IFAD

Enabling poor rural people
to overcome poverty

Republic of Rwanda

Climate Resilient Post-Harvest and Agribusiness Support Project (PASP) including blended Adaptation for Smallholder Agriculture Programme Grant (ASAP)

Detailed design report

Main report and appendices

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Currency equivalents

Currency Unit	=	Rwandan Franc (RwF)
US$1.0	=	RwF 640

Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

Fiscal year

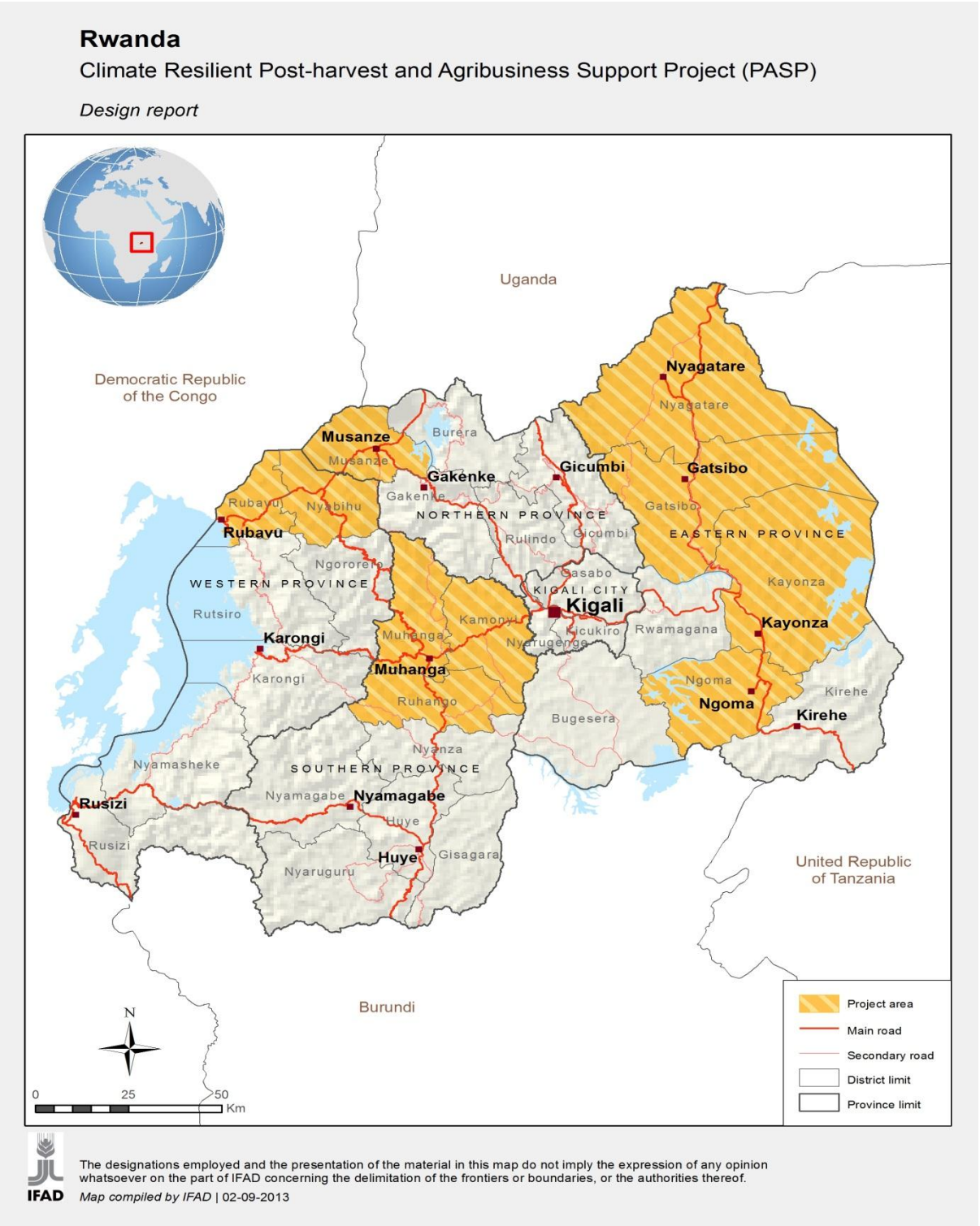
1 July – 30 June

Abbreviations and acronyms

AfDB	African Development Bank
AFR	Access to Finance Rwanda
AGF	Agriculture Guarantee Fund
AMIR	Association of Microfinance Institutions of Rwanda
ASAP	Adaption for Smallholder Agriculture Programme (IFAD grant)
AWPB	Annual Work Plan and Budget
BDF	BRD Development Fund
BDS	Business development services
BRD	Development Bank of Rwanda
BTC	Belgian Technical Cooperation
CAADP	Comprehensive Africa Agriculture Development Programme
CIP	Crop Intensification Programme
COAMV	Cooperative de Agriculteurs de Mais dans la Zone de Volcans
COSOP	Country Strategic Opportunities Programme
DAIM	Department of Agricultural Infrastructure and Mechanisation
DCO	District cooperative officer (sometimes economic development officer)
DFID	Department for International Development (of the UK)
DMO	District mechanisation officer
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
EICV3	Third Integrated Household Living Conditions Survey
FAO	Food and Agriculture Organisation of the UN
FEWSnet	Famine Early Warning Systems Network
GDP	Gross Domestic Product
GoR	Government of Rwanda
HUBC	(District) HUB coordinator
HUBF	HUB facilitator
HUBSG	HUB support group (based in the SPIU)
ICT	Information and Telecommunications Technologies
IFAD	International Fund for Agriculture Development
IFDC	International Fertiliser Development Corporation
IPM	Integrated Pest Management
ISAR	Institute of Agriculture Research of Rwanda
ITCZ	Inter-Tropical Convergence Zone
JADF	(District level) Joint Action Develop Forum
KM	Knowledge Management
KWAMP	Kirehe Community-based Watershed Management project
M&E	Monitoring and evaluation
MCC	Milk collection centre
MFI	Microfinance institutions
MIGEPROF	Ministry of Gender and Family Promotion
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINICOM	Ministry of Commerce and Industries
MINISANTE	Ministry of Health
MOU	Memorandum of Understanding
MYICT	Ministry of Youth and ICT
NAEB	National Agriculture Export Development Board

NAPA	National Adaptation Programme
NCCR	National Confederation of Cooperatives of Rwanda
NSCCLCD	National Strategy on Climate Change and Low Carbon Development
NGO	Non-governmental organisation
NISR	National Institute of Statistics of Rwanda
PAP	Product aggregation point
PAPF	PAP facilitators
PASP	Climate Resilient Post-harvest Agribusiness Support Project
PDRCIU	*Umutara* Community Resource and Infrastructure Development Programme
PEFA	Public Expenditure and Financial Accountability
PFMRAF	Public Financial Management Risk Assessment
PHHS	Post-harvest Handling and Storage Project
PHHTF	Post-harvest and Handling Task Force
PHSCS	National Post-harvest Staple Crop Strategy
PLS	Project Learning System
PPP	Public-private partnership
PPPMER II	Rural Small and Micro-Enterprises Promotion Project
PRICE	Project for Rural Income through Exports
PROBA	(PPPMER) Proximity Business Advisory
PSF	(Rwandan) Private Sector Federation
PSTA	Strategic Plan for the Transformation of Agriculture
RAB	Rwanda Agriculture Board
RADA	Rwanda Agricultural Development Authority
RADD	Rwanda Agriculture Dealer Development
RARDA	Rwanda Animal Resources Development Authority
RBS	Rwanda Bureau of Standards
RCA	Rwanda Cooperative Agency
RDB	Rwanda Development Board
REMA	Rwanda Environmental Management Authority
RMS	Rwanda Meteorological Service
RIF 2	Rural Infrastructure Facility II
RIMS	Results and Impact Management System (of IFAD)
SACCO	Savings and Credit Cooperative
SME	Small and medium enterprise
SMEGF	SME Guarantee Fund
SNV	Netherlands Development Organisation
SPIU	Single programme implementation unit
SEI	Stockholm Environment Institute
SWAp	Sector-wide approach
TB-AGI	Tony Blair- Africa Governance Initiative
TFI&M	Task Force for Irrigation and Mechanisation
TP	Turnaround Programme
USAID	United States Agency for International Development
USD	United States Dollar
WB	World Bank
WFP	World Food Programme

