about 10-15 members, 30% being women. They have a variety of responsibilities across IFAD projects such as community development, operation and maintenance of community services, management of the sanduq as the microfinance arm in each village. They often lack market/profit and sustainability orientation. Although they are effective in developing an enabling environment for the smooth delivery of project services they are less successful in the delivery of financial services and in the handling of financial resources.

11. **Rural finance institutions.** Agriculture Bank of Sudan Bank owned microfinance model (ABSUMI): This model was piloted by the Agricultural Bank of Sudan (ABS) in North and South Kordofan in the WSRMP project. In addition, Community owned apex microfinance institution model (Baraah): Baraah was established as a licensed, professionally managed central microfinance institution owned by the communities it served in the region. The development of the Baraah model was supported through the rural finance component of the IFAD-funded project SKRDP and additional Swedish funds.

12. **Lead project agency.** The lead project agency will be the Federal Ministry of Agriculture and Forestry. A lean Project Coordination unit (PCU) will be established in El Obeid in North Kordofan State to provide overall leadership and oversight of implementation activities. The implementation activities will be conducted by the four State Project Implementation Units

(SPIU), to be established one in the Sinnar State and one each in North Kordofan, South Kordofan and West Kordofan.

13. **Central Project Coordination Unit.** A Project Coordination unit (PCU) will be established in El Obeid in North Kordofan State to provide overall leadership and oversight of implementation activities. The lead Project Coordination Unit would include the following key staff: principal project coordinator, a technical team led by a private sector engagement/marketing specialist, production specialist, and rural finance specialist as well as the finance manager, senior M&E and KM officer, community and gender development officer, procurement officer, and an accountant. .

14. **State Project Implementation Units.** The implementation activities will be conducted by the four State Project Implementation Units (SPIU), to be established one in the Sinnar State and one each in North Kordofan, South Kordofan and West Kordofan. In each State SPIU, the key project staff would consist of a State project coordinator, M&E and KM officer, private sector coordinator, marketing coordinator, crop protection specialist, mechanization specialist, community and gender development officer, accountant, and rural finance officer.

15. At **the field level,** thirteen multidisciplinary LET (4 SK, 3 in NK, 3 in WK, 3 in Sinnar) will play a key role in the project implementation at the village level. At the field level, the multidisciplinary Locality Extension Teams (LET) will play a key role in the project implementation at the village level. Each LET consists of the following staff: locality private sector officer/team leader, locality crop protection officer, locality mechanisation officer, locality agroforestry officer, locality marketing officer, locality rural finance and community gender development officer. Most of these teams have been trained by SUSTAIN, SDP and WSRMP on targeting and gender focus, participatory transfer of technology, management of demonstrations, and liaison with private operators but much more will need to be done by IAMDP to deepen their knowledge and to take care of the high levels of staff turnover. Each extension agent will be responsible for the implementation of a monthly programme and the preparation and submission of monthly progress reports. Extension team leaders will prepare a consolidated monthly report. The staff of the Rural Agricultural Units (RAU) extension teams were selected competitively among the staff of the MAAWI. They will continue applying their current modus operandi introduced by SUSTAIN, SDP and WSRMP. A monthly inter and intra team coordination meeting will be organized at the RAU level. Monthly meetings at the SPIU level will be chaired by the M&E officer with the participation of the extension team leaders. The meetings at the RAU and state levels should discuss the progress made, difficulties encountered and remedies for addressing emerging problems.

16. In order to take advantage of their experience and for a fast take-off of project implementation, it would be preferable to retain the good performing and competent staff of the above mentioned positions currently in charge of management of SUSTAIN and SDP. Other required staff would be recruited on a competitive basis, including secondment from relevant government state offices

Appendix 6: Planning, M&E and learning and knowledge management

Planning

1. **Planning processes.** At inception, the PCU will review and update, if necessary, the Logical Framework during IAMDP start-up workshops with the participation of representatives from all stakeholder groups, including communities, prepare the Overall Work Plan & Budget and fine-tune the first Annual Work Plan & Budget (AWPB).

2. Thereafter, the PCU will prepare each year a consolidated AWPB incorporating the five State AWPBs generated by SPIUs for review and approval by the PSC. These AWPBs will provide a detailed description of activities to be carried out during the coming year, and the sources and uses of funds. The process will take into account the utilisation and achievement of plans from previous years and link clearly the proposed budgetary envelope with physical results to be achieved. AWPBs will be submitted in advance of the GoS annual budgeting process to ensure that sufficient counterpart funds are made available.

3. Performance-based contracts and MoUs with non-governmental service providers will stipulate clearly the results to be achieved. Final payments will be contingent both on acceptance of the works or services and on receipt of a certified report quantifying the results achieved.

4. **Progress reporting.** Each SPIU will monitor progress in its intervention zone within the standardised IAMDP M&E framework and agreed set of indicators. For day-to-day operations, the counterpart State Development and Adaptation Teams will generate the data and track outcomes and outputs. The PCU will be responsible for the consolidation of M&E reports at federal level. This decentralized data collection structure will allow project management to benefit from the provided information and avoid duplication of effort.

5. **Mid-Term Review.** Alongside the AWPB cycle, a comprehensive *Mid-Term Review* will be conducted in Mid PY3 to reassess the IAMDP design in the light of implementation experience. The main objectives will be to assess: (i) project achievements against targets, including numbers of expected beneficiaries (women and youth); (ii) interim project impact; (iii) efficiency and effectiveness of project management; and (iv) sustainability arrangements.

6. **Project Completion Report.** Towards the end of IAMDP implementation, the PCU will prepare a comprehensive internal *Project Completion Report* (PCR), to summarise achievements set against design intentions, and, drawing on intermediate and final evaluation studies, to assess overall impact and prospects for sustainability of gains in the economic and social resilience of the target population. The PCR will include a stocktaking of innovations, lessons learned and good practice, and an assessment of the extent to which project knowledge and experience have been captured, analysed and documented for wider dissemination and possible upscaling.

Monitoring and evaluation

7. **Role of M&E in results-based Project management.** The main objectives of IAMDP M&E are: (i) to provide timely and accurate information on implementation progress and constant feedback into project management and decision makers for decision-making and addressing potential plan deviations and problem areas; (ii) to evaluate the performance of implementing agencies and service providers; and (iii) to assess achievements at the levels of outcomes and impact. All M&E data will be disaggregated by gender, age and locality. A manageable number of key indicators will inform the M&E design, taking into account IFAD's Results and Impact Management System (RIMS).

8. **Baseline and impact studies.** A thorough *Baseline Survey* will be conducted in PY1 by a qualified service provider in a representative sample of communities within the targeted Localities, with a small statistical control group selected in adjacent areas. The survey will

concentrate on benchmarking those aspects in which IAMDP is intended to make a difference, including household assets and incomes, economic activity, social capital, social exclusion, private sector involvement, etc.

9. **Final impact evaluation.** The internal PCR will provide the basis for a substantial *Final Impact Evaluation* commissioned from an independent service provider at the end of implementation to assess (i) project effects and impact; (ii) sustainability of those effects; (iii) potential for upscaling project activities; (iv) lessons learned from implementation and recommendations for follow-up interventions; and (v) IAMDP's outcomes and impact contributing to the achievement of national objectives in the rural sector. The research will mirror the scope and methodology of the *baseline study* to the extent possible, to detect any changes in precisely the same indicators selected and to attempt to attribute observed changes to project interventions and/or to other factors.

Learning and knowledge management

10. **Project knowledge products and learning processes.** IAMDP will address three particular issues to ensure effective implementation: (i) building brand recognition and visibility, primarily to rural women and youth and their organisations; (ii) extending beneficiary access to enterprise development and value addition information, lessons learned and best practices; and (iii) facilitating the collection, sharing and dissemination of enterprise development and the PPP arrangement, lessons learned and best practices.

11. Annual IAMDP planning workshops will provide fora for documenting lessons learned and identifying promising areas for knowledge generation, providing stakeholders with an opportunity to express needs, successes and constraints, as well as fostering collaboration and brokering partnerships. The main anchoring points for knowledge management will be identified, including research institutions, civil society, regional KM networks and specialised service providers. The project will package and disseminate information to the respective stakeholders in appropriate formats, such as brochures, studies, articles, newsletter, TV and radio, and social media.

12. Building on previous experience with IFAD-supported projects, universities and research institutions, particularly ARC, will be the major IAMDP partners for learning and KM. For example, these centers have been and still are capable of developing and showcasing crop varieties, crop protection chemicals, fertilization, and equipment that are not in common use in the locality for the rainfed sector.

Appendix 7: Financial management and disbursement arrangements

A. Financial management risk assessment

Inherent risks: country issues, entity risks and project design

1. A comprehensive financial risk assessment has been carried out for the proposed project. Inherent country and entity risk and the control risk as reflected in Appendix 7.2. The initial risk has been rated as high and residual risk as medium after the implementations of the mitigation measures. Financial management arrangements, as they existed for the on-going projects of Seed development Project (SDP) and Supporting Small Scale Traditional Rainfed Producers in Sinnar State (SUSTAIN) were assessed.

2. The inherent financial management risk and country risk is rated as HIGH. Transparency International's Corruption Perception Index ranked Sudan 170 of 176 countries in 2016, with a score of 1.4 in 2016, showing very slight improvement as compared to 1.2 in 2015.

3. The latest PEFA assessment for Sudan was carried out in 2010 and no further financial management assessment was carried out since then. However, recent reports done by international organizations provide insight into Sudan's public financial management (PFM). In the Public Financial and Macroeconomic Management Capacity Building Appraisal Report done in 2013, the African Development Bank reported the PFM is characterized by inadequate internal control and accounting systems, limited transparency in government processes, the ineffectiveness of procurement and audit, shortage of qualified accounting and auditing staff, absence of a robust legal framework and less than optimal governmental financial control systems. Other issues identified include public expenditure controls, public procurement, cash and treasury management, internal and external audit at both federal and state levels.

4. Further, the Global Partnership for Effective Development Cooperation's C*ountry Brief: Sudan* for 2015, reported that the government is taking numerous steps to strengthen their PFM, along with other measures such as the adoption of Treasury Single Account (TSA), in parallel with the introduction of Accrual-based, instead of Cash-based budgetary accounting. The Government with the assistance of the IMF has drawn a PFM Reform Action Plan. The Ministry of Finance and Economic Planning (MoFEP) expressed its desire to re-engineer the PFM business process through the acquisition of an Integrated Financial Management Information System (IFMIS) as part of its PFM reform agenda. Specifically, the government considers the implementation of IFMIS as an essential element of the PFM reform agenda. Putting in place an IFMIS at Federal level would enable the government to control spending, deficits and achieve greater efficiencies and accountability in the budgeting process. The implementation of IFMIS system is currently underway.

5. Strengths are noted in the External Audit function, which is well developed and well respected in Sudan. As this project will build on the on-going SDP and SUSTAIN project, the FM assessment showed that capacity within the context, built up over five years, exists to ensure that funds are used for the purposes intended.

6. In November 2016, the Central Bank of Sudan lowered the commercial exchange rate that banks and foreign-exchange rate bureau are allowed to use from around SDG 6.7:USD 1 to SDG 15.8:USD 1, more or less the same as the black-market rate in the two preceding months. The new exchange rate amount consists of fixed rate part and an incentive part. The incentive part is around 130% of the fixed rate. IFAD projects with designated accounts at commercial banks receive the incentive part; however projects were instructed by MoFEP to not use the incentive without MoFEP's prior approval. IFAD engaged in dialogue with relevant stakeholders in GoS, advocating for the full exchange rate to be made available to projects to enable maintaining the purchasing power and achieve projects' development objectives

including those with bank accounts held at central bank. Before disbursement can began, current treatment of exchange rate should be resolved by MoFEP.

7. The quality of financial management of the current on-going projects of SDP and SUSTAIN has been rated as moderately satisfactory, weakness were noted in the budgetary control and lack of sophisticated accounting system.

8. IAMDP inherent and Programme control financial management risks and proposed mitigating actions are detailed in Appendix 7.2 available on desk, to be included in the PIM.

B. Financial management and disbursement arrangements

Financial management organization and staffing

9. The Project Coordination Unit (PCU) in El Obied - Kordofan (currently the managing unit of the on-going SDP) and the State Project Implementation Units (SPIUs) will be either staffed by retaining staff members in charge of the respective position under the on-going projects, based on performance; or through competitive hiring from local market. Terms of references of the key positions will be approved by IFAD prior to starting of the recruitment process or confirmation of those in charge into the new jobs. Staffing will comprise of the following position at both PCU and SPIU levels.

PCU level

(a) One financial manager- qualified accountant, with at least 15 years of experience in financial management, including experience in donor funded development projects;

(b) One senior accountant – Bachelor in Accounting, with a minimum 10 years of experience in the accounting field, including experience in donor funded development projects and their financial reporting requirements.

SPIU level

(a) One dedicated accountant and one finance assistant at each SPIU – Bachelor in Accounting. The accountants will be retained from on-going projects, based on performance or hired competitively from the local market. While the finance assistants are going to be sourced through secondment from respective department of MoAF/MoFEP. To ensure segregation of duties exists, the procurement function will be separated from those of finance. Consequently, will be carried out by dedicated procurement staff.

(b) As a condition of disbursement, the key staff should be appointed and in place before disbursements begin. In order to kick-start the implementation shortly after effectiveness, it was agreed with MoFEP to retain key staff, based on performance, of on-going SDP and SUSTAIN projects.

(c) Detailed job descriptions for each member of finance team will be included in the PIM. The ToRs of the key position will be approved by IFAD prior to starting of the recruitment process or confirmation of currently in charged staff. The position will be hired with annual contracts renewable on satisfactory performance. Changes to seconded staff may be at the request of IFAD or GoS with agreement from the other.

Budgeting

10. The project will follow bottom-up approach in preparation of Annual Work Plan and Budget (AWPB). AWPB will be initiated at the community/ locality level based on beneficiaries needs. These will be presented to the respective SPIU which will consolidate and format for submission to the PCU. All project activities will be included in the AWPB that will indicate what activities and expenditures will be implemented at Locality, State and PCU levels, and by each financing source (IFAD, counterpart funds and beneficiaries in kind and in cash contribution). Budgets will be presented in a format that presents separately the amounts on quarterly basis and by each financier. The PCU will ensure that all budgets are prepared in a consistent and

timely manner for submission to the Project Steering Committees (at local and federal levels), MoFEP and IFAD. AWPBs, once approved, will be available to all project parties. To ensure transparency, project related documentation will be circulated by PCU to all concerned staff in PCU and SPIUs.

11. The accounting system will include a budget module that will allow uploading yearly budget at the start of each financial year and consequently facilitating tracking of actual against budgeted expenditures on monthly basis and aid course corrections by management for significant variations from the budget.

Disbursement arrangements and flow of funds

12. The project will use available disbursement methods of replenishment, reimbursement and direct payments. It is expected that most expenditures will be through the designated/operating account using the Imprest mechanism. The ceiling authorized allocation will be based on budgets for six months. IFAD Client Portal (ICP) is expected to be rolled-out in country before the effectiveness date of the project. Consequently, the project will use for submission of Withdrawal Applications (WA).

13. The project is viewed as a continuation of the on-going SDP and SUSTAIN projects, in light of this, and in order to facilitate immediate start of the project upon effectiveness, 2017 AWPB of SDP can be amended to include the costs of procuring an accounting software system and preparation of the draft PIM and submit it for IFAD concurrence. Alternatively, such costs can be included as part of the start-up costs to be incurred before the satisfaction of the general conditions precedent to withdrawal. These costs shall not exceed an amount of US$150,000. The start-up costs are intended to cover the recruitment of key personnel, the purchase and installation of appropriate accounting software, preparation of the financial management section of the Project Implementation Manual, all of which are conditions for disbursement.

14. A EUR-denominated designated account will be opened for project to receive IFAD Grant at the Central Bank of Sudan/ Commercial bank acceptable to IFAD with an authorised allocation to allow for six months of projected project expenditures. PCU will also open an SDG account, in a commercial bank acceptable to IFAD, into which the EUR will be converted on an as needed basis to meet eligible expenditures. Counterpart contribution will be transfer to the same account. This SDG account pool account will be the same from which all transfers to SPIUs will be affected.

15. Each of the four SPIUs will open SDG accounts in commercial banks acceptable to IFAD.

16. Withdrawal applications will be prepared on quarterly by the PCU, on receipt of statements of expenditures and reconciliations from SPIUs.

17. The project will be allowed to use Direct Payment only for expenditures that are made in a hard currency, USD or EUR, to parties rendering services outside of Sudan, and where the contract has been signed for payment in the hard currency to an account outside of Sudan. All goods, works and services rendered within Sudan will use the SDG for payment.

18. Replenishment Applications prepared by the PCU will be submitted to IFAD, at a minimum every quarter or when 30% of the designated account has been utilized for eligible expenditures, whichever occurs earlier. Details regarding the designated account allocations and SoE thresholds will be found in the Letter to the Recipient.

19. The funds flow arrangements to meet eligible project expenditures are as follow, (and set out in a chart in Appendix 7.1).

20. A Designated Account in EUR will be held at the Central Bank of Sudan from which drawdowns will be made to the SDG operational account.

21. Project Operational Account A in SDG will be opened and managed by the PCU, shall receive funds transferred from the Designated Account.

22. Project Operational Account A will be used to transfer all sources of funds to State Project Operational Accounts.

23. States will open an SDG Project Operational Account for receipt of funds from the PCU.

24. States will be responsible for advances and expenditures of the State Teams.

25. The PCU, who is responsible for managing Project Account A, will ensure a timely flow of funds to the State Project Operational Account based on realistic quarterly or every six months' cash forecast.

26. All bank accounts in the project will have at least two authorised signatories. All payments will be by bank transfer or checks, except for petty cash expenditures or expenditure related to activities implemented at community/locality level where it not possible to pay in checks. The payment will be made through an advance to responsible staff and cleared with all supporting documents as soon as the activity is concluded. No more than one advance can be given to an individual at given time without the preceding advance is settled, unless in exceptional circumstances and upon prior approval of management. The expenditures/activities that can only be paid in cash will be reflected clearly in the PIM.

27. The fund flow under revolving matching equity (estimated amount $1.5 million equivalent) will be channelled upon by the project to the respective partner financial institutions (PFI) upon the receipt of the following: (i) The signed agreement between the project and PFIs managing the revolving matching equity for which no-objection should had been granted by IFAD and has been dully formalised; and (ii) a request from the respective PFI managing the fund specifying the amount and the bank details for the payment. The unitised balance upon the completion of the project will be transfer from PFIs to Micro Finance Unit in Central Bank of Sudan.

28. Mechanism of measurement, recognition of beneficiaries and private sector cash contribution; co-financing of Partner Financial institutions (PFIs) towards ISMGF and revolving matching equity; and in kind contributions are to be clearly reflected in the PIM.

29. Counterpart funds is to be made available for the project in advance and on quarterly basis. Central Coordination Unit to follow up with MoFEP for the timely release of funds

Internal Controls

30. Sufficient staffing at the SPIUs and the PCU will allow for appropriate segregation of duties to ensure that the following tasks are separated between staff:

    (d) custody of assets;

    (e) authorization or approval of related transactions affecting those assets; and

    (f) recording or reporting of related transactions.

31. All internal control mechanism will be detailed within the financial management arrangement of PIM which to be prepared before disbursement begins, including those for competitive Innovation Challenge Grant Programme for private sector, producer, or private sector/producer partnership; and credit funds to partner financial institutions and its mechanism. The external audit will report any internal control weaknesses within the management letter.

32. PCU to engage a firm which is familiar in donor's procedures to prepare financial management arrangement of the PIM.

Accounting systems, policies and procedures

33. The PCU will procure well-tested LAN-based accounting software; the ToR will be cleared by IFAD. The software will be dual language and able to record and report in SDG and EUR. The accounting system will include a budgeting module, procurement and reporting module. Training on the software will be provided by the supplier to all finance and procurement staff at

PCU and SPIU that will use the system. The data will be backed up on a server/ hard disk on a daily basis.

34. All accounting policies and procedures, related to the project will be clearly documented in the financial management manual, (as part of the overall PIM).

35. The project will adopt Cash basis for accounting standard.

36. The PCU will record advances to the SPIUs as an outstanding advance, and the SPIU will book the same as an advance. The SPIU will record all expenditures as they are incurred and submit on a monthly basis, certified SoEs and reconciliations, which will liquidate the advance provided. Such advances will qualify as eligible expenditure for IFAD once the expenditure has been recorded and not at the time of payment of the advance.

37. Beneficiaries and private sector in kind contributions will be recorded under a separate fund set up within the accounting system. The contributions will be collected and reporting through M&E system.

Financial reporting

38. The PCU will prepare monthly financial reports for the dissemination to the project management team (Principle Coordinator and State Coordinators). These will be consolidated further into quarterly unaudited financial reports to be submitted to IFAD. The financial Statements will be in formats acceptable to IFAD and samples of the same will be available within the Financial Management Manual. The financial reports will provide information to management, financiers and related parties to facilitate decision-making processes.

39. The PCU will consolidate its accounts with those of PIUs and produce audited and unaudited financial statements which, in line with IFAD's General Conditions, will be submitted to IFAD within six and four months of the end of the fiscal year respectively. The financial Statements will be prepared in accordance with the cash basis for accounting standard.

40. PFIs shall provide a periodic financial report signed by authorised representative disclosing revolving matching equity reconciliation, resources and use of fund and list all payment made for lending and losses on default , beneficiaries names and other documents such as minutes of lending committee.

Internal Audit

41. Given the complexities and risks arising from the wide geographical spread of project activities in 17 localities/129villages, the various implementation levels a, a full time qualified internal auditor will need to be assigned to the project by the General Directorate of Internal Audit of MoFEP.

42. Internal audit reports will be made available to PCU and SPIUs, Steering committees and MoFEP. Financial procedures (including procedures required at locality and community level) will be documented in a Financial Implementation Manual, which will be a condition for disbursement.

43. A complaints handling system for community members will be prepared and implemented, to be monitored centrally at PCU.

44. ***External Audit.*** As the Supreme Audit Institution (SAI), the National Audit Chamber (NAC) has sufficient capacity to conduct audits based on ISA; they will be performing the external audit of the project at the Coordination unit and State/Locality and community's levels. To ensure that IFAD's requirements are met, the project will share the Terms of Reference for the audit, which will be agreed to by the NAC prior to commencement of the annual audit. The auditor and on annual basis will provide an audit report with a management letter on audit observations on internal controls. The revolving match equity fund will be audited by the external auditor as part of their annual audit and PFIs shall make available to the auditors all necessary financial information and supporting document related to the use of the fund including financial reports,

bank account information and supporting documents. To ensure that audit reports are submitted to IFAD within six months after the end of the fiscal year, engagement of the auditor will commence three months before the end of each fiscal year to ensure that the NAC has scheduled the audit soon after fiscal year end.

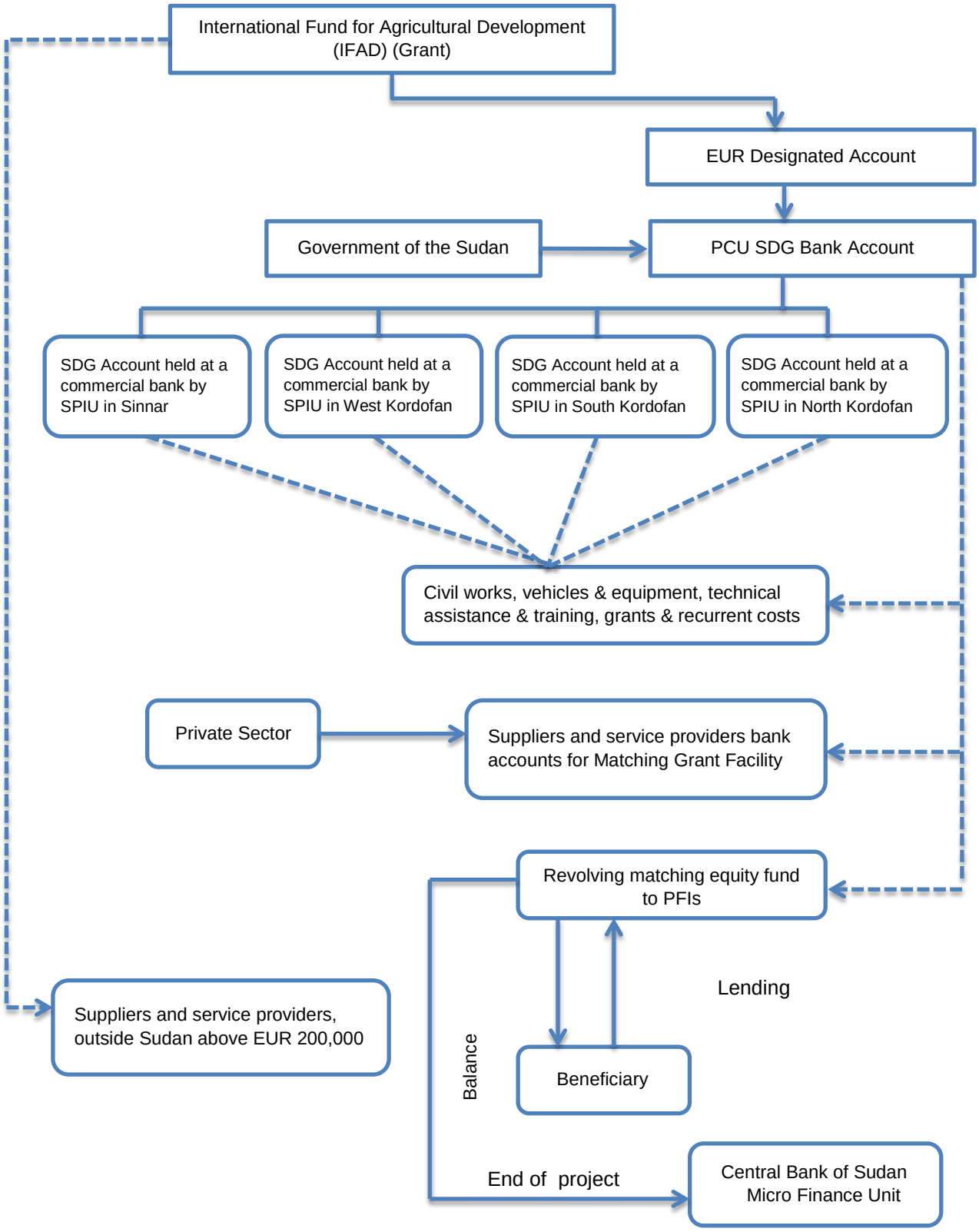
45. ***Anticorruption and good governance framework.*** The primary responsibility of detecting fraud and corruption lies with the recipient. However, the project should note IFAD applies a Zero Tolerance Policy towards fraudulent, corrupt, collusive or coercive actions in projects financed through its loans and grants. "Zero Tolerance" means that IFAD will pursue all allegations falling under the scope of this policy and that appropriate sanctions will be applied where the allegations are substantiated. IFAD shall take all possible actions to protect from reprisals individuals who help reveal corrupt practices in its project or grant activities and individuals or entities subject to unfair or malicious allegations. Given IFAD's Zero Tolerance described above, it is important that the staff and all stakeholders of the project are familiar with IFAD's as well as national anticorruption policies and whistle blowing procedures. The IFAD anticorruption policy is available on the IFAD website at www.ifad.org/governance/anticorruption/index.htm). The IFAD website also provides instructions on how to report any alleged wrongdoing to the Office of Audit and Oversight (http://www.ifad.org/governance/anticorruption/how.htm).

46. ***Taxation.*** IFAD Grant proceeds cannot be utilized for the payment of taxes and custom duties.

Table 2: Summary of actions needed to mitigate FM risks

Action	Responsible party/person	Target date/Covenants
Recruitment of key financial staff at PCU and SPIUs.	MoAF and MoFEP	Disbursement condition in the Financing Agreement.
Accounting software at PCU and SPIUs is installed.	PCU/CCU	Disbursement condition.
Financial Implementation Manual (including formats for all transactions).	PCU	Disbursement condition.
Full time internal auditor to be assigned to the project by MOEFP.	General Directorate of MoFEP	Mid-year in first year of implementation.

Appendix 7.1: Flow of funds chart



Appendix 7.2: Summary of financial management risks and mitigating actions

FM risk category	Initial risk rating	Proposed FM risk mitigating measures	Residual risk rating
A. Inherent Risks			
Country Level 1. Transparency International rating in 2016 put Sudan at 6th from the bottom of the list, with a score of 1.4. 2. Economy of Sudan is suffering from high inflation and wide currency fluctuations.	High	---	High
Entity and Project design 1. Project spread over five States and 129 village. 2. Implementation will happen at the village levels through State Implementation Units and service providers.	High	a) The Central Coordination Unit will be ring-fenced and hire key staff on competitive basis or through retaining performing staff of on-going SDP and SUSTAIN projects, and State implementing units will be within the structure of MoA and hired from the market/ministry on a competitive basis. b) Each State has an implementing unit that has been allocated key staff for the implementation of this project.	Medium
B. Project Control Risks			
1. Organization & Staffing a) Adequate qualified staff, with prior knowledge of IFAD's procedures, are difficult to find within Ministries. b) Finance Staff are made responsible for procurement function c) Project/Project Organizational structures created within Ministries are significantly influenced by the Ministry. d) Coordination between Central PCU and States Implementing Units.	High	a) Criteria for staff is prior experience on donor funded projects and (preferably) training received by IFAD/IFIs on financial management and disbursement. b) Independent PCU, ring-fenced; semi-independent SIU. c) Staff ToR to be cleared by IFAD before recruitment. A provision has been made to recruit separate procurement staff. d) Finance staff (manager and assistants) at CPU to be recruited from the market or through retaining those with good performance , and SIU Accountants from market and Finance Assistant from Ministry. All contracts will be performance based. e) Overall coordination for financial management issues will remain within the ToR of the Financial Manager at the PCU.	High
2. Budgeting a) Project budget will follow a bottom up approach, however capacity at the beneficiary levels in creation of a budget is weak. b) Lack of knowledge of IFAD procedures. c) Too many layers within the budget creation and approval process. d) Overruns and unrealistic budgets.	High	a) Budget coordination will remain with the CPU. a) State and Locality levels will receive assistance to ensure that the budgets are prepared in a realistic and appropriate manner. b) Training will be provided on regular basis to all staff – including procurement and subject specialists on the preparation of budgets. c) Budgets to include all sources of financing separately and to show estimates by quarter.	Medium

FM risk category	Initial risk rating	Proposed FM risk mitigating measures	Residual risk rating
		d) PMU will present to the IAMDP Steering Committee and IFAD and ensure that timelines are maintained. e) Interim financial reports, prepared by each SIU and consolidated by CPU, showing progress against budgets to be submitted to IFAD quarterly. f) IFAD office in Sudan will provide implementation support on processes and procedure.	
3. Funds Flow & Disbursements a) Limited abilities to forecast fund use leading to slow disbursement. b) Management of funds between the different States could result in liquidity issues, delayed fund flow and disbursement because of the multi-layer structure. c) Counterpart funds may not flow to the Project, per the commitment, which will impact and increase the risk on project account funds, which could be utilized in lieu of counterpart funds. d) Implementation delays due to lack of knowledge of IFAD procedures.	High	a) Budgeting issues will be mitigated, thereby facilitating the forecast of funds utilization. b) Clearly detailed fund flow arrangements and continuous follow-up of the same during implementation to ensure any course corrections will be made to mitigate risk of liquidity problems. c) CPU will maintain control of funds disbursed to SIUs, based on levels of activity. d) Counterpart funds will be included in the budget which will be submitted to GoS prior to the annual budgeting process and CPU and Central Coordination Unit of IFAD funded projects to regularly follow up with MOFEP for timely release of funds. e) GoS funds should be pre-paid into the dedicated account every quarter. f) Training will be provided to all staff, including senior managers, on IFAD financial management and disbursement procedures. g) A mid-year follow up on implementation will be conducted in the first year to ensure that things are on track. h) Fund flow to equity matching grant will be released upon satisfaction of some conditions as specified in appendix 7 above. i) Financial implementation manual will be a condition for disbursement and knowledge of the same will be mandatory for all staff involved in finance.	Medium
4. Internal Control a) Weak control structures magnified with vast distances between Centre and States. b) Remoteness of villages where expenditures are going to take place.	High	a) An internal auditor will be assigned to the project. The role will be: to ensure controls (as defined in the manual) are in place at Central and State levels; to test the functioning of the controls; report control weaknesses; and recommend corrections. b) Internal auditor will play a role in ensuring funds were utilized efficiently and effectively and for the purposes intended through frequent visit villages based on sample basis. c) Compliant mechanism to be put in place.	High
5. Accounting Systems, Policies & Procedures a) Manual or Excel based accounting prevails.	High	a) A reliable accounting system linking the CPU with the five States, on which training will be mandatory, will be a disbursement condition.	Medium

FM risk category	Initial risk rating	Proposed FM risk mitigating measures	Residual risk rating
b) Policies and procedures are created but are not adhered to by accounting staff. c) Lack of consistency with different layers within the Project structure in application of accounting policies and procedures.		b) Financial manual will be prepare as part of the overall PIM. c) All finance staff will be encourage to take and pass IFAD's e-learning on financial management. Financial Management Division conducted a training for all project FM staff in Feb 2017.	
6. Reporting & Monitoring a) Unable to produce financial management reports. b) Linkages through all levels to ensure that funds are properly tracked, recorded and reported. c) Periodic monitoring of financial reports does not exist.	High	a) Accounting software to be able to produce financial reports. b) Reporting and monitoring requirements will be detailed within PIM. c) PFIs will be required to provide periodic financial reports on sources and uses on revolving match equity. d) CPU manage finances with IFAD procedures and all processes documented in the PIM and in any subsidiary agreements with the States.	Medium
7. Internal Audit a) Internal auditor assigned to project is on part time job b) Ex ante check of each transaction, therefore the true nature of the function does not exist. c) Internal audit function does not exist at the locality/village levels.	High	a) Internal Audit Chamber at the MoFEP to assign a full time, certified Internal Auditor to the Project (Central PMU and the four states). b) IFAD mission will assess the quality and scope of the internal auditor during the course of implementation, and in case arrangement not found adequate, mitigation measure will be recommended.	Medium
8. Auditing a) National Audit Chamber (NAC) is not in compliance with IFAD Audit Guidelines and TORs. b) Revolving matching equity to PFIs is not audited	Medium	a) Continue the dialogue with NAC and invite them to any future FM training to Sudan portfolio to ensure that IFAD requirements are fulfilled. b) TOR to include a specific requirement to audit revolving matching grant.	Low
Project Fiduciary Risk at design:			
OVERALL FM RISK	HIGH		MEDIUM

Appendix 8: Procurement

A. Procurement capacity and governance

1. The Sudan Public Procurement, Contracting and Disposal of Public Assets Act (the Act) was issued by Government of Sudan in year 2010, drawing on experiences of regional countries, such as Egypt, Saudi Arabia, Tanzania and Uganda. The act also benefited from studies and remarks made by the World Bank and the Common Market for Eastern and South Africa. The Sudan Government has also issued the Regulations/Procedures for Public Procurement, Contracting and Disposal of Public Assets in March 2011 and the Comprehensive Manual for Procurement and Contracting Procedures, to guide the procurement process.

2. The General Directorate of Public Procurement, Contracting and Disposal of Public Assets ("the Directorate"), an autonomous unit under the Ministry of Finance and Economic Planning (MoFEP), reporting to the Minister of Finance, is mandated with the Public Procurement Reform. It is staffed with approximately fifty procurement and administrative personnel who are currently undergoing training. At present, the directorate is focusing on implementing the Act, public procurement methods and procedures, formation of procurement committees in the major Governmental units, prohibited actions, review and appeal procedures, ethical behaviour, offences, penalties, capacity building and a chapter regulating the disposal of public assets. (The Act contains fifteen chapters and eighty three articles.) So far, procurement guidelines and standard bidding documents in Arabic (drawing very much on WB documents) have been prepared and distributed to Government Agencies. In future, it is expected that this directorate will shift its focus from implementer of the law to monitoring and oversight.

3. Procurement in donor supported projects is currently governed by the regulations of the donors. However, for IFAD co-financed projects, procurement is agreed to be carried following Government Guidelines as far as they are in line with the Donors Guidelines. In this regard, the Central Coordination Unit for IFAD co-financed projects (CCU) is undertaking all projects' related procurement falling under the ICB and NCB methods. However, the procurement function at CCU will require further streamlining/strengthening of its capacity.