Map of the project area



Logical Framework

NARRATIVE SUMMARY	VERIFIABLE INDICATORS (*gender / vulnerable group disaggregated; RL: RIMS-level 1 (output) or 2 (outcome) indicators)	MEANS OF VERIFICATION	ASSUMPTIONS (A) AND RISKS (R)
OVERALL GOAL To alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda	• RL3: Increased ownership of household assets (household asset index)* (Targets defined in Baseline survey) • RL3: Prevalence of child malnutrition* amongst the 15,000 HHs reduced by 5 % points by end of project.	National statistics (EICV) Baseline and completion surveys	
PROJECT DEVELOPMENT OBJECTIVE Increased smallholder and rural worker incomes (including women, youth and vulnerable groups) from CIP crop and dairy PHHS-related businesses	• 155,000 direct beneficiaries of which 40% are women and 20 % youth • Average income increased by 15 % for at least half of the project's direct beneficiaries by end of project. • At least 5 % points of increased farm income derived from focused products and dairy by MTR and 10 % points by end of project. • At least 155,000 poor smallholder household members with increased food security and climate resilience (ASAP) • At least 25,000 small-farm households that are engaged with participating HUBs gain access to additional harvest and post-harvest technology options which help them reduce climate risks (ASAP) • 20% reduction in level of CIP crops post-harvest losses and milk spoilage over available baseline • At least US$29 million in leveraged commercial borrowing and other private sector resources for scaling up inclusive[1] business investments in climate resilient post-harvest handling, processing and marketing, and for actions that align scalable PPPs with such businesses • US$ value of new and existing post-harvest facilities and infrastructure made climate resilient (ASAP)	Baseline and completion surveys Annual participatory studies Case studies on HUBs to assess changes	Government agriculture and SME policies remain in place over the project life (A) Favourable economic environment /export prices (A) Continued GoR commitment to promoting PASP value chains (R)

[1] The term 'inclusive' means businesses that have Base-of-the-Pyramid (BoP) populations *(Ubudehe* cat. II, III and IV: very poor, poor and resourceful poor) as both customers and clients, and through which smallholder producers and entrepreneurs can hold on to their primary assets, i.e. land, water and labor to leverage technology, markets, jobs, capital from the larger scale investor.

Component 1: **HUB capacity development programme and business coaching**			
Outcome: Participating HUBs have the skills and technologies, as well as access to specialized service providers, to create and operate viable businesses capable of delivering larger volumes of improved produce to the market and manage climate risks in post-production processes[2]	• 80% of participating HUBs in each selected value chain identify and address their business management and financial skill gaps and produce bankable business plans • RL1: No. of people trained in post-production, processing and marketing • 80% of participating HUBs identify and develop business proposals to commercial viability related to aggregating production from CIP crops and dairy for markets, supporting transformation and creating value-added to enable smallholders to capture a higher share of the value • 80% of participating HUBs acquire required capacities to implement climate risk management strategies with clients and members (ASAP) • 100% of HUB business plans incorporate climate change adaptation and food security measures including capacity building on climate resilient processing, handling and storage techniques (ASAP) • RL2: 80 % of participating HUBs implement new marketing contracts with buyers (traders, WFP, linkages with agro-processers, etc.)	Baseline and completion surveys and case studies Client satisfaction surveys PASP monitoring system Case studies on HUBs monitoring planned and actual outcomes of business plans Post training capacity assessment and targeted impact studies of HUB capability changes District databases on activities and outcomes of HUB activities	Cooperatives remain the focus for GoR support to development of SMEs and agricultural value addition (A) Continued good collaboration between RCA and the Apex cooperative federations (A) PASP implementation partners (PHHTF, RAB) deliver required business services within their mandate to support PASP implementation and incorporate assessment and mitigation strategies of short and long term climate risks in their services (A) Business management capacity of the HUBs does not develop fast enough to cope with their expansion and manage their value chain development effectively

[2] Under PASP, a 'climate resilient' household is defined as a household that has access to timely and relevant climate information, additional technology options for crop and dairy production, and improved post-harvest storage for crop and dairy products.

Component 2: **Post-harvest climate resilient agri-business investment support**			
Outcome: HUB investments in climate -resilient and low carbon technologies reduce post-harvest losses and increase smallholder incomes	• 80 % of participating HUBs implement business plans that increase HUB profits • 20% of participating HUBs make significant (> RwF 90 million) new capital investments in value adding and/or market development activities based on expanded finance from commercial banks and the private sector • RL1: 80% of participating HUBs are able to access financing under commercial conditions at the end of the project • 80% of participating farmers (disaggregated by sex) adopt best practices for post-harvest, crop drying/milk cooling and storage[3] (ASAP) • 80% of participating HUBs introduce relevant water-harvesting and management technology and/or show significantly reduced water usage (ASAP) • Percentage increase on the number of private sector players collaborating with participating HUBs and PASP to establish and expand sustainable business linkages with the evolving PHHS enterprises of poor smallholders	Client satisfaction surveys AFR reviews and studies Project baseline and completion surveys and case studies Loan assessments from BDF Monthly and annual BDF reports to SPIU	Limited capacity of HUBs to originate and develop sound and bankable business proposals (R) Business management capacity of new HUBs does not develop fast enough to cope with their expansion and manage their activities to support the value chain development (R) Price volatility and transport cost disadvantages compared to competing regional production (R) Adoption of post-harvest and value addition mechanisation is slower than planned (R) Inadequate loan collateral provided by HUBs requiring loan guarantees are a major constraint to lending to HUBs (A) Domestic and regional export markets can absorb extra production (A)

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[3] Best practices include access to appropriate climate information services to ensure timely harvest and drying, low carbon energy source for drying and cooling, improved storage methods such hermetically sealed bags, sufficient pallets to keep produce of the floor and assist with ventilation, and building codes and standards to ensure infrastructure resilient to high winds and intense rainfall events.

I. Strategic context and rationale

A. Country and rural development and poverty context

1. Rwanda is a small, land-locked country with limited natural resources and a modest mining industry. The population has grown at a rate of 2.6% in the last ten years, reaching a total of 10.8 million and a population density of 416 in 2012, the highest in Africa. From a tragically-low starting point in 1994, Rwanda has achieved extraordinary results in two decades. Thanks to strong economic growth in the last 10 years, poverty has declined from 57% (2005) to 45% (2011) but it remains high in rural areas.

2. The long-term development goals of the Government of Rwanda (GoR or the government) are embedded in its Vision 2020 which is founded on good governance, development of human resources, a private-sector-led economy, infrastructure development, market-led agriculture, and regional economic integration. Vision 2020 seeks to transform the country from a low-income agriculture-based economy into a service-oriented economy by 2020.

3. It sets out ambitious objectives: by 2020, GDP per capita should have grown from US$250 to 900 (it has increased to US$520 since 2000) and less than 30% of the population should still live under the poverty line (estimated in 2012 at US$194 per adult per year). Rural economic transformation through the modernisation of the agriculture sector is one of the key priority areas: by 2020, agricultural production should have tripled, exports increased five times and the population depending on primary agricultural production reduced to 50%.

4. Strategies for achieving these objectives are articulated in the 2013-2018 Economic Development and Poverty Reduction Strategy II (EDPRS II). EDPRS II is structured around five thematic priorities: (i) economic transformation for rapid growth, including diversifying the economic base for exports; (ii) private sector development, competitiveness and service delivery; (iii) rural development, including agriculture modernization, environment and climate change; (iv) productivity and youth employment creation, including education and skills development and job creation; and (v) accountable governance.

5. In recent years, Rwanda has made great progress in deepening reforms, especially those designed to improve the business environment to support a private sector led development model. The achievements made during the period of the first EDPRS (2008-2012) have been remarkable in terms of economic growth and increased incomes, but also in other dimensions of well-being. The country's GDP has grown by an average of 8% annually during the past 20 years, and GDP per capita reached US$644 in 2012 (from US$479 in 2008).