4. In terms of Sudan's overall procurement capacity, recent assessments by IFAD indicate that the procurement capacity is extremely weak in particular, in the areas of managing the bidding process, procurement planning and contract management. There is no evidence of recent assessments undertaken for The Sudan by other donors. But the mission was informed that training has/is being delivered to the staff of procurement units at the state ministries on the Act, the Regulations, the Manual and the standard documents. However, similar training was not provided to procurement committees at the line department levels.

5. Coupled with the interviews, IFAD's new procurement assessment tool was the main instrument utilised in this validation exercise. This assessment covered the various phases of the procurement cycle, including planning, soliciting and bidding, evaluation and contract management, documentation and staffing.

6. Under the Act, investment projects financed by an international agency are not required to follow the national procurement procedures. But as indicated in paragraph 3 above, project procurement will follow Government Guidelines as far as they are in line with the IFAD Guidelines. Close monitoring from the ICO will be made to ensure no deviation occurs.

B. Arrangements for procurement under the project

7. **Procurement.** Majority of the current procurement activities under IAMDP is expected to be small in nature and value. Therefore, the project will not have big value procurement packages and specialized nature of procurement activities to attract ICB, except for procurement of

vehicles, should there be any. The majority of procurement activities will be within the thresholds of NCB, national shopping (quotations), community procurement and direct procurement. Considering the relatively weak capacity at present, close monitoring by ICO will be exercised to guide the process. The project will follow the procurement thresholds as set out in the Letter to the Borrower/Recipient and in the approved Procurement Plan.

8. Whenever possible, procurement of goods and works will be bulked into sizeable bid packages to attract adequate competition thus resulting in cost-effective and efficient procurement.

Procurement methods

9. Generally, the methods which are permitted for the procurement of works and goods are: (i) international competitive bidding (ICB); (ii) limited international bidding (LIB) or restricted tendering; (iii) national competitive bidding (NCB); (iv) international or national shopping or requests for quotations; (v) direct contracting; and (vi) procurement with community participation.

10. The methods which are permitted for the procurement of consulting services are: (i) quality and cost-based selection; (ii) quality based selection; (iii) selection under a fixed budget; (iv) selection based on consultants' qualifications; (v) least cost selection; (vi) single-source selection; and (vii) selection of individual consultants.

11. For each contract to be financed from IFAD proceeds, the types of procurement methods, estimated cost, prior review requirements and time-frame are agreed between the project and IFAD respectively in the Procurement Plan.

12. **IFAD financed procurement of works, goods and consultancy services.** While eventually the specific thresholds for procurement financed under the project will be stipulated in the Letter to the Borrower/Recipient, following are the recommended thresholds *(these are subject to confirmation at design completion)*.

13. Works estimated to cost more than US$ 300,000 equivalent will be procured through International Competitive Bidding (ICB) method using the WB's applicable Standard Bidding Documents (SBD). Works estimated between US$ 50,000 and US$ 300,000 equivalent will be procured through the NCB. While works estimated below US$ 50,000 will be procured through National Shopping or Community Participation. Direct contracting will have to be identified and approved by IFAD in advance for those cases which justify use of such method.

14. Goods estimated to cost more than US$ 200,000 equivalent per contract will be procured through the International Competitive Bidding (ICB) method using the WB's applicable SBDs. Goods estimated to cost between US$ 25,000 and US$ 200,000 equivalent per contract will be procured through National Competitive Bidding (NCB). Goods estimated to cost less than US$ 25,000 equivalent per contract will be procured through the Shopping method. Direct contracting will have to be identified and approved by IFAD in advance for those cases which justify use of such method.

15. Consulting services estimated to cost more than US$ 100,000 equivalent for firms, will be on the basis of Quality and Cost Based Selection and for services costing less than US$ 100,000 may be on the basis of Consultants' Qualifications. For individuals, it will be on the basis of Individual Consultants selection procedures. However, the specific nature of the assignment will finally determine the method of procurement to be followed and will be pre-determined in each approved annual procurement plan.

16. Prior to proceeding with the procurement phase of a public private partnerships or private sector participation project, if any, a feasibility study should be undertaken. If the feasibility study indicates that the proposed project will not provide value for money or improve the quality of public service, the project will not proceed with the procurement phase of the PPPP. The procurement procedures to be followed under the PPPP will be in accordance with the IFAD Procurement Regulations.

17. **Prior review thresholds.** For the purposes of Appendix I, Paragraph 2, of IFAD's Procurement Guidelines, the following shall be subject to prior review by the Fund:

    (a) Award of any contract for goods and equipment estimated to cost US$ 50,000 equivalent or more;

    (b) Award of any contract for works estimated to cost US$ 100,000 equivalent or more;

    (c) Award to a firm of any contract for consultancy services estimated to cost US$ 100,000 equivalent or more;

    (d) Award to an individual of any contract for consulting services estimated to cost US$ 25,000 equivalent or more; and

    (e) Award of any contract through direct contracting, single source selection, including selection of United Nations agencies, irrespective of the amount. Furthermore, for consultancy services, all Terms of Reference, Short-listing (if applicable) and draft contracts will be subject to IFAD prior review.

18. The aforementioned thresholds may be modified by the Fund during the course of project implementation.

19. **Post-review.** All other contracts will be subject to post-review and may be subject to procurement audit by the Fund. The project staff will maintain accurate records of all procurement activities and documents related to the project. The procurement files will be maintained for review by IFAD supervision missions and independent audits. Staff will also consolidate procurement activities into quarterly and annual progress reports.

20. **Ex post review.** The project will retain all documentation up to five years after the closing date of the financing for examination by IFAD or by independent auditors. This documentation includes, but is not be limited to, the signed original contract, the evaluation of the respective proposals and recommendation of award. IFAD does not finance expenditures for goods, works or consulting services that have not been procured in accordance with the procedures specified in the financing agreement. In such cases, IFAD may, in addition, exercise other remedies under the financing agreement, including cancellation of the amount in question from the financing. Even if the contract was awarded after obtaining a "no objection" from IFAD, IFAD may still declare miss-procurement if it concludes that the "no objection" was issued on the basis of incomplete, inaccurate or misleading information furnished by the project or the terms and conditions of the contract had been modified without IFAD's approval.

21. **Register of contracts.** Procurement carried out at project level is to be recorded and registered against the Procurement Plan. In addition, all contracts, with or without prior IFAD approval will be listed in the Register of Contracts maintained by the procuring entity with the dates of approval as provided by IFAD. When a contract is amended, the amendment will be recorded in the Register of Contracts. If a contract is cancelled or declared ineligible for financing by IFAD, this information will be written in the Register of Contracts. As this register facilitates the review and approval of payment requests on contracts, it is to be updated and submitted to the IFAD Country Programme Manager on a quarterly basis. The sample form to be used and instructions are detailed in Annex 6 of IFAD's Loan Disbursement Handbook and the Project Implementation Manual (PIM). It will also be necessary that the PMU prepare annual statistics disaggregated by type and methods of procurement, for the overall procurement transactions carried out.

22. **Bidding documents.** All bidding documents for the procurement of goods, works and services shall be prepared by the procurement officer (PO) with the support of the technical experts, who will supply specifications, terms of reference, bills of quantities and so forth as required. Approved templates will be used when possible and available. These templates will receive IFAD no objection before they can be used.

23. **Responsibilities.** The overall responsibility of procurement of works, goods and consulting services rest with the project manager. The procurement officer at the PMU level will be responsible to the project manager for: (i) consolidation of the procurement plans; (ii) overall oversight and monitoring of procurement activities; (iii) provide technical advice and training to the State Coordination Units (SCUs) as required; (iv) review bidding documents prepared by the SCUs; and (v) interface with IFAD for procurement reporting.

24. The following basic principles will guide the project while processing the procurement activities: (i) economy and efficiency; (ii) giving equal opportunities to all eligible bidders; (iii) encouraging the development of domestic capacity to provide goods, works and consulting services; (iv) fairness, integrity, transparency and good governance; and (v) selecting the most appropriate method for the specific procurement. The procurement officers at SCUs will be responsible for (i) implementing and executing procurement functions at the SCU level; (ii) monitoring and management of contracts; and (iii) assisting with development of procurement plans to be submission to PMU for consolidation. The PMU will implement works procurement estimated to cost US$ 50,000 and below, community procurement and shopping. When procurement is undertaken the CCU on behalf of the project for contracts which fall under the ICB and NCB methods, the project will have full participation of the project procurement officer.

25. **Staffing and capacity development.** A procurement officer will be recruited at the PMU and a procurement assistant at each of SCU offices. It is highly recommended that the positions are to be filled competitively and will be on performance-based contracts. GoS staff will be eligible to compete and if selected, will be hired as project staff and it will be their responsibility to take all necessary arrangements in accordance with the labour laws of the country. The SCU procurement assistant will be selected from among the pool of available state employees through comparison of 3 CVs and will be paid top-up. In order to establish sound procurement management system in the project and given the current assessment, there will be a need for intensive capacity development of these staffs. Further details will be elaborated in the PIM and annual procurement plans.

26. **Governance.** While there is still room for improvement in the implementation of the Anti-Corruption Law in Sudan, measures have been taken to reinforce the compliance with the law. The *Act* (aforementioned) provides for provisions on probity and anti-corruption. It provides for sanctions and penalties in the event of discovery, which applies to both individuals and companies and can lead to temporary or permanent debarment, depending on the severity or frequency of the crimes. In the event of criminal activity, the Act provides for action by the public prosecutor and the criminal authorities.

27. In accordance with the Business Anti-Corruption Portal of the Global Advisory Network (GAN) Integrity Solutions, Legislation, Corruption in the form of active and passive bribery is covered by the Sudan Penal Code 2003. Additionally, the major forms of corrupt activity, including attempted corruption, extortion, bribing a foreign official, and money laundering are criminalised. Moreover, Sudan signed the United Nations Convention Against Corruption (UNCAC) in 2005 and the African Union Convention on Preventing and Combating Corruption in 2008, but has not yet ratified either of them. Overall, the institutional setup for countering corruption remains weak in Sudan.

28. In a positive light though, an **Anti-Corruption Agency** was established in January 2012. A former Under-Secretary of Sudan's Ministry of Finance and National Economy, was appointed to head the agency. As of August 2013, it is still at too early to evaluate the effectiveness of the newly established anti-corruption agency. However, an article published in December 2012 by *Sudan Tribune* points out that nothing has yet emerged from the agency on its corruption investigation. President Bashir recently sacked the head of the agency because of this, according to *All Africa* in August 2013.

29. **Public procurement.** According to Global Integrity 2006, Sudan drafted and passed a Public Procurement Law in 2006 and the Act was revised in 2010. The law demands that major public procurement projects go through a competitive bidding process. According to the law, companies that violate procurement rules can be barred from participating in future tenders. Unsuccessful bidders may challenge the procurement decision in court. However, the enforcement is very weak, according to the *U4 Anti-Corruption Resource Centre* 2012. The public procurement law also covers conflicts of interest for procurement officials. According to *Global Integrity* 2006, major public procurements are typically advertised in Khartoum daily newspapers, but in most cases not for more than a week due to the cost of advertisement.

30. In particular, good governance measures built in to the project will include: (i) undertaking all necessary measures to create and sustain a corruption-free environment for activities under the project; (ii) instituting, maintaining and ensuring compliance with internal procedures and controls for activities under the project, following international best practice standards for the purpose of preventing corruption, and shall require all relevant ministries, agents and contractors to refrain from engaging in any such activities; (iii) complying with the requirements of IFAD's Policy on Preventing Fraud and Corruption in its Activities and Operations; and (iv) ensuring that the Good Governance Framework is implemented in a timely manner.

Appendix 8.2: 18 Months procurement plan

Appedix 8.2: 18 Months Procurement Plan

Component 1. Enhanced Crop Productivity and Production

Bid Package Ref.	Description	Unit	Quantity	Total Cost (USD)	Procurement Method	Prior Review	Start Date	Bid Opening Date	End Date	Responsible Entity	Remarks
1. Equipment and Materials											
1.1	Spray Service Equipment (knapsack sprayers)	Set	44	4 946	Shopping	No	Apr-18	May-18	Jun-18	PMU/SCUs	
1.2	Spray Service Equipment (knapsack sprayers)	Set	42	4 816	Shopping	No	Nov-18	Dec-18	Jan-19	PMU/SCUs	
1.3	25 (hp) Agricultural Equipment for mechanised service demos GPG	Set	9	296 808	ICB	Yes	Dec-17	Jan-18	Aug-18	PMU/CCU	Procurement process starts before project effectiveness
1.4	25 (hp) Agricultural Equipment for mechanised service demos GPG	Set	9	302 795	ICB	Yes	Sep-18	Oct-19	May-19	PMU/CCU	
1.5	70 (hp) Agricultural Equipment for mechanised service demos producer groups	Set	9	195 575	NCB	Yes	Oct-18	Nov-18	Feb-19	PMU/CCU	
1.6	Agricultural Equipment (self-propelled) for mechanised service demos GPG	Set	10	96 182	NCB	Yes	Jan-18	Feb-18	Jun-18	PMU/CCU	
1.7	Agricultural Equipment (self-propelled) for mechanised service demos GPG	Set	10	98 161	NCB	Yes	Nov-18	Dec-18	Apr-19	PMU/CCU	
1.8	Materials/equipment for demo (FFS)	Set	15	4 186	Shopping	No	Apr-18	Apr-18	Jun-18	SCUs	
1.9	Materials/equipment for demo (FFS)	Set	15	4 343	Shopping	No	Jan-19	Jan-19	Mar-19	SCUs	
1.10	Certified seeds for demo plots	MT	0.5	703	Shopping	No	Mar-18	Mar-18	May-18	SCUs	
1.11	Certified seeds for demo plots	MT	0.75	1 171	Shopping	No	Jan-19	Jan-19	Feb-19	SCUs	
1.12	GAPA Tools	Tool Kit	47.0	18 284	Shopping	No	Nov-18	Dec-18	Mar-19	PMU/SCUs	
2. Civil Works											
2.1	Construction of grain storage at community level	Village	47.0	16 037	Shopping	No	Jan-19	Feb-19	Jun-19	PMU/SCUs	Activity will carried out by CBOs in collaboration with project
3. Training											
3.1.a	**Locality extension staff**										
3.1	Technical training for locality agro dealers	Locality	10	68 243	CQS	Yes	Sep-18	Oct-18	Apr-19	PMU/CCU	If aged as stipulated in the project design
3.2	Business training for locality agro dealers	Locality	10	34 121	CQS	Yes	Nov-18	Dec-18	Jun-19	PMU/SCUs	report (PDR), that the training will be
3.3	Technical training on grain storage	Training	4	13 649	IC	No	Feb-19	Mar-19	May-19	PMU/SCUs	conducted by SAGA, then procurement
3.4	Business training on grain storage	Training	10	34 121	CQS	Yes	Mar-19	Apr-19	Jun-19	PMU/SCUs	method shall be SSS. Thus the process should
3.5	Technical training for MSP	Training	10	68 243	CQS	Yes	Sep-18	Oct-18	Mar-19	PMU/SCUs	receive prior approval form IFAD. The project
3.6	Business Training for MSP	Training	4	27 297	IC	Yes	Dec-18	Jan-19	May-19	PMU/SCUs	will be required to draw the ToR for the
3.7	GAPA training	Training	47	32 074	CQS	Yes	Jan-19	Mar-19	May-19	PMU/SCUs	assignment and that ToR should receive IFAD
4. Technical Assistance											
4.1	Assessment of Locality Agro dealers	Locality	10	61 480	CQS	Yes	Mar-18	Apr-18	Jun-18	PMU/CCU	
4.2	Assessment of Locality MSP capacity	Locality	10	61 480	CQS	Yes	Apr-18	May-18	Jul-18	PMU/CCU	
4.3	Assessment of PSE (Agro dealer, SSP, MSP)	Report	3	3 689	IC	No	Jun-18	Jul-18	Sep-18	PMU	
4.4	Assessment of PSE (Blacksmith & Productive ca	Report	2	18 444	IC	No	Jun-18	Jul-18	Sep-18	PMU	
4.5	Rental of SSP motorised sprayers	Motorised Sprayer	44	5 045	RFQ	No	Dec-18	Jan-19	Apr-19	PMU	
4.6	Rental of MSP implements	MSP	44	15 013	RFQ	No	Dec-18	Jan-19	Apr-19	PMU	
4.7	Gum Arabic Study Materials	Study	1	12 296	IC	No	Jun-18	Jul-18	Sep-18	PMU	
4.8	Development of GAPA training material	Training Material	1	2 459	IC	No	May-18	Jun-18	Aug-18	PMU	
4.9	Agro dealer Business - national consultant	Person/mths	2	8 517	IC	No	Mar-18	Apr-18	Jun-18	PMU	
4.10	MSP business - national consultant	Person/mths	2	8 517	IC	No	Mar-18	Apr-18	Jun-18	PMU	
4.11	Gum Arabic - national consultant	Person/mths	4	17 035	IC	No	Mar-18	Apr-18	Aug-18	PMU	
4.12	Business training specialist - international consultant	Person/mths	3	107 780	CQS	Yes	Mar-18	Apr-18	Jul-18	PMU	
4.13	Gum Arabic - international consultant	Person/mths	1	35 927	IC	Yes	Mar-18	Apr-18	Jun-18	PMU	
4.14	PPP - international consultant	Person/mths	1	35 927	IC	Yes	Mar-18	Apr-18	Jun-18	PMU	
4.15	International environment expert	Person/mths	4	143 706	CQS	Yes	Mar-18	Apr-18	Aug-18	PMU	
4.16	Climate change consultancy - institutional capacity	Person/mths	4	143 706	CQS	Yes	Mar-18	Apr-18	Aug-18	PMU	
4.17	Climate change consultancy - adaptation options	Person/mths	3	107 780	CQS	Yes	Mar-18	Apr-18	Jul-18	PMU	
4.18	Climate change consultancy - developing/funding strategy & implementation	Person/mths	4	143 706	CQS	Yes	Mar-18	Apr-18	Aug-18	PMU	
4.19	National environment/climate change staff	Person/mths	4	17 035	IC	No	Mar-18	Apr-18	Aug-18	PMU	

Component 2. Market Linkage and Value Addition

Bid Package Ref.	Description	Unit	Quantity	Total Cost (USD)	Procurement Method	Prior Review	Start Date	Bid Opening Date	End Date	Responsible Entity
1. Equipment and Materials										
2.1.c.2.1	Tools & equipment - Pilot initiative	Set	47	134 727	NCB	Yes	Nov-18	Dec-18	Mar-19	PMU/CCU
2. Civil Works										
2.1.a.2	Construction of pipe culverts	Number	15	367 122	ICB	Yes	Nov-18	Jan-19	Jun-19	PMU/CCU
2.1.a.3	Construction of box culverts	Number	15	423 602	ICB	Yes	Nov-18	Jan-19	Jun-19	PMU/CCU
2.1.c.2.3	Establishment of crop markets (2 in each state)	Market	2	175 664	NCB	Yes	Dec-18	Feb-19	Jun-19	PMU/CCU
4. Technical Assistance										
2.1.a.1	Survey and design of wadi crossings	Lump sum	2	84 957	CQS	Yes	May-18	Jul-18	Dec-18	PMU/CCU
2.1.a.4	Supervision of wadi construction works	Lump sum	1	47 443	CQS	Yes	Nov-18	Jan-19	Jul-19	PMU/CCU
2.1.b.1.1	Grain storage study - national consultant	Person/mths	3	12 776	IC	No	Jul-18	Aug-18	Nov-18	PMU
2.1.b.1.2.1	Grain storage study - national consultant	Person/mths	2	9 454	IC	No	Jan-19	Feb-19	Apr-19	PMU
2.1.b.1.2.2	Grain storage design - national consultant	Person/mths	3	14 181	IC	No	Mar-19	Apr-19	Jul-19	PMU
2.1.b.2.1	Dynamic pricing study	Study	1	2 928	IC	No	Apr-18	May-18	Jul-18	PMU
2.1.b.2.2	Storage Study	Study	1	2 928	IC	No	May-18	Jun-18	Jul-18	PMU
2.1.c.1.1	Un-refined oil/seed cake	Study	1	5 855	IC	No	Sep-18	Oct-18	Dec-18	PMU
2.1.c.1.2	Mobile groundnuts shelling	Study	1	2 928	IC	No	Sep-18	Oct-18	Dec-18	PMU
2.1.c.1.3	Gum Arabic packaging/grading	Study	1	3 250	IC	No	Dec-18	Jan-19	Mar-19	PMU
2.1.c.4.1	Storage national consultant	Person/mths	3	12 168	IC	No	Apr-18	May-18	Jul-18	PMU
2.1.c.4.2	Gum Arabic - national consultant	Person/mths	3	12 168	IC	No	May-18	Jun-18	Aug-18	PMU
2.1.c.4.3	Oil & livestock feed consultant	Person/mths	2	8 112	IC	No	Sep-18	Oct-18	Dec-18	PMU
2.1.c.4.4	Groundnut marketing - national consultant	Person/mths	2	8 112	IC	No	Sep-18	Oct-18	Dec-18	PMU
2.1.c.4.6	Crop marketing specialist - international	Person/mths	2	67 628	CQS	Yes	Aug-18	Oct-18	Dec-18	PMU/CCU
2.1.c.4.7	PPP consultant - international	Person/mths	1	30 914	CQS	Yes	Sep-18	Nov-18	Dec-18	PMU/CCU
2.1.c.4.8	Gum Arabic consultant - international	Person/mths	1	30 914	CQS	Yes	May-18	Jul-18	Aug-18	PMU/CCU

Component 3. Enabling Environment

Bid Package Ref.	Description	Unit	Quantity	Total Cost (USD)	Procurement Method	Prior Review	Start Date	Bid Opening Date	End Date	Responsible Entity
1. Equipment and Materials										
3.1.c.4	Supply of rub halls for collection centres	Rub hall	2.0	61 392	NCB	Yes	Nov-18	Dec-18	Apr-19	PMU/CCU
3. Training										
3.1.a.1.1	Training od SCG facilitators on SCG methodology	Workshop	1	1 549	IC	No	Apr-18	May-18	Jun-18	PMU
3.1.a.1.1.1	Training od SCG facilitators on SCG methodology	Workshop	3	5 157	IC	No	Jan-19	Feb-19	Apr-19	PMU
3.1.a.1.2	Training of SCG facilitators in surrounding villages	Workshop	1	1 719	IC	No	Feb-19	Mar-19	May-19	PMU
3.1.a.3.1	ToT for SCG facilitators in surrounding villages	Workshop	6	4 911	IC	No	Mar-19	Apr-19	Jun-19	PMU/SCUs
3.1.a.3.4	Workshops at regional level	Workshop	2	6 548	IC	No	Apr-19	May-19	Jul-19	PMU/SCUs
3.1.b.1.2	Training and capacity building (formal production financing)	Sessions	1	8 849	IC	No	May-18	Jun-18	Aug-18	PMU
3.1.b.2.1	Training and capacity building (Apex FIs)	Sessions	1	9 823	IC	No	Jan-19	Feb-19	Apr-19	PMU
3.1.c.1	Workshops on financing storage loans	Workshop	1	2 950	IC	No	Jan-18	Feb-18	Apr-18	PMU
3.1.c.1.1	Workshops on financing storage loans	Workshop	1	3 274	IC	No	Jan-19	Feb-19	Apr-19	PMU
3.1.d.2.1	Farmers/FPAs training	Village	22	12 882	IC	No	Mar-18	Apr-18	Jun-18	PMU/SCUs
3.1.d.2.2	Illiterate/semi literate - training	Village	22	12 882	IC	No	Mar-18	Apr-18	Jun-18	PMU/SCUs
3.1.d.2.5	Introduction to Government officials	Locality	4	4 684	IC	No	Apr-18	May-18	Jun-18	PMU/SCUs
3.1.e.2.1	FPAs training	Village	47	30 547	CQS	Yes	Feb-18	Mar-18	Jun-18	PMU/CCU
4. Technical Assistance										
3.1.a.2.1	Updating savings and credit manual	Lump sum	1	2 323	IC	No	Jul-18	Aug-18	Sep-18	PMU
3.1.a.3.2	Publicity of SCG methodology	Lump sum	0.5	10 232	IC	No	Jan-19	Feb-19	Apr-19	PMU
3.1.c.2	Amendment of manual by partners adopting storage loans	TA								
3.1.d.1.1	Farmers/FPAs - curriculum & materials	Document	1	11 711	IC	No	Jan-18	Feb-18	Apr-18	PMU
3.1.d.1.2	Illiterate/semi literate - curriculum & materials	Document	1	11 711	IC	No	Jan-18	Feb-18	Apr-18	PMU
3.1.d.1.5	Introduction to Government officials	Document	1	586	IC	No	Jan-18	Feb-18	Apr-18	PMU
3.1.e.1.1	Farmer Producer Associations - curriculum/materials	Document	1	2 928	ic	No	Jan-18	Feb-18	Apr-18	PMU/SCUs
3.1.f.1	FAB - international consultant	Person/mths	2	58 883	CQS	Yes	Mar-18	May-18	Jul-18	PMU/CCU
3.1.f.2	PPP - international consultant	Person/mths	1	29 442	CQS	Yes	Mar-18	May-18	Jul-18	PMU/CCU
3.1.f.5	Farmers associations specialist - national	Person/mths	2	8 112	IC	No	Mar-18	May-18	Jul-18	PMU

Component 4. Project Management

Bid Package Ref.	Description	Unit	Quantity	Total Cost (USD)	Procurement Method	Prior Review	Start Date	Bid Opening Date	End Date	Responsible Entity
1. Equipment and Materials										
4.1.a.3.1.3.1	4WD Vehicles (3 SW, 7 DC, 2 HT 5 door)	Number	12	523 000	ICB	Yes	Feb-18	Mar-18	Oct-18	PMU/CCU
4.1.a.3.1.3.5	Motor Bikes	Number	10	56 207	NCB	Yes	Apr-18	May-18	Aug-18	PMU/CCU
4.1.a.4.1.4.1	Power Generator 80KVA	Number	2	27 789	NCB	No	Apr-18	May-18	Aug-18	PMU/CCU
4.1.a.4.1.4.2	Computers & Accessories	Set	22	45 987	NCB	No	Apr-18	May-18	Aug-18	PMU/CCU
4.1.a.4.1.4.3	Photocopiers	Number	3	12 911	Shopping	No	Apr-18	May-18	Jun-18	PMU
3. Training										
4.1.a.2.1.2.3	Gender sensitization training for new communities	Course	1	13 549	IC	No	Jan-19	Feb-19	May-19	PMU
4.1.a.2.1.2.4	GALS training for facilitators	Course	1	24 592	IC	No	Feb-18	Mar-18	May-18	PMU
4.1.a.2.1.2.5	GALS champions training	Course	1	12 296	IC	No	Mar-18	Apr-18	Jun-18	PMU
4. Technical Assistance										
4.1.a.1.2	Comprehensive baseline study	Study	1	61 480	CQS	Yes	Feb-18	Mar-18	Jun-18	PMU/CCU
4.1.a.1.3	Develop KM strategy and PIM	Person/mths	4	17 036	IC	No	Feb-18	Mar-18	Jul-18	PMU
4.1.a.1.7	Technical and thematic studies	Person/mths	3	18 444	IC	No	Jun-18	Jul-18	Nov-18	PMU
4.1.a.1.10	Technical advisors/consultants (national)	Person/mths	10	42 567	IC	No	Jan-18	Mar-18	Dec-18	PMU

NB:
Training activities are planned to be carried out by:
1. Individual consultants or firms, where the project may provide logistical support where needed, or
2. Where indicated in PDR by SAGA and similar entities on SSS basis
3. Where training activities are being carried out by the project extension staff, this is not included under the procurement plan.

Bid Package Ref.	Description	Unit	Quantity	Total Cost (SDG)	Procurement Method	Prior Review	Start Date	Bid Opening Date	End Date	Responsible Entity	Remarks
1. Equipment and Materials											
1.1	Spray Service Equipment/material	Set	75	375 000	NCB	Yes	May-18	Jun-18	Sep-18	PMU/CCU	
1.2	25 (hp) Agricultural Equipment for mechanised service demos GPG	Set	9	4 185 000	ICB	Yes	Feb-18	Apr-18	Aug-18	PMU/CCU	Tendering process to start before EB approval
1.3	70 (hp) Agricultural Equipment for mechanised service demos producer groups	Set	9	2 700 000	ICB	Yes	Oct-18	Dec-18	Mar-19	PMU/CCU	
1.4	Agricultural Equipment (self-propelled) for mechanised service demos GPG	Set	10	1 350 000	NCB	Yes	May-18	Jun-18	Aug-18	PMU/CCU	
1.5	Equipment for contact farmers	Set	50	52 500	LS	No	Mar-18	Mar-18	May-18	SCUs	
1.6	Materials/equipment for demo (FFS)	Per annum	15	35 250	LS	No	Mar-18	Mar-18	May-18	SCUs	
1.7	Certified seeds for demo plots	MT	0.5	9 080	LS	No	Mar-18	Mar-18	May-18	SCUs	
1.8	Agro-chemicals for demo plots	Per annum	1.0	35 800	LS	No	Mar-18	Mar-18	May-18	SCUs	
1.9	Office equipment and furniture - extension teams	Set	5.0	750 000	NCB	Yes	May-18	Jun-18	Aug-18	PMU/CCU	
2. Training											
2.1.a	**Locality extension staff**										
2.1.a.1	Training on mechanised services	person	9	20 250	IC	No	Jun-18	Jun-18	Jul-18	PMU/SCUs	
2.1.a.2	Training on agro-chemicals	person	9	20 250	IC	No	Jun-18	Jun-18	Jul-18	PMU/SCUs	
2.1.a.3	Training on FAAB and rural finance	person	27	60 750	IC	No	Jul-18	Jul-18	Aug-18	PMU/SCUs	
2.1.a.4	Training on data collection, analysis and reporting	person	9	20 250	IC	No	Jul-18	Jul-18	Aug-18	PMU/SCUs	
2.1.a.5	Training on documentation and KM	person	9	20 250	IC	No	Jul-18	Jul-18	Aug-18	PMU/SCUs	
2.1.a.6	Training on GPS and Geo-location	person	27	60 750	IC	No	Aug-18	Aug-18	Sep-18	PMU/SCUs	
2.1.a.7	Training on Gender Action Learning System (GALS)	person	27	60 750	IC	No	Aug-18	Aug-18	Sep-18	PMU/SCUs	
2.1.a.8	Business development training	course	18	40 500	IC	No	Aug-18	Aug-18	Sep-18	PMU/SCUs	
2.1.a.9	Exposure visit and external training	person	15	510 000	QCBS	Yes	Sep-18	Nov-18	Dec-18	PMU	
2.1.b	**Producer Groups**										
2.1.b.1	Publicity and demonstrations on use of improved seeds and input packages	campaigns	4	300 000	QCBS	Yes	May-18	May-18	Jun-18	PMU	
2.1.b.2	Training producer groups on FAAB	person	1 500	150 000	IC	No	Oct-18	Oct-18	Dec-18	PMU/SCUs	
2.1.b.3	Training illiterate farmers of FAAB using GALS methods	person	500	100 000	IC	No	Nov-18	Nov-18	Feb-19	PMU/SCUs	
2.1.b.4	Selection of and training contact farmers on extension messages and communication skills	trainee	50	57 500	IC	No	Nov-18	Nov-18	Feb-19	PMU/SCUs	
2.1.b.5	Selection of and training village agents to support MSP, MF and SSP	agent	30	34 500	IC	No					
2.1.b.6	Support field crops demonstration to increase adoption of improved practices	site	15	750 000	QCBS	Yes	Apr-18	May-18	Jun-18	PMU/CCU	
2.1.b.7	Establish and support farmer field schools	site	15	300 000	QCBS	Yes	Apr-18	May-18	Jun-18	PMU/CCU	
2.1.b.8	Mechanised service for demo plots	per annum	1	85 000	IC	No	May-18	May-18	Jun-18	PMU	
2.1.b.9	Filed days for producer groups exposure to improved practices	number	20	200 000	CQS	Yes			Dec-18	PMU	Activity to be carried out by CBOs in collaboration with Project
2.1.b.10	Internal exchange visits between producer groups	number	10	150 000	IC	No			Dec-18	SCUs	Activity to be carried out by CBOs in collaboration with Project
2.1.b.11	Harvest day	per annum	1	150 000	IC	No			Dec-18	SCUs	Activity to be carried out by CBOs in collaboration with Project
2.1.c	**Linking Producer Groups to Private Sector**										
2.1.c.1	Technical training for spray service providers	person	150	172 500	QCBS	Yes	Dec-18	Jan-19	Apr-19	PMU/CCU	
2.1.c.2	Training mechanised service providers on technical aspects	person	75	86 250	IC	No	Nov-18	Nov-18	Jan-19	PMU	
2.1.c.3	Training spray service providers on providing as a business	person	150	172 500	QCBS	Yes	Jan-19	Feb-19	May-19	PMU/CCU	
2.1.c.4	Selection of and training mechanised service providers on providing as a business	person	75	86 250	IC	No	Jan-19	Jan-19	Mar-19	PMU	
2.1.c.5	Exposure visits for service providers outside Sudan	person	20	680 000	QCBS	Yes	Oct-18	Nov-18	Dec-18	PMU	
3. Technical Assistance											
3.1	Community/village survey	survey	1	150 000	IC	No	Mar-18	Apr-18	Jun-18	PMU	Tendering process to start before EB approval
3.2	Selection and phasing of communities	village	55	55 000		No	Mar-18		Jun-18	PMU/SCUs	The process will be carried out by Project in collaboration with the community & localities
3.3	Community mobilisation campaign	campaign	1	170 000	QCBS	Yes	Apr-18	May-18	Jun-18	PMU	Tendering process to start before EB approval
3.4	Registration of producer groups	groups	30	30 000		No					Activity to be carried out by CBOs in collaboration with Project
3.5	Sensitization training/awareness on gender issues	course	1	50 000	IC	No	Nov-18	Nov-18	Dec-18	PMU	
3.6	Training producer groups on group management and book-keeping	groups	55	275 000	QCBS	Yes	Oct-18	Nov-18	Dec-18	PMU	
3.7	Training of village-based extension agents	agent	35	35 000	IC	No	Oct-18	Oct-18	Nov-18	PMU	

Appendix 9: Project cost and financing

Table 1: Components Project Cost Summary

	(SDG '000)					(US$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
1. Enhanced crop productivity and production	153 907	101 401	255 307	40	32	8 152	5 371	13 523	40	32
2. Market linkage and value addition	79 742	55 249	134 991	41	17	4 224	2 926	7 150	41	17
3. Enabling environment	292 428	12 432	304 860	4	39	15 489	658	16 147	4	39
4. Project implementation	84 903	11 434	96 336	12	12	4 497	606	5 103	12	12
Total BASELINE COSTS	610 979	180 515	791 495	23	100	32 361	9 561	41 922	23	100
Physical Contingencies	11 445	5 475	16 920	32	2	606	290	896	32	2
Price Contingencies	337 834	65 943	403 777	16	51	4 252	443	4 696	9	11
Total PROJECT COSTS	960 259	251 933	1 212 192	21	153	37 220	10 295	47 514	22	113

Table 2: Components by Financiers (US$ '000)

	Private Sector		IFAD		Beneficiaries		Government		Total		For. Exch.	Local (Excl. Taxes)	Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%			
1. Enhanced crop productivity and production	94	0.6	12 564	81.8	4	-	2 701	17.6	15 363	32.3	5 837	7 919	1 606
2. Market linkage and value addition	215	2.7	5 963	74.5	465	5.8	1 360	17.0	8 003	16.8	3 126	4 047	829
3. Enabling environment	9 894	54.0	3 277	17.9	2 046	11.2	3 116	17.0	18 333	38.6	689	14 626	3 018
4. Project implementation	-	-	4 214	72.5	-	-	1 602	27.5	5 815	12.2	642	3 635	1 538
Total PROJECT COSTS	10 203	21.5	26 017	54.8	2 515	5.3	8 779	18.5	47 514	100.0	10 295	30 228	6 992

Table 3: Project Components by Year – Base Costs (US$ '000)

	Base Cost						
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
1. Enhanced crop productivity and production	2 153	3 218	3 573	2 426	1 315	839	13 523
2. Market linkage and value addition	503	2 062	1 591	1 490	775	728	7 150
3. Enabling environment	757	1 841	4 272	4 005	5 090	182	16 147
4. Project implementation	1 548	1 270	600	564	547	574	5 103
Total BASELINE COSTS	4 961	8 392	10 035	8 485	7 726	2 323	41 922
Physical Contingencies	155	218	203	146	97	77	896
Price Contingencies							
Inflation							
Local	547	1 873	3 555	4 331	5 545	1 886	17 738
Foreign	18	84	150	119	41	33	443
Subtotal Inflation	565	1 957	3 704	4 450	5 586	1 919	18 181
Devaluation	-368	-1 378	-2 691	-3 289	-4 282	-1 477	-13 486
Subtotal Price Contingencies	196	579	1 013	1 161	1 304	442	4 696
Total PROJECT COSTS	5 312	9 189	11 251	9 792	9 128	2 842	47 514
Taxes	981	1 389	1 385	1 355	1 463	419	6 992
Foreign Exchange	1 773	2 857	3 094	1 777	478	316	10 295

Table 4: Project Components by Year -- Totals Including Contingencies (US$ '000)

	Totals Including Contingencies						
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
1. Enhanced crop productivity and production	2 323	3 561	4 029	2 836	1 584	1 030	15 363
2. Market linkage and value addition	524	2 235	1 763	1 681	918	882	8 003
3. Enabling environment	800	1 993	4 761	4 602	5 960	218	18 333
4. Project implementation	1 665	1 400	698	674	666	712	5 815
Total PROJECT COSTS	5 312	9 189	11 251	9 792	9 128	2 842	47 514

Table 5: Expenditure Accounts by Financiers (US$ '000)

	Private Sector		IFAD		Beneficiaries		Government		Total		For. Exch.	Local (Excl. Taxes)	Duties & Taxes
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%			
I. Investment Costs													
A. Goods and services /a	45	1.2	3 131	81.8	-	-	650	17.0	3 826	8.1	373	2 866	587
B. Consultancies /b	16	0.3	4 180	82.7	-	-	859	17.0	5 056	10.6	2 849	1 845	362
C. Trainings & w orkshops	9	0.3	2 882	82.7	-	-	592	17.0	3 483	7.3	961	2 074	447
D. Civil Works	5 463	44.5	3 408	27.8	1 322	10.8	2 088	17.0	12 280	25.8	-	10 192	2 088
E. Equipment and materials /c	4 621	35.6	4 350	33.5	1 193	9.2	2 820	21.7	12 984	27.3	4 686	6 170	2 129
F. Grants	48	3.0	1 272	80.0	-	-	270	17.0	1 591	3.3	1 425	137	28
Total Investment Costs	10 203	26.0	19 222	49.0	2 515	6.4	7 280	18.6	39 220	82.5	10 295	23 284	5 641
II. Recurrent Costs													
A. Salaries and allow ances	-	-	6 331	81.8	-	-	1 404	18.2	7 735	16.3	-	6 479	1 256
B. Operating Cost	-	-	464	83.0	-	-	95	17.0	559	1.2	-	464	95
Total Recurrent Costs	-	-	6 795	81.9	-	-	1 499	18.1	8 294	17.5	-	6 943	1 351
Total PROJECT COSTS	10 203	21.5	26 017	54.8	2 515	5.3	8 779	18.5	47 514	100.0	10 295	30 228	6 992

\a TA, Training, Supervision, Audit and Contractual Services
\b It includes studies and TA
\c Including vehicle

Table 6: Expenditure Accounts by Years -- Totals Including Contingencies (US$ '000)

	Totals Including Contingencies						
	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs							
A. Goods and services /a	309	1 125	1 043	997	287	65	3 826
B. Consultancies /b	1 542	1 226	1 161	409	401	318	5 056
C. Trainings & w orkshops	251	749	939	674	480	390	3 483
D. Civil Works	240	1 758	2 897	2 846	4 055	484	12 280
E. Equipment and materials /c	1 508	2 677	3 296	2 904	2 473	126	12 984
F. Grants	165	321	546	557	-	-	1 591
Total Investment Costs	4 015	7 857	9 883	8 386	7 696	1 382	39 220
II. Recurrent Costs							
A. Salaries and allow ances	1 209	1 242	1 276	1 311	1 336	1 361	7 735
B. Operating Cost	87	90	92	95	97	98	559
Total Recurrent Costs	1 297	1 332	1 368	1 406	1 432	1 460	8 294
Total PROJECT COSTS	5 312	9 189	11 251	9 792	9 128	2 842	47 514

\a TA, Training, Supervision, Audit and Contractual Services
\b It includes studies and TA
\c Including vehicle

Table 7: Disbursements by Semesters and Government Cash Flow (US$ '000))

	Financing Available				Costs to be Financed	Government	
	Private Sector	IFAD	Beneficiaries		Project		Cumulative
	Amount	Amount	Amount	Total	Costs	Cash Flow	Cash Flow
1	81	1 948	1	2 029	2 656	-627	-627
2	81	1 948	1	2 029	2 656	-627	-1 254
3	461	3 082	125	3 668	4 595	-926	-2 180
4	461	3 082	125	3 668	4 595	-926	-3 106
5	1 175	3 282	204	4 662	5 625	-964	-4 070
6	1 175	3 282	204	4 662	5 625	-964	-5 033
7	1 586	2 155	315	4 056	4 896	-840	-5 873
8	1 586	2 155	315	4 056	4 896	-840	-6 713
9	1 794	1 389	598	3 780	4 564	-784	-7 497
10	1 794	1 389	598	3 780	4 564	-784	-8 280
11	4	1 153	15	1 172	1 421	-249	-8 530
12	4	1 153	15	1 172	1 421	-249	-8 779
Total	10 203	26 017	2 515	38 735	47 514	-8 779	-8 779

Table 8: Disbursement Accounts by Financiers (US$ '000)

	Private Sector		IFAD		Beneficiaries		Government		Total		For.	Local (Excl.	Duties &
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Exch.	Taxes)	Taxes
Civil w orks_DA	5 463	44.5	3 408	27.8	1 322	10.8	2 088	17.0	12 280	25.8	-	10 192	2 088
Goods & services_DA	45	1.2	3 131	81.8	-	-	650	17.0	3 826	8.1	373	2 866	587
Consultancies_DA	16	0.3	4 180	82.7	-	-	859	17.0	5 056	10.6	2 849	1 845	362
Trainings & Workshops_DA	9	0.3	2 882	82.7	-	-	592	17.0	3 483	7.3	961	2 074	447
Equipment & Material_DA	4 621	35.6	4 350	33.5	1 193	9.2	2 820	21.7	12 984	27.3	4 686	6 170	2 129
Salaries & allow ances_DA	-	-	6 331	81.8	-	-	1 404	18.2	7 735	16.3	-	6 479	1 256
Operating cost_DA	-	-	464	83.0	-	-	95	17.0	559	1.2	-	464	95
Grants_DA	48	3.0	1 272	80.0	-	-	270	17.0	1 591	3.3	1 425	137	28
Total PROJECT COSTS	10 203	21.5	26 017	54.8	2 515	5.3	8 779	18.5	47 514	100.0	10 295	30 228	6 992

Table 9: Local/Foreign/Taxes by Financiers (US$'000)

	Private Sector		IFAD		Beneficiaries		Government		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
I. Foreign	342	3.3	8 015	77.9	375	3.6	1 562	15.2	10 295	21.7
II. Local (Excl. Taxes)	9 860	32.6	18 003	59.6	2 140	7.1	225	0.7	30 228	63.6
III. Taxes	-	-	-	-	-	-	6 992	100.0	6 992	14.7
Total Project	10 203	21.5	26 017	54.8	2 515	5.3	8 779	18.5	47 514	100.0

Table 10: Expenditure Accounts by Components - Base Costs (US$ '000)

	Enhanced crop productivity and production	Market linkage and value addition	Enabling environment	Project implementation	Total	Physical Contingencies %	Physical Contingencies Amount
I. Investment Costs							
A. Goods and services /a	2 831	342	155	-	3 327	3.6	119
B. Consultancies /b	3 169	681	144	574	4 568	3.6	164
C. Trainings & w orkshops	2 236	240	239	324	3 040	3.4	104
D. Civil Works	5	2 698	7 980	-	10 683	0.9	93
E. Equipment and materials /c	1 594	2 032	6 619	1 470	11 715	1.4	160
F. Grants	1 450	-	-	-	1 450	4.0	58
Total Investment Costs	11 285	5 994	15 137	2 367	34 782	2.0	697
II. Recurrent Costs							
A. Salaries and allow ances	2 238	1 156	1 011	2 260	6 664	2.7	180
B. Operating Cost	-	-	-	476	476	4.0	19
Total Recurrent Costs	2 238	1 156	1 011	2 736	7 140	2.8	199
Total BASELINE COSTS	13 523	7 150	16 147	5 103	41 922	2.1	896
Physical Contingencies	547	137	8	204	896	-	-
Price Contingencies							
Inflation							
Local	4 333	2 338	9 048	2 020	17 738	-	-
Foreign	246	159	27	12	443	-	-
Subtotal Inflation	4 579	2 496	9 075	2 031	18 181	-	-
Devaluation	-3 285	-1 780	-6 898	-1 523	-13 486	-	-
Subtotal Price Contingencies	1 294	716	2 177	509	4 696	1.8	86
Total PROJECT COSTS	15 363	8 003	18 333	5 815	47 514	2.1	982
Taxes	1 606	829	3 018	1 538	6 992	2.0	140
Foreign Exchange	5 837	3 126	689	642	10 295	2.9	303

\a TA, Training, Supervision, Audit and Contractual Services
\b It includes studies and TA
\c Including vehicle

Table 1.1: Enhanced crop productivity and production /a – Quantities and totals including contingencies
Detailed Costs (USD)

		Quantities							Unit Cost	Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	(US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Taxes)	Duties & Taxes	Total
I. Investment Costs																				
A. Activity One -- PS service provider and agrodealer capacity building																				
1. SA1: Agrodealer capacity building																				
Agrodealer Assessments /b	number	10	-	10	-	9	-	29	6,000	66 158	-	69 791	-	65 768	-	201 717	-	167 425	34 292	201 717
Agrodealer Technical Training /c	number	-	10	-	13	-	6	29	6,000	-	67 938	-	93 246	-	44 678	205 862	-	170 865	34 997	205 862
Agrodealer Business Training /d	number	-	10	-	13	-	6	29	3,000	-	33 969	-	46 623	-	22 339	102 931	-	85 433	17 498	102 931
Khartoum Visits /e	number	-	2	-	2	-	-	4	4,000	-	9 058	-	9 564	-	-	18 622	-	15 456	3 166	18 622
Agrodealer Association formation: Training /f	number	-	-	4	-	-	-	4	7,500	-	-	34 896	-	-	-	34 896	-	28 963	5 932	34 896
Agrodealer Association formation: Exposure Tour /g	number	-	-	1	-	-	-	1	216,000	-	-	236 053	-	-	-	236 053	236 053	-	-	236 053
Subtotal										66 158	110 965	340 740	149 433	65 768	67 017	800 081	236 053	468 143	95 885	800 081
2. SA2: Mechanized Service Provider (MSP) Capacity Building																				
Assessment /h	number	10	-	10	-	6	-	26	5,000	55 132	-	58 160	-	36 538	-	149 829	-	124 358	25 471	149 829
Technical Training /i	number	5	10	10	10	10	5	50	7,500	41 349	84 922	87 239	89 660	91 344	46 540	441 054	-	366 075	74 979	441 054
Business Training /j	number	-	4	4	4	4	4	20	7,500	-	33 969	34 896	35 864	36 538	37 232	178 498	-	148 153	30 345	178 498
Khartoum Visits /k	number	-	3	-	3	-	2	8	8,000	-	25 714	-	26 753	-	18 556	71 022	71 022	-	-	71 022
MSP implement rental /l	MSP	-	44	42	40	-	-	126	8,000	-	398 568	390 832	382 548	-	-	1 171 948	-	972 717	199 231	1 171 948
Subtotal										96 481	543 172	571 127	534 824	164 420	102 327	2 012 351	71 022	1 611 303	330 026	2 012 351
3. SA3: Spray Service Provider (SSP) Capacity Building																				
Assessments /m	number	-	47	42	40	-	-	129	250	-	13 304	12 214	11 955	-	-	37 473	-	31 102	6 370	37 473
SAGA Grant Agreement /n	number	1	-	-	-	-	-	1	150,000	165 395	-	-	-	-	-	165 395	-	137 278	28 117	165 395
Technical Training and Certification /o	number	-	4	4	4	4	2	18	5,250	-	23 778	24 427	25 105	25 576	13 031	111 917	-	92 891	19 026	111 917
On Farm Demonstrations /p	Training	-	10	10	10	10	5	45	3,250	-	36 800	37 804	38 853	39 583	20 167	173 206	-	143 761	29 445	173 206
SSP Equipment purchased (knapsack/PPE) /q	Knapsack	44	42	40	-	-	-	126	126	5 823	5 670	5 508	-	-	-	17 001	17 001	-	-	17 001
SSP Equipment Rental Charges (motorized sprayers) /r	Motorized sprayers	-	44	42	40	-	-	126	126	-	5 940	5 783	5 618	-	-	17 341	17 341	-	-	17 341
Subtotal										171 219	85 492	85 735	81 530	65 159	33 198	522 333	34 342	405 032	82 958	522 333
4. SA4: Mechanic / Blacksmith capacity building																				
Assessments /s	number	10	-	10	-	5	-	25	3,750	41 349	-	43 620	-	22 836	-	107 805	-	89 478	18 327	107 805
Technical Training /t	number	5	10	10	10	10	5	50	3,250	17 918	36 800	37 804	38 853	39 583	20 167	191 123	-	158 632	32 491	191 123
Business Training /u	number	-	4	4	4	4	4	20	20,000	-	90 584	93 055	95 637	97 434	99 285	475 995	-	395 075	80 919	475 995
Regional Visits to State capitals /v	number	-	2	-	2	-	2	6	4,000	-	9 058	-	9 564	-	9 928	28 551	-	23 697	4 854	28 551
Subtotal										59 267	136 441	174 479	144 053	159 852	129 381	803 473	-	666 883	136 590	803 473
Subtotal										393 124	876 071	1 172 080	909 840	455 199	331 924	4 138 238	341 417	3 151 361	645 459	4 138 238
B. Activity Two -- On farm and innovation demonstrations																				
On Farm Demonstrations /w	number	-	40	30	30	-	-	100	5,826.271	-	263 882	203 312	208 953	-	-	676 147	-	561 202	114 945	676 147
Innovation Demonstrations /x	number	10	10	10	10	10	-	50	17,000	187 448	192 490	197 742	203 229	207 047	-	987 956	-	820 004	167 953	987 956
Materials and equipment for demonstration farmer field school /y	set	15	15	20	25	20	5	100	266	4 191	4 275	5 814	7 413	6 049	1 542	29 284	29 284	-	-	29 284
Certified seed for demo plots /z	metric ton	0.5	0.75	1.5	1.5	1	0.5	5.75	1,143.591	630	971	1 995	2 051	1 393	710	7 750	-	6 433	1 318	7 750
Agricultural implements /aa	Set	6	9	13	13	13	-	54	5,000	31 512	48 213	71 034	72 455	73 904	-	297 119	297 119	-	-	297 119
Agricultural equipment (25 hp) /bb	Set	4	5	9	-	-	-	18	33,100	139 073	177 318	325 556	-	-	-	641 947	641 947	-	-	641 947
Agricultural equipment (self propelled) /cc	Set	10	10	10	-	-	-	30	9,061	95 177	97 080	99 022	-	-	-	291 279	291 279	-	-	291 279
Subtotal										458 031	784 230	904 476	494 100	288 393	2 252	2 931 481	1 259 628	1 387 638	284 215	2 931 481
C. Activity Three -- Engagement with national private sector companies																				
1. SA1: Information sharing																				
Service Provider and Agrodealer reports /dd	number	4	5	6	5	5	-	25	1,000	4 411	5 661	6 979	5 977	6 090	-	29 118	-	24 168	4 950	29 118
Smallholder Productive Capacity Reports	number	2	-	2	-	2	-	6	7,500	16 540	-	17 448	-	18 269	-	52 256	-	43 373	8 884	52 256
Private sector training courses /ee	number	-	2	2	2	2	-	8	16,500	-	35 356	36 064	36 785	37 521	-	145 725	145 725	-	-	145 725
Private sector technical assistance /ff	lump-sum	-	2	2	2	2	2	10	16,500	-	35 356	36 064	36 785	37 521	38 271	183 996	183 996	-	-	183 996
Subtotal										20 950	76 374	96 554	79 547	99 400	38 271	411 096	329 722	67 541	13 834	411 096
2. Innovation scale-up matching grant facility (ISMGF)																				
Establishment and Operations /gg	lump-sum	1	1	1	1	1	1	6	40,000	42 016	42 856	43 713	44 588	45 479	46 389	265 042	265 042	-	-	265 042
Grants (for Services) /hh	Grants	-	3	5	5	-	-	13	20,000	-	64 284	109 284	111 469	-	-	285 037	285 037	-	-	285 037
Grants (for buying materials) /ii	grant	-	3	5	5	-	-	13	80,000	-	257 138	437 134	445 877	-	-	1 140 150	1 140 150	-	-	1 140 150
Subtotal										42 016	364 279	590 132	601 934	45 479	46 389	1 690 229	1 690 229	-	-	1 690 229
Subtotal										62 966	440 653	686 686	681 481	144 879	84 660	2 101 325	2 019 951	67 541	13 834	2 101 325
D. Activity Four -- Gum Arabic support																				
1. SA1: Improved Potencial of Gum Arabic Resource Base																				
Gum Arabic Genetic Upgrading and Dissemination	number	1	-	1	1	-	-	3	10,000	11 026	-	11 632	11 955	-	-	34 613	-	28 729	5 884	34 613
Nursery and Plantation Technical Support /jj	number	1	1	1	1	-	-	4	5,000	5 513	5 661	5 816	5 977	-	-	22 968	-	19 063	3 905	22 968
Nursery and Plantation Co-Financing /kk	number	-	1	1	1	1	-	4	52,000	-	58 879	60 486	62 164	63 332	-	244 861	-	203 235	41 626	244 861
Subtotal										16 540	64 541	77 934	80 096	63 332	-	302 442	-	251 027	51 415	302 442
2. SA3: Gum Arabic Innovation Demonstrations																				
Gum Arabic Innovation Dissemination /ll	Set	4	8	8	6	6	4	36	3,177.966	14 017	28 787	29 573	22 795	23 223	15 776	134 170	-	111 362	22 809	134 170
Gum Arabic Producers Association (GAPA) Training Materials Development /mm	set	1	-	1	-	10	-	12	2,000	2 205	-	2 326	-	24 358	-	28 890	-	23 979	4 911	28 890
GAPA Training /nn	Course	-	47	42	40	-	-	129	420.551	-	22 381	20 546	20 110	-	-	63 037	-	52 320	10 716	63 037
GAPA Tools /oo	Tool Kit	-	47	42	40	-	-	129	340	-	17 121	15 606	15 160	-	-	47 887	47 887	-	-	47 887
Subtotal										16 222	68 289	68 050	58 065	47 582	15 776	273 984	47 887	187 661	38 437	273 984
Subtotal										32 761	132 830	145 984	138 161	110 914	15 776	576 426	47 887	438 688	89 852	576 426

Table 1.1: Enhanced crop productivity and production /a – Quantities and totals including contingencies (cont'd.)

		Quantities							Unit Cost	Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	(US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Taxes)	Duties & Taxes	Total
I. Investment Costs																				
E. Activity Five -- Environment and climate change (CC)																				
International Enviroment Expert	Person month	5	5	4	-	-	-	14	43,000	225 836	230 353	187 968	-	-	-	644 157	644 157	-	-	644 157
CC Consultancy Services in Institutional Capacity	Person month	5	4	-	-	-	-	9	33,000	174 983	142 786	-	-	-	-	317 768	317 768	-	-	317 768
CC Consultancy Services in adaptation options prioritized and cost benefits analyz	Person month	3	3	3	-	-	-	9	33,000	104 990	107 089	109 231	-	-	-	321 310	321 310	-	-	321 310
CC Consultancy Services in developing funding strategy and implementation	Person month	5	4	3	-	-	-	12	38,610	204 245	166 835	127 767	-	-	-	498 847	422 933	75 914	-	498 847
National Enviroment/Climate Change Staff	Person month	5	4	4	-	-	-	13	3,463.453	19 095	15 687	16 115	-	-	-	50 896	-	42 244	8 652	50 896
Subtotal										729 148	662 749	441 081	-	-	-	1 832 977	1 706 167	118 158	8 652	1 832 977
F. Activity Six -- Support to home garden (Jubraka) cultivation																				
Jubraka demonstration in the new villages /pp	number	50	50	50	-	-	-	150	9.11	502	516	530	-	-	-	1 548	-	1 285	263	1 548
Jubraka demonstration in new villages /qq	number	50	50	50	-	-	-	150	31.78	1 752	1 799	1 848	-	-	-	5 400	-	4 482	918	5 400
Jubraka scalling up in the old villages	number	1 500	1 500	2 000	2 000	1 500	1 500	10 000	2.595	4 089	4 171	5 673	5 786	4 426	4 515	28 660	28 660	-	-	28 660
Subtotal										6 344	6 486	8 051	5 786	4 426	4 515	35 607	28 660	5 766	1 181	35 607
G. Consultants for technical assistance																				
Agrodealer Business National Consultant	Person month	2	2	2	-	-	-	6	3,462.977	7 637	7 842	8 056	-	-	-	23 535	-	19 534	4 001	23 535
MSP Business National Consultant	Person month	12	12	5	5	5	5	44	3,462.977	45 821	47 053	20 141	20 699	21 088	21 489	176 291	-	146 321	29 969	176 291
Crop production National Consultant	person month	12	12	6	6	6	6	48	3,462.977	45 821	47 053	24 169	24 839	25 306	25 787	192 974	-	160 169	32 806	192 974
Agroforestry National consultant (Gum Arabic Specialist)	person month	12	12	6	6	6	6	48	3,462.977	45 821	47 053	24 169	24 839	25 306	25 787	192 974	-	160 169	32 806	192 974
Communication Development National Consultant	person month	4	4	4	4	4	4	24	3,462.977	15 274	15 684	16 112	16 559	16 871	17 191	97 692	-	81 084	16 608	97 692
Agrodealer Association International Consultant	Person month	-	-	2	-	-	-	2	33,000	-	-	72 127	-	-	-	72 127	72 127	-	-	72 127
Gum Arabic International Consultant	Person month	1	1	1	1	-	-	4	33,000	34 663	35 356	36 064	36 785	-	-	142 868	142 868	-	-	142 868
PPP International Consultant	Person month	1	1	1	1	1	1	6	33,000	34 663	35 356	36 064	36 785	37 521	38 271	218 660	218 660	-	-	218 660
Subtotal										229 699	235 399	236 901	160 507	126 091	128 524	1 117 121	433 655	567 277	116 189	1 117 121
Total Investment Costs										1 912 073	3 138 418	3 595 258	2 389 875	1 129 902	567 651	12 733 176	5 837 365	5 736 428	1 159 382	12 733 176
II. Recurrent Costs																				
A. SPIU and LET staff salaries																				
SPIU: Mechanization Specialist (MCS) /rr	person year	4	4	4	4	4	4	24	9,533.898	42 050	43 181	44 359	45 590	46 446	47 329	268 954	-	223 232	45 722	268 954
SPIU: Crop Protection Specialist (CPS) /ss	Person year	4	4	4	4	4	4	24	9,533.898	42 050	43 181	44 359	45 590	46 446	47 329	268 954	-	223 232	45 722	268 954
LET: Locality Private Sector Officer/ Team Leader (LPSO) /tt	person year	13	13	13	13	13	13	78	5,296.61	75 923	77 965	80 093	82 315	83 861	85 454	485 611	-	403 057	82 554	485 611
LET: Locality Crop Protection Officer (LCPO) /uu	person year	13	13	13	13	13	13	78	5,296.61	75 923	77 965	80 093	82 315	83 861	85 454	485 611	-	403 057	82 554	485 611
LET: Locality Mechanization Officer (LMO) /vv	person year	13	13	13	13	13	13	78	5,296.61	75 923	77 965	80 093	82 315	83 861	85 454	485 611	-	403 057	82 554	485 611
LET: Locality Agro-forestry Officer (LAO) /ww	person year	13	13	13	13	13	13	78	5,296.61	75 923	77 965	80 093	82 315	83 861	85 454	485 611	-	403 057	82 554	485 611
Locality Extension Teams Topping /xx	team year	4	4	4	4	4	4	24	1,493.644	6 588	6 765	6 950	7 142	7 277	7 415	42 136	-	34 973	7 163	42 136
State Level Staff Salary (Sinnar State & North, South & West Kordofan States) /yy	person year	12	12	12	12	12	12	72	1,271.186	16 820	17 272	17 744	18 236	18 578	18 931	107 582	-	89 293	18 289	107 582
Total Recurrent Costs										411 199	422 259	433 781	445 816	454 193	462 821	2 630 070	-	2 182 958	447 112	2 630 070
Total										2 323 271	3 560 677	4 029 039	2 835 691	1 584 094	1 030 472	15 363 245	5 837 365	7 919 386	1 606 494	15 363 245

\a for Sennar & Kordofan States
\b number of localities
\c number of localities covered by SAGA grant
\d number of localities
\e Groups on Visit
\f number of training courses in four states
\g # of study tours to African country (1 week @ 20 people)
\h Locality Assessments
\i Locality Based Training courses
\j State Based Trainings
\k # of study tour groups of 20 persons per visit
\l New villages only, 2 per village
\m number of villages
\n SAGA Grants
\o State based training courses
\p Locality Based Training
\q new villages only, 2 per village
\r new villages only
\s Locality assessments
\t Locality based training
\u State based training
\v Study tours in groups (20 persons per visit
\w # of Villages with On Farm Demonstrations
\x Localities, but costing is complex because MOUs with individual companies
\y PS contribution is 33%
\z PS contribution is 33%

\aa For providing producers groups with mechanized services as demos
\bb for providing GPGs with mechanized services as demos. PS contribution is 33%
\cc for providing GPGs with mechanized services as demos. PS contribution is 33%
\dd Assessment reports include information on the market potential to the private sector
\ee PS share is 33%
\ff PS share is 50%
\gg Fully funded by IFAD; 25% domestic and 75% US$
\hh PS share is 33%; these grants are 20% of total grants. this part will be used for services and the other 80% will be used for importing materials
\ii PS share is 33%. this part (80%) of the grants will be used to import materials and goods
\jj 1 per each State
\kk Buying equipment and materials to upgrade nurseries. PS share is 25%
\ll 1 per locality for 2 years
\mm include package of tapping tools for each Gum Arabic Producers Association (GAPA)
\nn 1 per village
\oo 1 tool kit per village
\pp vegetable seeds, 10% of local fencing cost, and plastic sheet
\qq Pouring, 90% of local fencing cost, weeding, and digging pond
\rr SPIU level
\ss SPIU level
\tt LET level
\uu LET level
\vv LET level
\ww LET level
\xx It includes: extension officer, secretary and driver to be paid by IFAD. State level staff topping (Sinnar State and North, South and West Kordofan States)
\yy State and Locality levels. Government of Sudan will cover 100% of these salaries

Table 1.2: Enhanced Crop Productivity and Production /a – Expenditures by financiers

	Expenditures by Financiers (US$)																												
	Private Sector							IFAD							Beneficiaries							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs																													
A. Activity One -- PS service provider and agrodealer capacity building																													
1. SA1: Agrodealer capacity building																													
Agrodealer Assessments /b	-	-	-	-	-	-	-	54 911	-	57 927	-	54 587	-	167 425	-	-	-	-	-	-	-	11 247	-	11 865	-	11 181	-	34 292
Agrodealer Technical Training /c	-	-	-	-	-	-	-	-	56 388	-	77 394	-	37 083	170 865	-	-	-	-	-	-	-	-	11 549	-	15 852	-	7 595	34 997
Agrodealer Business Training /d	-	-	-	-	-	-	-	-	28 194	-	38 697	-	18 541	85 433	-	-	-	-	-	-	-	-	5 775	-	7 926	-	3 798	17 498
Khartoum Visits /e	-	-	-	-	-	-	-	-	7 518	-	7 938	-	-	15 456	-	-	-	-	-	-	-	-	1 540	-	1 626	-	-	3 166
Agrodealer Association formation: Training /f	-	-	-	-	-	-	-	-	-	28 963	-	-	-	28 963	-	-	-	-	-	-	-	-	-	5 932	-	-	-	5 932
Agrodealer Association formation: Exposure Tour /g	-	-	-	-	-	-	-	-	-	195 924	-	-	-	195 924	-	-	-	-	-	-	-	-	-	40 129	-	-	-	40 129
Subtotal	-	-	-	-	-	-	-	54 911	92 101	282 814	124 029	54 587	55 624	664 067	-	-	-	-	-	-	-	11 247	18 864	57 926	25 404	11 181	11 393	136 014
2. SA2: Mechanized Service Provider (MSP) Capacity Building																													
Assessment /h	-	-	-	-	-	-	-	45 759	-	48 272	-	30 326	-	124 358	-	-	-	-	-	-	-	9 372	-	9 887	-	6 211	-	25 471
Technical Training /i	-	-	-	-	-	-	-	34 320	70 485	72 409	74 418	75 816	38 628	366 075	-	-	-	-	-	-	-	7 029	14 437	14 831	15 242	15 529	7 912	74 979
Business Training /j	-	-	-	-	-	-	-	-	28 194	28 963	29 767	30 326	30 902	148 153	-	-	-	-	-	-	-	-	5 775	5 932	6 097	6 211	6 329	30 345
Khartoum Visits /k	-	-	-	-	-	-	-	-	21 342	-	22 205	-	15 401	58 948	-	-	-	-	-	-	-	-	4 371	-	4 548	-	3 154	12 074
MSP implement rental /l	-	-	-	-	-	-	-	-	330 811	324 391	317 515	-	-	972 717	-	-	-	-	-	-	-	-	67 756	66 441	65 033	-	-	199 231
Subtotal	-	-	-	-	-	-	-	80 079	450 833	474 035	443 904	136 468	84 932	1 670 251	-	-	-	-	-	-	-	16 402	92 339	97 092	90 920	27 951	17 396	342 100
3. SA3: Spray Service Provider (SSP) Capacity Building																													
Assessments /m	-	-	-	-	-	-	-	-	11 043	10 137	9 922	-	-	31 102	-	-	-	-	-	-	-	-	2 262	2 076	2 032	-	-	6 370
SAGA Grant Agreement /n	-	-	-	-	-	-	-	137 278	-	-	-	-	-	137 278	-	-	-	-	-	-	-	28 117	-	-	-	-	-	28 117
Technical Training and Certification /o	-	-	-	-	-	-	-	-	19 736	20 274	20 837	21 228	10 816	92 891	-	-	-	-	-	-	-	-	4 042	4 153	4 268	4 348	2 215	19 026
On Farm Demonstrations /p	-	-	-	-	-	-	-	-	30 544	31 377	32 248	32 853	16 739	143 761	-	-	-	-	-	-	-	-	6 256	6 427	6 605	6 729	3 428	29 445
SSP Equipment purchased (knapsack/PPE) /q	-	-	-	-	-	-	-	4 833	4 706	4 572	-	-	-	14 111	-	-	-	-	-	-	-	990	964	936	-	-	-	2 890
SSP Equipment Rental Charges (motorized sprayers) /r	-	-	-	-	-	-	-	-	4 930	4 800	4 663	-	-	14 393	-	-	-	-	-	-	-	-	1 010	983	955	-	-	2 948
Subtotal	-	-	-	-	-	-	-	142 111	70 958	71 160	67 670	54 082	27 555	433 537	-	-	-	-	-	-	-	29 107	14 534	14 575	13 860	11 077	5 644	88 797
4. SA4: Mechanic / Blacksmith capacity building																													
Assessments /s	-	-	-	-	-	-	-	34 320	-	36 204	-	18 954	-	89 478	-	-	-	-	-	-	-	7 029	-	7 415	-	3 882	-	18 327
Technical Training /t	-	-	-	-	-	-	-	14 872	30 544	31 377	32 248	32 853	16 739	158 632	-	-	-	-	-	-	-	3 046	6 256	6 427	6 605	6 729	3 428	32 491
Business Training /u	-	-	-	-	-	-	-	-	75 184	77 236	79 379	80 870	82 406	395 075	-	-	-	-	-	-	-	-	15 399	15 819	16 258	16 564	16 878	80 919
Regional Visits to State capitals /v	-	-	-	-	-	-	-	-	7 518	-	7 938	-	8 241	23 697	-	-	-	-	-	-	-	-	1 540	-	1 626	-	1 688	4 854
Subtotal	-	-	-	-	-	-	-	49 191	113 246	144 817	119 564	132 678	107 386	666 883	-	-	-	-	-	-	-	10 075	23 195	29 661	24 489	27 175	21 995	136 590
Subtotal	-	-	-	-	-	-	-	326 293	727 139	972 827	755 167	377 815	275 497	3 434 737	-	-	-	-	-	-	-	66 831	148 932	199 254	154 673	77 384	56 427	703 500
B. Activity Two -- On farm and innovation demonstrations																													
On Farm Demonstrations /w	-	-	-	-	-	-	-	-	219 022	168 749	173 431	-	-	561 202	-	-	-	-	-	-	-	-	44 860	34 563	35 522	-	-	114 945
Innovation Demonstrations /x	-	-	-	-	-	-	-	155 582	159 767	164 126	168 680	171 849	-	820 004	-	-	-	-	-	-	-	31 866	32 723	33 616	34 549	35 198	-	167 953
Materials and equipment for demonstration farmer field school /y	-	-	-	-	-	-	-	3 479	3 548	4 826	6 153	5 020	1 280	24 306	-	-	-	-	-	-	-	712	727	988	1 260	1 028	262	4 978
Certified seed for demo plots /z	-	-	-	-	-	-	-	523	806	1 656	1 702	1 156	589	6 433	-	-	-	-	-	-	-	107	165	339	349	237	121	1 318
Agricultural implements /aa	-	-	-	-	-	-	-	26 155	40 017	58 959	60 138	61 340	-	246 609	-	-	-	-	-	-	-	5 357	8 196	12 076	12 317	12 564	-	50 510
Agricultural equipment (25 hp) /bb	-	-	-	-	-	-	-	115 431	147 174	270 211	-	-	-	532 816	-	-	-	-	-	-	-	23 642	30 144	55 345	-	-	-	109 131
Agricultural equipment (self propelled) /cc	-	-	-	-	-	-	-	78 997	80 577	82 188	-	-	-	241 761	-	-	-	-	-	-	-	16 180	16 504	16 834	-	-	-	49 517
Subtotal	-	-	-	-	-	-	-	380 166	650 911	750 715	410 103	239 366	1 869	2 433 130	-	-	-	-	-	-	-	77 865	133 319	153 761	83 997	49 027	383	498 352
C. Activity Three -- Engagement with national private sector companies																													
1. SA1: Information sharing																													
Service Provider and Agrodealer reports /dd	-	-	-	-	-	-	-	3 661	4 699	5 793	4 961	5 054	-	24 168	-	-	-	-	-	-	-	750	962	1 186	1 016	1 035	-	4 950
Smallholder Productive Capacity Reports	-	-	-	-	-	-	-	13 728	-	14 482	-	15 163	-	43 373	-	-	-	-	-	-	-	2 812	-	2 966	-	3 106	-	8 884
Private sector training courses /ee	-	-	-	-	-	-	-	-	29 346	29 933	30 531	31 142	-	120 952	-	-	-	-	-	-	-	-	6 011	6 131	6 253	6 378	-	24 773
Private sector technical assistance /ff	-	-	-	-	-	-	-	-	29 346	29 933	30 531	31 142	31 765	152 717	-	-	-	-	-	-	-	-	6 011	6 131	6 253	6 378	6 506	31 279
Subtotal	-	-	-	-	-	-	-	17 389	63 391	80 140	66 024	82 502	31 765	341 210	-	-	-	-	-	-	-	3 562	12 984	16 414	13 523	16 898	6 506	69 886
2. Innovation scale-up matching grant facility (ISMGF)																													
Establishment and Operations /gg	7 143	7 286	7 431	7 580	7 732	7 886	45 057	27 731	28 285	28 851	29 428	30 016	30 617	174 928	-	-	-	-	-	-	-	7 143	7 286	7 431	7 580	7 732	7 886	45 057
Grants (for Services) /hh	-	10 928	18 578	18 950	-	-	48 456	-	42 428	72 127	73 570	-	-	188 125	-	-	-	-	-	-	-	-	10 928	18 578	18 950	-	-	48 456
Grants (for buying materials) /ii	-	-	-	-	-	-	-	-	213 424	362 822	370 078	-	-	946 324	-	-	-	-	-	-	-	-	43 713	74 313	75 799	-	-	193 825
Subtotal	7 143	18 214	26 010	26 530	7 732	7 886	93 513	27 731	284 137	463 800	473 076	30 016	30 617	1 309 377	-	-	-	-	-	-	-	7 143	61 927	100 322	102 329	7 732	7 886	287 339
Subtotal	7 143	18 214	26 010	26 530	7 732	7 886	93 513	45 119	347 528	543 940	539 100	112 518	62 382	1 650 586	-	-	-	-	-	-	-	10 704	74 911	116 737	115 852	24 629	14 392	357 225
D. Activity Four -- Gum Arabic support																													
1. SA1: Improved Potencial of Gum Arabic Resource Base																													
Gum Arabic Genetic Upgrading and Dissemination	-	-	-	-	-	-	-	9 152	-	9 654	9 922	-	-	28 729	-	-	-	-	-	-	-	1 874	-	1 977	2 032	-	-	5 884
Nursery and Plantation Technical Support /jj	-	-	-	-	-	-	-	4 576	4 699	4 827	4 961	-	-	19 063	-	-	-	-	-	-	-	937	962	989	1 016	-	-	3 905
Nursery and Plantation Co-Financing /kk	-	-	-	-	-	-	-	-	48 870	50 203	51 596	52 566	-	203 235	-	-	-	-	-	-	-	-	10 009	10 283	10 568	10 766	-	41 626
Subtotal	-	-	-	-	-	-	-	13 728	53 569	64 685	66 480	52 566	-	251 027	-	-	-	-	-	-	-	2 812	10 972	13 249	13 616	10 766	-	51 415
2. SA3: Gum Arabic Innovation Demonstrations																													
Gum Arabic Innovation Dissemination /ll	-	-	-	-	-	-	-	11 634	23 893	24 545	18 920	19 275	13 094	111 362	-	-	-	-	-	-	-	2 383	4 894	5 027	3 875	3 948	2 682	22 809
Gum Arabic Producers Association (GAPA) Training Materials Development /mm	-	-	-	-	-	-	-	1 830	-	1 931	-	20 218	-	23 979	-	-	-	-	-	-	-	375	-	395	-	4 141	-	4 911
GAPA Training /nn	-	-	-	-	-	-	-	-	18 576	17 053	16 691	-	-	52 320	-	-	-	-	-	-	-	-	3 805	3 493	3 419	-	-	10 716
GAPA Tools /oo	-	-	-	-	-	-	-	-	14 211	12 953	12 583	-	-	39 746	-	-	-	-	-	-	-	-	2 911	2 653	2 577	-	-	8 141
Subtotal	-	-	-	-	-	-	-	13 464	56 680	56 482	48 194	39 493	13 094	227 407	-	-	-	-	-	-	-	2 758	11 609	11 569	9 871	8 089	2 682	46 577
Subtotal	-	-	-	-	-	-	-	27 192	110 249	121 167	114 673	92 058	13 094	478 433	-	-	-	-	-	-	-	5 569	22 581	24 817	23 487	18 855	2 682	97 992

Table 1.2: Enhanced Crop Productivity and Production /a – Expenditures by financiers (cont'd.)