6. Rwanda's successful performance has been driven by stable macroeconomic and market-oriented policies, improved regulatory frameworks and relatively transparent interactions with the private sector. A strong anti-corruption policy has increased business confidence. This growth, however, has had less-than-expected effects on the poorer strata of the population, as shown by the Gini coefficient in the last decade.

7. Despite the country's success in having established a sound investment climate, foreign direct investments remain at low levels. The private sector is still nascent and could profit much from access to technological know-how and established distribution channels abroad. The major constraints to accelerated growth, investments and exports are the lack of economic infrastructure, the still limited skills base and an increasing vulnerability to climate risks such as drought, floods, intense and erratic rainfall, associated high winds and temperature shifts. If not addressed, existing climate variability, will impose significant economic costs on this growth. A 2009 study by the Stockholm Environment Institute (SEI) estimates that adaptation to climate change will cost Rwanda US$50-300 million per year by 2030[1]. The potential impacts of increased climatic risk on agricultural productivity and post-harvest processes in Rwanda are discussed in WP 1 and summarized in Appendix 1, Attachment 3.

[1] The Economics of Climate Change in Rwanda. The report used case studies of recent natural disasters to estimate losses incurred because of the example disasters. However, the report did not make estimates of the annual total losses due to natural disasters.

8. Rwanda is also attributing high importance to increased regional integration and is already benefitting from the positive growth momentum in East Africa. But large growth potentials are yet to be realized, such as benefitting from regional power trade. On July 1, 2010 the East Africa Community (EAC) Common Market became effective, and Rwanda implemented the EAC Common External Tariff Framework.

Agriculture and rural poverty

9. Over the last five years, the population of Rwanda has grown from 9.5 million to an estimated 10.8 million. Rwanda's society is still largely rural (85%) and agriculture dependent. Households manage complex, mostly rainfed, farming systems. Due to the country's mountainous geography, only about 60% of the total land area is currently under cultivation. The favourable climatic conditions and the generally fertile soils allow cultivation of a wide range of agricultural products comprised of both cash and food crops. Tea and coffee are by far the main traditional export crops, providing 70% of agricultural export earnings. Food crops cover around 67% of cultivated area with two-thirds consumed by the family but an increasing proportion of households are now selling staple crops. The main food crops include rainfed sorghum, banana, beans, sweet potato and cassava, but maize, rice, Irish potato and fruits and vegetables have emerged as important smallholder crops. Encouraged by government policy, dairy production is also widespread and increasing.

10. Recognized in EDPRS II as a priority sector, agriculture is at the heart of Rwanda's economy and, together with services, one of two key growth engines capable of contributing significantly to poverty reduction. The government objective is to move agriculture from subsistence to commercial production and from low- to high-value products. The agricultural sector grew at an average of 4.9% over the last five years, contributing about 36% to GDP. The sector occupies 80% of the labour force, a high percentage of which is composed of women, and generates more than 45% of the country's export revenues. Agriculture contributes to national food self-sufficiency, providing over 90% of all food consumed.

11. The realization of the Rwanda Vision 2020 and the EDPRS II will primarily depend on the dynamism of the agricultural sector and in particular the growth and sustainability of food crops in face of increasing climatic uncertainties. To achieve this goal, the GoR has made enormous strides in improving the physical and policy environment for agricultural intensification and growth, has created a dairy sector in which very large numbers of farm families participate, has established a fertilizer distribution network, has laid foundations for stronger cooperation among farmers for the purpose of bulking up output, and has initiated the development of modern post-harvest infrastructure in key value chains.

12. According to the recent World Bank Rwanda Economic Update (2013), higher agricultural productivity has been the main driver of growth and poverty reduction in Rwanda (14 percentage points) over the last 10 years. Together with increased commercialization of agriculture production, reflected in the rising share of harvests sold on local markets, the increase in production accounted for about 45% of the reduction in poverty in the last decade.

13. Public expenditure on agriculture consistently rose by an annual average of 10% for the last four years, corresponding to almost 6% of the total government budget. However, it remains modest when compared with the Comprehensive Africa Agriculture Development Programme (CAADP) annual agricultural budget-share target of 10%. At an average of 5.5%, Rwanda is making progress to reach the CAADP 6% annual agricultural growth rate by 2015. However, the government budget is highly dependent on foreign aid (40% of the national budget). This could be a potential risk to public investment stability and sustainability.

14. Given these important demands on public sector resources, the development of partnerships with the private sector takes on increasing urgency in Rwanda. Government is aware of the importance that public resources be channelled to the sector in ways that are designed to promote efficiency. This has meant targeting public support on actions that have sector-wide reach, such as infrastructure development (including irrigation and terracing), strengthening of human capital, and interventions that catalyse public-private partnerships to help aggregate production for markets, support transformation, and create value-added.

15. **Rural poverty.** The recently published Third Integrated Household Living Conditions Survey (EICV3) shows that the standard of living of Rwanda's population has improved over the last five

years, the birth rate has fallen, literacy levels amongst the young have grown, electrification has been improved as have sanitation methods and access to health. The proportion of the population below the poverty line decreased from 58.9 to 44.9% and extreme poverty fell from 40 to 24% in the last decade. Despite these achievements, poverty is still widespread and extremely deep.

16. Poverty and extreme poverty are estimated at 48.7% and 26.4% in rural areas. The Northern and Eastern provinces have seen the most improvement while the Western and Southern provinces still have the highest percentages of poverty at 56 and 48%, respectively. The prevalence of chronic malnutrition (stunting) among children under five remains very high (43%). In addition, Rwanda ranks 167th of 186 countries in the 2012 Human Development Index (HDI) and 76th out of 148 countries in the Gender Inequality Index (GII).

17. Production systems are based on small family farms that cultivate an average of 0.76 ha, with 26% having less than 0.2 ha, thus severely restricting the ability of the rural population to escape poverty. Poorest households tend to have no land or very small landholdings, low levels of literacy, and poor access to services. Food insecure households tend to be headed by women, elderly and uneducated.

18. **Natural resource base.** Rwanda is ecologically diverse ranging from highland mountain forests to savannah grasslands and low altitude marshes. In the west and north west there are highland mountain landscapes changing to rolling plains in the lowland areas in the east. Most of the country has two agriculture seasons supported by two rainy seasons. Some lowland marshland areas have a third season. About 52% of the countries' 165,000 ha of marshlands are under cultivation. The major natural resource management issue is the pressure a growing population is exerting on natural resources (land, water, forests, flora, fauna and non-renewable resources) which have been degrading for decades. This degradation includes deforestation, depletion of bio-diversity, erosion and landslides, pollution of waterways and degradation of fragile ecosystems, such as swamps and wetlands. Environmental problems are exacerbated by poor location of industries and direct disposal of their untreated wastes into waterways and lakes.

19. To support a more sustainable development pathway, the GoR is focusing on implementation of appropriate land and water management policies and programmes, coupled with a sound biodiversity and climate change policies. As part of protecting and managing natural resources, Rwanda intends to reduce from 90 to 50% the number of households mainly dependent on traditional agriculture. To assist this change, environmental aspects are integrated into all sector policies, education and development plans, and in all decision-making spheres of government. Community involvement (including women and youth) is promoted in environmental protection and management. The Government has recently carried out an Strategic Environmental Assessment (SEA) of the agriculture sector with EU support. Regarding crop intensification, the SEA recommended to give special emphasis to soil acidity and nutrient management, pest and disease management, soil and water conservation and crop variety selection.

20. **Climate change.** Rwanda's Economic Development Strategy is highly vulnerable to climate change as it depends on rainfed agriculture for supporting rural livelihoods and exports. This is already borne out through frequent extreme weather events that cause major socio-economic impacts and reduce economic growth in different regions (see WP 1 for a complete discussion). The impacts of floods and droughts associated with El Niño and La Niña events of recent years are thought to have been exacerbated by climate change and the poor environmental conditions prevailing in the country (NAPA[2]). Climate model scenarios show increases in mean annual temperature of up to 3.25°C by the end of the century, which are expected to cause further significant losses to agricultural production that are currently estimated anything from 15 to 40% depending on source and commodity[3]. Changes in rainfall are more uncertain, though most models predict that rainfall intensity will increase and there may be a change in the timing of the two cropping seasons that historically characterised Rwanda's rainfed systems. The potential impacts of increased climatic risk on agricultural productivity and post-harvest processes in Rwanda for all major CIP crops and dairy are

[2] National Adaptation Plan of Action (NAPA), Republic of Rwanda, 2006. Ministry of Lands, Environment, Forestry, Water And Mines, Kigali.
[3] African Post-Harvest Losses Information Systems (APHLIS website); USAID, MINAGRI and CARANA, Postharvest Baseline Survey of Rwandan Maize and Rice farming households; Smallholder Post-harvest Innovations Project (SPIP) – Mid Term Project Report, IFAD Policy and Technical Advisory Division, May 2013.

discussed in WP 1 and summarized in Appendix 1, Attachment 3. Key activities and investments to address these emerging issues are also discussed together with indicators of success.