	Expenditures by Financiers (US$)																										
	Private Sector							IFAD							Beneficiaries							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs																												
E. Activity Five -- Environment and climate change (CC)																												
International Enviroment Expert	-	-	-	-	-	-	-	187 444	191 193	156 013	-	-	-	534 650	-	-	-	-	-	-	-	38 392	39 160	31 955	-	-	-	109 507
CC Consultancy Services in Institutional Capacity	-	-	-	-	-	-	-	145 235	118 512	-	-	-	-	263 748	-	-	-	-	-	-	-	29 747	24 274	-	-	-	-	54 021
CC Consultancy Services in adaptation options prioritized and cost benefits analyz	-	-	-	-	-	-	-	87 141	88 884	90 662	-	-	-	266 687	-	-	-	-	-	-	-	17 848	18 205	18 569	-	-	-	54 623
CC Consultancy Services in developing funding strategy and implementation	-	-	-	-	-	-	-	169 523	138 473	106 047	-	-	-	414 043	-	-	-	-	-	-	-	34 722	28 362	21 720	-	-	-	84 804
National Enviroment/Climate Change Staff	-	-	-	-	-	-	-	15 849	13 020	13 375	-	-	-	42 244	-	-	-	-	-	-	-	3 246	2 667	2 739	-	-	-	8 652
Subtotal	-	-	-	-	-	-	-	605 192	550 082	366 097	-	-	-	1 521 371	-	-	-	-	-	-	-	123 955	112 667	74 984	-	-	-	311 606
F. Activity Six -- Support to home garden (Jubraka) cultivation																												
Jubraka demonstration in the new villages /pp	-	-	-	-	-	-	-	417	428	440	-	-	-	1 285	-	-	-	-	-	-	-	85	88	90	-	-	-	263
Jubraka demonstration in new villages /qq	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 454	1 493	1 534	-	-	-	4 482	298	306	314	-	-	-	918
Jubraka scalling up in the old villages	-	-	-	-	-	-	-	3 394	3 462	4 708	4 802	3 674	3 747	23 788	-	-	-	-	-	-	-	695	709	964	984	752	768	4 872
Subtotal	-	-	-	-	-	-	-	3 811	3 890	5 148	4 802	3 674	3 747	25 072	1 454	1 493	1 534	-	-	-	4 482	1 078	1 103	1 369	984	752	768	6 053
G. Consultants for technical assistance																												
Agrodealer Business National Consultant	-	-	-	-	-	-	-	6 339	6 509	6 687	-	-	-	19 534	-	-	-	-	-	-	-	1 298	1 333	1 370	-	-	-	4 001
MSP Business National Consultant	-	-	-	-	-	-	-	38 031	39 054	16 717	17 180	17 503	17 836	146 321	-	-	-	-	-	-	-	7 790	7 999	3 424	3 519	3 585	3 653	29 969
Crop production National Consultant	-	-	-	-	-	-	-	38 031	39 054	20 060	20 617	21 004	21 403	160 169	-	-	-	-	-	-	-	7 790	7 999	4 109	4 223	4 302	4 384	32 806
Agroforestry National consultant (Gum Arabic Specialist)	-	-	-	-	-	-	-	38 031	39 054	20 060	20 617	21 004	21 403	160 169	-	-	-	-	-	-	-	7 790	7 999	4 109	4 223	4 302	4 384	32 806
Communication Development National Consultant	-	-	-	-	-	-	-	12 677	13 018	13 373	13 744	14 003	14 269	81 084	-	-	-	-	-	-	-	2 597	2 666	2 739	2 815	2 868	2 922	16 608
Agrodealer Association International Consultant	-	-	-	-	-	-	-	-	-	59 866	-	-	-	59 866	-	-	-	-	-	-	-	-	-	12 262	-	-	-	12 262
Gum Arabic International Consultant	-	-	-	-	-	-	-	28 770	29 346	29 933	30 531	-	-	118 581	-	-	-	-	-	-	-	5 893	6 011	6 131	6 253	-	-	24 288
PPP International Consultant	-	-	-	-	-	-	-	28 770	29 346	29 933	30 531	31 142	31 765	181 488	-	-	-	-	-	-	-	5 893	6 011	6 131	6 253	6 378	6 506	37 172
Subtotal	-	-	-	-	-	-	-	190 650	195 382	196 628	133 221	104 656	106 675	927 211	-	-	-	-	-	-	-	39 049	40 018	40 273	27 286	21 435	21 849	189 911
Total Investment Costs	7 143	18 214	26 010	26 530	7 732	7 886	93 513	1 578 423	2 585 179	2 956 520	1 957 066	930 087	463 264	10 470 541	1 454	1 493	1 534	-	-	-	4 482	325 052	533 531	611 194	406 279	192 083	96 501	2 164 640
II. Recurrent Costs																												
A. SPIU and LET staff salaries																												
SPIU: Mechanization Specialist (MCS) /rr	-	-	-	-	-	-	-	34 901	35 840	36 818	37 839	38 550	39 283	223 232	-	-	-	-	-	-	-	7 148	7 341	7 541	7 750	7 896	8 046	45 722
SPIU: Crop Protection Specialist (CPS) /ss	-	-	-	-	-	-	-	34 901	35 840	36 818	37 839	38 550	39 283	223 232	-	-	-	-	-	-	-	7 148	7 341	7 541	7 750	7 896	8 046	45 722
LET: Locality Private Sector Officer/ Team Leader (LPSO) /tt	-	-	-	-	-	-	-	63 016	64 711	66 477	68 321	69 605	70 927	403 057	-	-	-	-	-	-	-	12 907	13 254	13 616	13 993	14 256	14 527	82 554
LET: Locality Crop Protection Officer (LCPO) /uu	-	-	-	-	-	-	-	63 016	64 711	66 477	68 321	69 605	70 927	403 057	-	-	-	-	-	-	-	12 907	13 254	13 616	13 993	14 256	14 527	82 554
LET: Locality Mechanization Officer (LMO) /vv	-	-	-	-	-	-	-	63 016	64 711	66 477	68 321	69 605	70 927	403 057	-	-	-	-	-	-	-	12 907	13 254	13 616	13 993	14 256	14 527	82 554
LET: Locality Agro-forestry Officer (LAO) /w w	-	-	-	-	-	-	-	63 016	64 711	66 477	68 321	69 605	70 927	403 057	-	-	-	-	-	-	-	12 907	13 254	13 616	13 993	14 256	14 527	82 554
Locality Extension Teams Topping /xx	-	-	-	-	-	-	-	5 468	5 615	5 768	5 928	6 040	6 154	34 973	-	-	-	-	-	-	-	1 120	1 150	1 181	1 214	1 237	1 261	7 163
State Level Staff Salary (Sinnar State & North, South & West Kordofan States) /yy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16 820	17 272	17 744	18 236	18 578	18 931	107 582
Total Recurrent Costs	-	-	-	-	-	-	-	327 334	336 139	345 311	354 892	361 560	368 428	2 093 665	-	-	-	-	-	-	-	83 864	86 120	88 470	90 925	92 633	94 393	536 405
Total	7 143	18 214	26 010	26 530	7 732	7 886	93 513	1 905 758	2 921 319	3 301 832	2 311 958	1 291 647	831 692	12 564 206	1 454	1 493	1 534	-	-	-	4 482	408 917	619 651	699 664	497 203	284 716	190 893	2 701 044

\a for Sennar & Kordofan States
\b number of localities
\c number of localities covered by SAGA grant
\d number of localities
\e Groups on Visit
\f number of training courses in four states
\g # of study tours to African country (1 week @ 20 people)
\h Locality Assessments
\i Locality Based Training courses
\j State Based Trainings
\k # of study tour groups of 20 persons per visit
\l New villages only, 2 per village
\m number of villages
\n SAGA Grants
\o State based training courses
\p Locality Based Training
\q new villages only, 2 per village
\r new villages only
\s Locality assessments
\t Locality based training
\u State based training
\v Study tours in groups (20 persons per visit
\w # of Villages with On Farm Demonstrations
\x Localities, but costing is complex because MOUs with individual companies
\y PS contribution is 33%
\z PS contribution is 33%

\aa For providing producers groups with mechanized services as demos
\bb for providing GPGs with mechanized services as demos. PS contribution is 33%
\cc for providing GPGs with mechanized services as demos. PS contribution is 33%
\dd Assessment reports include information on the market potential to the private sector
\ee PS share is 33%
\ff PS share is 50%
\gg Fully funded by IFAD; 25% domestic and 75% US$
\hh PS share is 33%; these grants are 20% of total grants. this part will be used for services and the other 80% will be used for importing materials
\ii PS share is 33%. this part (80%) of the grants will be used to import materials and goods
\jj 1 per each State
\kk Buying equipment and materials to upgrade nurseries. PS share is 25%
\ll 1 per locality for 2 years
\mm include package of tapping tools for each Gum Arabic Producers Association (GAPA)
\nn 1 per village
\oo 1 tool kit per village
\pp vegetable seeds, 10% of local fencing cost, and plastic sheet
\qq Pouring, 90% of local fencing cost, weeding, and digging pond
\rr SPIU level
\ss SPIU level
\tt LET level
\uu LET level
\vv LET level
\ww LET level
\xx It includes: extension officer, secretary and driver to be paid by IFAD. State level staff topping (Sinnar State and North, South and West Kordofan States)
\yy State and Locality levels. Government of Sudan will cover 100% of these salaries

Table 2.1: Market linkage and value addition /a - Quantities and totals including contingencies
Detailed Costs (USD)

		Quantities							Unit Cost	Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	(US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Taxes)	Duties & Taxes	Total
I. Investment Costs																				
A. Physical market access (Wadi crossings construction)																				
Survey and design works /b	Lumpsum	1	1	-	-	-	-	2	32,745.604	36 106	37 078	-	-	-	-	73 184	-	60 743	12 441	73 184
Construction of pipe culverts	Number	-	10	10	8	8	8	44	21,669.386	-	245 361	252 056	207 240	211 133	215 144	1 130 934	-	938 676	192 259	1 130 934
Construction of box culverts	Number	-	10	10	8	8	8	44	24,929.82	-	282 279	289 981	238 421	242 901	247 515	1 301 098	-	1 079 911	221 187	1 301 098
Supervision of civil works (6%)	%	-	10	10	8	8	8	44	2,115.89	-	23 958	24 612	20 236	20 616	21 008	110 429	-	91 656	18 773	110 429
Subtotal										36 106	588 676	566 649	465 897	474 650	483 667	2 615 646	-	2 170 986	444 660	2 615 646
B. Activity Two -- Storage Facilities Development																				
1. SA1: Smallholder owned & operated cash crop storage demonstration facilities																				
Design of grain stores (national consultant) /c	Person month	3	1	1	-	-	-	5	3,463.983	11 459	3 922	4 029	-	-	-	19 410	-	16 110	3 300	19 410
Infrastructure - construction of grain stores at community level /d	Number	-	5	5	3	-	-	13	12,637.765	-	71 548	73 501	45 324	-	-	190 373	-	158 010	32 363	190 373
Supervision of civil works (6%)	percent	-	5	5	3	-	-	13	758.263	-	4 128	4 240	2 615	-	-	10 983	-	9 116	1 867	10 983
Subtotal										11 459	79 598	81 770	47 939	-	-	220 766	-	183 236	37 530	220 766
2. SA2: Price and Storage Studies																				
Dynamic pricing study /e	Study	2	-	-	-	-	-	2	35,500	71 710	-	-	-	-	-	71 710	71 710	-	-	71 710
Storage financing study /f	Study	1	-	-	-	-	-	1	35,500	35 855	-	-	-	-	-	35 855	35 855	-	-	35 855
Other studies /g	Study	-	1	1	1	-	-	3	35,500	-	36 572	37 304	38 050	-	-	111 925	111 925	-	-	111 925
Subtotal										107 565	36 572	37 304	38 050	-	-	219 490	219 490	-	-	219 490
3. SA3: Sinnar State crop market rehabilitation																				
Feasibility study	number	1	-	-	-	-	-	1	25,000	25 250	-	-	-	-	-	25 250	25 250	-	-	25 250
Technical assistance	number	-	1	-	-	-	-	1	15,000	-	15 453	-	-	-	-	15 453	15 453	-	-	15 453
Training	number	3	3	3	1	1	1	12	20,000	60 600	61 812	63 048	21 436	21 865	22 302	251 064	251 064	-	-	251 064
Infrastructure - construction of market infrastructure	number	-	1	-	-	-	-	1	380,730.456	-	414 518	-	-	-	-	414 518	-	344 050	70 468	414 518
Supervision of civil works (6%)	percent	-	1	-	-	-	-	1	18,275.053	-	19 897	-	-	-	-	19 897	-	16 514	3 382	19 897
Subtotal										85 850	511 680	63 048	21 436	21 865	22 302	726 182	291 767	360 564	73 851	726 182
Subtotal										204 874	627 851	182 122	107 425	21 865	22 302	1 166 438	511 257	543 800	111 381	1 166 438
C. Activity Three -- Market Linkages / Value Addition																				
1. SA1: Market Assessment Studies																				
a) Unrefined Oil/Seedcake	number	1	-	-	-	-	-	1	5,000	5 301	-	-	-	-	-	5 301	-	4 400	901	5 301
b) Mobile Groundnut Shelling	Study	1	-	-	-	-	-	1	2,500	2 651	-	-	-	-	-	2 651	-	2 200	451	2 651
c.1) Gum Arabic Grading and Packing	number	-	1	-	-	-	-	1	2,500	-	2 722	-	-	-	-	2 722	-	2 259	463	2 722
c.2) Improving Smallholder access to Wholesale and Auction Markets	number	1	1	-	-	-	-	2	35,500	35 855	36 572	-	-	-	-	72 427	72 427	-	-	72 427
d) Certified Seed Production: International Certification -- Fair Trade / Organic	Study	-	2	-	-	-	-	2	33,000	-	67 993	-	-	-	-	67 993	67 993	-	-	67 993
Other International Market Studies	number	-	-	1	1	-	-	2	33,000	-	-	34 677	35 370	-	-	70 047	70 047	-	-	70 047
Subtotal										43 807	107 287	34 677	35 370	-	-	221 140	210 467	8 859	1 815	221 140
2. SA2: Direct Support for Market Linkage / Value Addition																				
Tools & Equipment /h	Set	-	47	42	40	30	20	179	4,650	-	234 156	213 431	207 333	158 610	107 855	921 384	921 384	-	-	921 384
Logistical Support /i	number	-	47	42	40	-	-	129	2,000	-	102 342	93 950	91 959	-	-	288 251	-	239 248	49 003	288 251
Subtotal										-	336 498	307 381	299 292	158 610	107 855	1 209 635	921 384	239 248	49 003	1 209 635
3. SA3: Scale-Up via ICMGF																				
Innovation Scaling up Matching Grant Facility (ISMGF) /j	number	-	4	5	6	-	-	15	80,000	-	329 664	420 322	514 474	-	-	1 264 459	1 264 459	-	-	1 264 459
4. Consultants for Technical Assistance																				
PPP Consultant -- International	person month	1	1	1	1	1	1	6	33,000	34 663	35 356	36 064	36 785	37 521	38 271	218 660	218 660	-	-	218 660
Subtotal										78 470	808 806	798 443	885 920	196 130	146 126	2 913 894	2 614 970	248 107	50 817	2 913 894
Total Investment Costs										319 450	2 025 332	1 547 214	1 459 242	692 645	652 095	6 695 978	3 126 227	2 962 893	606 858	6 695 978
II. Recurrent Costs																				
SPIU: Marketing Specialist (MS) /k	Person year	4	4	4	4	4	4	24	11,335.011	48 071	49 364	50 711	52 118	53 097	54 106	307 465	-	255 196	52 269	307 465
LET: Locality Marketing Officer (LMKO)	person year	13	13	13	13	13	13	78	11,335.011	156 230	160 432	164 810	169 382	172 565	175 843	999 262	-	829 387	169 874	999 262
Total Recurrent Costs										204 300	209 796	215 520	221 500	225 662	229 949	1 306 727	-	1 084 583	222 144	1 306 727
Total										523 750	2 235 128	1 762 734	1 680 741	918 307	882 044	8 002 705	3 126 227	4 047 476	829 001	8 002 705

\a for Sennar & Kordofan States
\b As per submission by SDP & SUSTAIN
\c As per submission by SDP & SUSTAIN, but note the number of stores to build below
\d 1 per locality, as per SDP/SUSTAIN estimates
\e incidental costs of publicizing, most costs in the consultants
\f incidental costs of publicizing, most costs in the consultants
\g incidental costs of publicizing, most costs in the consultants
\h One "set" per village. Contribution of IFAD is 60% and Beneficiaries is 40%, of which: PS is 20% and Farmers is 20%.
\i One "set" per village
\j $80,000 are Goods, which 40% from local market and PS contribution is 33%
\k Marketing Specialist

Table 2.2: Market linkage and value addition /a - Expenditures by financiers

	Expenditures by Financiers (US$)																										
	Private Sector							IFAD							Beneficiaries							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs																												
A. Physical market access (Wadi crossings construction)																												
Survey and design works /b	-	-	-	-	-	-	-	29 968	30 774	-	-	-	-	60 743	-	-	-	-	-	-	-	6 138	6 303	-	-	-	-	12 441
Construction of pipe culverts	-	-	-	-	-	-	-	-	203 650	209 207	172 009	175 241	178 570	938 676	-	-	-	-	-	-	-	-	41 711	42 850	35 231	35 893	36 575	192 259
Construction of box culverts	-	-	-	-	-	-	-	-	234 292	240 684	197 890	201 608	205 438	1 079 911	-	-	-	-	-	-	-	-	47 987	49 297	40 532	41 293	42 078	221 187
Supervision of civil works (6%)	-	-	-	-	-	-	-	-	19 885	20 428	16 796	17 111	17 436	91 656	-	-	-	-	-	-	-	-	4 073	4 184	3 440	3 505	3 571	18 773
Subtotal	-	-	-	-	-	-	-	29 968	488 601	470 319	386 694	393 960	401 444	2 170 986	-	-	-	-	-	-	-	6 138	100 075	96 330	79 202	80 691	82 223	444 660
B. Activity Two -- Storage Facilities Development																												
1. SA1: Smallholder owned & operated cash crop storage demonstration facilities																												
Design of grain stores (national consultant) /c	-	-	-	-	-	-	-	9 511	3 255	3 344	-	-	-	16 110	-	-	-	-	-	-	-	1 948	667	685	-	-	-	3 300
Infrastructure - construction of grain stores at community level /d	-	-	-	-	-	-	-	-	52 230	53 655	33 086	-	-	138 972	-	7 155	7 350	4 532	-	-	19 037	-	12 163	12 495	7 705	-	-	32 363
Supervision of civil works (6%)	-	-	-	-	-	-	-	-	3 426	3 520	2 170	-	-	9 116	-	-	-	-	-	-	-	-	702	721	445	-	-	1 867
Subtotal	-	-	-	-	-	-	-	9 511	58 912	60 519	35 257	-	-	164 198	-	7 155	7 350	4 532	-	-	19 037	1 948	13 532	13 901	8 150	-	-	37 530
2. SA2: Price and Storage Studies																												
Dynamic pricing study /e	-	-	-	-	-	-	-	59 519	-	-	-	-	-	59 519	-	-	-	-	-	-	-	12 191	-	-	-	-	-	12 191
Storage financing study /f	-	-	-	-	-	-	-	29 760	-	-	-	-	-	29 760	-	-	-	-	-	-	-	6 095	-	-	-	-	-	6 095
Other studies /g	-	-	-	-	-	-	-	-	30 355	30 962	31 581	-	-	92 898	-	-	-	-	-	-	-	-	6 217	6 342	6 468	-	-	19 027
Subtotal	-	-	-	-	-	-	-	89 279	30 355	30 962	31 581	-	-	182 177	-	-	-	-	-	-	-	18 286	6 217	6 342	6 468	-	-	37 313
3. SA3: Sinnar State crop market rehabilitation																												
Feasibility study	-	-	-	-	-	-	-	20 958	-	-	-	-	-	20 958	-	-	-	-	-	-	-	4 293	-	-	-	-	-	4 293
Technical assistance	-	-	-	-	-	-	-	-	12 826	-	-	-	-	12 826	-	-	-	-	-	-	-	-	2 627	-	-	-	-	2 627
Training	-	-	-	-	-	-	-	50 298	51 304	52 330	17 792	18 148	18 511	208 383	-	-	-	-	-	-	-	10 302	10 508	10 718	3 644	3 717	3 791	42 681
Infrastructure - construction of market infrastructure	-	-	-	-	-	-	-	-	273 582	-	-	-	-	273 582	-	70 468	-	-	-	-	70 468	-	70 468	-	-	-	-	70 468
Supervision of civil works (6%)	-	-	-	-	-	-	-	-	16 514	-	-	-	-	16 514	-	-	-	-	-	-	-	-	3 382	-	-	-	-	3 382
Subtotal	-	-	-	-	-	-	-	71 256	354 226	52 330	17 792	18 148	18 511	532 263	-	70 468	-	-	-	-	70 468	14 595	86 986	10 718	3 644	3 717	3 791	123 451
Subtotal	-	-	-	-	-	-	-	170 045	443 493	143 811	84 630	18 148	18 511	878 639	-	77 623	7 350	4 532	-	-	89 505	34 828	106 735	30 961	18 262	3 717	3 791	198 295
C. Activity Three -- Market Linkages / Value Addition																												
1. SA1: Market Assessment Studies																												
a) Unrefined Oil/Seedcake	-	-	-	-	-	-	-	4 400	-	-	-	-	-	4 400	-	-	-	-	-	-	-	901	-	-	-	-	-	901
b) Mobile Groundnut Shelling	-	-	-	-	-	-	-	2 200	-	-	-	-	-	2 200	-	-	-	-	-	-	-	451	-	-	-	-	-	451
c.1) Gum Arabic Grading and Packing	-	-	-	-	-	-	-	-	2 259	-	-	-	-	2 259	-	-	-	-	-	-	-	-	463	-	-	-	-	463
c.2) Improving Smallholder access to Wholesale and Auction Markets	-	-	-	-	-	-	-	29 760	30 355	-	-	-	-	60 114	-	-	-	-	-	-	-	6 095	6 217	-	-	-	-	12 313
d) Certified Seed Production: International Certification -- Fair Trade / Organic	-	-	-	-	-	-	-	-	56 434	-	-	-	-	56 434	-	-	-	-	-	-	-	-	11 559	-	-	-	-	11 559
Other International Market Studies	-	-	-	-	-	-	-	-	-	28 782	29 357	-	-	58 139	-	-	-	-	-	-	-	-	-	5 895	6 013	-	-	11 908
Subtotal	-	-	-	-	-	-	-	36 360	89 048	28 782	29 357	-	-	183 547	-	-	-	-	-	-	-	7 447	18 239	5 895	6 013	-	-	37 594
2. SA2: Direct Support for Market Linkage / Value Addition																												
Tools & Equipment /h	-	-	-	-	-	-	-	-	131 127	119 521	116 106	88 821	60 399	515 975	-	63 222	57 626	55 980	42 825	29 121	248 774	-	39 807	36 283	35 247	26 964	18 335	156 635
Logistical Support /i	-	-	-	-	-	-	-	-	84 944	77 979	76 326	-	-	239 248	-	-	-	-	-	-	-	-	17 398	15 972	15 633	-	-	49 003
Subtotal	-	-	-	-	-	-	-	-	216 071	197 500	192 432	88 821	60 399	755 223	-	63 222	57 626	55 980	42 825	29 121	248 774	-	57 205	52 255	50 880	26 964	18 335	205 638
3. SA3: Scale-Up via ICMGF																												
Innovation Scaling up Matching Grant Facility (ISMGF) /j	-	56 043	71 455	87 461	-	-	214 958	-	184 612	235 380	288 105	-	-	708 097	-	32 966	42 032	51 447	-	-	126 446	-	56 043	71 455	87 461	-	-	214 958
4. Consultants for Technical Assistance																												
PPP Consultant -- International	-	-	-	-	-	-	-	28 770	29 346	29 933	30 531	31 142	31 765	181 488	-	-	-	-	-	-	-	5 893	6 011	6 131	6 253	6 378	6 506	37 172
Subtotal	-	56 043	71 455	87 461	-	-	214 958	65 130	519 077	491 594	540 426	119 963	92 163	1 828 354	-	96 189	99 659	107 427	42 825	29 121	375 220	13 340	137 497	135 735	150 606	33 342	24 841	495 362
Total Investment Costs	-	56 043	71 455	87 461	-	-	214 958	265 143	1 451 171	1 105 724	1 011 750	532 071	512 118	4 877 979	-	173 812	107 009	111 960	42 825	29 121	464 725	54 306	344 306	263 026	248 071	117 750	110 856	1 138 316
II. Recurrent Costs																												
SPIU: Marketing Specialist (MS) /k	-	-	-	-	-	-	-	39 899	40 972	42 090	43 258	44 070	44 908	255 196	-	-	-	-	-	-	-	8 172	8 392	8 621	8 860	9 026	9 198	52 269
LET: Locality Marketing Officer (LMKO)	-	-	-	-	-	-	-	129 671	133 159	136 792	140 587	143 229	145 950	829 387	-	-	-	-	-	-	-	26 559	27 273	28 018	28 795	29 336	29 893	169 874
Total Recurrent Costs	-	-	-	-	-	-	-	169 569	174 131	178 882	183 845	187 299	190 857	1 084 583	-	-	-	-	-	-	-	34 731	35 665	36 638	37 655	38 362	39 091	222 144
Total	-	56 043	71 455	87 461	-	-	214 958	434 713	1 625 302	1 284 606	1 195 595	719 370	702 976	5 962 562	-	173 812	107 009	111 960	42 825	29 121	464 725	89 038	379 972	299 665	285 726	156 112	149 947	1 360 460

\a for Sennar & Kordofan States
\b As per submission by SDP & SUSTAIN
\c As per submission by SDP & SUSTAIN, but note the number of stores to build below
\d 1 per locality, as per SDP/SUSTAIN estimates
\e incidental costs of publicizing, most costs in the consultants
\f incidental costs of publicizing, most costs in the consultants
\g incidental costs of publicizing, most costs in the consultants
\h One "set" per village. Contribution of IFAD is 60% and Beneficiaries is 40%, of which: PS is 20% and Farmers is 20%.
\i One "set" per village
\j $80,000 are Goods, which 40% from local market and PS contribution is 33%
\k Marketing Specialist

Table 3.1: Enabling environment /a - Quantities and totals including contingencies
Detailed Costs (USD)

		Quantities								Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	Unit Cost (US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Taxes)	Duties & Taxes	Total
I. Investment Costs																				
A. Sub-component one -- farmers associations strengthening and business development																				
1. Activity One -- farming as a business (FAAB)																				
a. SA1: FAAB case studies /b																				
FAAB for Illiterate/Semi-literate Curriculum /c	number	1	-	-	-	-	-	1	10,000	11 026	-	-	-	-	-	11 026	-	9 152	1 874	11 026
Service Provider FAAB modules /d	number	4	-	4	-	-	-	8	2,500	11 026	-	11 632	-	-	-	22 658	-	18 806	3 852	22 658
Introduction to Government Officials	Document	1	-	1	-	-	-	2	2,500	2 757	-	2 908	-	-	-	5 665	-	4 702	963	5 665
Subtotal										24 809	-	14 540	-	-	-	39 349	-	32 660	6 689	39 349
2. Activity Two -- farmer producer association capacity building																				
a. SA1: Curriculum and Training Materials																				
FPA training materials /e	number	1	1	1	-	-	-	3	500	530	544	559	-	-	-	1 634	-	1 356	278	1 634
FPA Apex Assocation curriculum development	number	-	-	1	-	-	-	1	35,500	-	-	37 304	-	-	-	37 304	37 304	-	-	37 304
FPA Apex Association Training Materials	number	-	-	1	1	1	-	3	500	-	-	559	575	586	-	1 720	-	1 427	292	1 720
Subtotal										530	544	38 422	575	586	-	40 657	37 304	2 783	570	40 657
b. SA2: Apex Organization Exposure Visit /f																				
FPAs	Village	-	47	42	38	47	-	174	420.551	-	20 363	18 560	17 129	21 609	-	77 661	64 459	-0	13 202	77 661
Locality Official Training	Locality	-	-	10	-	-	-	10	1,682.203	-	-	17 677	-	-	-	17 677	14 672	-	3 005	17 677
Apex Organization Exposure Visit /g	Study Tour	-	-	1	-	-	-	1	42,055.085	-	-	44 192	-	-	-	44 192	36 679	-	7 513	44 192
Subtotal										-	20 363	80 429	17 129	21 609	-	139 529	115 809	-0	23 720	139 529
Subtotal										530	20 907	118 851	17 703	22 195	-	180 186	153 113	2 783	24 290	180 186
Subtotal										25 339	20 907	133 391	17 703	22 195	-	219 535	153 113	35 443	30 979	219 535
B. Sub-component Two -- Access to rural finance																				
1. Activity Three -- Development of savings and credit groups																				
a. Pre financing by buyers																				
Pre financing by buyers /h	%	0.06	0.19	0.32	0.43	-	-	1	1,407,446.822	89 533	291 146	503 732	695 670	-	-	1 580 081	-	1 311 467	268 614	1 580 081
Pre financing by buyers (Works) /i	%	-	0.06	0.19	0.32	0.43	-	1	2,111,170.18	-	137 911	448 636	776 562	1 063 111	-	2 426 220	-	2 013 763	412 457	2 426 220
Subtotal										89 533	429 058	952 368	1 472 231	1 063 111	-	4 006 301	-	3 325 230	681 071	4 006 301
b. SA1: Development of village SCG facilitators																				
Training of SCG facilitators of SCG methodology /j	Workshop	1	3	3	1	1	-	9	1,259.428	1 389	4 278	4 395	1 506	1 534	-	13 101	-	10 874	2 227	13 101
Exposure visits of the facilitators /k	number	-	2	3	3	2	-	10	1,889.195	-	4 278	6 592	6 775	4 602	-	22 248	-	18 466	3 782	22 248
Allowances to SCG facilitators to start SCG formation in neighbouring villages /l	Person day	-	250	450	400	170	-	1 270	18.909	-	5 353	9 898	9 042	3 915	-	28 207	-	23 412	4 795	28 207
Subtotal										1 389	13 909	20 885	17 323	10 051	-	63 556	-	52 752	10 805	63 556
c. SA2: Formation of savings and credit groups																				
Updating savings and credit manual /m	Lumpsum	1	-	0.5	-	-	-	1.5	1,889.195	2 083	-	1 099	-	-	-	3 182	-	2 641	541	3 182
Formation of saving and credit groups /n	number	-	75	135	120	51	-	381	62.977	-	5 348	9 889	9 034	3 912	-	28 183	-	23 392	4 791	28 183
Exposure visits of new SCG representatives to mature SCGs in WSRMP and LMRP villages /o	number	-	2	4	4	2	-	12	1,259.428	-	2 742	5 634	5 791	2 950	-	17 117	-	14 207	2 910	17 117
Registration costs of SCGs /p	number of groups	-	100	180	160	68	-	508	25.212	-	2 745	5 076	4 637	2 008	-	14 465	-	12 006	2 459	14 465
Subtotal										2 083	10 835	21 698	19 462	8 869	-	62 948	-	52 247	10 701	62 948
d. SA3: Replication and scaling up of SCGs																				
ToT of SCG facilitators in surrounding villages /q	number of w orkshops	-	6	11	10	-	-	27	629.714	-	4 114	7 747	7 238	-	-	19 099	-	15 853	3 247	19 099
e. Activity Six -- Consultants for Technical Assistance																				
Crop Storage Specialist -- national	Pew rson month	-	2	-	-	-	-	2	264.831	-	577	-	-	-	-	577	-	577	-	577
Gum Arabic Business Specialist -- national	Person month	-	1	-	-	-	-	1	264.831	-	288	-	-	-	-	288	-	288	-	288
Farm Association Specialist -- national	Person month	2	-	2	-	-	-	4	264.831	562	-	592	-	-	-	1 154	-	1 154	-	1 154
Subtotal										562	865	592	-	-	-	2 019	-	2 019	-	2 019
Subtotal										93 566	458 781	1 003 291	1 516 255	1 082 031	-	4 153 923	-	3 448 100	705 824	4 153 923
2. Activity Four -- Collaboration with partnering financial institutions																				
a. SA1: Crop production loan																				
Matchnig equity support (crop production)	%	0.17	0.22	0.61	-	-	-	1	582,468.008	104 983	139 515	397 392	-	-	-	641 890	-	532 769	109 121	641 890
Matchnig equity support (crop production)	%	0.17	0.22	0.61	-	-	-	1	873,702.013	157 475	209 272	596 088	-	-	-	962 835	-	799 153	163 682	962 835
Matching equity support for jubraka	%	0.29	0.23	0.49	-	-	-	1.01	55,851.218	17 172	13 986	30 609	-	-	-	61 767	-	51 267	10 500	61 767
Matching equity support for jubraka	%	0.29	0.23	0.49	-	-	-	1.01	83,776.801	25 758	20 979	45 913	-	-	-	92 650	-	76 900	15 751	92 650
Subtotal										305 389	383 752	1 070 003	-	-	-	1 759 143	-	1 460 089	299 054	1 759 143
b. SA2: Post-harvest financing																				
Workshop on financing storage loans /r	number	1	1	-	-	-	-	2	2,518.909	2 671	2 742	-	-	-	-	5 413	-	5 413	-	5 413
Demonstration of post harvest village storage loans /s	Demonstration	-	2	2	-	-	-	4	6,297.246	-	13 712	14 086	-	-	-	27 799	-	23 073	4 726	27 799
Know ledge sharing of results /t	Workshop	-	-	1	-	1	-	2	2,518.909	-	-	2 817	-	2 950	-	5 767	-	4 787	980	5 767
Supply of rub halls for storage in collection centers /u	Rub halls	-	2	2	-	-	-	4	23,615	-	50 603	51 615	-	-	-	102 217	102 217	-	-	102 217
Subtotal										2 671	67 057	68 518	-	2 950	-	141 196	102 217	33 273	5 706	141 196
Subtotal										308 059	450 809	1 138 521	-	2 950	-	1 900 339	102 217	1 493 361	304 760	1 900 339

Table 3.1: Enabling environment /a - Quantities and totals including contingencies (cont'd.)

		Quantities								Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	Unit Cost (US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Taxes)	Duties & Taxes	Total
I. Investment Costs																				
3. Activity Five -- Crop loan portfolio start-up matching grants to PFIs																				
a. SA1: Rural finance cycles																				
First cycle financing from Banks (crop loans) /v	ratio	0.17	0.22	0.61	-	-	-	1	172,340.254	31 062	41 280	117 580	-	-	-	189 922	-	157 635	32 287	189 922
First cycle financing from Banks (crop loans)	ratio	0.17	0.22	0.61	-	-	-	1	258,510.381	46 593	61 919	176 370	-	-	-	284 883	-	236 453	48 430	284 883
First cycle financing from Banks (Jubraka)	ratio	0.29	0.23	0.49	-	-	-	1.01	18,617.214	5 724	4 662	10 203	-	-	-	20 589	-	17 089	3 500	20 589
First cycle financing from Banks (Jubraka)	ratio	0.29	0.23	0.49	-	-	-	1.01	27,925.794	8 586	6 993	15 304	-	-	-	30 884	-	25 633	5 250	30 884
2-4 cycle financing by banks (crop loans)	ratio	-	0.07	0.19	0.29	0.42	-	0.97	3,127,393.591	-	238 345	664 590	1 042 517	1 538 220	-	3 483 673	-	2 891 448	592 224	3 483 673
2-4 cycle financing by banks (crop loans)	ratio	-	0.06	0.19	0.29	0.42	-	0.96	3,480,814.989	-	227 383	739 694	1 160 330	1 712 052	-	3 839 459	-	3 186 751	652 708	3 839 459
2-4 cycle self financing by farmer	ratio	-	0.06	0.19	0.32	0.8	-	1.37	622,750.477	-	40 681	132 338	229 069	583 433	-	985 521	-	817 983	167 539	985 521
2-4 cycle self financing by farmer	ratio	-	0.043	0.19	0.32	0.64	-	1.193	1,074,485.911	-	50 303	228 335	395 233	805 318	-	1 479 189	-	1 227 727	251 462	1 479 189
Subtotal										91 966	671 566	2 084 414	2 827 150	4 639 023	-	10 314 120	-	8 560 720	1 753 400	10 314 120
4. Activity Six -- Technical assistance and capacity building of PFIs																				
a. SA1: Technical assistance to PFIs /w																				
Training and capacity building /x	number	1	1	1	-	-	-	3	7,556.674	8 012	8 227	8 452	-	-	-	24 691	-	20 493	4 197	24 691
Expousure to the project demonstarion /y	ratio	0.25	0.25	0.25	0.25	-	-	1	15,000	3 976	4 083	4 194	4 311	-	-	16 563	-	13 748	2 816	16 563
Exposure to value chain financin experiences	number	-	-	1	-	-	-	1	18,892	-	-	19 852	-	-	-	19 852	19 852	-	-	19 852
Subtotal										11 988	12 310	32 498	4 311	-	-	61 106	19 852	34 241	7 013	61 106
b. SA2: Infrastructure and operations gap financing to PFIs to expand outreach																				
Incentives for expanding outreach /z	ratio	0.25	0.5	0.25	-	-	-	1	300,000	75 750	154 530	78 810	-	-	-	309 090	309 090	-	-	309 090
c. SA3: Collaboration with apex financial institutions CBS, SMDC, Guarantee agency, MFI association																				
TA for improving supervision process, M and E systems /aa	number	-	-	1	-	-	-	1	20,000	-	-	22 369	-	-	-	22 369	-	18 566	3 803	22 369
Support IT infrastructure and technology adoption for strengthening supervision and monitoring	lump sum	-	0.25	0.5	0.25	-	-	1	100,000	-	25 755	52 540	26 796	-	-	105 091	105 091	-	-	105 091
Experience sharing w orkshops on success of the crop production loans & replication strategies at national level /bb	number	-	-	1	-	-	-	1	10,000	-	-	11 185	-	-	-	11 185	-	9 283	1 901	11 185
Subtotal										-	25 755	86 094	26 796	-	-	138 644	105 091	27 849	5 704	138 644
Subtotal										87 738	192 595	197 402	31 106	-	-	508 841	434 033	62 090	12 717	508 841
5. Consultants for technical assistance																				
Community Development National Consultant	person month	4	4	4	4	4	4	24	3,462.977	14 686	15 081	15 493	15 923	16 222	16 530	93 934	-	77 965	15 969	93 934
Subtotal										596 015	1 788 833	4 439 121	4 390 433	5 740 225	16 530	16 971 157	536 250	13 642 237	2 792 671	16 971 157
Total Investment Costs										621 355	1 809 740	4 572 512	4 408 137	5 762 420	16 530	17 190 693	689 363	13 677 680	2 823 650	17 190 693
II. Recurrent Costs																				
A. SPIU and LET Staff Salaries																				
SPIU: Rural Finance Specialists (RFS) /cc	Person year	4	4	4	4	4	4	24	11,122.881	47 171	48 440	49 762	51 142	52 103	53 093	301 711	-	250 420	51 291	301 711
LET: Locality Rural Finance and Community Development Officer (LRCO)	Person year	13	13	13	13	13	13	78	9,533.898	131 405	134 940	138 622	142 468	145 145	147 902	840 481	-	697 599	142 882	840 481
Total Recurrent Costs										178 576	183 380	188 383	193 610	197 248	200 995	1 142 192	-	948 019	194 173	1 142 192
Total										799 931	1 993 119	4 760 895	4 601 747	5 959 668	217 525	18 332 885	689 363	14 625 699	3 017 823	18 332 885

\a for Sennar & Kordofan States
\b case studies
\c Materials Production
\d Materials Production
\e training materials
\f 20 members for 1 w eek total
\g 20 members for 1 w eek total
\h this is a 100% PS activity
\i This is a 100% PS activity
\j 2 facilitators per village, 30 participant per w orkshop. 1 day w orkshop including cost of allow ances, hall charges, refreshment, w orkshop facilitated by project staff
\k 15-20 facilitators per exposure visit; 2-3 days local exposure to other villages w ith SCGs; cost includes transportation, daily allow ance, accommodation
\l 10 days per facilitator
\m In year 1 LMRP SCG manual w ill be updated incorporating LMRP experiences and lessons learnt. In year 3 this manual w ill be fine tuned based on first tw o year experiences.
\n 3 SCGs per village formed directly by the project as an entry level activity. Includes cost of the savings boxes, stationery, initial training
\o 15-20 SCG representatives per exposure visit; 1-2 days local exposure to other villages w ith SCGs; cost includes transportation, daily allow ance, accommodation
\p registration under relevant cooperative or PA law
\q Allow ance, hall charges, stationery, refreshment for 1 day ToT w orkshops (30-40 persons) at village level for training the SCG facilitators in surrounding villages.
\r Regional w orkshops for Kordofan and Sennar region in years 1 and 2. 30-40 participants
\s project grants to demonstrate financial product for supporting post harvest financing to the financial partners
\t Regional w orkshops for Kordofan and Sennar region in years 1 and 2. 30-40 participants
\u Supply of rub halls to expand local collection outreach by supporting temporary storage at collection points
\v Includes seasonal loan demonstration for 15000 farmers for the first tw o years. Av loan size SDG 2000 and 2,500 respectively for the tw o years.
\w Includes TA to the PFIs to develop and refine their business plans and harmonise w ith IAMDP needs. Develop investment estimates, cost benefit estimates and credit requirement estimates for different crop models involving the project promoted technologies.
\x Includes training on value chain financing and development of product and methodology for value chain financing for PFI staff, ABS branch staff
\y Includes incremental operations costs support, mobility support, rural branch establishment support and technology adoption support
\z Includes incremental operations costs support, mobility support, rural branch establishment support and technology adoption support
\aa Includes training on value chain financing and development of product and methodology for value chain financing
\bb National w orkshop in years 3. 2 days w orkshop for 40-50 participants. Costs include facility charges, allow ances, accommodation, refreshments, stationery charges.
\cc Rural Finance (1 Coordinator, 4 experts at State coordination levels and 10 officer at locality level (1 per locality))

Table 3.2: Enabling environment /a - Expenditures by financiers

		Expenditures by Financiers (US$)																										
		Private Sector							IFAD							Beneficiaries								Government						
	Unit	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs																													
A. Sub-component one -- farmers associations strengthening and business development																													
1. Activity One -- farming as a business (FAAB)																													
a. SA1: FAAB case studies /b																													
FAAB for Illiterate/Semi-literate Curriculum /c	number	-	-	-	-	-	-	-	9 152	-	-	-	-	-	9 152	-	-	-	-	-	-	-	1 874	-	-	-	-	-	1 874
Service Provider FAAB modules /d	number	-	-	-	-	-	-	-	9 152	-	9 654	-	-	-	18 806	-	-	-	-	-	-	-	1 874	-	1 977	-	-	-	3 852
Introduction to Government Officials	Document	-	-	-	-	-	-	-	2 288	-	2 414	-	-	-	4 702	-	-	-	-	-	-	-	469	-	494	-	-	-	963
Subtotal		-	-	-	-	-	-	-	20 592	-	12 068	-	-	-	32 660	-	-	-	-	-	-	-	4 218	-	2 472	-	-	-	6 689
2. Activity Two -- farmer producer association capacity building																													
a. SA1: Curriculum and Training Materials																													
FPA training materials /e	number	-	-	-	-	-	-	-	440	452	464	-	-	-	1 356	-	-	-	-	-	-	-	90	93	95	-	-	-	278
FPA Apex Assocation curriculum development	number	-	-	-	-	-	-	-	-	-	30 962	-	-	-	30 962	-	-	-	-	-	-	-	-	-	6 342	-	-	-	6 342
FPA Apex Association Training Materials	number	-	-	-	-	-	-	-	-	-	464	477	486	-	1 427	-	-	-	-	-	-	-	-	-	95	98	100	-	292
Subtotal		-	-	-	-	-	-	-	440	452	31 890	477	486	-	33 745	-	-	-	-	-	-	-	90	93	6 532	98	100	-	6 912
b. SA2: Apex Organization Exposure Visit /f																													
FPAs	Village	-	-	-	-	-	-	-	-	16 901	15 405	14 217	17 936	-	64 459	-	-	-	-	-	-	-	-	3 462	3 155	2 912	3 674	-	13 202
Locality Official Training	Locality	-	-	-	-	-	-	-	-	-	14 672	-	-	-	14 672	-	-	-	-	-	-	-	-	-	3 005	-	-	-	3 005
Apex Organization Exposure Visit /g	Study Tour	-	-	-	-	-	-	-	-	-	36 679	-	-	-	36 679	-	-	-	-	-	-	-	-	-	7 513	-	-	-	7 513
Subtotal		-	-	-	-	-	-	-	-	16 901	66 756	14 217	17 936	-	115 809	-	-	-	-	-	-	-	-	3 462	13 673	2 912	3 674	-	23 720
Subtotal		-	-	-	-	-	-	-	440	17 353	98 646	14 694	18 422	-	149 555	-	-	-	-	-	-	-	90	3 554	20 205	3 010	3 773	-	30 632
Subtotal		-	-	-	-	-	-	-	21 032	17 353	110 714	14 694	18 422	-	182 214	-	-	-	-	-	-	-	4 308	3 554	22 676	3 010	3 773	-	37 321
B. Sub-component Two -- Access to rural finance																													
1. Activity Three -- Development of savings and credit groups																													
a. Pre financing by buyers																													
Pre financing by buyers /h	%	74 312	241 652	418 098	577 406	-	-	1 311 467	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15 221	49 495	85 634	118 264	-	-	268 614
Pre financing by buyers (Works) /i	%	-	114 467	372 368	644 546	882 382	-	2 013 763	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23 445	76 268	132 015	180 729	-	412 457
Subtotal		74 312	356 118	790 466	1 221 952	882 382	-	3 325 230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15 221	72 940	161 903	250 279	180 729	-	681 071
b. SA1: Development of village SCG facilitators																													
Training of SCG facilitators of SCG methodology /j	Workshop	-	-	-	-	-	-	-	1 153	3 551	3 648	1 250	1 273	-	10 874	-	-	-	-	-	-	-	236	727	747	256	261	-	2 227
Exposure visits of the facilitators /k	number	-	-	-	-	-	-	-	-	3 551	5 472	5 624	3 819	-	18 466	-	-	-	-	-	-	-	-	727	1 121	1 152	782	-	3 782
Allowances to SCG facilitators to start SCG formation in neighbouring villages /l	Person day	-	-	-	-	-	-	-	-	4 443	8 215	7 505	3 249	-	23 412	-	-	-	-	-	-	-	-	910	1 683	1 537	666	-	4 795
Subtotal		-	-	-	-	-	-	-	1 153	11 544	17 334	14 378	8 342	-	52 752	-	-	-	-	-	-	-	236	2 365	3 550	2 945	1 709	-	10 805
c. SA2: Formation of savings and credit groups																													
Updating savings and credit manual /m	Lumpsum	-	-	-	-	-	-	-	1 729	-	912	-	-	-	2 641	-	-	-	-	-	-	-	354	-	187	-	-	-	541
Formation of saving and credit groups /n	number	-	-	-	-	-	-	-	-	4 439	8 208	7 499	3 247	-	23 392	-	-	-	-	-	-	-	-	909	1 681	1 536	665	-	4 791
Exposure visits of new SCG representatives to mature SCGs in WSRMP and LMRP villages /o	number	-	-	-	-	-	-	-	-	2 276	4 677	4 806	2 448	-	14 207	-	-	-	-	-	-	-	-	466	958	984	501	-	2 910
Registration costs of SCGs /p	number of groups	-	-	-	-	-	-	-	-	2 278	4 213	3 849	1 666	-	12 006	-	-	-	-	-	-	-	-	467	863	788	341	-	2 459
Subtotal		-	-	-	-	-	-	-	1 729	8 993	18 009	16 153	7 361	-	52 247	-	-	-	-	-	-	-	354	1 842	3 689	3 309	1 508	-	10 701
d. SA3: Replication and scaling up of SCGs																													
ToT of SCG facilitators in surrounding villages /q	number of w orkshops	-	-	-	-	-	-	-	-	3 414	6 430	6 008	-	-	15 853	-	-	-	-	-	-	-	-	699	1 317	1 231	-	-	3 247
e. Activity Six -- Consultants for Technical Assistance																													
Crop Storage Specialist -- national	Pew rson month	-	-	-	-	-	-	-	-	577	-	-	-	-	577	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gum Arabic Business Specialist -- national	Person month	-	-	-	-	-	-	-	-	288	-	-	-	-	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Farm Association Specialist -- national	Person month	-	-	-	-	-	-	-	562	-	592	-	-	-	1 154	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal		-	-	-	-	-	-	-	562	865	592	-	-	-	2 019	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal		74 312	356 118	790 466	1 221 952	882 382	-	3 325 230	3 443	24 817	42 367	36 539	15 704	-	122 870	-	-	-	-	-	-	-	15 811	77 846	170 459	257 763	183 945	-	705 824
2. Activity Four -- Collaboration with partnering financial institutions																													
a. SA1: Crop production loan																													
Matchnig equity support (crop production)	%	-	-	-	-	-	-	-	87 136	115 797	329 836	-	-	-	532 769	-	-	-	-	-	-	-	17 847	23 718	67 557	-	-	-	109 121
Matchnig equity support (crop production)	%	-	-	-	-	-	-	-	130 704	173 696	494 753	-	-	-	799 153	-	-	-	-	-	-	-	26 771	35 576	101 335	-	-	-	163 682
Matching equity support for jubraka	%	-	-	-	-	-	-	-	14 253	11 608	25 405	-	-	-	51 267	-	-	-	-	-	-	-	2 919	2 378	5 203	-	-	-	10 500
Matching equity support for jubraka	%	-	-	-	-	-	-	-	21 380	17 412	38 108	-	-	-	76 900	-	-	-	-	-	-	-	4 379	3 566	7 805	-	-	-	15 751
Subtotal		-	-	-	-	-	-	-	253 472	318 514	888 102	-	-	-	1 460 089	-	-	-	-	-	-	-	51 916	65 238	181 900	-	-	-	299 054
b. SA2: Post-harvest financing																													
Workshop on financing storage loans /r	number	-	-	-	-	-	-	-	2 217	2 276	-	-	-	-	4 493	-	-	-	-	-	-	-	454	466	-	-	-	-	920
Demonstration of post harvest village storage loans /s	Demonstration	-	-	-	-	-	-	-	-	11 381	11 692	-	-	-	23 073	-	-	-	-	-	-	-	-	2 331	2 395	-	-	-	4 726
Know ledge sharing of results /t	Workshop	-	-	-	-	-	-	-	-	-	2 338	-	2 448	-	4 787	-	-	-	-	-	-	-	-	-	479	-	501	-	980
Supply of rub halls for storage in collection centers /u	Rub halls	-	-	-	-	-	-	-	-	42 000	42 840	-	-	-	84 840	-	-	-	-	-	-	-	-	8 602	8 774	-	-	-	17 377
Subtotal		-	-	-	-	-	-	-	2 217	55 658	56 870	-	2 448	-	117 193	-	-	-	-	-	-	-	454	11 400	11 648	-	501	-	24 003
Subtotal		-	-	-	-	-	-	-	255 689	374 171	944 972	-	2 448	-	1 577 281	-	-	-	-	-	-	-	52 370	76 638	193 549	-	501	-	323 058

Table 3.2: Enabling environment /a - Expenditures by financiers (cont'd.)

	Expenditures by Financiers (US$)																										
	Private Sector							IFAD								Beneficiaries							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs																												
3. Activity Five -- Crop loan portfolio start-up matching grants to PFIs																												
a. SA1: Rural finance cycles																												
First cycle financing from Banks (crop loans) /v	25 782	34 262	97 592	-	-	-	157 635	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5 281	7 018	19 989	-	-	-	32 287
First cycle financing from Banks (crop loans)	38 673	51 393	146 387	-	-	-	236 453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7 921	10 526	29 983	-	-	-	48 430
First cycle financing from Banks (Jubraka)	4 751	3 869	8 468	-	-	-	17 089	-	-	-	-	-	-	-	-	-	-	-	-	-	-	973	793	1 735	-	-	-	3 500
First cycle financing from Banks (Jubraka)	7 127	5 804	12 703	-	-	-	25 633	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 460	1 189	2 602	-	-	-	5 250
2-4 cycle financing by banks (crop loans)	-	197 827	551 610	865 289	1 276 723	-	2 891 448	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40 519	112 980	177 228	261 497	-	592 224
2-4 cycle financing by banks (crop loans)	-	188 728	613 946	963 074	1 421 003	-	3 186 751	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38 655	125 748	197 256	291 049	-	652 708
2-4 cycle self financing by farmer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33 765	109 841	190 127	484 249	-	817 983	-	6 916	22 497	38 942	99 184	-	167 539
2-4 cycle self financing by farmer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41 752	189 518	328 044	668 414	-	1 227 727	-	8 552	38 817	67 190	136 904	-	251 462
Subtotal	76 332	481 883	1 430 706	1 828 363	2 697 726	-	6 515 010	-	-	-	-	-	-	-	-	75 517	299 358	518 171	1 152 663	-	2 045 709	15 634	114 166	354 350	480 615	788 634	-	1 753 400
4. Activity Six -- Technical assistance and capacity building of PFIs																												
a. SA1: Technical assistance to PFIs /w																												
Training and capacity building /x	2 163	2 221	2 282	-	-	-	6 667	4 487	4 607	4 733	-	-	-	13 827	-	-	-	-	-	-	-	1 362	1 399	1 437	-	-	-	4 197
Expousure to the project demonstarion /y	1 073	1 102	1 132	1 164	-	-	4 472	2 226	2 286	2 349	2 414	-	-	9 276	-	-	-	-	-	-	-	676	694	713	733	-	-	2 816
Exposure to value chain financin experiences	-	-	5 360	-	-	-	5 360	-	-	11 117	-	-	-	11 117	-	-	-	-	-	-	-	-	-	3 375	-	-	-	3 375
Subtotal	3 237	3 324	8 774	1 164	-	-	16 499	6 713	6 894	18 199	2 414	-	-	34 219	-	-	-	-	-	-	-	2 038	2 093	5 525	733	-	-	10 388
b. SA2: Infrastructure and operations gap financing to PFIs to expand outreach																												
Incentives for expanding outreach /z	-	-	-	-	-	-	-	62 873	128 260	65 413	-	-	-	256 545	-	-	-	-	-	-	-	12 878	26 270	13 398	-	-	-	52 545
c. SA3: Collaboration with apex financial institutions CBS, SMDC, Guarantee agency, MFI association																												
TA for improving supervision process, M and E systems /aa	-	-	6 040	-	-	-	6 040	-	-	12 527	-	-	-	12 527	-	-	-	-	-	-	-	-	-	3 803	-	-	-	3 803
Support IT infrastructure and technology adoption for strengthening supervision and monitoring	-	6 954	14 186	7 235	-	-	28 374	-	14 423	29 423	15 005	-	-	58 851	-	-	-	-	-	-	-	-	4 378	8 932	4 555	-	-	17 865
Experience sharing w orkshops on success of the crop production loans & replication strategies at national level /bb	-	-	3 020	-	-	-	3 020	-	-	6 263	-	-	-	6 263	-	-	-	-	-	-	-	-	-	1 901	-	-	-	1 901
Subtotal	-	6 954	23 245	7 235	-	-	37 434	-	14 423	48 213	15 005	-	-	77 641	-	-	-	-	-	-	-	-	4 378	14 636	4 555	-	-	23 570
Subtotal	3 237	10 278	32 020	8 399	-	-	53 933	69 586	149 576	131 824	17 419	-	-	368 405	-	-	-	-	-	-	-	14 915	32 741	33 558	5 288	-	-	86 503
5. Consultants for technical assistance																												
Community Development National Consultant	-	-	-	-	-	-	-	12 190	12 517	12 859	13 216	13 464	13 720	77 965	-	-	-	-	-	-	-	2 497	2 564	2 634	2 707	2 758	2 810	15 969
Subtotal	153 881	848 279	2 253 191	3 058 714	3 580 108	-	9 894 173	340 907	561 082	1 132 022	67 175	31 616	13 720	2 146 522	-	75 517	299 358	518 171	1 152 663	-	2 045 709	101 227	303 954	754 550	746 374	975 838	2 810	2 884 754
Total Investment Costs	153 881	848 279	2 253 191	3 058 714	3 580 108	-	9 894 173	361 939	578 435	1 242 736	81 868	50 038	13 720	2 328 736	-	75 517	299 358	518 171	1 152 663	-	2 045 709	105 535	307 509	777 226	749 383	979 611	2 810	2 922 075
II. Recurrent Costs																												
A. SPIU and LET Staff Salaries																												
SPIU: Rural Finance Specialists (RFS) /cc	-	-	-	-	-	-	-	39 152	40 205	41 302	42 448	43 246	44 067	250 420	-	-	-	-	-	-	-	8 019	8 235	8 459	8 694	8 858	9 026	51 291
LET: Locality Rural Finance and Community Development Officer (LRCO)	-	-	-	-	-	-	-	109 066	112 000	115 056	118 248	120 470	122 759	697 599	-	-	-	-	-	-	-	22 339	22 940	23 566	24 220	24 675	25 143	142 882
Total Recurrent Costs	-	-	-	-	-	-	-	148 218	152 205	156 358	160 696	163 716	166 826	948 019	-	-	-	-	-	-	-	30 358	31 175	32 025	32 914	33 532	34 169	194 173
Total	153 881	848 279	2 253 191	3 058 714	3 580 108	-	9 894 173	510 157	730 640	1 399 094	242 565	213 753	180 546	3 276 755	-	75 517	299 358	518 171	1 152 663	-	2 045 709	135 893	338 683	809 251	782 297	1 013 144	36 979	3 116 247

\a for Sennar & Kordofan States
\b case studies
\c Materials Production
\d Materials Production
\e training materials
\f 20 members for 1 w eek total
\g 20 members for 1 w eek total
\h this is a 100% PS activity
\i This is a 100% PS activity
\j 2 facilitators per village, 30 participant per w orkshop. 1 day w orkshop including cost of allow ances, hall charges, refreshment, w orkshop facilitated by project staff
\k 15-20 facilitators per exposure visit; 2-3 days local exposure to other villages w ith SCGs; cost includes transportation, daily allow ance, accommodation
\l 10 days per facilitator
\m In year 1 LMRP SCG manual w ill be updated incorporating LMRP experiences and lessons learnt. In year 3 this manual w ill be fine tuned based on first tw o year experiences.
\n 3 SCGs per village formed directly by the project as an entry level activity. Includes cost of the savings boxes, stationery, initial training
\o 15-20 SCG representatives per exposure visit; 1-2 days local exposure to other villages w ith SCGs; cost includes transportation, daily allow ance, accommodation
\p registration under relevant cooperative or PA law
\q Allow ance, hall charges, stationery, refreshment for 1 day ToT w orkshops (30-40 persons) at village level for training the SCG facilitators in surrounding villages.
\r Regional w orkshops for Kordofan and Sennar region in years 1 and 2. 30-40 participants
\s project grants to demonstrate financial product for supporting post harvest financing to the financial partners
\t Regional w orkshops for Kordofan and Sennar region in years 1 and 2. 30-40 participants
\u Supply of rub halls to expand local collection outreach by supporting temporary storage at collection points
\v Includes seasonal loan demonstration for 15000 farmers for the first tw o years. Av loan size SDG 2000 and 2,500 respectively for the tw o years.
\w Includes TA to the PFIs to develop and refine their business plans and harmonise w ith IAMDP needs. Develop investment estimates, cost benefit estimates and credit requirement estimates for different crop models involving the project promoted technologies.
\x Includes training on value chain financing and development of product and methodology for value chain financing for PFI staff, ABS branch staff
\y Includes incremental operations costs support, mobility support, rural branch establishment support and technology adoption support
\z Includes incremental operations costs support, mobility support, rural branch establishment support and technology adoption support
\aa Includes training on value chain financing and development of product and methodology for value chain financing
\bb National w orkshop in years 3. 2 days w orkshop for 40-50 participants. Costs include facility charges, allow ances, accommodation, refreshments, stationery charges.
\cc Rural Finance (1 Coordinator, 4 experts at State coordination levels and 10 officer at locality level (1 per locality))

Table 4.1: Project management /a - Quantities and totals including contingencies

		Quantities							Unit Cost	Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	(US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Duties & Taxes)	Taxes	Total
I. Investment Costs																				
A. I. Investment Cost																				
1. I. 1 Technical Assistance																				
Project Start-Up Workshop	Lumpsum	1	-	-	-	-	-	1	35,000	38 592	-	-	-	-	-	38 592	-	32 032	6 561	38 592
Comprehensive baseline study	Study	1	-	-	-	-	-	1	50,000	55 132	-	-	-	-	-	55 132	-	45 759	9 372	55 132
Develop KM Strategy and PIM /b	Person month	4	1	-	-	-	-	5	3,463.453	15 276	3 922	-	-	-	-	19 197	-	15 934	3 264	19 197
Conduct Annual Review and Planning Workshops	lump sum	1	1	1	1	1	1	6	6,000	6 616	6 794	6 979	7 173	7 308	7 446	42 315	-	35 122	7 194	42 315
Mid Term review	Lumpsum	-	-	1	-	-	-	1	35,000	-	-	40 712	-	-	-	40 712	-	33 791	6 921	40 712
Project Completion	Lumpsum	-	-	-	-	-	1	1	40,000	-	-	-	-	-	49 642	49 642	-	41 203	8 439	49 642
Technical and thematic studies	person month	3	2	2	3	4	2	16	5,000	16 540	11 323	11 632	17 932	24 358	12 411	94 195	-	78 182	16 013	94 195
Supervision by PSC, SCC, IFAD & Govt /p	person year	1	1	1	1	1	1	6	10,000	11 026	11 323	11 632	11 955	12 179	12 411	70 526	-	58 536	11 989	70 526
Annual Audit	number	1	1	1	1	1	1	6	7,000	7 718	7 926	8 142	8 368	8 525	8 687	49 368	-	40 975	8 393	49 368
Mechanization National Consultant	Person month	4	4	4	4	4	4	24	3,462.977	15 274	15 684	16 112	16 559	16 871	17 191	97 692	-	81 084	16 608	97 692
Crop Production National Consultant	person month	4	4	4	4	4	4	24	3,462.977	15 274	15 684	16 112	16 559	16 871	17 191	97 692	-	81 084	16 608	97 692
Agroforestry National Consultant	person month	4	4	4	4	4	4	24	3,462.977	15 274	15 684	16 112	16 559	16 871	17 191	97 692	-	81 084	16 608	97 692
Subtotal										196 721	88 341	127 434	95 106	102 982	142 171	752 754	-	624 786	127 968	752 754
2. I.2 Training																				
Training for PCU and State Level staff (External)	Person month	8	17	7	5	2	1	40	3,148.623	27 774	60 608	25 637	18 820	7 670	3 908	144 417	-	119 866	24 551	144 417
Training for PCU and State Level staff (Internal)	Person month	4	6	4	4	-	-	18	3,148.623	13 887	21 391	14 650	15 056	-	-	64 984	-	53 937	11 047	64 984
Gender sensitization training for new communities	number	-	1	-	-	-	-	1	10,000	-	11 323	-	-	-	-	11 323	-	9 398	1 925	11 323
GALS trainings for facilitators /c	number	1	1	-	-	-	-	2	20,000	22 053	22 646	-	-	-	-	44 699	-	37 100	7 599	44 699
GALS champions training /d	Course	1	1	-	-	-	-	2	10,000	11 026	11 323	-	-	-	-	22 349	-	18 550	3 799	22 349
Subtotal										74 740	127 291	40 287	33 877	7 670	3 908	287 772	-	238 851	48 921	287 772
3. I.3 Vehicles																				
PCU: 4WD Station Wagon /e	number	3	3	-	-	-	-	6	66,144	208 433	212 602	-	-	-	-	421 035	175 431	-	245 604	421 035
PCU: 4WD Double Cab /f	number	2	1	-	-	-	-	3	59,359.2	124 702	63 598	-	-	-	-	188 300	78 458	-	109 842	188 300
SIUP/LET: Hardtop 5 Doors /g	Number	2	1	-	-	-	-	3	54,271.2	114 013	58 147	-	-	-	-	172 160	71 733	-	100 426	172 160
SPIU/LET: 4WD Double Cab /h	Number	5	5	-	-	-	-	10	44,520	233 819	238 495	-	-	-	-	472 314	196 798	-	275 517	472 314
SPIU/LET: Motorbike /i	Number	10	7	-	-	-	-	17	12,720	133 611	95 398	-	-	-	-	229 009	95 420	-	133 589	229 009
Subtotal										814 578	668 240	-	-	-	-	1 482 817	617 841	-	864 977	1 482 817
4. I.4 Equipment and Furniture																				
PCU: Generator 80KVA /j	Number	2	-	-	-	-	-	2	11,300	23 739	-	-	-	-	-	23 739	23 739	-	-	23 739
Computers and accessories /k	Set	22	-	-	-	-	-	22	1,700	41 239	-	-	-	-	-	41 239	-	34 228	7 011	41 239
PCU: Photocopier /l	Number	3	-	-	-	-	-	3	3,500	11 578	-	-	-	-	-	11 578	-	9 609	1 968	11 578
Subtotal										76 555	-	-	-	-	-	76 555	23 739	43 837	8 979	76 555
Total Investment Costs										1 162 594	883 871	167 721	128 982	110 652	146 078	2 599 899	641 580	907 474	1 050 845	2 599 899

Table 4.1: Project management /a - Quantities and totals including contingencies (cont'd.)