21. **Rural women.** Progress in women's participation in society represents an ambitious national objective and an indicator of Rwanda's commitment to empowering women. An estimated 56% of the members of Parliament and one third of the Cabinet are women. While the GoR vision and national gender policy is inclusive of women with a target representation at 30% across the employment structure, further analysis shows that, while they not under-represented in management, women often lack a voice and true empowerment. They represent 53% of the population and close to 30% of the most vulnerable households are headed by women under 21 year old. The incidence of poverty is 7% higher in women-headed households (62% compared with 54% of the households headed by men). Women concentrate their work in agriculture (82% are active in the sector) and find it more difficult to find alternative non-farm employment (over the last five years, only 4% of women managed to find work outside of agriculture, as opposed to 9% among men). They have the lowest levels of schooling and highest levels of illiteracy (23%) and are often unable to move beyond subsistence agriculture, have limited market access information; lack access to knowledge and finance; and have difficulty in participating in new ventures and agri-businesses which could provide additional economic opportunities. Women are associated with primary processing and marketing of small quantities in the local markets. It is harder for women to accumulate livestock assets as cattle ownership is predominantly in men's hands which has direct implications for improving the milk value chain. Women-headed households are less resilient to both economic and climatic shocks and have limited or no savings. As agricultural wage labourers, they are paid as little as RwF 800 (US$1.3) per day. Impoverished women are also vulnerable to discrimination and to a vicious cycle of inadequate health care and education and a lack of awareness of their legal rights.

22. **Rural youth and employment**. The number of people aged 16 and above in Rwanda has grown from about 4.1 million in 2001 to 5.9 million in 2011, a growth of some 1.8 million adults. Ministry of Youth data report that youth (age 14-35) represent approximately 40% of the total population in 2011 and 51.6% are girls. No specific data is available as to youth employment breakdowns but given land constraints, providing sufficient work opportunities for those youth without access to productive resources is a major challenge for the country. The majority of the new off-farm jobs created are in small and microenterprises in the informal sector. The government has a target of 200,000 new jobs created per year.

23. **Intensification of crop production.** The Crop Intensification Programme (CIP) is a flagship programme implemented by the Ministry of Agriculture and Animal Resources (MINAGRI) since 2007. CIP focuses on six priority crops: maize, wheat, rice, Irish potato, beans and cassava and aims to significantly increase food crop production. The programme includes facilitation of access to improved seeds and fertilizers, consolidation of land use for more effective use[4], and provision of advisory services and improvement of post-harvest handling and storage facilities.

24. Key accomplishments under the CIP include: (i) increased use of improved seeds for maize (by 61.8%), wheat (46.3%) and Irish potato (16.3%); and (ii) doubled national average in the use of fertilizer: from 8.5 kg per ha in 2006 to around 16 kg per ha in 2010. Yields have significantly increased and overall production, assisted by the land-use consolidation programme, increased without expanding the total area under cultivation: The total production of maize, wheat and cassava tripled from 2007 to 2011, the production of beans doubled, and that of rice and Irish potato increased by 30%.

25. Concurrent with the increase in crop production, Rwanda has also seen a shift toward more commercial agriculture, with marketed output increasing in all provinces from 22% in 2005/6 to 27% in 2010/11. Future CIP challenges include increasing the effectiveness of the farm inputs used, gradually exiting from input subsidies without reducing input use and crop productivity, reducing harvest and post-harvest losses in the face of an increasingly variable climate, and strengthening smallholders' links to markets and information services. An overview of production and the local and regional markets for the CIP crops, and a SWOT analysis on the prioritized crops are provided in Appendix 1, Attachment 1 and 2, respectively.

[4] See Attachment 3 in Appendix 1 for a discussion of the land-use consolidation programme.

26. **Livestock and crop-livestock integration.** Livestock, particularly dairy cattle, has historically been an integral part of production systems in Rwanda. This affinity with cattle and milk production has led the GoR to place a high priority on increasing milk production both to improve the level of nutrition in rural and urban areas and as a pathway for very poor families to lift themselves out of poverty. Diverse production systems are present, from agro-pastoral extensive systems in the Eastern province, where more than 40% of the herds are concentrated, to integrated crop/livestock systems. During the period of the genocide, 80% of the cattle and 90% of small ruminants were decimated, but restocking has been actively supported in the last decade, practically re-establishing the number of animals to 1994 levels.

27. The 'one cow per poor family's programme' (*girinka*) aims to distribute cattle to poor households, and has been successful in raising rural incomes and increasing milk production from 50,000 tons in 2000 to 450,000 tons in 2012 but there has been a lag in the effective management of milk collection and aggregation centres and transport services. Being predominantly an occupation of women, smallholder dairy farming holds great potential for economic empowerment of rural women. The sector is however vulnerable to climate change on the production side, as water becomes scarce for fodder production in some areas, and as temperature fluctuations require changes in forage feeding systems and complicate the safe storage and cooling of milk in the supply chain to consumers.

28. **Farmers' organizations, cooperatives and rural enterprises**. Rwanda has had a variety of traditional forms of self-help groups, some of which have survived to the present day[5]. The Government has supported transformation of these traditional systems of solidarity and mutual assistance into economically oriented development structures such as cooperatives. As a result of this effort, the number of cooperatives has increased from about 900 in 2005 to 4,987 registered cooperatives in 2012 with some two million individuals currently organised into these cooperatives. Over a third of cooperative members are women and they account for about 34% of cooperative management board members, above the legal requirement of 30%. It is commonly accepted that the majority of cooperatives' members have weak knowledge of their rights and duties as well as limited business skills and low levels of literacy.

29. The majority of smallholders in Rwanda are organised into cooperatives, and formal support to different agricultural products, including food crops, is organised along crop-specific supply or value chains. About 40% of cooperatives are product-specific agricultural cooperative societies based on the *Umurenge* (sector) or village level and have formed commodity-specific unions, mostly at district level. The unions have established national federations to represent commodities or products which offers great potential, particularly in the markets for rice, tea, coffee, potato, cassava and maize or milk. These groups promote agricultural activities and extension services among their members, as do commodity-specific farmer federations which may encompass pre-production services, production support, and post-harvesting processing operations all the way to consumers. The large number of cooperatives provides a range of entry points for support to the rural sector and priority target groups. However, most local cooperatives have very weak financial management and poor control over their limited resources, and private-sector involvement remain limited or informal.

30. **The Rwanda Cooperative Agency** (RCA) plays an oversight role, but is also involved in building cooperatives' administrative and managerial capacities. Since the market orientation of the agricultural sector is increasing, there is general consensus that large numbers of smallholders with their small plot sizes can boost their revenue from agricultural production only if they are organised in well-functioning cooperative structures on consolidated land-use areas. The National Cooperative Confederations of Rwanda (NCCR), established in 2010, is the apex group for cooperative federations, unions, and local cooperatives. NCCR provides a vertical network of cooperative organisations and a structure for both advocacy and information channels from the village level to the national level and vice versa.

31. Many Rwanda farmers and rural business people do not belong to cooperatives and operate **micro, small and medium enterprises** (SME) and other forms of business partnerships outside the cooperative structures. Until recently, the SMEs have had limited access to government support which is largely directed through cooperatives. The Rwanda Chamber of Commerce supports private businesses in the agricultural sector and established an agricultural chamber in 2011. Private

[5] *Ubudehe* (working together), *Umubyizi* (assisting each other) and *Umuganda* (community work).

enterprises are also represented by the Private Sector Federation (PSF) which has a section addressing agricultural SME issues and another section providing business development services to SMEs across the country.