		Quantities							Unit Cost	Totals Including Contingencies (US$)							Breakdown of Totals Incl. Cont. (US$)			
	Unit	2018	2019	2020	2021	2022	2023	Total	(US$)	2018	2019	2020	2021	2022	2023	Total	For. Exch.	Local (Excl. Duties & Taxes)	Taxes	Total
II. Recurrent Costs																				
A. Staff salaries & operating costs																				
1. II.1 Staff Salaries																				
PCU: Private Sector Expert, Marketing/Technical Team Leader (PSE) /m	Person year	1	1	1	1	1	1	6	14,300.847	15 769	16 193	16 635	17 096	17 417	17 748	100 858	-	83 712	17 146	100 858
PCU Project Coordinator	Person year	1	1	1	1	1	1	6	15,889.831	17 521	17 992	18 483	18 996	19 353	19 720	112 064	-	112 064	-	112 064
PCU M&E KM Officer	person year	1	1	1	1	1	1	6	10,593.22	11 680	11 995	12 322	12 664	12 902	13 147	74 709	-	74 709	-	74 709
PCU: Crop Production Expert (CPE)	Person year	1	1	1	1	1	1	6	10,593.22	11 680	11 995	12 322	12 664	12 902	13 147	74 709	-	62 009	12 701	74 709
PCU Finance Manager	person year	1	1	1	1	1	1	6	12,182.203	13 433	13 794	14 170	14 563	14 837	15 119	85 916	-	85 916	-	85 916
PCU: Community Development and Gender Specialist (CDGS)	person year	1	1	1	1	1	1	6	10,593.22	11 680	11 995	12 322	12 664	12 902	13 147	74 709	-	62 009	12 701	74 709
PCU Rural Finance Expert (RFE)	person year	1	1	1	1	1	1	6	10,593.22	11 680	11 995	12 322	12 664	12 902	13 147	74 709	-	62 009	12 701	74 709
PCU Procurement Officer	person year	1	1	1	1	1	1	6	10,593.22	11 680	11 995	12 322	12 664	12 902	13 147	74 709	-	74 709	-	74 709
PCU: Accountant /n	Person year	1	1	1	1	1	1	6	8,474.576	9 344	9 596	9 858	10 131	10 321	10 517	59 768	-	49 607	10 160	59 768
Subtotal										114 468	117 547	120 755	124 105	126 437	128 839	732 152	-	666 744	65 408	732 152
2. II.2 Allowances																				
Field Allowances /o	lump sum	1	1	1	1	1	1	6	7,556.674	8 332	8 556	8 790	9 034	9 203	9 378	53 294	-	44 234	9 060	53 294
Travelling Allowances /p	lump sum	1	1	1	1	1	1	6	14,000	15 437	15 852	16 285	16 736	17 051	17 375	98 736	-	81 951	16 785	98 736
Subtotal										23 769	24 408	25 075	25 770	26 254	26 753	152 030	-	126 185	25 845	152 030
3. II.3 Operating and Maintenance (M&E)																				
Vehicle O&M /q	lump sum	1	1	1	1	1	1	6	12,594.439	13 887	14 261	14 650	15 056	15 339	15 630	88 823	-	73 723	15 100	88 823
Equipment and generator operations and maintenance /r	lump sum	1	1	1	1	1	1	6	5,000	5 513	5 661	5 816	5 977	6 090	6 205	35 263	-	29 268	5 995	35 263
Guesthouse and office rent /s	Per annum	1	1	1	1	1	1	6	12,594.439	13 887	14 261	14 650	15 056	15 339	15 630	88 823	-	73 723	15 100	88 823
Documentation and media editing and advertising /t	lump sum	1	1	1	1	1	1	6	1,250	1 378	1 415	1 454	1 494	1 522	1 551	8 816	-	7 317	1 499	8 816
Subtotal										34 666	35 598	36 569	37 584	38 290	39 018	221 725	-	184 032	37 693	221 725
4. III.1 SPIU/LET: Staff Salary																				
SPIU: State Project Coordinator	Person year	4	4	4	4	4	4	24	13,241.525	58 402	59 973	61 610	63 319	64 509	65 734	373 547	-	310 044	63 503	373 547
SPIU: Private Sector Specialist/Unit Leader (PSS)	Person year	4	4	4	4	4	4	24	11,546.61	50 927	52 297	53 724	55 214	56 252	57 320	325 733	-	270 358	55 375	325 733
SPIU: Community and gender officer	Person year	4	4	4	4	4	4	24	6,885.593	30 369	31 186	32 037	32 926	33 545	34 182	194 244	-	161 223	33 022	194 244
Accountant and Procurement Assistants	Person Year	8	8	8	8	8	8	48	6,000	52 926	54 350	55 833	57 382	58 460	59 571	338 523	-	280 974	57 549	338 523
SPIU/LET: Accountants /u	Person year	4	4	4	4	4	4	24	6,885.593	30 369	31 186	32 037	32 926	33 545	34 182	194 244	-	161 223	33 022	194 244
Subtotal										253 363	260 178	267 278	274 693	279 854	285 171	1 620 536	-	1 345 045	275 491	1 620 536
5. III.2 SPIU/LET Staff allowances																				
SPIU/LET: Field Allowances /v	lump sum	1	1	1	1	1	1	6	14,483.633	15 970	16 400	16 847	17 315	17 640	17 975	102 147	-	84 782	17 365	102 147
Travelling Allowances /w	lump sum	1	1	1	1	1	1	6	7,000	7 718	7 926	8 142	8 368	8 525	8 687	49 368	-	40 975	8 393	49 368
Subtotal										23 689	24 326	24 990	25 683	26 165	26 662	151 515	-	125 757	25 758	151 515
6. III.3 SPIU/LET Operating and Maintenance																				
Vehicle O&M /x	lump sum	4	4	4	4	4	4	24	11,964.725	52 771	54 190	55 669	57 214	58 288	59 396	337 528	-	280 148	57 380	337 528
Total Recurrent Costs										502 726	516 248	530 335	545 049	555 290	565 839	3 215 486	-	2 727 911	487 575	3 215 486
Total										1 665 320	1 400 119	698 056	674 031	665 942	711 917	5 815 385	641 580	3 635 385	1 538 420	5 815 385

\a for Sennar & Kordofan States
\b 3 pm for Developing KM Strategy and 2 pm for Project Implementation Manual (PIM)
\c IAMDP staff and extension teams to become GALS - each training 15 participants
\d Each facilitator will in turn train five GALS champions in each farmer producer organization
\e for PCU
\f For PCU
\g State and locality extension teams level
\h State and locality extension teams level
\i State and locality extension teams level
\j 2 generators for PCU only
\k 7 for PCU/ 15 for State & Locality Extension levels
\l 3 for PCU only
\m PCU
\n PCU
\o PCU staff
\p PCU staff
\q PCU
\r PCU: $3,000 Equipment & $2,000 generator (O&M)
\s PCU
\t PCU: $500 Documentation and media editing and $750 advertising
\u State level staff salary (Sennar State and North, South and West Kordofan States)
\v State and Locality level
\w State and Locality level
\x State and locality level (Sennar State and North, South and West Kordofan States)

Table 4.2: Project management /a - – Expenditures by financiers

	Expenditures by Financiers (US$)													
	IFAD							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
I. Investment Costs														
A. I. Investment Cost														
1. I. 1 Technical Assistance														
Project Start-Up Workshop	32 032	-	-	-	-	-	32 032	6 561	-	-	-	-	-	6 561
Comprehensive baseline study	45 759	-	-	-	-	-	45 759	9 372	-	-	-	-	-	9 372
Develop KM Strategy and PIM /b	12 679	3 255	-	-	-	-	15 934	2 597	667	-	-	-	-	3 264
Conduct Annual Review and Planning Workshops	5 491	5 639	5 793	5 953	6 065	6 180	35 122	1 125	1 155	1 186	1 219	1 242	1 266	7 194
Mid Term review	-	-	33 791	-	-	-	33 791	-	-	6 921	-	-	-	6 921
Project Completion	-	-	-	-	-	41 203	41 203	-	-	-	-	-	8 439	8 439
Technical and thematic studies	13 728	9 398	9 654	14 884	20 218	10 301	78 182	2 812	1 925	1 977	3 048	4 141	2 110	16 013
Supervision by PSC, SCC, IFAD & Govt /p	9 152	9 398	9 654	9 922	10 109	10 301	58 536	1 874	1 925	1 977	2 032	2 070	2 110	11 989
Annual Audit	6 406	6 579	6 758	6 946	7 076	7 211	40 975	1 312	1 347	1 384	1 423	1 449	1 477	8 393
Mechanization National Consultant	12 677	13 018	13 373	13 744	14 003	14 269	81 084	2 597	2 666	2 739	2 815	2 868	2 922	16 608
Crop Production National Consultant	12 677	13 018	13 373	13 744	14 003	14 269	81 084	2 597	2 666	2 739	2 815	2 868	2 922	16 608
Agroforestry National Consultant	12 677	13 018	13 373	13 744	14 003	14 269	81 084	2 597	2 666	2 739	2 815	2 868	2 922	16 608
Subtotal	163 278	73 323	105 770	78 938	85 475	118 002	624 786	33 442	15 018	21 664	16 168	17 507	24 169	127 968
2. I.2 Training														
Training for PCU and State Level staff (External)	23 053	50 305	21 279	15 621	6 366	3 243	119 866	4 722	10 303	4 358	3 199	1 304	664	24 551
Training for PCU and State Level staff (Internal)	11 526	17 755	12 159	12 497	-	-	53 937	2 361	3 636	2 490	2 560	-	-	11 047
Gender sensitization training for new communities	-	9 398	-	-	-	-	9 398	-	1 925	-	-	-	-	1 925
GALS trainings for facilitators /c	18 304	18 796	-	-	-	-	37 100	3 749	3 850	-	-	-	-	7 599
GALS champions training /d	9 152	9 398	-	-	-	-	18 550	1 874	1 925	-	-	-	-	3 799
Subtotal	62 035	105 651	33 438	28 118	6 366	3 243	238 851	12 706	21 639	6 849	5 759	1 304	664	48 921
3. I.3 Vehicles														
PCU: 4WD Station Wagon /e	86 847	88 584	-	-	-	-	175 431	121 586	124 018	-	-	-	-	245 604
PCU: 4WD Double Cab /f	51 959	26 499	-	-	-	-	78 458	72 743	37 099	-	-	-	-	109 842
SIUP/LET: Hardtop 5 Doors /g	47 505	24 228	-	-	-	-	71 733	66 508	33 919	-	-	-	-	100 426
SPIU/LET: 4WD Double Cab /h	97 425	99 373	-	-	-	-	196 798	136 394	139 122	-	-	-	-	275 517
SPIU/LET: Motorbike /i	55 671	39 749	-	-	-	-	95 420	77 940	55 649	-	-	-	-	133 589
Subtotal	339 407	278 433	-	-	-	-	617 841	475 170	389 807	-	-	-	-	864 977
4. I.4 Equipment and Furniture														
PCU: Generator 80KVA /j	19 703	-	-	-	-	-	19 703	4 036	-	-	-	-	-	4 036
Computers and accessories /k	34 228	-	-	-	-	-	34 228	7 011	-	-	-	-	-	7 011
PCU: Photocopier /l	9 609	-	-	-	-	-	9 609	1 968	-	-	-	-	-	1 968
Subtotal	63 541	-	-	-	-	-	63 541	13 014	-	-	-	-	-	13 014
Total Investment Costs	628 261	457 407	139 209	107 055	91 841	121 245	1 545 018	534 333	426 464	28 513	21 927	18 811	24 833	1 054 881

Table 4.2: Project management /a - – Expenditures by financiers (cont'd.)

	Expenditures by Financiers (US$)													
	IFAD							Government						
	2018	2019	2020	2021	2022	2023	Total	2018	2019	2020	2021	2022	2023	Total
II. Recurrent Costs														
A. Staff salaries & operating costs														
1. II.1 Staff Salaries														
PCU: Private Sector Expert, Marketing/Technical Team Leader (PSE) /m	13 088	13 440	13 807	14 190	14 456	14 731	83 712	2 681	2 753	2 828	2 906	2 961	3 017	17 146
PCU Project Coordinator	14 542	14 933	15 341	15 766	16 063	16 368	93 013	2 979	3 059	3 142	3 229	3 290	3 352	19 051
PCU M&E KM Officer	9 695	9 956	10 227	10 511	10 708	10 912	62 009	1 986	2 039	2 095	2 153	2 193	2 235	12 701
PCU: Crop Production Expert (CPE)	9 695	9 956	10 227	10 511	10 708	10 912	62 009	1 986	2 039	2 095	2 153	2 193	2 235	12 701
PCU Finance Manager	11 149	11 449	11 761	12 088	12 315	12 549	71 310	2 284	2 345	2 409	2 476	2 522	2 570	14 606
PCU: Community Development and Gender Specialist (CDGS)	9 695	9 956	10 227	10 511	10 708	10 912	62 009	1 986	2 039	2 095	2 153	2 193	2 235	12 701
PCU Rural Finance Expert (RFE)	9 695	9 956	10 227	10 511	10 708	10 912	62 009	1 986	2 039	2 095	2 153	2 193	2 235	12 701
PCU Procurement Officer	9 695	9 956	10 227	10 511	10 708	10 912	62 009	1 986	2 039	2 095	2 153	2 193	2 235	12 701
PCU: Accountant /n	7 756	7 964	8 182	8 409	8 567	8 729	49 607	1 589	1 631	1 676	1 722	1 755	1 788	10 160
Subtotal	95 009	97 564	100 227	103 007	104 943	106 936	607 686	19 460	19 983	20 528	21 098	21 494	21 903	124 466
2. II.2 Allowances														
Field Allowances /o	6 916	7 102	7 296	7 498	7 639	7 784	44 234	1 416	1 455	1 494	1 536	1 565	1 594	9 060
Travelling Allowances /p	12 813	13 157	13 516	13 891	14 152	14 421	81 951	2 624	2 695	2 768	2 845	2 899	2 954	16 785
Subtotal	19 728	20 259	20 812	21 389	21 791	22 205	126 185	4 041	4 149	4 263	4 381	4 463	4 548	25 845
3. II.3 Operating and Maintenance (M&E)														
Vehicle O&M /q	11 526	11 836	12 159	12 497	12 731	12 973	73 723	2 361	2 424	2 490	2 560	2 608	2 657	15 100
Equipment and generator operations and maintenance /r	4 576	4 699	4 827	4 961	5 054	5 150	29 268	937	962	989	1 016	1 035	1 055	5 995
Guesthouse and office rent /s	11 526	11 836	12 159	12 497	12 731	12 973	73 723	2 361	2 424	2 490	2 560	2 608	2 657	15 100
Documentation and media editing and advertising /t	1 144	1 175	1 207	1 240	1 264	1 288	7 317	234	241	247	254	259	264	1 499
Subtotal	28 772	29 546	30 353	31 195	31 781	32 385	184 032	5 893	6 052	6 217	6 389	6 509	6 633	37 693
4. III.1 SPIU/LET: Staff Salary														
SPIU: State Project Coordinator	48 474	49 778	51 136	52 555	53 542	54 559	310 044	9 928	10 195	10 474	10 764	10 966	11 175	63 503
SPIU: Private Sector Specialist/Unit Leader (PSS)	42 269	43 406	44 591	45 828	46 689	47 576	270 358	8 658	8 890	9 133	9 386	9 563	9 744	55 375
SPIU: State M&E and Knowledge	25 206	25 884	26 591	27 328	27 842	28 371	161 223	5 163	5 302	5 446	5 597	5 703	5 811	33 022
SPIU: Community and gender officer	25 206	25 884	26 591	27 328	27 842	28 371	161 223	5 163	5 302	5 446	5 597	5 703	5 811	33 022
Accountant and Procurement Assistants	43 929	45 111	46 342	47 627	48 522	49 444	280 974	8 998	9 240	9 492	9 755	9 938	10 127	57 549
SPIU/LET: Accountants /u	25 206	25 884	26 591	27 328	27 842	28 371	161 223	5 163	5 302	5 446	5 597	5 703	5 811	33 022
Subtotal	210 291	215 948	221 840	227 995	232 279	236 692	1 345 045	43 072	44 230	45 437	46 698	47 575	48 479	275 491
5. III.2 SPIU/LET Staff allowances														
SPIU/LET: Field Allowances /v	13 255	13 612	13 983	14 371	14 641	14 919	84 782	2 715	2 788	2 864	2 943	2 999	3 056	17 365
Travelling Allowances /w	6 406	6 579	6 758	6 946	7 076	7 211	40 975	1 312	1 347	1 384	1 423	1 449	1 477	8 393
Subtotal	19 662	20 190	20 741	21 317	21 717	22 130	125 757	4 027	4 135	4 248	4 366	4 448	4 533	25 758
6. III.3 SPIU/LET Operating and Maintenance														
Vehicle O&M /x	43 800	44 978	46 205	47 487	48 379	49 299	280 148	8 971	9 212	9 464	9 726	9 909	10 097	57 380
Total Recurrent Costs	417 262	428 486	440 178	452 391	460 890	469 646	2 668 853	85 463	87 762	90 157	92 658	94 399	96 193	546 633
Total	1 045 523	885 893	579 387	559 446	552 731	590 891	4 213 872	619 796	514 226	118 670	114 585	113 210	121 026	1 601 513

\a for Sennar & Kordofan States
\b 3 pm for Developing KM Strategy and 2 pm for Project Implementation Manual (PIM)
\c IAMDP staff and extension teams to become GALS - each training 15 participants
\d Each facilitator will in turn train five GALS champions in each farmer producer organization
\e for PCU
\f For PCU
\g State and locality extension teams level
\h State and locality extension teams level
\i State and locality extension teams level
\j 2 generators for PCU only
\k 7 for PCU/ 15 for State & Locality Extension levels
\l 3 for PCU only
\m PCU
\n PCU
\o PCU staff
\p PCU staff
\q PCU
\r PCU: $3,000 Equipment & $2,000 generator (O&M)
\s PCU
\t PCU: $500 Documentation and media editing and $750 advertising
\u State level staff salary (Sennar State and North, South and West Kordofan States)
\v State and Locality level
\w State and Locality level
\x State and locality level (Sennar State and North, South and West Kordofan States)

Appendix 10: Economic and financial analysis

EFA Assumptions

Items	Data collection	Project years					
	2017	2018	2019	2020	2021	2022	2023
	PY0	PY1	PY2	PY3	PY4	PY5	PY6
Inflation Rates:							
National[1]	35%	14%	12%	10%	8%	8%	8%
International	2%	2%	2%	2%	2%	2%	2%
Exchange rate:[2]							
Indicative Exchange Rate (IER)	18.88	21.15	23.26	25.12	26.63	28.23	29.92
Shadow Exchange Rate (SER)	22.35	24.62	26.73	28.59	30.35	32.23	34.25
Standard Conversion Factor (SCF)	0.84	0.86	0.87	0.88	0.88	0.89	0.89
Shadow exchange rate factor (SERF)	1.18	1.17	1.15	1.14	1.14	1.13	1.12
Taxes and Duties:[3]							
Value added Tax (VAT)	17%	17%	17%	17%	17%	17%	17%
Custom Duties	140%	140%	140%	140%	140%	140%	140%
Port fees (SDG)	10%	10%	10%	10%	10%	10%	10%

1) Inflation: All the available inflation estimates are based on the historical data before 2017. Starting from 2017, the Government of Sudan established the concept of indicative exchange rate with an incentive of 123.72%, which increased the inflation rates in the last 6 months to about 34%. As per IMF Khartoum Office projections, it is expected that it will go down to 14% in 2018 to settle at 8% per year in the medium run.

2) Exchange rate: The Government of Sudan established the concept of indicative exchange rate with an incentive of 123.72%. The Central bank controls the levels of the indicative exchange rate. It is assumed that the exchange rate from 2018 will change as the difference between the national and the international inflation rates.

3) Taxes and Duties: the actual rates that applied by the Government of Sudan are applied.

A. Financial analysis of the project

1. Both the financial and economic analyses are based on four crop budgets and three farm budgets. The four crops are sesame, sorghum, groundnuts and gum Arabic. The three farm budgets are based on 5 feddans, 10 feddans and 15 feddans farm sizes. The financial analysis was applied to estimate the value of production suits the inputs and labor costs. Three models targeted productivity and marketing improvements in the four states, i.e. Sinnar, South Kordofan, West Kordofan, and North Kordofan. The four states are categorized into two sets according to their similarity.

2. Sinnar and South Kordofan are relatively close in terms of soil (heavier more fertile soils), cropping patterns, rainfall, and distance to markets. They both are generally higher potential agricultural areas. One set of crop models for both states are proposed. There will not be important differences between them. The following is the proposed three models

(a) Model 1 (model of 5 feddans farm) planted by 2.08 feddans of sesame, 2.0 feddans of sorghum, 0.90 feddan of groundnut and 0.02 feddan of high yield variety gum Arabic.

(b) Model 2 (model of 10 feddans farm) planted by 4.16 feddans of sesame, 4.00 feddans of sorghum, 1.80 feddans of groundnut and 0.04 feddan of high yield variety gum Arabic.

(c) Model 3 (model of 15 feddans farm) planted by 6.24 feddans of sesame, 6.00 feddans of sorghum, 2.70 feddans of groundnut and 0.06 feddan of high yield variety gum Arabic.

Table 3: Three models based on farm budgets in Sinnar and South Kordofan

Model	Sesame	Sorghum	Groundnut	Gum Arabic
	feddan	feddan	feddan	feddan
1. Five feddans	2.08	2.00	0.90	0.02
2. Ten feddans	4.16	4.00	1.80	0.04
3. Fifteen feddans	6.24	6.00	2.70	0.06

3. Similarly, West Kordofan and North Kordofan have very similar soil types (lighter sandy soils), cropping patterns, rainfall, and market access. They are both generally lower potential agricultural areas. So one set of models has been created for both states, there are not important differences between them.

(a) Model 1 (model of 5 feddans farm) planted by 2.50 feddans of sesame, 0.48 feddan of sorghum, 2.00 feddans of groundnut and 0.02 feddan of high yield variety gum Arabic.

(b) Model 2 (model of 10 feddans farm) planted by 5.00 feddans of sesame, 0.96 feddan of sorghum, 4.00 feddans of groundnut and 0.04 feddan of high yield variety gum Arabic.

(c) Model 3 (model of 15 feddans farm) planted by 7.50 feddans of sesame, 1.44 feddans of sorghum, 6.00 feddans of groundnut and 0.06 feddan of high yield variety gum Arabic.

Table 4: Three models based on farm budgets in West and North Kordofan

Model	Sesame	Sorghum	Groundnut	Gum Arabic
	feddan	feddan	feddan	feddan
1. Five feddans	2.50	0.48	2.00	0.02
2. Ten feddans	5.00	0.96	4.00	0.04
3. Fifteen feddans	7.50	1.44	6.00	0.06

Source: Estimated using the best area combination of the four crops that yield high returns in light of the data from Agricultural Statistics Administration; General Administration for Planning and agricultural economics; Ministry of Agriculture and field visit to Sinnar and Kordofan States in March 2017 and August 2017.

4. In the “with project” situation, per unit crop technical parameters are assumed to augment due to project interventions at the farm level through enhancing competitiveness of smallholder crop production (enhancing productivity and marketing activities).

5. All activities developed by IAMDP are expected to increase from the “without project – WOP” to the “with project – WP” situation. The use of the improved seeds varieties and the mechanization of the agricultural operations will increase the yield with different levels as described in Table 5. The first

column of the table includes the results of the available research about the improved crops of the project. It has been decided not to use the full percentage supplied by the researchers. Then it is reduced in most of the crops to less than half as shown in the second column in Table 5. The third column includes the self-consumption of the proposed crops. It was obtained from earlier studies to enhance the analysis.

Table 5: Crop growth rates (GR) as a result of improved production and marketing and the use of appropriate mechanization and assumed self-consumptions for selected crops

Crop	GR Recommended by Researchers	Used GR	Self-consumption
Sesame	50%	20%	1%
Sorghum	43%	20%	90%
Ground Nuts	20%	20%	1%
Gum Arabic	60%	20%	1%

Source: Field visit to Sinnar and Kordofan States in March 2017.

6. The above mentioned three models in Table 3 and Table 4 are estimated using crop budgets of the four crops in Table 5 according to the proposed productivity and marketing improvement activities under the project. The improved seeds/seedlings will be applied on the selected four crops. The mechanization and storage improvement activities will be applied on sesame, sorghum and groundnuts. The marketing of Gum Arabic will be improved though associations that will arrange for collecting the gum Arabic in large quantities that fit with the needs of wholesalers.

Table 6: Four models based on crop budgets

Activity	Objective	Sesame	Sorghum	Groundnut	Gum Arabic
1. Improved seeds/seedlings	Productivity improvement	√	√	√	√
2. Mechanization		√	√	√	
3. Storage improvement	Marketing improvement	√	√	√	
4. Sell directly to wholesalers					√*

Source: Field visit to Sennar and Kordofan States in March and August 2017.
* Selling to wholesalers directly is usually done by an association to collect large quantities to a wholesale market.

7. The adoption rate of all models is 20% annually starting from the second year of the project, i.e. first year: zero adoption, second year: 20% adoption, third year: 40% adoption, fourth year: 60%, and fifth year: 80%. This rate is used in building all of the models including the cost benefit analysis of the crop budgets and the farm budgets. This is a conservative method that provides good level of accuracy during implementation.

8. The three models will be implemented to serve a total of 27,000 households in the four states. The first model (5 feddans per household) presents 20% of the total households (5,400 HH) and will serve 27,000 feddans. The second model (10 feddans per household) presents 40% of the total households (10,800 HH) and will serve 108,000 feddans. The third model (15 feddans per household) presents 40% of the total households (10,800 HH) and will serve 162,000 feddans.

Table 7: Distribution of the households and area according to the project models

Models	% of Household	Total Area (feddan)	# of Households
Model 1: 5 feddans/HH	20%	27,000	5,400
Model 2: 10 feddans/HH	40%	108,000	10,800
Model 3: 15 feddans/HH	40%	162,000	10,800
Total project	100%	297,000	27,000

Source: Project design team estimates

9. The first set of the three models will be implemented to serve total of 22,170 households in Sennar and South Kordofan. The first model (5 feddans per household) presents 20% of the total households (4,434 HH) and will serve 22,170 feddans. The second model (10 feddans per household) presents 40% of the total households (8,868 HH) and will serve 88,680 feddans. The third model (15

feddans per household) presents 40% of the total households (8,868 HH) and will serve 133,020 feddans.

Table 8: Distribution of the project area/beneficiaries in Sennar and South Kordofan

Models	% of Household	Total Area (feddan)	# of Households
Model 1: 5 feddans/HH	20%	22,170	4,434
Model 2: 10 feddans/HH	40%	88,680	8,868
Model 3: 15 feddans/HH	40%	133,020	8,868
Total project	100%	243,870	22,170

Source: Project design team estimates

10. The second set of the three models will be implemented to serve total of 4,830 households in West & North Kordofan. The first model (5 feddans per household) presents 20% of the total households (966 HH) and will serve 4,830 feddans. The second model (10 feddans per household) presents 40% of the total households (1,932 HH) and will serve 19,320 feddans. The third model (15 feddans per household) presents 40% of the total households (1,932 HH) and will serve 28,980 feddans.

Table 9: Distribution of the project area/beneficiaries in West & North Kordofan

Models	% of Household	Total Area (feddan)	# of Households
Model 1: 5 feddans/HH	20%	4,830	966
Model 2: 10 feddans/HH	40%	19,320	1,932
Model 3: 15 feddans/HH	40%	28,980	1,932
Total project	100%	53,130	4,830

Source: Project design team estimates

11. Table 10 includes the farm gate prices for main and secondary crops for the proposed crops. Only gum Arabic has its wholesale market price because gum Arabic can be handled as small amount with high value.

Table 10: Crops Farm Gate (FGP) prices for main and secondary crops in Sinnar and South Kordofan

Crop	Main Crop	Secondary Crop	
	FGP*		
	SDG/kg	SDG/Unit	Unit
Sesame	7.90	8.0	Sack
Sorghum	3.30	250	feddan
Ground Nuts	12.10	12.1	Sack
Gum Arabic	18.90		
Gum Arabic (Wholesale Market)	35.00		

Source: Field visit to Sinnar States in March and August 2017.
* All prices are at farm level except the last price for Gum Arabic (at the bottom of the column) is price at wholesale market.

Table 11: Crops Farm Gate (FGP) prices for main and secondary crops in West and South Kordofan

Crop	Main Crop	Secondary Crop	
	FGP*		
	SDG/kg	SDG/Unit	Unit
Sesame	7.30	8	Sack
Sorghum	3.01	250	feddan
Ground Nuts	11.90	12.1	Sack
Gum Arabic	17.70		
Gum Arabic (Wholesale Market)	35.00		

Source: Field visit to Kordofan States in March and August 2017.
* All prices are at farm level except the last price for Gum Arabic (at the bottom of the column) is price at wholesale market.

12. IAMDP will create more than 3 million work-days of casual labor to work in the project area (297,000 feddans – see Table 6 above), i.e. more than 32,000 annual jobs of casual labor[34] during the five years of the project. Ranking the four crops based on their job creation: sesame is the highest (more than 2.7 million work-days), sorghum come second (more than 1.7 million work-days), then groundnut is the third (more than 0.2 million work-days), and gum Arabic is the lowest one that generates casual labor (about 0.2 million work-days). Table 12 and Table 13 include a redistribution of the total number of casual/work-days by model.

Table 12: Total number of casual labor for the three models, by model (person'000/day)

Model	1	2	3	4	5	6-10
Sesame	2,706	2,775	2,843	2,911	2,979	2,979
sorghum	1,741	1,779	1,817	1,855	1,893	1,893
Groundnuts	260	264	267	271	275	275
Sum Arabic	2.26	1.07	1.07	1.66	1.19	1.19
Total	4,710	4,818	4,928	5,038	5,148	5,148

Source: estimated as a result of interviews during field visit to Sinnar and Kordofan States in March 2017

Table 13: Total number of casual labor for the three models, by model (person'000/season)

Model	1	2	3	4	5-10
Total Model 1	2.9	3.0	3.1	3.1	3.2
Total Model 2	11.7	12.0	12.3	12.5	12.8
Total Model 3	17.6	18.0	18.4	18.8	19.2
Total Project	32.3	33.0	33.8	34.5	35.3

Source: estimated as a result of interviews during field visit to Sinnar and Kordofan States in March 2017
* A season days of work is 146 workdays

13. Table 14 and table 15 include the financial analysis for the proposed four crops. The analysis of sesame and groundnuts included crop production and storage improvements. However, storage is not considered in the case of sorghum because more than 90% of the crop is self-consumption. In the case of gum Arabic, marketing improvement is considered, i.e. the farmers through their association can benefit from the higher price in the wholesale markets.

Table 14: Financial Analysis for crop production in Sinnar and South Kordofan

Crop Production	Sesame	Sorghum	Groundnuts	Gum Arabic
Return to family labour*	72	(14)	185	1,854
Discount rate	12%	12%	12%	12%
NPV @ 0.12	72	236	473	1,323
FIRR	16%	19%	42%	28%
NPV_b	548	656	577	2,746
NPV_c	476	421	104	1,422
B/C ratio	1.15	1.56	5.53	1.93
Incremental net benefits (yr6)	278	342	257	779

Source: Economic and Financial Analysis
* consider full development year family labor requirements

[34] Created jobs are estimated by assuming that a season requires 146 of work days.

Table 15: Financial Analysis for Storage and marketing improvement in Sinnar and South Kordofan

Storage/marketing enhancement	Sesame	Sorghum	Groundnuts	Gum Arabic
Return to family labour*	(14)		129	2,565
Discount rate	12%		12%	12%
NPV @ 0.12	751		709	836
FIRR	39%		42%	23%
NPVb	926		643	2,270
NPVc	175		(67)	1,434
B/C ratio	5.29		(9.64)	1.58

Source: Economic and Financial Analysis
* consider full development year family labor requirements
** about 90% of sorghum is for self-consumption

Table 16: Financial Analysis for crop production in West and North Kordofan

Crop Production	Sesame	Sorghum	Groundnuts	Gum Arabic
Return to family labour*	78	(14)	181	1,854
Discount rate	12%	12%	12%	12%
NPV @ 0.12	56	(11)	359	1,323
FIRR	19%	12%	38%	28%
NPV_b	739	539	514	2,746
NPV_c	683	550	155	1,422
B/C ratio	1.08	0.98	3.33	1.93
Incremental net benefits (yr6)	239	342	228	740

Source: Economic and Financial Analysis
* consider full development year family labor requirements

Table 17: Financial Analysis for Storage and marketing improvement in West and North Kordofan

Storage/marketing enhancement	Sesame	Sorghum	Groundnuts	Gum Arabic
Return to family labour*	(18)		126	2,565
Discount rate	12%		12%	12%
NPV @ 0.12	556		577	836
FIRR	36%		38%	23%
NPVb	1,007		582	2,270
NPVc	450		5	1,434
B/C ratio	2.24		120	1.58

Source: Economic and Financial Analysis
* consider full development year family labor requirements
** about 90% of sorghum is for self-consumption

B. Economic analysis of the project

14. **Cost-benefit streams.** The objectives of the economic analysis are: (i) to assess the overall program viability; and (ii) to estimate the program impact by estimating the economic rate of return (EIRR) and the economic net present value ((ENPV). The computation of economic costs is derived from financial project costs, by excluding transfers such as duties, taxes, and price contingencies.

15. The cost benefit streams were obtained from crop production in four states of Sudan: Sinnar, North Kordofan, West Kordofan, and South Kordofan. The streams of incremental benefits show highly profitable cash crops especially with high yield varieties and the use of mechanization and better storage processes.

16. **Assumptions.** The economic analysis consists of aggregating all project costs and projected benefits from the three models of sesame, sorghum, groundnuts and gum Arabic and improving their

storage and marketing facilities in order to evaluate project impact. Details of the Economic analysis are presented in Annexes. The following assumptions were used:

(a) Inflation. All the available inflation estimates are based on the historical data before 2017. Starting from 2017, the Government of Sudan established the concept of indicative exchange rate with an incentive of 123.72%, which increased the inflation rates in the last 6 months to about 34%. It is expected that it will go down for a while and then go back again once the Government has a dramatic change in the indicative exchange rate again.

(b) The price contingencies are excluded from the economic analysis but physical contingencies are included. Flexible exchange rates per USD have been adopted for the next six years lifetime of the project. The indicative exchange rate is estimated using August 2017 indicative exchange rate (SDG 18.88) adjusted by the difference between the national and international inflation rates through the proposed lifetime of the project also, the project cost re-estimated using the calculated shadow exchange rate for the 6 years of the project (see Table 18).

(c) The non-tradable resources including labour wages are discounted using standard conversion factor (SCF). The shadow exchange rate factor (SERF) is used to adjust the traded inputs. The tradable outputs are estimated using the adjusted shadow exchange rates (SER).

Table 18: Inflation rates and estimated exchange rates

Items	Data collection	Project years					
	2017	2018	2019	2020	2021	2022	2023
	PY0	PY1	PY2	PY3	PY4	PY5	PY6
Inflation Rates:							
National	35%	14%	12%	10%	8%	8%	8%
International	2%	2%	2%	2%	2%	2%	2%
Exchange rate:							
Indicative Exchange Rate (IER)	18.88	21.15	23.26	25.12	26.63	28.23	29.92
Shadow Exchange Rate (SER)	22.35	24.62	26.73	28.59	30.35	32.23	34.25
Standard Conversion Factor (SCF)	0.84	0.86	0.87	0.88	0.88	0.89	0.89
Shadow exchange rate factor (SERF)	1.18	1.17	1.15	1.14	1.14	1.13	1.12

17. The main sources of quantified benefits of IAMDP are expected to be: (i) improved production and productivity of the three models (four crops) due to the application of improved inputs and improved agricultural mechanization; (ii) improved storage facilities for sesame, sorghum, and groundnuts; and (iii) improved sales of gum Arabic to be sold to wholesalers and benefit from the price differences. This recommended to be implemented through associations because the association can collect larger amount of gum Arabic to fit with the needs of wholesalers and to have higher power of bargaining.

Table 19: Economic prices, world prices and HS codes for the four crops

Crop	Economic Price at Farm Gate (SDG/kg)*	World Price $/Ton	HS Code
Sesame	29.51	$1,128.8	120740
Sorghum	10.18	$179.2	1007
Ground Nuts	36.34	$1,434.7	1508
Gum Arabic	41.79	$1,678.4	130120
Gum Arabic (Wholesale Market)	45.96	$1,678.4	130120

Source: UN Com-trade database.

* Economic prices derived from world prices using the shadow exchange rate.

18. The base case of the EIRR and the sensitivity analyses on investment in the IAMDP project area over 20 years are estimated in Table 20. The sensitivity analysis shows that the project is still feasible even the investment costs increased by 10%, cost of production increased by 10% and the revenue decreased by 10%.

Table 20: EIRR base cases and sensitivity analyses

IRR	Base case	Investment Costs increased by 10%	Cost of production increased by 10%	Revenue decreased by 10%
EIRR	20.54%	19.2%	19.5%	16.2%

Source: Economic and Financial Analysis.

19. The risk of delay in benefit was tested for one, two, and three years. The project is still feasible as the EIRR is respectively, 17.0%, 14.2%, but it can be an issue if the project benefits are delayed for three years the EIRR will reach 11.9% (Table 21).

Table 21: The risk of delay in benefits

IRR	Base case	Revenue lagged:		
		one year	two years	three years
EIRR	20.54%	17.0%	14.2%	11.9%

Source: Economic and Financial Analysis.