32. **Business Development Services** (BDS) are also provided through the recently privatised business development centres (BDC) created at each district centre by the Rwanda Development Board (RDB). The IFAD-funded Rural Small and Micro-Enterprises Promotion Project (PPPMER II) implemented through the Ministry of Industry and Commerce (MINICOM) has also developed a cadre of 416 business advisers (one per each sector) who are under the coordination of a rural small and medium enterprise facilitator in every district to support rural SMEs across Rwanda. In addition, individual BDS providers can be found across the country who develop business plans for SMEs and undertake contract work for commercial banks assessing loan proposals.

33. **Extension services** are available to less than 15% of rural households. Public extension services have lacked resources, are generally not demand-driven or gender sensitive, and have focused mostly on agricultural techniques, leaving out critical elements such as climate information services, marketing and management. There is even less support for post-harvest handling and product handling with the Post-harvest and Handling Task Force (PHHTF) implementing some activities for the CIP crops. Most post-harvest and value addition issues are addressed through development partner-supported programmes. The National Extension Strategy (2008) promoted a new demand-driven approach aiming at developing professional cooperatives and building on the diversity of public, private and associative service providers in the rural areas. For agricultural research, the national agricultural research organisation has been integrated within the new Rwanda Agriculture Board (RAB) structure aimed at providing more responsive services to agricultural value chains.

Policy, strategy and institutional context

34. Rwanda's governance culture is highly results oriented, thus ensuring that policies and strategies are implemented. Since the 1994 genocide, the Government has sought to create a more-inclusive form of governance based on one national identity and increased decentralization. A special feature in Rwanda is the adoption of 'annual performance contracts' (*imihigo*) at all levels of government to create incentives for public-sector accountability and achievement of verifiable development targets. Cooperatives have significantly contributed to rebuilding social capital and cohesion among the rural poor and are increasingly providing technical assistance to members, extending credit, facilitating access to inputs and organizing collective marketing. Associations of off-farm producers are emerging, and farmers' organizations organized in commodity chains are also becoming more vocal and representative.

35. **National rural poverty reduction strategy.** The most current policy document covering the agricultural sector is the 2013-2016 Strategic Plan for the Transformation of Agriculture (PSTA III). In the process of being adopted, PSTA III aims at translating GoR policy objectives into a comprehensive roadmap to transform Rwanda's agriculture from a subsistence to a knowledge-based, value-creating sector while ensuring food security and preserving natural resources. It places emphasis on value chains and markets; product quality and premium prices; bulking up production to facilitate access to inputs, services and markets; increasing exports; and expanding the role of the private sector in irrigated production. Reducing losses through post-harvest facilities are also expected to generate more income and employment in activities such as product processing, packaging, and marketing. MINAGRI exerts strong ownership and leadership over the agriculture-sector strategy, and development partners consider the operationalization of the strategic plan highly effective.

36. **The National Post-harvest Staple Crop Strategy** (PHSCS) aims to develop an efficient post-harvest system driven by the private sector to reduce post-harvest losses and ensure food security of staple crops. It seeks increased competitiveness by decreasing marketing costs along the value and supply chains, and enhancing farmers' access to and strengthening their linkages with markets. The Climate Resilient Post-harvest and Agribusiness Support Project (PASP) has been formulated as an instrument for implementation of the PHSCS with the Post-harvest and Handling Task Force (PHHTF) as key counterpart.

37. **National Multi-sectoral Strategy to Eliminate Malnutrition** (NSEM). Fighting malnutrition is high on the Government's policy agenda. A coordinating structure has been created responding directly to the Prime Minister, involving several key ministries (Ministry of Health [MINISANTE], Ministry of Local Government [MINALOC], MINAGRI, Ministry of Education [MINEDUC] and Ministry of Gender and Family Promotion [MIGEPROF]). The United Nations Renewed Efforts Against Child Hunger and Undernutrition (REACH) programme – launched at a global level by the United Nations Children's Fund (UNICEF), World Health Organization (WHO), World Food Programme (WFP) and FAO, and which IFAD intends to join – is assisting Rwanda in operationalizing the 2010-13 NSEM.

38. **Access to financial services** (see Appendix 13 for a review of rural financial services in Rwanda). Lack of access to finance is a significant constraint on equitable economic and social development in Rwanda. Less than 3% of farmers have access to adequate rural financial services. The GoR discourages the use of subsidized interest rates so lending to rural clients, however scarce, is largely undertaken on a commercial basis, albeit generally for 1-2 year periods which discourages longer term investment. These short-term loan periods, combined with high real interest rates, make loan repayment challenging. The growing number of commercial banks in Rwanda suggests that lending capital is not a major constraint to financial services. However, only two commercial banks have rural networks and charge high interest rates (up to 18%).

39. Government and project-sponsored guarantee funds have addressed collateral constraints in rural lending and have supported their consolidation under the *Banque Rwandaise de Développement* (BRD), with the Business Development Fund (BDF) more recently streamlining their management. BDF and experienced project managers report that some guarantee funding is still required to support poor rural borrowers with limited collateral.

40. Microfinance institutions (MFI) have limited outreach in rural areas and usually charge much higher interest rates to farmers (2-2.5% per month). To improve access to credit in the rural areas, the government has promoted the creation of 416 savings and credit cooperatives (SACCOs), one per sector. These have mobilised significant saving resources but much limited lending due to inadequate capacity.

41. A review of the SACCO sector completed in March 2012 found that the main constraints of Rwandan MFIs and SACCOs in the rural financing sector consist of lack of capacity and poor governance, isolation from financial markets, and capital lending resource structure not shaped for medium to long term financing. BRD, together with BDF and the BPR are assisting in developing SACCO's capacity so that they can be used to channel bank funds to and from rural clients and, at a later stage, to receive on-lending resources. The study also recommended some consolidation of SACCOs and continuation of the capacity building activities already implemented and supported through the RCA but the modest resources that are available severely limit the scope of the capacity building efforts.

42. The Government is committed to improving access to and quality of financial services and to remove constraints, in particular by approving and implementing sector strategies; supporting capacity-building of MFIs and SACCOs as key entities serving IFAD target groups; and harmonizing state support by establishing the BDF. Under the DFID-supported Access to Finance Rwanda (AFR), government and development partners are committed to implementing a common operational platform to address priority constraints such as sustainability of SACCOs, crop insurance, leasing and several other alternative financing mechanisms.

43. Previous IFAD-funded projects have had major rural finance components with varying degrees or success. As greater volumes of lending capital become available and the GoR and IFAD intend to foster the commercial lending sector by not subsiding interest rates, a new generation of projects will seek to link focused project investment resources to leverage borrowing from the commercial banking system once project viability and sustainability have been independently verified. PASP design has constituted an important entry point for full alignment with this strategic approach.

44. PASP will partner with the Rwanda Rural Investment Facility 2 (RIF 2), a follow-up World Bank-MINAGRI programme supporting investment in rural areas, to provide incentives for financial institutions and entrepreneurs to finance post-harvest climate resilient agribusiness investments. RIF 2 provides a matching grant scheme for a certain portion of an investment loan taken along the agricultural chain by an investor who wants to obtain a loan from a licensed financial institution to

partially finance the investment. Grants are only paid when the loan component has been repaid. Individuals, farmers organizations, cooperatives and privately owned SMEs borrowing from a licensed financial institution can participate. RIF 2 is a programme funded by MINAGRI and administered by the BRD Development Fund (BDF). Its objective is to stimulate financial institutions to finance productive investments in the agriculture sector through the provision of a grant covering part of the investment costs. Individual farmers and entrepreneurs, farmers and producers associations, production and commercialization cooperatives, as well as any other commercial entity are eligible to access RIF 2. Beneficiaries from a RIF grant can also benefit from an existing guarantee extended by the Agriculture Guarantee Fund, also administered by BNR. A rapid assessment of BDF is provided in Appendix 13 (Attachment 1).