Annex 1: Crops Financial Analyses

Sesame Financial Analysis

Sinnar & South Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Sesame	Kg	7.9	220	220	229	238	246	255	255	255	255	255	255
Fodder	sack	8.0	10	10	10	10	10	10	10	10	10	10	10
Self-consumption	Kg	7.9	2	2	2	2	2	3	3	3	3	3	3
Operating costs													
Land preparation (Sub-soil plow)	per feddan	80	0			1			1			1	
Seeds (traditional)	kg	20	2										
Seeds (improved)	kg	30		2	2	2	2	2	2	2	2	2	2
Land cleaning/preparation	per feddan	50	1						0	0	0	0	0
Planting	per feddan	50	1	1	1	1	1	1	1	1	1	1	1
Weeding 1	per feddan	50	3	3	3	3	3	3	3	3	3	3	3
Weeding 2	per feddan	50	2	2	2	2	2	2	2	2	2	2	2
Harvesting	per Sack	160	3	3.00	3.12	3.24	3.36	3.48	3.48	3.48	3.48	3.48	3.48
Threshing	sack	10	3	3.00	3.12	3.24	3.36	3.48	3.48	3.48	3.48	3.48	3.48
Empty sacks	sack	25	3	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Loading and Transportation	sack	10	3	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Zakat	%	10%	1,738	1,217	1,808	1,877	1,947	2,016	2,016	2,016	2,016	2,016	2,016
Labour													
Land cleaning	pers.day	S/F	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	pers.day	S/F	1.3	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Weeding	pers.day	S/F	6.3	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
Harvesting	pers.day	S/F	12.0	12.00	12.48	12.96	13.44	13.92	13.92	13.92	13.92	13.92	13.92
Thershing	pers.day	S/F	0.8	0.75	0.78	0.81	0.84	0.87	0.87	0.87	0.87	0.87	0.87
Sub-total labour days			22	20.25	20.76	21.27	21.78	22.29	22.29	22.29	22.29	22.29	22.29
Skilled (paid) labour (S)	pers.day	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Family labour (F)	pers.day	40	22	20.25	20.76	21.27	21.78	22.29	22.29	22.29	22.29	22.29	22.29

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Sesame	1,738	1,217	1,808	1,877	1,947	2,016	2,016	2,016	2,016	2,016	2,016
Fodder	80	80	80	80	80	80	80	80	80	80	80
Self-consumption	17	17	18	19	19	20	20	20	20	20	20
Total revenue	1,818	1,297	1,888	1,957	2,027	2,096	2,096	2,096	2,096	2,096	2,096
Total sales	1,801	1,279	1,869	1,938	2,007	2,076	2,076	2,076	2,076	2,076	2,076
Operating input costs											
Land preparation (Sub-soil plow)	0	0	0	80	0	0	80	0	0	80	0
Seeds (traditional)	40	0	0	0	0	0	0	0	0	0	0
Seeds (improved)	0	60	60	60	60	60	60	60	60	60	60
Land cleaning/preparation	50	0	0	0	0	0	0	0	0	0	0
Planting	50	50	50	50	50	50	50	50	50	50	50
Weeding 1	150	150	150	150	150	150	150	150	150	150	150
Weeding 2	100	100	100	100	100	100	100	100	100	100	100
Harvesting	480	480	499	518	538	557	557	557	557	557	557
Threshing	30	30	31	32	34	35	35	35	35	35	35
Empty sacks	75	75	100	100	100	100	100	100	100	100	100
Loading and Transportation	30	30	40	40	40	40	40	40	40	40	40
Zakat	174	122	181	188	195	202	202	202	202	202	202
Sub-total operating costs	*1,179*	*1,097*	*1,211*	*1,319*	*1,266*	*1,293*	*1,373*	*1,293*	*1,293*	*1,373*	*1,293*
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	860	810	830	851	871	892	892	892	892	892	892
Sub-total labour costs	*860*	*810*	*830*	*851*	*871*	*892*	*892*	*892*	*892*	*892*	*892*
Total production costs without family labour	*319*	*287*	*381*	*468*	*395*	*402*	*482*	*402*	*402*	*482*	*402*
Total production costs with family labour	*1,179*	*1,097*	*1,211*	*1,319*	*1,266*	*1,293*	*1,373*	*1,293*	*1,293*	*1,373*	*1,293*
Income (after labour costs)	**639**	**200**	**676**	**639**	**761**	**803**	**723**	**803**	**803**	**723**	**803**
Incremental net income	639	(439)	37	(1)	122	164	84	164	164	84	164
Incremental net benefits	1,818	(521)	70	139	209	278	278	278	278	278	278
Incremental net costs	1,179	(82)	32	140	87	114	194	114	114	194	114
Net Benefits (liquidity)	**1,482**	**993**	**1,489**	**1,471**	**1,612**	**1,674**	**1,594**	**1,674**	**1,674**	**1,594**	**1,674**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Storage													
Stored amount of Sesame (bigining)	Kg	7.9	218	218	227	235	244	253	253	253	253	253	253
Storage period	months			5	5	5	5	5	5	5	5	5	5
Value of Stored Seasame (begining)	months	5	1,721	1,721	1,789	1,858	1,927	1,996	1,996	1,996	1,996	1,996	1,996
Storage cost	per kg	0.05	0	54	57	59	61	63	63	63	63	63	63
Loan Amount	%	75%	0	41	42	44	46	47	47	47	47	47	47
Storage annual interest	per year	24%	0	5	5	5	5	6	6	6	6	6	6
Losses without project	Kg	8%	17.42										
Losses with project	Kg	1%		2.18	2.27	2.35	2.44	2.53	2.53	2.53	2.53	2.53	2.53
Losses without project			138										
Losses with project				17.21	17.89	18.58	19.27	19.96	19.96	19.96	19.96	19.96	19.96
Incremental Cost and losses			138	77	80	83	86	89	89	89	89	89	89
Stored Sesame (end)	kg	8.9	200	216	224	233	241	250	250	250	250	250	250
Total revenue of stored sesame (end)			1,781	1,361	1,415	2,070	2,147	2,223	2,223	2,223	2,223	2,223	2,223
Increamental net benefit			61	(360)	(374)	212	220	227	227	227	227	227	227
Total production costs without family labour			456	363	460	550	480	490	570	490	490	570	490
Total production costs with family labour			1,316	1,173	1,291	1,401	1,352	1,382	1,462	1,382	1,382	1,462	1,382
Income (after labour costs)			465	188	124	669	795	841	761	841	841	761	841
Incremental net income				(277)	(340)	204	330	377	297	377	377	297	377
Incremental net benefits with storage				(420)	(366)	289	366	442	442	442	442	442	442
Incremental net costs with storage				(143)	(26)	85	35	66	146	66	66	146	66
Net Benefits (liquidity)			**1,264**	**1,357**	**1,329**	**1,308**	**1,447**	**1,506**	**1,426**	**1,506**	**1,506**	**1,426**	**1,506**

West & North Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Sesame	Kg	7.3	205	205	213	221	230	238	238	238	238	238	238
Fodder	sack	8.0	9	9	9	9	9	9	9	9	9	9	9
Self-consumption	Kg	7.3	2	2	2	2	2	2	2	2	2	2	2
Operating costs													
Land preparation (Sub-soil plow)	per feddan	80	0			1			1			1	
Seeds (traditional)	kg	20	2										
Seeds (improved)	kg	30		2	2	2	2	2	2	2	2	2	2
Land cleaning/preparation	per feddan	40	1						0	0	0	0	0
Planting	per feddan	40	1	1	1	1	1	1	1	1	1	1	1
Weeding 1	per feddan	40	2	3	3	3	3	3	3	3	3	3	3
Weeding 2	per feddan	40	2	2	2	2	2	2	2	2	2	2	2
Harvesting	per Sack	160	2	2.28	2.37	2.46	2.55	2.64	2.64	2.64	2.64	2.64	2.64
Threshing	sack	10	2	2.28	2.37	2.46	2.55	2.64	2.64	2.64	2.64	2.64	2.64
Empty sacks	sack	25	3	2.28	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Loading and Transportation	sack	10	3	2.28	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Zakat	%	10%	1,497	1,347	1,556	1,616	1,676	1,736	1,736	1,736	1,736	1,736	1,736
Labour													
Land cleaning	pers.day	S/F	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	pers.day	S/F	1.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weeding	pers.day	S/F	4.0	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Harvesting	pers.day	S/F	9.1	9.11	9.48	9.84	10.20	10.57	10.57	10.57	10.57	10.57	10.57
Thershing	pers.day	S/F	0.6	0.57	0.59	0.62	0.64	0.66	0.66	0.66	0.66	0.66	0.66
Sub-total labour days			16	15.68	16.07	16.46	16.84	17.23	17.23	17.23	17.23	17.23	17.23
Skilled (paid) labour (S)	pers.day	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Family labour (F)	pers.day	40	16	15.68	16.07	16.46	16.84	17.23	17.23	17.23	17.23	17.23	17.23

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Sesame	1,497	1,347	1,556	1,616	1,676	1,736	1,736	1,736	1,736	1,736	1,736
Fodder	72	72	72	72	72	72	72	72	72	72	72
Self-consumption	15	15	16	16	17	17	17	17	17	17	17
Total revenue	1,569	1,419	1,628	1,688	1,748	1,808	1,808	1,808	1,808	1,808	1,808
Total sales	1,554	1,404	1,613	1,672	1,731	1,791	1,791	1,791	1,791	1,791	1,791
Operating input costs											
Land preparation (Sub-soil plow)	0	0	0	80	0	0	80	0	0	80	0
Seeds (traditional)	40	0	0	0	0	0	0	0	0	0	0
Seeds (improved)	0	60	60	60	60	60	60	60	60	60	60
Land cleaning/preparation	40	0	0	0	0	0	0	0	0	0	0
Planting	40	40	40	40	40	40	40	40	40	40	40
Weeding 1	80	120	120	120	120	120	120	120	120	120	120
Weeding 2	80	80	80	80	80	80	80	80	80	80	80
Harvesting	364	364	379	394	408	423	423	423	423	423	423
Threshing	23	23	24	25	26	26	26	26	26	26	26
Empty sacks	75	57	100	100	100	100	100	100	100	100	100
Loading and Transportation	30	23	40	40	40	40	40	40	40	40	40
Zakat	150	135	156	162	168	174	174	174	174	174	174
Sub-total operating costs	*922*	*902*	*998*	*1,100*	*1,041*	*1,063*	*1,143*	*1,063*	*1,063*	*1,143*	*1,063*
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	627	627	643	658	674	689	689	689	689	689	689
Sub-total labour costs	*627*	*627*	*643*	*658*	*674*	*689*	*689*	*689*	*689*	*689*	*689*
Total production costs without family labour	*295*	*274*	*356*	*442*	*368*	*374*	*454*	*374*	*374*	*454*	*374*
Total production costs with family labour	*922*	*902*	*998*	*1,100*	*1,041*	*1,063*	*1,143*	*1,063*	*1,063*	*1,143*	*1,063*
Income (after labour costs)	**647**	**517**	**630**	**588**	**707**	**745**	**665**	**745**	**745**	**665**	**745**
Incremental net income	647	(129)	(17)	(58)	60	99	19	99	99	19	99
Incremental net benefits	1,569	(150)	60	120	180	239	239	239	239	239	239
Incremental net costs	922	(20)	76	178	119	141	221	141	141	221	141
Net Benefits (liquidity)	**1,259**	**1,129**	**1,257**	**1,230**	**1,364**	**1,417**	**1,337**	**1,417**	**1,417**	**1,337**	**1,417**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Storage													
Stored amount of Sesame (bigining)	Kg	7.3	203	203	211	219	227	235	235	235	235	235	235
Storage period	months			5	5	5	5	5	5	5	5	5	5
Value of Stored Seasame (begining)	months	5	1,482	1,482	1,541	1,600	1,659	1,719	1,719	1,719	1,719	1,719	1,719
Storage cost	per kg	0.05	0	51	53	55	57	59	59	59	59	59	59
Loan Amount	%	75%	0	38	40	41	43	44	44	44	44	44	44
Storage annual interest	per year	24%	0	5	5	5	5	5	5	5	5	5	5
Losses without project	Kg	8%	16.24										
Losses with project	Kg	1%		2.03	2.11	2.19	2.27	2.35	2.35	2.35	2.35	2.35	2.35
Losses without project			119										
Losses with project				14.82	15.41	16.00	16.59	17.19	17.19	17.19	17.19	17.19	17.19
Incremental Cost and losses			119	70	73	76	79	81	81	81	81	81	81
Stored Sesame (end)	kg	8.9	187	201	209	217	225	233	233	233	233	233	233
Total revenue of stored sesame (end)			1,660	1,429	1,319	1,929	2,000	2,072	2,072	2,072	2,072	2,072	2,072
Increamental net benefit			178	(53)	(222)	329	341	353	353	353	353	353	353
Total production costs without family labour			413	345	429	517	446	455	535	455	455	535	455
Total production costs with family labour			1,040	972	1,071	1,176	1,120	1,144	1,224	1,144	1,144	1,224	1,144
Income (after labour costs)			619	457	247	753	880	928	848	928	928	848	928
Incremental net income				(162)	(372)	134	261	308	228	308	308	228	308
Incremental net benefits with storage				(231)	(341)	269	341	412	412	412	412	412	412
Incremental net costs with storage				(69)	31	135	79	104	184	104	104	184	104
Net Benefits (liquidity)			**1,068**	**1,137**	**1,112**	**1,083**	**1,213**	**1,264**	**1,184**	**1,264**	**1,264**	**1,184**	**1,264**

Sorghum Financial Analysis

Sinnar & South Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Sorghum	Kg	3.3	735	735	764	794	823	853	853	853	853	853	853
Fodder	per feddan	250	1	1	1	1	1	1	1	1	1	1	1
Self-consumption	Kg	3.3	588	588	612	635	659	682	682	682	682	682	682
Operating costs													
Land preparation (Sub-soil plow)	per feddan	60	0		1			1			1		
Seeds (traditional)	kg	20	2										
Seeds (improved)	kg	30		2	2	2	2	2	2	2	2	2	2
Land cleaning/preparation	per feddan	40	1										
Planting	per feddan	40	1	1	1	1	1	1	1	1	1	1	1
Weeding 1	per feddan	40	3	3	3	3	3	3	3	3	3	3	3
Weeding 2	per feddan	40	2	2	2	2	2	2	2	2	2	2	2
Harvesting	per Sack	25	8.17	8.17	8.49	8.82	9.15	9.47	9.47	9.47	9.47	9.47	9.47
Threshing	sack	10	8.17	8.17	8.49	8.82	9.15	9.47	9.47	9.47	9.47	9.47	9.47
Empty sacks	sack	30	9.00	8.17	9.00	9.00	9.15	11.00	11.00	11.00	11.00	11.00	11.00
Loading and Transportation	sack	5	9.00	8.17	9.00	9.00	9.15	11.00	11.00	11.00	11.00	11.00	11.00
Zakat	%	10%	2,426	2,062	2,270	2,620	2,717	2,814	2,814	2,814	2,814	2,814	2,814
Labour													
Land cleaning	pers.day	S/F	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Planting	pers.day	S/F	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Weeding	pers.day	S/F	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Harvesting	pers.day	S/F	5.1	5.1	5.3	5.5	5.7	5.9	5.9	5.9	5.9	5.9	5.9
Thershing	pers.day	S/F	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.4
Sub-total labour days			14.1	13.1	13.4	13.7	14.0	14.3	14.3	14.3	14.3	14.3	14.3
Skilled (paid) labour (S)	pers.day	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family labour (F)	pers.day	40	14.1	13.1	13.4	13.7	14.0	14.3	14.3	14.3	14.3	14.3	14.3

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Sorghum	2,426	2,062	2,270	2,620	2,717	2,814	2,814	2,814	2,814	2,814	2,814
Fodder	250	250	250	250	250	250	250	250	250	250	250
Self-consumption	1,940	1,940	2,018	2,096	2,173	2,251	2,251	2,251	2,251	2,251	2,251
Total revenue	2,676	2,312	2,520	2,870	2,967	3,064	3,064	3,064	3,064	3,064	3,064
Total sales	735	371	502	774	793	813	813	813	813	813	813
Operating input costs											
Land preparation (Sub-soil plow)	0	0	60	0	0	60	0	0	60	0	0
Seeds (traditional)	40	0	0	0	0	0	0	0	0	0	0
Seeds (improved)	0	60	60	60	60	60	60	60	60	60	60
Land cleaning/preparation	40	0	0	0	0	0	0	0	0	0	0
Planting	40	40	40	40	40	40	40	40	40	40	40
Weeding 1	120	120	120	120	120	120	120	120	120	120	120
Weeding 2	80	80	80	80	80	80	80	80	80	80	80
Harvesting	204	204	212	221	229	237	237	237	237	237	237
Threshing	82	82	85	88	91	95	95	95	95	95	95
Empty sacks	270	245	270	270	274	330	330	330	330	330	330
Loading and Transportation	45	41	45	45	46	55	55	55	55	55	55
Zakat	243	206	227	262	272	281	281	281	281	281	281
Sub-total operating costs	*1,163*	*1,078*	*1,199*	*1,186*	*1,212*	*1,358*	*1,298*	*1,298*	*1,358*	*1,298*	*1,298*
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	566	526	537	549	560	572	572	572	572	572	572
Sub-total labour costs	*566*	*526*	*537*	*549*	*560*	*572*	*572*	*572*	*572*	*572*	*572*
Total production costs without family labour	*598*	*552*	*662*	*637*	*652*	*786*	*726*	*726*	*786*	*726*	*726*
Total production costs with family labour	*1,163*	*1,078*	*1,199*	*1,186*	*1,212*	*1,358*	*1,298*	*1,298*	*1,358*	*1,298*	*1,298*
Income (after labour costs)	**1,512**	**1,234**	**1,321**	**1,684**	**1,755**	**1,706**	**1,766**	**1,766**	**1,706**	**1,766**	**1,766**
Incremental net income	1,512	(278)	(191)	172	243	194	254	254	194	254	254
Incremental net benefits	2,676	(364)	(155)	194	291	388	388	388	388	388	388
Incremental net costs	1,163	(86)	36	22	49	195	135	135	195	135	135
Net Benefits (liquidity)	**137.55**	**(180.73)**	**(159.77)**	**136.95**	**141.52**	**26.36**	**86.36**	**86.36**	**26.36**	**86.36**	**86.36**

West & North Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Sorghum	Kg	3.0	710	710	738	767	795	824	824	824	824	824	824
Fodder	per feddan	250	1	1	1	1	1	1	1	1	1	1	1
Self-consumption	Kg	3.0	568	568	591	613	636	659	659	659	659	659	659
Operating costs													
Land preparation (Sub-soil plow)	per feddan	60	0		1			1			1		
Seeds (traditional)	kg	20	2										
Seeds (improved)	kg	30		2	2	2	2	2	2	2	2	2	2
Land cleaning/preparation	per feddan	40	1										
Planting	per feddan	40	1	1	1	1	1	1	1	1	1	1	1
Weeding 1	per feddan	40	3	3	3	3	3	3	3	3	3	3	3
Weeding 2	per feddan	40	2	2	2	2	2	2	2	2	2	2	2
Harvesting	per Sack	25	7.89	7.89	8.20	8.52	8.84	9.15	9.15	9.15	9.15	9.15	9.15
Threshing	sack	10	7.89	7.89	8.20	8.52	8.84	9.15	9.15	9.15	9.15	9.15	9.15
Empty sacks	sack	30	8.00	7.89	9.00	9.00	8.84	11.00	11.00	11.00	11.00	11.00	11.00
Loading and Transportation	sack	5	8.00	7.89	9.00	9.00	8.84	11.00	11.00	11.00	11.00	11.00	11.00
Zakat	%	10%	2,137	2,009	2,223	2,308	2,394	2,479	2,479	2,479	2,479	2,479	2,479
Labour													
Land cleaning	pers.day	S/F	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Planting	pers.day	S/F	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Weeding	pers.day	S/F	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Harvesting	pers.day	S/F	4.9	4.9	5.1	5.3	5.5	5.7	5.7	5.7	5.7	5.7	5.7
Thershing	pers.day	S/F	2.0	2.0	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Sub-total labour days			13.9	12.9	13.2	13.5	13.7	14.0	14.0	14.0	14.0	14.0	14.0
Skilled (paid) labour (S)	pers.day	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family labour (F)	pers.day	40	13.9	12.9	13.2	13.5	13.7	14.0	14.0	14.0	14.0	14.0	14.0

FINANCIAL BUDGET		WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS		1	1	2	3	4	5	6	7	8	9	10
Main production revenue												
Sorghum		2,137	2,009	2,223	2,308	2,394	2,479	2,479	2,479	2,479	2,479	2,479
Fodder		250	250	250	250	250	250	250	250	250	250	250
Self-consumption		1,710	1,710	1,778	1,846	1,915	1,983	1,983	1,983	1,983	1,983	1,983
Total revenue		2,387	2,259	2,473	2,558	2,644	2,729	2,729	2,729	2,729	2,729	2,729
Total sales		677	549	695	712	729	746	746	746	746	746	746
Operating input costs												
Land preparation (Sub-soil plow)		0	0	60	0	0	60	0	0	60	0	0
Seeds (traditional)		40	0	0	0	0	0	0	0	0	0	0
Seeds (improved)		0	60	60	60	60	60	60	60	60	60	60
Land cleaning/preparation		40	0	0	0	0	0	0	0	0	0	0
Planting		40	40	40	40	40	40	40	40	40	40	40
Weeding 1		120	120	120	120	120	120	120	120	120	120	120
Weeding 2		80	80	80	80	80	80	80	80	80	80	80
Harvesting		197	197	205	213	221	229	229	229	229	229	229
Threshing		79	79	82	85	88	92	92	92	92	92	92
Empty sacks		240	237	270	270	265	330	330	330	330	330	330
Loading and Transportation		40	39	45	45	44	55	55	55	55	55	55
Zakat		214	201	222	231	239	248	248	248	248	248	248
Sub-total operating costs		*1,090*	*1,053*	*1,184*	*1,144*	*1,158*	*1,313*	*1,253*	*1,253*	*1,313*	*1,253*	*1,253*
Labour costs												
Skilled (paid) labour costs		0	0	0	0	0	0	0	0	0	0	0
Family labour costs		556	516	527	538	549	560	560	560	560	560	560
Sub-total labour costs		*556*	*516*	*527*	*538*	*549*	*560*	*560*	*560*	*560*	*560*	*560*
Total production costs without family labour		*534*	*537*	*657*	*606*	*609*	*753*	*693*	*693*	*753*	*693*	*693*
Total production costs with family labour		*1,090*	*1,053*	*1,184*	*1,144*	*1,158*	*1,313*	*1,253*	*1,253*	*1,313*	*1,253*	*1,253*
Income (after labour costs)		**1,297**	**1,206**	**1,288**	**1,414**	**1,486**	**1,416**	**1,476**	**1,476**	**1,416**	**1,476**	**1,476**
Incremental net income		1,297	(92)	(224)	117	188	119	179	179	119	179	179
Incremental net benefits		2,387	(128)	(203)	171	256	342	342	342	342	342	342
Incremental net costs		1,090	(37)	21	54	68	223	163	163	223	163	163
Net Benefits (liquidity)		**143.71**	**12.20**	**37.26**	**105.81**	**120.11**	**(7.10)**	**52.90**	**52.90**	**(7.10)**	**52.90**	**52.90**

Groundnuts Financial Analysis

Sinnar & South Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Groundnut	Kg	12.10	133	133	138	143	148	154	154	154	154	154	154
Fodder	sack	12.1	50	50	50	50	50	50	50	50	50	50	50
Self-consumption	Kg	12.10	1.33	1.33	1.38	1.43	1.48	1.54	1.54	1.54	1.54	1.54	1.54
Operating costs													
Land preparation (Sub-soil plow)	per feddan	60	0			1			1			1	
Seeds (traditional)	kg	13.5	20	20	20	20	20	20	20	20	20	20	20
Seeds (improved)													
Land clearing and preparation	per feddan	50	1.00										
planting	per feddan	50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weeding 1	per feddan	50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Weeding 2	per feddan	50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Harvesting	per Sack	25	5	5.00	5.20	5.40	5.60	5.80	5.80	5.80	5.80	5.80	5.80
Empty sacks	sack	30	4	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Loading and Transportation	sack	10	4	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Zakat	%	10%	1,603	1202.44	1500.642	1731.51	1795.64	1859.77	1859.77	1859.77	1859.77	1859.77	1859.77
Labor													
Land cleaning	pers.day	S/F	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	pers.day	S/F	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Weeding	pers.day	S/F	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38
Harvesting	pers.day	S/F	3.13	3.13	3.25	3.38	3.50	3.63	3.63	3.63	3.63	3.63	3.63
Sub-total labour days			10.00	8.75	8.88	9.00	9.13	9.25	9.25	9.25	9.25	9.25	9.25
Skilled (paid) labour (S)	pers.day	0	0	0	0	0	0	0	0	0	0	0	0
Family labour (F)	pers.day	40	10	8.75	8.88	9.00	9.13	9.25	9.25	9.25	9.25	9.25	9.25

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Groundnut	1,603	1,202.4	1,500.6	1,731.5	1,795.6	1,859.8	1,859.8	1,859.8	1,859.8	1,859.8	1,859.8
Fodder	605	605.0	605.0	605.0	605.0	605.0	605.0	605.0	605.0	605.0	605.0
Self-consumption	16	16.0	16.7	17.3	18.0	18.6	18.6	18.6	18.6	18.6	18.6
Total revenue	2,208	1,807	2,106	2,337	2,401	2,465	2,465	2,465	2,465	2,465	2,465
Total sales	2,192	1,791	2,089	2,319	2,383	2,446	2,446	2,446	2,446	2,446	2,446
Operating input costs											
Land preparation (Sub-soil plow)	0	0	0	60	0	0	60	0	0	60	0
Seeds (traditional)	270	270	270	270	270	270	270	270	270	270	270
Land clearing and preparation	50	0	0	0	0	0	0	0	0	0	0
planting	50	50	50	50	50	50	50	50	50	50	50
Weeding 1	100	100	100	100	100	100	100	100	100	100	100
Weeding 2	75	75	75	75	75	75	75	75	75	75	75
Harvesting	125	125	130	135	140	145	145	145	145	145	145
Empty sacks	120	120	120	120	150	150	150	150	150	150	150
Loading and Transportation	40	40	40	40	50	50	50	50	50	50	50
Zakat	160	120	150	173	180	186	186	186	186	186	186
Sub-total operating costs	*990*	900	935	1,023	1,015	1,026	1,086	1,026	1,026	1,086	1,026
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	400	350	355	360	365	370	370	370	370	370	370
Sub-total labour costs	*400*	*350*	*355*	*360*	*365*	*370*	*370*	*370*	*370*	*370*	*370*
Total production costs without family labour	*590*	*550*	*580*	*663*	*650*	*656*	*716*	*656*	*656*	*716*	*656*
Total production costs with family labour	*990*	*900*	*935*	*1,023*	*1,015*	*1,026*	*1,086*	*1,026*	*1,026*	*1,086*	*1,026*
Income (after labour costs)	**1,218**	**907**	**1,171**	**1,313**	**1,386**	**1,439**	**1,379**	**1,439**	**1,439**	**1,379**	**1,439**
Incremental net income	1,218	(311)	(47)	95	168	221	161	221	221	161	221
Incremental net benefits	2,208	(401)	(103)	128	192	257	257	257	257	257	257
Incremental net costs	990	(90)	(55)	33	24	36	96	36	36	96	36
Net Benefits (liquidity)	**1,602**	**1,241**	**1,509**	**1,656**	**1,733**	**1,790**	**1,730**	**1,790**	**1,790**	**1,730**	**1,790**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Storage													
Stored amount of Sorghum (bigining)	Kg	12	131	157	136	142	147	152	152	152	152	152	152
Storage period	months	5	1,587	1,905	1,651	1,714	1,778	1,841	1,841	1,841	1,841	1,841	1,841
Storage cost	per kg	0.20	131	157	136	142	147	152	152	152	152	152	152
Loan Amount	%	75%	98	118	102	106	110	114	114	114	114	114	114
Storage annual interest	per year	24%		14	12	13	13	14	14	14	14	14	14
Losses without project	kg	5%	6.56										
Losses with project	kg	1%		1.57	1.36	1.42	1.47	1.52	1.52	1.52	1.52	1.52	1.52
Losses without project			79										
Losses with project				19	17	17	18	18	18	18	18	18	18
Incremental Cost and losses			211	191	165	172	178	184	184	184	184	184	184
stored Sesame (end)	kg	14.0	125	156	135	140	145	151	151	151	151	151	151
Total revenue of stored sesame			1,745	1,527	1,172	1,964	2,036	2,109	2,109	2,109	2,109	2,109	2,109
Increamental net benefit			(53)	(568)	(644)	78	81	84	84	84	84	84	84
Total production costs without family labour			801	741	745	835	827	840	900	840	840	900	840
Total production costs with family labour			1,201	1,091	1,100	1,195	1,192	1,210	1,270	1,210	1,210	1,270	1,210
Income (after labour costs)			544	436	72	769	844	899	839	899	899	839	899
Incremental net income				(107)	(472)	225	300	355	295	355	355	295	355
Increamenatl net benefit with full project				(217)	(572)	219	292	364	364	364	364	364	364
Increamenatl Cost with full project				(110)	(101)	(6)	(8)	9	69	9	9	69	9
Net Benefits (liquidity)			**944**	**786**	**427**	**1,129**	**1,209**	**1,269**	**1,209**	**1,269**	**1,269**	**1,209**	**1,269**

West & North Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Groundnut	Kg	11.90	120	120	125	130	134	139	139	139	139	139	139
Fodder	sack	12.1	45	45	45	45	45	45	45	45	45	45	45
Self-consumption	Kg	11.90	1.20	1.20	1.25	1.30	1.34	1.39	1.39	1.39	1.39	1.39	1.39
Operating costs													
Land preparation (Sub-soil plow)	per feddan	60	0			1			1			1	
Seeds (traditional)	kg	13.5	20	20	20	20	20	20	20	20	20	20	20
Seeds (improved)													
Land clearing and preparation	per feddan	40	1.00										
planting	per feddan	40	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weeding 1	per feddan	40	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Weeding 2	per feddan	40	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Harvesting	per Sack	25	5	5.00	5.20	5.40	5.60	5.80	5.80	5.80	5.80	5.80	5.80
Empty sacks	sack	30	4	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Loading and Transportation	sack	10	4	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Zakat	%	10%	1,428	1071	1336.608	1542.24	1599.36	1656.48	1656.48	1656.48	1656.48	1656.48	1656.48
Labor													
Land cleaning	pers.day	S/F	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	pers.day	S/F	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weeding	pers.day	S/F	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Harvesting	pers.day	S/F	3.13	3.13	3.25	3.38	3.50	3.63	3.63	3.63	3.63	3.63	3.63
Sub-total labour days			8.63	7.63	7.75	7.88	8.00	8.13	8.13	8.13	8.13	8.13	8.13
Skilled (paid) labour (S)	pers.day	0	0	0	0	0	0	0	0	0	0	0	0
Family labour (F)	pers.day	40	9	7.63	7.75	7.88	8.00	8.13	8.13	8.13	8.13	8.13	8.13

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Groundnut	1,428	1,071.0	1,336.6	1,542.2	1,599.4	1,656.5	1,656.5	1,656.5	1,656.5	1,656.5	1,656.5
Fodder	545	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5
Self-consumption	14	14.28	14.8512	15.4224	15.9936	16.5648	16.5648	16.5648	16.5648	16.5648	16.5648
Total revenue	1,973	1,616	1,881	2,087	2,144	2,201	2,201	2,201	2,201	2,201	2,201
Total sales	1,958	1,601	1,866	2,071	2,128	2,184	2,184	2,184	2,184	2,184	2,184
Operating input costs											
Land preparation (Sub-soil plow)	0	0	0	60	0	0	60	0	0	60	0
Seeds (traditional)	270	270	270	270	270	270	270	270	270	270	270
Land clearing and preparation	40	0	0	0	0	0	0	0	0	0	0
planting	40	40	40	40	40	40	40	40	40	40	40
Weeding 1	80	80	80	80	80	80	80	80	80	80	80
Weeding 2	60	60	60	60	60	60	60	60	60	60	60
Harvesting	125	125	130	135	140	145	145	145	145	145	145
Empty sacks	120	120	120	120	150	150	150	150	150	150	150
Loading and Transportation	40	40	40	40	50	50	50	50	50	50	50
Zakat	143	107	134	154	160	166	166	166	166	166	166
Sub-total operating costs	*918*	842	874	959	950	961	1,021	961	961	1,021	961
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	345	305	310	315	320	325	325	325	325	325	325
Sub-total labour costs	*345*	*305*	*310*	*315*	*320*	*325*	*325*	*325*	*325*	*325*	*325*
Total production costs without family labour	*573*	*537*	*564*	*644*	*630*	*636*	*696*	*636*	*636*	*696*	*636*
Total production costs with family labour	*918*	*842*	*874*	*959*	*950*	*961*	*1,021*	*961*	*961*	*1,021*	*961*
Income (after labour costs)	**1,055**	**773**	**1,007**	**1,128**	**1,194**	**1,240**	**1,180**	**1,240**	**1,240**	**1,180**	**1,240**
Incremental net income	1,055	(281)	(47)	73	139	186	126	186	186	126	186
Incremental net benefits	1,973	(357)	(91)	114	171	228	228	228	228	228	228
Incremental net costs	918	(76)	(44)	41	32	43	103	43	43	103	43
Net Benefits (liquidity)	**1,385**	**1,064**	**1,303**	**1,427**	**1,498**	**1,549**	**1,489**	**1,549**	**1,549**	**1,489**	**1,549**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (1 FEDDAN)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Storage													
Stored amount of Sorghum (bigining)	Kg	12	119	119	124	128	133	138	138	138	138	138	138
Storage period	months	5	1,414	1,414	1,470	1,527	1,583	1,640	1,640	1,640	1,640	1,640	1,640
Storage cost	per kg	0.20	119	119	124	128	133	138	138	138	138	138	138
Loan Amount	%	75%	89	89	93	96	100	103	103	103	103	103	103
Storage annual interest	per year	24%		11	11	12	12	12	12	12	12	12	12
Losses without project	kg	5%	5.94										
Losses with project	kg	1%		1.19	1.24	1.28	1.33	1.38	1.38	1.38	1.38	1.38	1.38
Losses without project			71										
Losses with project				14	15	15	16	16	16	16	16	16	16
Incremental Cost and losses			189	144	149	155	161	167	167	167	167	167	167
stored Sesame (end)	kg	14.0	113	118	122	127	132	136	136	136	136	136	136
Total revenue of stored sesame			1,580	1,153	1,062	1,778	1,844	1,910	1,910	1,910	1,910	1,910	1,910
Increamental net benefit			(23)	(405)	(558)	96	100	103	103	103	103	103	103
Total production costs without family labour			762	681	713	799	791	802	862	802	802	862	802
Total production costs with family labour			1,107	986	1,023	1,114	1,111	1,127	1,187	1,127	1,127	1,187	1,127
Income (after labour costs)			473	167	39	664	733	783	723	783	783	723	783
Incremental net income				(306)	(434)	191	261	310	250	310	310	250	310
Increamenatl net benefit with full project				(427)	(518)	198	264	330	330	330	330	330	330
Increamenatl Cost with full project				(122)	(84)	7	4	20	80	20	20	80	20
Net Benefits (liquidity)			**818**	**472**	**349**	**979**	**1,053**	**1,108**	**1,048**	**1,108**	**1,108**	**1,048**	**1,108**

Gum Arabic Financial Analysis

Sinnar & South Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREES)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Gum Arabic (new tree)	Kg	18.9	0.00	0.00	0.00	0.00	85.28	88.56	91.84	95.12	95.12	95.12	95.12
Gum Arabic (old tree)	Kg	18.9	60.00	60.00	62.40	64.80	67.20	69.60	60.00	60.00	60.00	60.00	60.00
Gum Arabic (Average new & old trees)	Kg	18.9	60.00	60.00	62.40	64.80	76.24	79.08	79.08	79.08	79.08	79.08	79.08
Self-consumption (Average new & old trees)	Kg	18.9	0.60	0.60	0.62	0.65	0.76	0.79	0.79	0.79	0.79	0.79	0.79
Investment costs													
Seedling	per seedling	6	0.00	100	0	0	0	0	0	0	0	0	0
Planting	per feddan	50	0.00	1	0	0	0	0	0	0	0	0	0
Breeding	Per feddan	50	0.00	0.40	0.40	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	per feddan	1,000	0.00	0.20	0.20	0.20	0.20	0.2	0.2	0	0	0	0
Operating costs													
Land Preparation	per feddan	200	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Harvesting (New trees)	per feddan	50	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Harvesting (Old trees)	per feddan	50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Empty sacks	sack	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Transportation	sack	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zakat	%	10%	1,134	1,134	1,179	1,225	1,921	1,993	1,993	1,993	1,993	1,993	1,993
Labour													
Planting	pers.day	S/F	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding	pers.day	S/F	0.00	0.40	0.40	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	per feddan	S/F	0.00	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00
Harvesting	pers.day	S/F	1.25	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sub-total labour days			1.25	2.10	1.10	1.10	1.60	1.20	1.20	1.00	1.00	1.00	1.00
Skilled (paid) labour (S)	pers.day	0	0	0	0	0	0	0	0	0	0	0	0
Family labour (F)	pers.day	40	1.25	2.10	1.10	1.10	1.60	1.20	1.20	1.00	1.00	1.00	1.00