45. **National Strategy on Climate Change and Low-Carbon Development (NCCLCD).** The climate sensitivities of Rwanda's long-term development goals, first discussed in NAPA, have been re-examined in the 2011 NCCLCD. The need to manage the implications of climate variability for the social, environmental and economic development of the country is highlighted in the strategy. It provides the framework for the climate-change and low-carbon development incorporated into EDPRS II and Vision 2020, with emphasis on the development of "low-carbon and climate-resilient post-harvest agribusiness sectors". Rwanda has become one of a number of nations across the world that has developed a national climate change and environment fund (FONERWA) built on the newly adopted Green Growth and Climate Resilience Strategy. FONERWA will be the primary mechanism through which Rwanda accesses, budgets, disburses and monitors international and national extra-budgetary climate and environment finance. Funds will be distributed to government, private sector, civil society and communities to implement a range of projects.

B. Rationale for IFAD involvement

46. PASP is primarily aligned with the second strategic objective of the new RB-COSOP (2013-2018) which seeks to contribute to achievement of government targets reducing post-harvest losses and generating opportunities for youth employment and added value of agriculture produce through processing and agribusiness. PASP has been designed concurrently with the formulation of PSTA III (2013-2017). This has allowed project formulation to be closely articulated with the sector development goals and ensured its full alignment with MINAGRI's policy framework and investment programme.

47. Sustained growth of the agriculture sector in Rwanda has been driven by key public investments in land-use consolidation, irrigation, soil and water conservation, access to inputs, increasing the livestock herd and social capital building through cooperative development. Sustainable intensification of production systems is a government priority, together with the generation of off-farm employment to support alternative livelihood opportunities and economic mobility away from primary production.

48. The World Bank predicts that if the country can sustain increases in agricultural productivity over the medium term, poverty will continue to fall, especially if business activities increase along with the boom in agriculture. Since virtually all of Rwanda's poor depend on agriculture to generate income, scaling up agricultural intensification and commercialization will be the quickest way to get significant numbers of people out of poverty.

49. Currently, IFAD- and other development partners-supported agricultural programs cover only a small part of available land, which means that there is an opportunity to expand them, and significantly reduce poverty. To this end, IFAD's new RB-COSOP (2013-2018) prioritizes working with the GoR and development partners to link the scaling up of agricultural programs with the promotion and facilitation of business activities that can thrive on increased agricultural production, especially those related to trade, post-harvest storage and processing.

50. Post-harvest losses are recognized in Rwanda as one of the greatest sources of inefficiency in agricultural production in the country; and therefore, one of the best 'no-regrets' opportunities for effectively improving crop productivity and resilience in more uncertain climatic and economic conditions. As discussed in Appendix 1 (Attachment 3), current losses for key commodities amount to about 30% of harvested products, but these losses are likely to increase given the country's reliance on rainfed agriculture and its vulnerability to climate change. Because CIP has focused on increasing productivity with limited concern for post-harvest management, there is urgent need to improve post-

harvest handling and infrastructure (harvesting, cleaning, drying and storing) as the infrastructure developed for the traditional cropping practices is insufficient for the current volumes of production.

51. Reducing post-harvest losses is expected to generate additional income and off-farm employment in activities such as product storing, processing, packaging and marketing. However, at present there is a low level of engagement of private sector in processing, marketing and trading of farm outputs. PASP will facilitate and support organised smallholders and SMEs to set up and manage aggregation and post-harvest market chain businesses (e.g., grain drying and handling facilities, potato cleaning/packaging, cassava preparation or milk collection centres) and partnerships with private sector, MFIs and other service providers in the priority CIP crops and dairy development. As farmers organizations, cooperatives or privately owned businesses develop their management, technical, marketing and financial capacity, some will build their capacity to move into value adding through more sophisticated processing and packaging, distribution and market development.

52. PASP will be strengthened through a grant from the Adaptation for Smallholder Agriculture Programme (ASAP), which will enable the project to address climate-related post-harvest problems in the prioritized CIP crops and dairy.

53. With climate change and the double cropping systems promoted under CIP (triple in some areas), harvesting is now taking place at wetter times of the year, so farmers can no longer rely on the sun to dry cereals to safe moisture-content levels for storage. In a more variable climate, the wetter, higher humidity conditions at harvest are more conducive for the development of micro-organisms and insects causing higher levels of deterioration of crops in-store, hence the need for faster, cost-effective grain drying techniques. In areas with growing water stress and declining productivity of rainfed crops, there is an additional problem of price fluctuations which requires farmers to store more produce until they can sell without a loss. With existing post-harvest facilities, poor farmers are unable to store agricultural produce for long periods without incurring physical losses or receiving lower product prices at harvest. Additional investments in post-harvest technologies (timely harvesting, drying technologies using alternative energy sources such as solar and biogas, hermetically sealed storage bags, improved structures resilient to high winds and heavy rainfall events, etc.) are needed to enable Rwandan farmers to buffer climatic and economic uncertainties and variability.

54. The growing high priority dairy industry in Rwanda is also susceptible to climate change on the production side, as water becomes scarce for fodder production in some areas, and as temperature fluctuations require changes in forage feeding systems and complicate the safe storage, transport and cooling of milk in the supply chain to consumers. Without significant unit cost-reducing improvement in the milk supply and marketing chain (solar powered or ice bank type milk cooling systems, creation of village aggregation and collection points), many of the short-term gains and improvements in livelihoods for very poor families from the large public investment in the *girinka* programme will be reduced due to increasing climatic risks and higher energy costs to ensure that high quality milk reaches poor consumers.

II. Project description

A. Target group and project area

55. **Target group.** PASP's primary target group comprises poor smallholder farmers either engaged in production and primary processing in the priority CIP crops and dairy, including poor farmers with some production potential and members of cooperatives who own small land plots, and smallholders who supplement their income through agricultural wage work. The target group was selected among the *Ubudehe*[6] categories II (the very poor), III (the poor), and IV (the resourceful poor) and corresponds to the EICV3 income group of small-scale farmers (61.8% of the population) and wage farm labourers (9.8% of the population). The project will address the post-harvest sector of the CIP crops and dairy to demonstrate pro-poor approaches benefitting these target groups in post-harvest activities. PASP will also engage individual farmers and entrepreneurs who can potentially become

[6] There are six *Ubudehe* categories: extreme poor, very poor, poor, resourceful poor, food rich and money rich. The *Ubudehe* programme is a national initiative launched in 2001 to identify the social and economic conditions of each household based on the notion that citizens can analyze their own poverty within their communities and develop solutions together to the problems they face (see Appendix 2).

drivers for creating new investment and employment opportunities for vulnerable groups, including the landless poor. Detailed poverty and livelihood targeting data are provided in Appendix 2, Attachments 2 and 3.

56. **Priority CIP crops**. Based on a review of existing value chain studies and market information available on the CIP crops and dairy sector, MINAGRI has decided to initially focus PASP on maize, beans, cassava, Irish potato and dairy. The selected commodities were ranked according to: (i) competitiveness, including potential domestic and regional demand, as well as value addition opportunities; (ii) potential impact, including number of poor rural households benefiting or participating in the value chain and potential to increase income; (iii) harmonisation, including synergies with government and other development partners strategies and programmes; and (iv) potential to increase household food security, women's income, and economic inclusion of the rural poor. An overview of production and the local and regional markets for the CIP crops, and a SWOT analysis on the prioritized commodities are provided in Attachment 1 and 2, respectively, in Appendix 1. Attachment 1 in Appendix 2 presents the value chain ranking matrix for the targeted crops.

57. **Project area and beneficiaries**. While most targeted commodities are produced nationwide, initially project support will focus on three geographical areas determined using three main criteria: (i) land area dedicated to individual crops, according to the 2011-2012 MINAGRI CIP data; (ii) poverty, assessed by cross referencing EICV3 and *Ubudehe* data; and (iii) potential for value chain development and growth based on current and prospective processing facilities. The selected food baskets areas are set out in Attachment 3 in Appendix 2, and summarized in Table 1 below which presents socio-economic and targeting data on the districts with the main CIP commodities to be supported by the project.

58. The initial target for PASP national beneficiaries will be 32,400 rural households in 10 districts where the project will be intervening. These households will be members of approximately 200 HUBs. Based on the national average of 4.8 people per household, the number of direct beneficiaries is estimated to be around 155,518 and the project cost per beneficiary will come to approximately US$494. For the planned 10 districts, this will include an average of 3,240 households or 15,552 beneficiaries per district. As PASP implementation capacities are gradually developed, MINAGRI intends to scale up successful operations to other major market-driven crops or livestock activities and geographical areas.