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREEs)									
ITEMS	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production revenue											
Gum Arabic (new tree)	0	0	0	0	1,612	1,674	1,736	1,798	1,798	1,798	1,798
Gum Arabic (old tree)	1,134	1,134	1,179	1,225	1,270	1,315	1,134	1,134	1,134	1,134	1,134
Gum Arabic (Average new & old trees)	1,134	1,134	1,179	1,225	1,921	1,993	1,913	1,955	1,955	1,955	1,955
Self-consumption (Average new & old trees)	11	11	12	12	19	20	19	20	20	20	20
Total revenue (Average new & old trees)	1,134	1,134	1,179	1,225	1,921	1,993	1,913	1,955	1,955	1,955	1,955
Total sales (Average new & old trees)	1,123	1,123	1,168	1,212	1,902	1,973	1,894	1,935	1,935	1,935	1,935
Investment costs (feddan = 100 trees)											
Seedling	0.0	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	0.0	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding	0.0	20.00	20.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	0.0	200.00	200.00	200.00	200.00	200.00	200.00	0.00	0.00	0.00	0.00
Sub-total investment costs (1 feddan)	0.0	870.00	220.00	220.00	220.00	200.00	200.00	0.00	0.00	0.00	0.00
Operating input costs											
Land Preparation	0	100	0	0	0	0	0	0	0	0	0
Harvesting (New trees)	0	0	0	0	25	25	25	25	25	25	25
Harvesting (Old trees)	50	25	25	25	25	25	25	25	25	25	25
Empty sacks	10	5	5	5	5	5	5	5	5	5	5
Transportation	10	5	5	5	5	5	5	5	5	5	5
Zakat	113	57	59	61	96	100	100	100	100	100	100
Sub-total operating costs (new & old trees)	183.4	191.7	94.0	96.2	156.1	159.6	159.6	159.6	159.6	159.6	159.6
total costs (Average new & old trees)	*183.4*	*530.9*	*157.0*	*158.1*	*188.0*	*179.8*	*179.8*	*79.8*	*79.8*	*79.8*	*79.8*
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	50	84	44	44	64	48	48	40	40	40	40
Sub-total labour costs	*50*	*84*	*44*	*44*	*64*	*48*	*48*	*40*	*40*	*40*	*40*
Total production costs without family labour	*133*	*1,317*	*333*	*334*	*344*	*332*	*332*	*40*	*40*	*40*	*40*
Total production costs with family labour	*183*	*1,401*	*377*	*378*	*408*	*380*	*380*	*80*	*80*	*80*	*80*
Income (after labour costs)	**950.6**	**(267)**	**802**	**847**	**1,513**	**1,613**	**1,533**	**1,875**	**1,875**	**1,875**	**1,875**
Incremental net income	951	(1,217)	(148)	(104)	563	662	583	924	924	924	924
Incremental net benefits	1,134	0	45	91	787	859	779	821	821	821	821
Incremental net costs	183	1,217	194	195	225	196	196	(104)	(104)	(104)	(104)
Net Benefits (liquidity)	**989**	**(194)**	**835**	**878**	**1,558**	**1,641**	**1,562**	**1,895**	**1,895**	**1,895**	**1,895**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREES)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Sell directly to Wholesale market (association)													
Collecting Gum Arabic to be sold in wholesale market	kg	35.00	59.40	59.40	61.78	64.15	75.48	78.29	78.29	78.29	78.29	78.29	78.29
Collecting Cost (average old & new trees)	%	0.5%	10.40	10.40	10.81	11.23	13.21	13.70	13.70	13.70	13.70	13.70	13.70
Transporation Cost (average old & new trees)	Sack	2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total Cost (average old & new trees)			12.40	12.40	12.81	13.23	15.21	15.70	15.70	15.70	15.70	15.70	15.70
Total Revenue (average old & new trees)			2,079.00	2,079	2,162	2,245	2,642	2,740	2,740	2,740	2,740	2,740	2,740
Total production costs without family labour			145.80	204.10	106.78	109.46	171.27	175.34	175.34	175.34	175.34	175.34	175.34
Total production costs with family labour			195.80	1,413.25	389.79	391.34	423.24	395.52	395.52	95.52	95.52	95.52	95.52
Income (after labour costs)			1,883.2	665.8	1,772.4	1,854.0	2,218.5	2,344.6	2,344.6	2,644.6	2,644.6	2,644.6	2,644.6
Incremental net income				(1,217)	(111)	(29)	335	461	461	761	761	761	761
Incremental net benefits			2,079.0	0.0	83.2	166.3	562.7	661.1	661.1	661.1	661.1	661.1	661.1
Incremental net costs			195.8	1,217.5	194.0	195.5	227.4	199.7	199.7	(100.3)	(100.3)	(100.3)	(100.3)
Net Benefits (liquidity)			**1,933.2**	**1,875**	**2,055**	**2,136**	**2,470**	**2,565**	**2,565**	**2,565**	**2,565**	**2,565**	**2,565**

West & North Kordofan: YIELDS AND INPUTS			WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREES)									
ITEMS	UNIT	PRICE (SDG)	1	1	2	3	4	5	6	7	8	9	10
Main production													
Gum Arabic (new tree)	Kg	17.7	0.00	0.00	0.00	0.00	88.40	91.80	95.20	98.60	98.60	98.60	98.60
Gum Arabic (old tree)	Kg	17.7	65.00	65.00	67.60	70.20	72.80	75.40	65.00	65.00	65.00	65.00	65.00
Gum Arabic (Average new & old trees)	Kg	17.7	65.00	65.00	67.60	70.20	80.60	83.60	83.60	83.60	83.60	83.60	83.60
Self-consumption (Average new & old trees)	Kg	17.7	0.65	0.65	0.68	0.70	0.81	0.84	0.84	0.84	0.84	0.84	0.84
Investment costs													
Seedling	per seedling	6	0.00	100	0	0	0	0	0	0	0	0	0
Planting	per feddan	40	0.00	1	0	0	0	0	0	0	0	0	0
Breeding	Per feddan	40	0.00	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	per feddan	1,000	0.00	0.20	0.20	0.20	0.20	0.2	0.2	0	0	0	0
Operating costs													
Land Preparation	per feddan	200	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Harvesting (New trees)	per feddan	40	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Harvesting (Old trees)	per feddan	40	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Empty sacks	sack	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Transportation	sack	10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Zakat	%	10%	1,151	1,151	1,197	1,243	1,902	1,973	1,973	1,973	1,973	1,973	1,973
Labour													
Planting	pers.day	S/F	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding	pers.day	S/F	0.00	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	per feddan	S/F	0.00	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00
Harvesting	pers.day	S/F	1.00	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sub-total labour days			1.00	2.20	1.20	1.20	1.70	1.20	1.20	1.20	1.20	1.20	1.20
Skilled (paid) labour (S)	pers.day	0	0	0	0	0	0	0	0	0	0	0	0
Family labour (F)	pers.day	40	1.00	2.20	1.20	1.20	1.70	1.20	1.20	1.20	1.20	1.20	1.20

FINANCIAL BUDGET	WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREEs)									
ITEMS	1	1	2	3	4	5	6	7	8	9	10
Main production revenue											
Gum Arabic (new tree)	0	0	0	0	1,565	1,625	1,685	1,745	1,745	1,745	1,745
Gum Arabic (old tree)	1,151	1,151	1,197	1,243	1,289	1,335	1,151	1,151	1,151	1,151	1,151
Gum Arabic (Average new & old trees)	1,151	1,151	1,197	1,243	1,902	1,973	1,890	1,930	1,930	1,930	1,930
Self-consumption (Average new & old trees)	12	12	12	12	19	20	19	19	19	19	19
Total revenue (Average new & old trees)	1,151	1,151	1,197	1,243	1,902	1,973	1,890	1,930	1,930	1,930	1,930
Total sales (Average new & old trees)	1,139	1,139	1,185	1,230	1,883	1,953	1,871	1,911	1,911	1,911	1,911
Investment costs (feddan = 100 trees)											
Seedling	0.0	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planting	0.0	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding	0.0	20.00	20.00	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
guarding against animals until established	0.0	200.00	200.00	200.00	200.00	200.00	200.00	0.00	0.00	0.00	0.00
Sub-total investment costs (1 feddan)	0.0	860.00	220.00	220.00	220.00	200.00	200.00	0.00	0.00	0.00	0.00
Operating input costs											
Land Preparation	0	100	0	0	0	0	0	0	0	0	0
Harvesting (New trees)	0	0	0	0	20	20	20	20	20	20	20
Harvesting (Old trees)	40	20	20	20	20	20	20	20	20	20	20
Empty sacks	10	5	5	5	5	5	5	5	5	5	5
Transportation	10	5	5	5	5	5	5	5	5	5	5
Zakat	115	58	60	62	95	99	99	99	99	99	99
Sub-total operating costs (new & old trees)	175.1	187.5	89.8	92.1	145.1	148.6	148.6	148.6	148.6	148.6	148.6
total costs (Average new & old trees)	*175.1*	*523.8*	*154.9*	*156.1*	*182.6*	*174.3*	*174.3*	*74.3*	*74.3*	*74.3*	*74.3*
Labour costs											
Skilled (paid) labour costs	0	0	0	0	0	0	0	0	0	0	0
Family labour costs	40	88	48	48	68	48	48	48	48	48	48
Sub-total labour costs	*40*	*88*	*48*	*48*	*68*	*48*	*48*	*48*	*48*	*48*	*48*
Total production costs without family labour	*135*	*1,296*	*327*	*328*	*335*	*326*	*326*	*26*	*26*	*26*	*26*
Total production costs with family labour	*175*	*1,384*	*375*	*376*	*403*	*374*	*374*	*74*	*74*	*74*	*74*
Income (after labour costs)	**975**	**(233)**	**822**	**866**	**1,500**	**1,599**	**1,516**	**1,856**	**1,856**	**1,856**	**1,856**
Incremental net income	975	(1,209)	(154)	(109)	524	623	541	881	881	881	881
Incremental net benefits	1,151	0	46	92	752	822	740	780	780	780	780
Incremental net costs	175	1,209	200	201	228	199	199	(101)	(101)	(101)	(101)
Net Benefits (liquidity)	**1,004**	**(157)**	**858**	**902**	**1,549**	**1,627**	**1,545**	**1,885**	**1,885**	**1,885**	**1,885**

FINANCIAL BUDGET			WITHOUT PROJECT	WITH PROJECT (feddan = 100 TREES)									
ITEMS			1	1	2	3	4	5	6	7	8	9	10
Sell directly to Wholesale market (association)													
Collecting Gum Arabic to be sold in wholesale market	kg	35.00	64.35	64.35	66.92	69.50	79.79	82.76	82.76	82.76	82.76	82.76	82.76
Collecting Cost (average old & new trees)	%	0.5%	11.26	11.26	11.71	12.16	13.96	14.48	14.48	14.48	14.48	14.48	14.48
Transporation Cost (average old & new trees)	Sack	2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total Cost (average old & new trees)			13.26	13.26	13.71	14.16	15.96	16.48	16.48	16.48	16.48	16.48	16.48
Total Revenue (average old & new trees)			2,252	2,252	2,342	2,432	2,793	2,897	2,897	2,897	2,897	2,897	2,897
Total production costs without family labour			148	201	104	106	161	165	165	165	165	165	165
Total production costs with family labour			188	1,397	389	390	419	391	391	91	91	91	91
Income (after labour costs)			2,063.9	855	1,954	2,042	2,374	2,506	2,506	2,806	2,806	2,806	2,806
Incremental net income				(1,209)	(110)	(22)	310	442	442	742	742	742	742
Incremental net benefits			2,252.3	0	90	180	541	644	644	644	644	644	644
Incremental net costs			188.3	1,209	200	202	230	202	202	(98)	(98)	(98)	(98)
Net Benefits (liquidity)			**2,104**	**2,051**	**2,239**	**2,326**	**2,632**	**2,732**	**2,732**	**2,732**	**2,732**	**2,732**	**2,732**

Annex 2: Shadow Prices

HSC			120740	1007	1508	130120
Item	**Unit**	**Adjust-ment**	**Sesame**	**Sorghum**	**Groundnut**	**Gum Arabic**
Year			**2016**	**2017**	**2017**	**2016**
World market price, nominal 2016 a	$/t		1,129	179	1,435	1,678
Quality differential		0%	0	0	0	0
Equivalent value of SDG Product	$/t		1,129	179	1,435	1,678
Freight and Insurance Cost to SDN port	$/t		40	45	40	40
Value at SDN Port			1,089	224	1,395	1,638
Conversion to SDN b	SDG:$	22.35				
Value at SDN Port	SDG/kg		24.3	5.0	31.2	36.6
Port handling charges, storage & loss	SDG/kg	4.34	4.3	4.3	4.3	4.3
Internal handling, transport costs	SDG/kg		11	11	11	11
Value at wholesale market	SDG/kg		39.68	20.35	46.52	51.96
Transport costs local to wholesale market	SDG/kg		3	3	3	3
Dealer handling & processing costs	SDG/kg		3	3	3	3
Value at local market	SDG/kg		33.7	14.4	40.5	46.0
Transport costs: farmgate to local market	SDG/kg		4	4	4	4
Economic value at farmgate	SDG/kg		29.51	10.18	36.34	41.79

[a] Price data derived from UN Comtrade database

b Estimated Shadow exchange rate June 2017.

Annex 3: Economic Internal rates of return (IRRs)

Economic Rate of Return (ERR)								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	20.54%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(65.0)	68.1	(98.6)	(166.7)	0.830	56	(82)	(138)
2	2019	204.0	24.2	(32.9)	195.3	(81.5)	(276.8)	0.688	134	(56)	(191)
3	2020	248.7	24.2	(18.1)	254.8	136.7	(118.1)	0.571	145	78	(67)
4	2021	194.3	24.2	(14.1)	204.4	192.8	(11.7)	0.474	97	91	(6)
5	2022	134.9	24.2	17.4	176.5	248.7	72.3	0.393	69	98	28
6	2023	18.4	24.2	19.9	62.5	248.4	186.0	0.326	20	81	61
7	2024		24.2	8.6	32.8	248.4	215.6	0.270	9	67	58
8	2025		24.2	17.7	41.9	248.4	206.5	0.224	9	56	46
9	2026		24.2	19.9	44.0	248.4	204.4	0.186	8	46	38
10	2027		24.2	8.6	32.8	248.4	215.6	0.154	5	38	33
11	2028		24.2	8.6	32.8	248.4	215.6	0.128	4	32	28
12	2029		24.2	8.6	32.8	248.4	215.6	0.106	3	26	23
13	2030		24.2	8.6	32.8	248.4	215.6	0.088	3	22	19
14	2031		24.2	8.6	32.8	248.4	215.6	0.073	2	18	16
15	2032		24.2	8.6	32.8	248.4	215.6	0.061	2	15	13
16	2033		24.2	8.6	32.8	248.4	215.6	0.050	2	13	11
17	2034		24.2	8.6	32.8	248.4	215.6	0.042	1	10	9
18	2035		24.2	8.6	32.8	248.4	215.6	0.035	1	9	7
19	2036		24.2	8.6	32.8	248.4	215.6	0.029	1	7	6
20	2037		24.2	8.6	32.8	248.4	215.6	0.024	1	6	5
		909.3	483.1	48.4	1,440.8	4,124.4	2,683.7	4.752	575	576	0

Annex 4: Sensitivity Analysis

Investment Costs increased by 10%								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	18.8%	SDG million	SDG million	SDG million
1	2018	119.8	24.2	(65)	79	(99)	(178)	0.842	66	(83)	(150)
2	2019	224.4	24.2	(35)	213	(82)	(295)	0.709	151	(58)	(209)
3	2020	273.6	24.2	(19)	279	137	(142)	0.597	167	82	(85)
4	2021	213.8	24.2	(14)	224	193	(31)	0.502	112	97	(16)
5	2022	148.4	24.2	15	188	249	61	0.423	79	105	26
6	2023	20.3	24.2	19	63	249	185	0.356	23	89	66
7	2024		24.2	9	33	248	216	0.300	10	74	65
8	2025		24.2	15	40	248	209	0.252	10	63	53
9	2026		24.2	19	44	248	205	0.212	9	53	44
10	2027		24.2	9	33	248	216	0.179	6	44	39
11	2028		24.2	9	33	248	216	0.150	5	37	32
12	2029		24.2	9	33	248	216	0.127	4	31	27
13	2030		24.2	9	33	248	216	0.107	3	26	23
14	2031		24.2	9	33	248	216	0.090	3	22	19
15	2032		24.2	9	33	248	216	0.076	2	19	16
16	2033		24.2	9	33	248	216	0.064	2	16	14
17	2034		24.2	9	33	248	216	0.054	2	13	12
18	2035		24.2	9	33	248	216	0.045	1	11	10
19	2036		24.2	9	33	248	216	0.038	1	9	8
20	2037		24.2	9	33	248	216	0.032	1	8	7
		1,000.3	483.2	40	1,523	4,125	2,602	5.152	659	660	0

Cost of production increased by 10%								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	20.2%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(59)	75	(99)	(173)	0.832	62	(82)	(144)
2	2019	204.0	24.2	(32)	197	(82)	(278)	0.692	136	(56)	(192)
3	2020	248.7	24.2	(17)	256	137	(119)	0.576	147	79	(69)
4	2021	194.3	24.2	(13)	206	193	(13)	0.479	99	92	(6)
5	2022	134.9	24.2	17	176	249	73	0.398	70	99	29
6	2023	18.4	24.2	21	64	249	185	0.331	21	82	61
7	2024		24.2	9	34	248	215	0.276	9	68	59
8	2025		24.2	17	41	248	207	0.229	9	57	48
9	2026		24.2	21	45	248	203	0.191	9	47	39
10	2027		24.2	9	34	248	215	0.159	5	39	34
11	2028		24.2	9	34	248	215	0.132	4	33	28
12	2029		24.2	9	34	248	215	0.110	4	27	24
13	2030		24.2	9	34	248	215	0.091	3	23	20
14	2031		24.2	9	34	248	215	0.076	3	19	16
15	2032		24.2	9	34	248	215	0.063	2	16	14
16	2033		24.2	9	34	248	215	0.053	2	13	11
17	2034		24.2	9	34	248	215	0.044	1	11	9
18	2035		24.2	9	34	248	215	0.036	1	9	8
19	2036		24.2	9	34	248	215	0.030	1	8	6
20	2037		24.2	9	34	248	215	0.025	1	6	5
		909.3	483.1	70	1,463	4,125	2,662	4.821	590	590	0

Revenue decreased by 10%								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	17.4%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(65)	68	(109)	(177)	0.852	58	(92)	(150)
2	2019	204.0	24.2	(35)	193	(90)	(283)	0.725	140	(65)	(205)
3	2020	248.7	24.2	(19)	254	123	(131)	0.617	157	76	(81)
4	2021	194.3	24.2	(14)	204	173	(31)	0.526	107	91	(16)
5	2022	134.9	24.2	15	174	224	50	0.448	78	100	22
6	2023	18.4	24.2	19	62	224	162	0.381	23	85	62
7	2024		24.2	9	33	224	191	0.325	11	73	62
8	2025		24.2	15	40	224	184	0.276	11	62	51
9	2026		24.2	19	44	224	180	0.235	10	53	42
10	2027		24.2	9	33	224	191	0.200	7	45	38
11	2028		24.2	9	33	224	191	0.171	6	38	33
12	2029		24.2	9	33	224	191	0.145	5	32	28
13	2030		24.2	9	33	224	191	0.124	4	28	24
14	2031		24.2	9	33	224	191	0.105	3	24	20
15	2032		24.2	9	33	224	191	0.090	3	20	17
16	2033		24.2	9	33	224	191	0.076	3	17	15
17	2034		24.2	9	33	224	191	0.065	2	15	12
18	2035		24.2	9	33	224	191	0.055	2	12	11
19	2036		24.2	9	33	224	191	0.047	2	11	9
20	2037		24.2	9	33	224	191	0.040	1	9	8
		909.3	483.1	40	1,432	3,676	2,244	5.505	632	633	0

Revenue lagged one year								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	17.0%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(65)	68	0	(68)	0.855	58	0	(58)
2	2019	204.0	24.2	(35)	193	(99)	(292)	0.731	141	(72)	(213)
3	2020	248.7	24.2	(19)	254	(82)	(336)	0.625	159	(51)	(210)
4	2021	194.3	24.2	(14)	204	137	(68)	0.534	109	73	(36)
5	2022	134.9	24.2	15	174	193	19	0.457	80	88	8
6	2023	18.4	24.2	19	62	249	187	0.390	24	97	73
7	2024		24.2	9	33	249	216	0.334	11	83	72
8	2025		24.2	15	40	248	209	0.285	11	71	60
9	2026		24.2	19	44	248	205	0.244	11	61	50
10	2027		24.2	9	33	248	216	0.209	7	52	45
11	2028		24.2	9	33	248	216	0.178	6	44	38
12	2029		24.2	9	33	248	216	0.152	5	38	33
13	2030		24.2	9	33	248	216	0.130	4	32	28
14	2031		24.2	9	33	248	216	0.111	4	28	24
15	2032		24.2	9	33	248	216	0.095	3	24	21
16	2033		24.2	9	33	248	216	0.081	3	20	18
17	2034		24.2	9	33	248	216	0.070	2	17	15
18	2035		24.2	9	33	248	216	0.059	2	15	13
19	2036		24.2	9	33	248	216	0.051	2	13	11
20	2037		24.2	9	33	248	216	0.043	1	11	9
		909.3	483.1	40	1,432	3,876	2,444	5.635	642	643	0

Revenue lagged two years								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	14.2%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(65)	68	0	(68)	0.876	60	0	(60)
2	2019	204.0	24.2	(35)	193	0	(193)	0.767	148	0	(148)
3	2020	248.7	24.2	(19)	254	(99)	(353)	0.672	171	(66)	(237)
4	2021	194.3	24.2	(14)	204	(82)	(286)	0.589	120	(48)	(168)
5	2022	134.9	24.2	15	174	137	(37)	0.516	90	71	(19)
6	2023	18.4	24.2	19	62	193	131	0.452	28	87	59
7	2024		24.2	9	33	249	216	0.396	13	98	85
8	2025		24.2	15	40	249	209	0.347	14	86	72
9	2026		24.2	19	44	248	205	0.304	13	75	62
10	2027		24.2	9	33	248	216	0.266	9	66	57
11	2028		24.2	9	34	248	215	0.233	8	58	50
12	2029		24.2	9	34	248	215	0.204	7	51	44
13	2030		24.2	9	34	248	215	0.179	6	44	38
14	2031		24.2	9	34	248	215	0.157	5	39	34
15	2032		24.2	9	34	248	215	0.137	5	34	29
16	2033		24.2	9	34	248	215	0.120	4	30	26
17	2034		24.2	9	34	248	215	0.105	4	26	23
18	2035		24.2	9	34	248	215	0.092	3	23	20
19	2036		24.2	9	34	248	215	0.081	3	20	17
20	2037		24.2	9	34	248	215	0.071	2	18	15
		909.3	483.1	48	1,441	3,628	2,187	6.563	712	712	0

Revenue lagged three years								0	Present Value		
		Current values (SDG million)						EIRR	Cost	Revenue	Benefits
#	YEAR	Investment costs	Operational costs	Cost of production	Total Costs	Revenue	Benefits	11.9%	SDG million	SDG million	SDG million
1	2018	108.9	24.2	(65)	68	0	(68)	0.893	61	0	(61)
2	2019	204.0	24.2	(35)	193	0	(193)	0.798	154	0	(154)
3	2020	248.7	24.2	(19)	254	0	(254)	0.713	181	0	(181)
4	2021	194.3	24.2	(14)	204	(99)	(303)	0.637	130	(63)	(193)
5	2022	134.9	24.2	15	174	(82)	(256)	0.569	99	(46)	(145)
6	2023	18.4	24.2	19	62	137	75	0.508	31	69	38
7	2024		24.2	9	33	193	160	0.454	15	87	73
8	2025		24.2	15	40	249	209	0.405	16	101	85
9	2026		24.2	19	44	249	205	0.362	16	90	74
10	2027		24.2	9	33	248	216	0.324	11	80	70
11	2028		24.2	9	33	248	216	0.289	9	72	62
12	2029		24.2	9	33	248	216	0.258	8	64	56
13	2030		24.2	9	33	248	216	0.231	8	57	50
14	2031		24.2	9	33	248	216	0.206	7	51	44
15	2032		24.2	9	33	248	216	0.184	6	46	40
16	2033		24.2	9	33	248	216	0.164	5	41	35
17	2034		24.2	9	33	248	216	0.147	5	36	32
18	2035		24.2	9	33	248	216	0.131	4	33	28
19	2036		24.2	9	33	248	216	0.117	4	29	25
20	2037		24.2	9	33	248	216	0.105	3	26	23
		909.3	483.1	40	1,432	3,379	1,947	7.495	774	774	0

Appendix 11: Project Implementation

Manual

1. The Project Implementation Manual (PIM) will be prepared at project start up. It will consist of updating and adjusting the current PIMs of SUSTAIN and SDP to further emphasise the scaling up, marketing and capacity building dimensions of IAMDP. The PIM will have the following Table of Contents to guide the PCU and ensure timely implementation on the ground.

2. Implementation plans
   (a) Project readiness activities
   (b) Overall project implementation plan
   (c) Annual Work Plans & Budgets
3. Project management arrangements
   (a) Project implementation organizations – roles and responsibilities
   (b) Key persons involved in implementation
   (c) Project Coordination Unit
   (d) State Project Implementation Units
   (e) LET teams
4. Costs and financing
   (a) Allocation and withdrawal of grant proceeds
   (b) Fund flow diagram
   (c) Detailed cost estimates
5. Financial management
   (a) Financial management assessment
   (b) Disbursement
   (c) Accounting
   (d) Auditing
6. Procurement and consulting services
   (a) Assessment of procurement capacity
   (b) Advance contracting
   (c) Procurement of goods, works and consulting Services
   (d) Procurement plan
   (e) Consultants' Terms of Reference
7. Performance monitoring, evaluation, reporting and communications
   (a) Project design and monitoring framework
   (b) Monitoring
   (c) Evaluation
   (d) Reporting
   (e) Stakeholder Communication Strategy
8. Gender and social dimensions
9. Climate Change and Environmental Dimension.
10. Safeguards, anticorruption policy and accountability mechanism
11. Record of PIM changes

Appendix 12: Compliance with IFAD policies

1. The project is in line with IFAD Strategic Framework 2016-2025. The project activities, implementation arrangements and M&E system have been designed in compliance with IFAD Targeting Policy, IFAD's policy on Engagement in Fragile and Conflict-affected States and Situations, FAD policy on gender equality and women's empowerment and in line with the approaches outlined in the Framework for Gender Mainstreaming in IFAD investment Operations. The project is designed to be consistent with IFAD's Private Sector Development and Partnership Strategy, its Rural Finance Policy and the associated Decision Tools for Rural Finance. Finally, the project will be aligned with both IFAD's Climate Change Strategy and its Environment and Natural Resource Management Policy. The preliminary Environmental and Social category is B, considering that the project approach will promote use of climate resilient technologies and best agricultural practice.

Strategic Framework (2016-2025)

2. IFAD's Strategic Framework (2016-2025) reiterates its unique mandate of improving rural food security and nutrition and enabling rural women and men to overcome poverty. The framework identified three closely interlinked and mutually reinforcing strategic objectives: Increase poor rural people's productive capacities; Increase poor rural people's benefits from market participation; and strengthen the environmental sustainability and climate resilience of poor rural people's economic activities. IAMDP is designed to empower smallholder producers, men and women, and youth by strengthening their organizations, capacities, skills, enabling them to enhance their productive capacity and enhance their links with markets for production, processing and marketing

Social Environmental and Climate Assessment Review Note

3. The design mission reviewed the Social Environmental and Climate Assessment Procedures to determine the status of the IAMDP project with respect to its requirements. It is proposed to classify the project **as posing moderate socio-environmental risks at this design state, category B.**

IFAD Check lists

Gender checklist	**Design**
1. The project design report contains – and project implementation is based on – gender-disaggregated poverty data and an analysis of gender differences in the activities or sectors concerned, as well as an analysis of each project activity from the gender perspective to address any unintentional barriers to women's participation.	Sex-disaggregated data on poverty has been used in the analysis of proposed IAMDP activities, taking into account the specific challenges faced by women and youth in rural Sudan.
2. The project design articulates – or the project implements – actions with aim to: • Expand women's economic empowerment through access to and control over productive and household assets;	IAMDP will enhance women access to financial services and thereby enable them to accumulate human, social, physical and financial assets. The IAMDP promotes women and youth participation in farmer producer organisations.
• Strengthen women's decision-making role in the household and community and their representation in membership and leadership of local institutions;	The project will enhance women's participation and voice in decision-making by setting a target of 50% female participation in farmer producer organisations as well as 15% youth participation in all project-related decision-making bodies and committees, for example
• Achieve a reduced workload and an equitable workload balance between women and men.	IAMDP is designed to enhance women's access to financial services, marketing and value chain development. The project s will also invest in building rural infrastructure like crossings which will enhance women and youth access to markets.

Gender checklist	**Design**
3. The project design report includes one paragraph in the targeting section that explains what the project will deliver from a gender perspective.	The gender-related and social inclusion aspects of the project are summarized in the section on project area and target group.
4. The project design report describes the key elements for operationalizing the gender strategy, with respect to the relevant project components.	This is summarized in Appendix 2.
5. The design document – and the project implements – operational measures to ensure gender-equitable participation in, and benefit from, project activities. These will generally include:	
5.1 Allocating adequate human and financial resources to implement the gender strategy.	Gender sensitization and gender mainstreaming activities are costed for in the PDR and includes capacity building in the GALS methodology for extension teams as well as community members. All actions identified in the Gender Strategy have been properly costed and budgeted for.
5.2 Ensuring and supporting women's active participation in project-related activities, decision-making bodies and committees, including setting specific targets for participation.	At the community level, the participation of women in farmer producer organisations is the starting point. Gender sensitization is part of the process of engagement with rural communities. A minimum of 50% women participation in the farmer organisations and a minimum of 15% youth have been set as targets.
5.3 Ensuring that project/project management arrangements (composition of the project management unit/project coordination unit, project terms of reference for staff and implementing partners, etc. reflect attention to gender equality and women's empowerment concerns.	Gender equitable staffing is been proposed for the project management unit. Gender-sensitive language will be used to describe staff positions and responsibilities for gender mainstreaming will been detailed in TORs of all PMC staff. The project Coordinator has overall responsibility for ensuring that the gender strategy is prepared and implemented. The Community Development Officer is the gender focal point and will be responsible for coordinating the implementation of the gender and targeting strategies.The Rural Finance Specialist is responsible for implementing the gender strategy for his/her respective components. The Procurement Officer is responsible for ensuring that gender targeting concerns are reflected in the tendering process and in all contracts with service providers. The M&E and Knowledge Management Officer is responsible for public sensitization on gender and financial services and for organizing experience sharing workshops to identify, document and disseminate good practices on gender mainstreaming. Gender sensitization trainings will be given to project staff and implementing partners. At field level, the extension team and selected community members will be trained to be GALS facilitators and trainers.
5.4 Ensuring direct project/project outreach to women (for example through appropriate numbers and qualification of field staff), especially where women's mobility is limited.	The inclusion of women staff members in the extension teams responsible for supporting the establishment of farmer producer organisations is one way to ensuring direct project outreach to women and youth.
5.5 Identifying opportunities to support strategic opportunities with government and other development organizations for networking and policy dialogue.	The PCU will document and capitalize on the experience of women's participation in farmer producer groups and engage in high-level policy dialogue with concerned Ministries and stakeholders at both state and federal level.
6. The project's logical framework, M&E, and learning systems specify in design – and project M&E unit collects, analyses and interprets sex- and age-disaggregated performance and impact data, including	The number of women who would benefit from IAMDP has been clearly specified and this is indicated in the logframe. All relevant logframe indicators (i.e., all those dealing with people) are sex-disaggregated.

Gender checklist	Design
specific indicators on gender equality and women's empowerment.	

IFAD Targeting checklist

Targeting checklist	Design
1. Does the main target group – those expected to benefit most – correspond to IFAD's target group as defined by the Targeting Policy (poorer households and food insecure)?	The project targets poor rural smallholder farmer households including women headed households and youth.
2. Have target sub-groups been identified and described according to their different socio-economic characteristics, assets and livelihoods – with attention to gender and youth differences (matrix on target group characteristics completed)?	The project target group is described as (i) small holder farmers, (ii) women headed households (iii) rural youth. Their socioeconomic characteristics have been described in the PDR.
3. Is evidence provided of interest in and likely uptake of the proposed activities by the identified target sub-groups? What is the evidence (matrix on analysis of project components and activities by principal beneficiary groups completed)?	There is a huge unmet demand for access to finance, agricultural inputs, marketing and value chain development among the targeted groups.
4. Does the design document describe a feasible and operational targeting strategy in line with the Targeting Policy, involving some or all of the following measures and methods:	
4.1 ***Geographic targeting*** *– based on poverty data or proxy indicators to identify, for area-based projects or projects, geographic areas (and within these, communities) with high concentration of poor people;*	Localities and communities have been selected on the following criteria: (i) high poverty levels and sufficient numbers of potential beneficiaries, particularly women and youth; (ii) coverage under the on-going IFAD co-financed projects and potential to capitalize on successful approaches, and (iii) potential for crop production and marketing of Groundnuts, sesame, sorghum and gum Arabic. In Sinnar state about 80% of the population lives in rural areas and about 44 % of the population is classified as poor, compared to the national poverty level for Sudan which is 46.5 %. In the greater Kordofan region the rural population is estimated at 80% in NK (WK included) and 77% in South Kordofan. In 2009 the poverty head count was 58% for NK (WK included) and 60% for SK, significantly high compared to national poverty levels.
4.2 ***Self-targeting*** *– when good and services respond to the priority needs, resource endowments and livelihood strategies of target groups;*	The targeting and self-targeting of youth, women, and rural poor and small-scale farmers will be achieved though: (i) promotion of activities with a relatively low barrier of entry which is not attractive to large-scale agricultural enterprises; and (ii) facilitation, empowerment and capacity-building measures to encourage active participation. These measures include: (i) information and mobilisation campaigns through producer organisations); (ii) group-based approaches and schemes to lower entry thresholds for the rural poor; (iii) linkages with the microfinance sector to leverage their investment capacity; (iv) institutional strengthening of groups and management training of their members.
4.3 ***Direct targeting*** *– when services or resources are*	Project beneficiaries will be organised in farmer producer groups,

Targeting checklist	**Design**
to be channelled to specific individuals or households;	including women and youth.
4.4 ***Empowering measures*** *– including information and communication, focused capacity- and confidence-building measures, organizational support, in order to empower and encourage the more active participation and inclusion in planning and decision-making of people who traditionally have less voice and power;*	Farmer producer organisations are highly empowering to members including women and youth; they build social and psychological self-confidence hand in hand with economic empowerment and build the capacity members to access better prices, along with increased market access and value addition skills. Through Saving and Credit Groups women learn that they can successfully save on a regular basis, borrow and repay, and make good profits on petty trading of local products. Savings empower them to pay children's education, smooth consumption, improve their homes and diets, and accumulate livelihood assets. The GALS methodology will increase gender equality at HH level.
4.5 ***Enabling measures*** *– to strengthen stakeholders' and partners' attitude and commitment to poverty targeting, gender equality and women's empowerment, including policy dialogue, awareness-raising and capacity-building;*	The gender and targeting strategy of the IAMDP will build on the good experiences of the SDP, SUSTAIN and WSRMP projects in Sudan.
4.6 ***Procedural measures*** *– that could militate against participation by the intended target groups;*	Procedural measures are addressed in the PDR to prevent guide in the selection of the poorest project areas. Attention will be given to costs/contributions, timing and administrative procedures required for effective participation of the various target groups in project activities. Transparency and clarity in procedures for decision-making will be promoted. All members of groups will be encouraged to participate in business ventures.
4.7 ***Operational measures*** *– appropriate project/project management arrangements, staffing, selection of implementation partners and service providers.*	Targeting responsibilities are explicitly mentioned in TORs for all PCU staff. Project coordinator will be responsible for seeing that gender and poverty targeting is effective. All service provider contracts make them accountable for targeting. Service providers will be assessed on their proven track record with poverty, gender and youth targeting.
5. Monitoring targeting performance. Does the design document specify that targeting performance will be monitored using participatory M&E, and also be assessed at mid-term review? Does the M&E framework allow for the collection/analysis of sex-disaggregated data and are there gender-sensitive indicators against which to monitor/evaluate outputs, outcomes and impacts?	The M&E design gives strong emphasis to monitoring of targeting performance. Project will collect and report on sex-disaggregated data for all project activities. Poverty status of households will also be monitored at baseline, MTR and PCR using poverty scorecards.

Appendix 13: Contents of the project life file

A. Project-generated knowledge

- ✓ IAMDP Project Concept Note
- ✓ WP 1: SECAP report
- ✓ IAMDP Detailed Design Report

B. IFAD knowledge base not generated by the project

- ✓ Result-based Country Strategic Opportunities Project for Sudan (RB-COSOP), November 2013.
- ✓ Sudan COSOP Results Review (CRR), IFAD January 2017
- ✓ Value Chain Study: Sesame, Groundnuts, Sorghum, IFAD February 2017
- ✓ Gum Arabic Production and Marketing Project (GAPMP), PCR, IFAD 2015
- ✓ IFAD Policies and Strategies (IFAD Strategic Framework 2016-2025, Environmental and Social Assessment, Climate Change, Gender, Targeting, Private Sector Development and Partnership, Rural Enterprise, Rural Finance, Preventing Fraud and Corruption, Procurement, Supervision and Implementation Support, Project M&E, Innovation, Knowledge Management, Environment and Natural Resources Management Policy).
- ✓ Country portfolio of loans and grants.
- ✓ Country Project Issues Sheets and Project Status Reports.
- ✓ Recent supervision reports and Mid-Term Reviews of projects in Sudan portfolio: Western Sudan Resources Management Project (WSRMP); Butana Integrated Rural Development Project (BIRDP); and Supporting Small-scale Traditional Rainfed Producers in Sinnar State (SUSTAIN), Seed Development Project (SDP) a Western Sudan Resources Management Project (WSRMP).

C. Knowledge base not generated by the Project

- ✓ Sudan Interim Poverty Reduction Strategy Paper, January 2013.
- ✓ Study commissioned by IFAD on Potential Compensating Sectors for the Reduction in Oil Resources for the Sudan Economy, HAT Professional Consultancy Team Ltd, May 2011.
- ✓ Sudan Revitalizing non-oil export: Diagnostic Trade Integration Study for the Integrated Framework Project.