Table 1. Socio-economic profile of PASP targeted food basket areas

	Food basket area			
	North-west	**Southern**	**Eastern**	**Average / Total**
Districts	Musanze, Nyabihu, Rubavu	Kamonyi, Muhanga, Ruhango	Gatsibo, Kayonza, Ngoma, Nyagatare	
Estimated population	844,800	894,100	1,307,000	3,045,900
In *Ubudehe* cat. II, III and IV (very poor, poor and resourceful poor)	89.2%	90.0%	90.0%	89.8%
HHs headed by most vulnerable group	40%	43%	37%	40%
Number of HUBs in area	65	65	70	200
No. of HHs per HUB	150	150	150	
Plus HHs in services supporting HUBs	12	12	12	
No. of HHs participating in project	10,530	10,530	11,340	32,400
No. of people benefiting from project	50,544	50,544	54,430	155,518
Families in categories II, III and IV	9,400	9,450	10,200	29,050
No. of poor people	44,800	45,120	48,960	138,880
Supported PASP value chains	Irish potato, maize, beans, milk	Cassava, beans, milk	Maize, beans, Milk	

Sources: MINAGRI CIP crop areas (2011-2012), EICV3 and *Ubudehe* data by district

59. The North-west area includes the districts of Musanze, Nyabihu and Rubavu producing Irish potato, maize, beans and milk. The Eastern province area includes the districts of Gatsibo, Kayonza, Ngoma and Nyagatare producing maize (more than 90%), beans (94%) and cassava (50%), with also potential for dairy development. The Southern province area includes the districts of Muhunga, Kamonyi and Ruhango with predominantly two crops, with over 70% of households growing cassava, and more than 90% growing beans. In order to facilitate market linkages the geographical targeting will focus on these *'food-basket'* areas where several agricultural value chains function in parallel and which correspond to different agro-ecological zones of the country. This concept is consistent with moving locally processed crops to the regional markets in RDC, Burundi, Uganda and Tanzania.

60. **Poverty and gender targeting**. PASP will promote women's participation in post-harvest processes and value chain development equally with men, assisting them to move out of low input-low output activities with equal access to agricultural support and financial services, and to play an active role in cooperatives and cooperative-owned businesses. Specific attention will be given to women throughout the project starting by strengthening MINAGRI SPIU with a Targeting/Gender specialist who will be responsible for further development, implementation and monitoring of the targeting strategy, as well as supporting institutional strengthening. The specialist will conduct gender sensitive value chain analysis, disaggregate M&E data by gender, carry out gender baseline studies and develop a gender action plan. The SPIU M&E unit will collect, analyse and interpret sex and age aggregated performance and impact data, and propose specific indicators on gender equality and women's empowerment, as well as a set quantitative targets for participation in project activities. The specialist will also establish links with the IFAD-financed regional grant to OXFAM NOVIB 'Gender and Value Chain Development', to scale up the Gender Action Learning System and organize learning routes and exchange visits on GALS.

61. Specific measures to ensure gender equitable participation and benefits from project activities include: (i) establishing and monitoring minimum participant quotas for women and youth in capacity building activities within the participating cooperatives, both at management level and among the overall membership to ensure that women knowledge about access to finance is improved; (ii) developing women's capacities to become service providers, and where appropriate, organising special training sessions targeted to them; (iii) ensuring that both male and female family members have access to visits, exchange programmes, farmer field schools (FFS) and other technical training, with a target of at least 50% women; (iv) incorporating gender audits in cooperative capacity assessments and supporting cooperatives to increase the number of women members and in leadership positions, and to ensure that they have equal access to cooperative services; and (v) designing a competition on a yearly basis to recognize the most entrepreneurial women in every district.

62. **Youth mainstreaming**. To overcome the contains the youth face and ensure their opportunities to participate and benefit from PASP investments, the project will: (i) profile young people as part of the baseline analysis and identify those that are household heads in the *Ubudehe* categorization to have a better understanding of their poverty levels; (ii) prioritise young people for training related to the development of skills and capacities in off-farm income generation, including linkages to the HANGUMURIMO programme in MINICOM that took over the apprenticeship programme of PPPMER II for the establishment of training positions with cooperatives and cooperative-owned businesses; (iii) ensure that the poorer young households gain access to employment generated by project activities; and (iv) identify within cooperatives high potential youth with good literacy skills for leaders' training. Linkages will be established with the USAID/EDC Youth Livelihoods Project and vocational technical schools to identify employment opportunities. Finally, opportunities for youth participation in simple mechanisation will be also explored.

B. Project development objective

63. The design of PASP concurrently with the formulation of PSTA III has allowed its full alignment with MINAGRI's sector strategies and investment programme. PASP overall project goal is to alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda. PASP development objective is to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from CIP crop and dairy businesses, especially those related to aggregating

production for markets, supporting transformation, and creating value-added to enable smallholders to capture a higher share of the value.

64. The project's primary focus will be the facilitation of inclusive[7] business activities that can thrive on increased agricultural production from CIP crops and dairy development. Investments in improved post-harvesting procedures, drying, processing, storage, distribution, logistics and capacity building of cooperatives and farmers organizations are expected to generate reductions in product losses that are just as important as improved crop yields in preserving food production and localized value addition in a changing and more uncertain climate. PASP design capitalizes on the significant production gains achieved in recent years in the agriculture and livestock-dairy sectors, and aims at supporting the technical, marketing, infrastructure, and direct capacity building needs of cooperatives, self-help groups and SMEs seeking to undertake viable post-harvest investments.

65. PASP will be strengthened through an ASAP US$7 million investment providing incremental support to reduce the vulnerability of post-harvest market chains to the impacts of climate change and ensure that appropriate mechanisms are established to safe guard food security. ASAP support will facilitate a better understanding of how current and future agro-meteorological conditions influence harvest and post-harvest activities, so as to ensure that rural infrastructure and related investments supported by the project are resilient to these changing climatic patterns. ASAP investments will be fully embedded in PASP components and results framework.

66. Achievement of PASP development objective will be evaluated by considering changes in average smallholder net incomes over the project life, assessing changes in the proportion of the farmer incomes that comes from increased returns from marketing and other activities at post-harvest handling and value addition level, as well as the number of beneficiaries from project-supported activities with access to climate smart low carbon post-harvest technologies and infrastructure.

67. **Overall project strategy**. Appendix 4 provides a detailed description of the project components and main activities to be supported by PASP. The first significant point where primary produce is aggregated – a product aggregation point or business hub[8] (HUB), will be the focus of project implementation to serve smallholders post-harvest services' needs. A HUB includes the physical place where primary products are aggregated and where value addition could be generated, together with facilitation of the necessary managerial and technical skills, technologies and equipment (e.g., for quality control, sorting, packaging, storing, value adding, etc.).

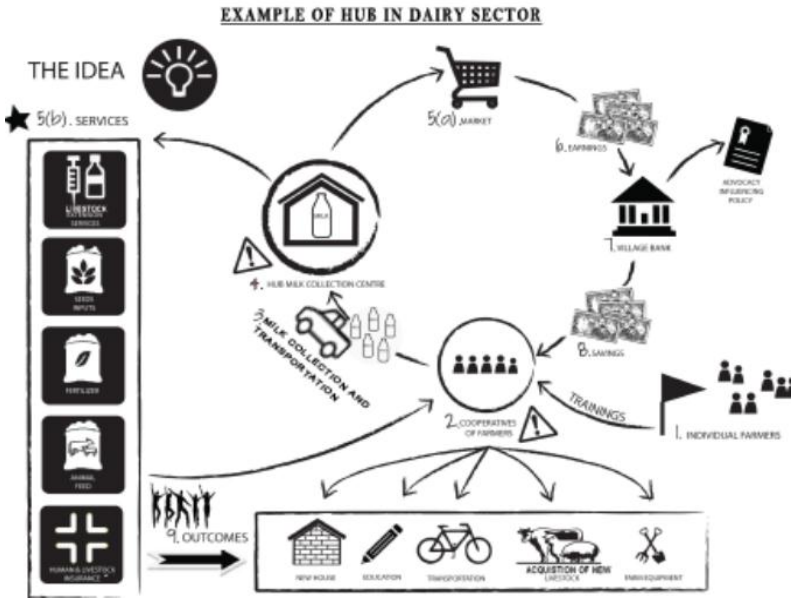
68. A HUB could be part of a CIP-formed cooperative, a cooperative-owned business or an existing or newly formed SME allowing them to benefit from value addition. For dairy, a typical HUB could be an existing milk collection centre (MCC) developed under a government programme (see figure below). For maize or beans a HUB could be the place where cooperatives or privately-owned SMEs consolidate grain for drying, cleaning, sorting, bagging or storage prior to dispatch to market. A key component of the HUB is its linkage to agribusiness support services which the project will facilitate and strengthen, either directly or by ensuring access to services by other relevant institutions and/or private sector providers. PASP will also contribute to developing these support services.

69. The HUB will be the focus for development of the services needed to add value, assure product quality and quantity, and facilitate market linkages. PASP will support HUBs seeking to professionalise their business processes by facilitating their collaboration with: (i) local agro-dealers providing seeds, fertilizers or other agro-chemicals to cooperative members associated with these HUBs; (ii) SACCOs, MFIs and financial institutions providing savings and other financial services complementing larger lending facilities available from commercial banks; and (iii) other specialized pre- and post-harvest technical service providers, including climate information services.

[7] The term 'inclusive' means businesses that have Base-of-the-Pyramid (BoP) populations *(Ubudehe* cat. II, III and IV: very poor, poor and resourceful poor) as both customers and clients, and through which smallholder producers and entrepreneurs can hold on to their primary assets, i.e. land, water and labor to leverage technology, markets, jobs, capital from the larger scale investor.

[8] PASP has adopted the term HUB to describe these aggregation points. The HUB concept is consistent with the definition used by other rural business development programmes in Rwanda.

70. The process will be assisted by experienced Post-harvest and Handling Task Force (PHHTF), RAB, district-based BDS or private post-harvest service providers for the CIP crop-related HUBs[9]. In the dairy value chain, district or sector livestock extension or veterinary officers will be selected and trained specifically to work with the participating MCCs. They will receive training in working with groups, facilitation and needs analysis differentiated by gender and age to ensure inclusion of vulnerable groups including women, single headed households and youth.



71. As part of PASP strategy to build HUB technical and business capacities, a climate resilient and low carbon development pathway will be encouraged for the HUB to move to more advanced value adding activities such as product differentiation, processing, packaging, distribution and development of new products. Where appropriate, certification for fair trade and/or organic status could be developed. ASAP investments will focus on facilitating introduction of climate-smart post-harvest technologies and infrastructure that take advantage of advances in the engineering sciences as well as ecologically sound systems design, including climate service information provision, solar drying tunnels, biogas fuelled grain driers, and sealed bag grain storage among others. Choices for specific ASAP investments across the focused commodities are presented in Tables 4 and 5 in Appendix 1 (Attachment 3), and summarized in Appendix 4 (Attachment 1). ASAP support will be instrumental to help create the development space for adoption of these technologies within PASP through policy and institutional development.

72. PASP will promote value addition through a staged progression from improved harvesting procedures, basic rural agro-processing (cleaning, grading, sorting, packing), transport, bulking and storage options to more sophisticated climate-resilient processing, transformation, and packaging to meet the needs of more sophisticated domestic and export markets. The project will support participating HUBs to build their capacity to meet market needs and increase their efficiency and competitiveness by creating product added value. Links to market actors (retail or wholesale) in the value addition process will be an important aspect in integrating the value addition to the actual market demand and thereby developing or deepening market linkages.

73. PASP's financial services strategy will be based around three streams (see Appendix 13): (i) partnership with BDF, GoR-mandated institution for facilitating SMEs and cooperative access to finance; (ii) use of financial incentives to stimulate innovation, address market weaknesses and build resilience to climate change; and (iii) focus on fostering the commercial lending sector by not subsiding interest rates, but instead by linking focused project investment resources to leverage borrowing from the commercial banking system and private sector once project viability and

[9] If PHHTF or RAB managed staff are not available or suited for the work, experienced district based private BDS providers or NGOs will be recruited on a competitive basis. These may be BDS providers from the district BDC centre, the PPPMER supported Proximity Business Advisory (PROBA) scheme or independent BDS providers.

sustainability have been independently verified by participating financial institutions. The financial sector partnership is key to the sustainability and scaling-up of PASP economic benefits since it will ensure that businesses can grow and advance to commercial scale based on expanded finance from commercial banks and the private sector well beyond the project's timeframe.

74. In line with IFAD Private Sector Strategy, PASP will support private sector investment promotion and incentives aimed at establishing public private sector partnerships (PPP). The project is designed to align scalable PPPs capable of leveraging commercial borrowing and other private sector resources for inclusive PHHS business investments. Potential PPPs will be identified and assessed on their commitment and capacity to provide stronger market linkages and inclusive business development services to PASP target groups. Along the pathway, the private sector will be the driver of improved efficiency and increased investment after project closure. PASP support will enable smaller or less developed SMEs to participate in the process starting from basic levels so they can advance to higher levels of value addition, if and when they have matured their technical and business capacities required to scale-up their businesses.

75. An estimated 750 cooperatives are active in the agricultural sector: 600 cooperatives are organized by crop value chain and 150 are dairy cooperatives focusing on milk collection and local marketing with some cheese and yoghurt processing. The average membership of these cooperatives is 150 households. Initially, PASP will target about 200 SMEs which are mainly cooperative owned but will also assist a number of privately owned businesses selected using agreed criteria. Although the number of HUBs participating in the project will be based on demand, MINAGRI has estimated that a possible breakdown could include 30 MCCs across all regions, 30 potato cooperatives in the north, 30 cassava cooperatives in the south and east, and 110 multi-cropping maize and bean cooperatives in the three food basket areas initially targeted by PASP.

76. Final HUB selection will be undertaken through a process of initial awareness raising and calling for expression of interests to participate. Selection criteria will include: having a HUB function with market-led growth potential; being a cohesive group with some formal structure/registration; cooperative membership with most members in the PASP target groups (*Ubudehe* categories II, III and IV); and having a functioning leadership structure. While initially focusing on the ten specified districts, as PASP implementation advances, opportunities will be explored for the project to assist other HUBs in areas where other government programmes have developed post-harvest infrastructure and support facilities.

77. Following a district level awareness campaign, PASP will commence implementation through interested CIP-formed cooperatives in areas with a need for post-harvest investment or existing SMEs with some post-harvest facilities or experience. Participating HUBs will be systematically supported to develop their capacity to identify market opportunities and constraints leading to preparation of action and business plans. The management capacity needs and physical investment requirements to implement these business and action plans will be supported and annually reviewed and assessed on performance.

C. Outcomes/components

78. PASP will be implemented over a five-year period and comprises the following three mutually reinforcing components: (i) HUB capacity development programme and business coaching; (ii) Post-harvest climate resilient agri-business investment support; and (iii) Project management and coordination.

Component 1: HUB capacity development programme and business coaching (US$12.57 million, including US$6.3 million IFAD loan/grant, US$2.5 million ASAP grant, US$1,03 million government counterpart funds, and US$2.7 million project beneficiaries/value chain actors contribution).

79. The main outcome from component 1 will be: Cooperatives, farmers organizations or SMEs associated with participating HUBs have the skills and knowledge, as well as access to specialized service providers, to create viable and competitive businesses capable of delivering larger volumes of improved produce to the market chain and provide climate resilient and low carbon value adding to an expanding number of clients.

80. The first component will assist HUBs in each selected commodity to identify and address their business management and financial skill gaps and produce bankable business plans (BPs) to develop and manage their services more profitably with stronger linkages to supplying farmers and integrating low carbon and climate resilience activities. Depending on the stage of development of the HUBs, the BPs will include investment in physical capital items such as storage sheds, simple value adding, sophisticated storage and complex processing and marketing to suit identified new markets in Rwanda or in the EAC. To support management and operation of this physical investment, there will be a range of capacity building activities included in the BPs to develop the specialised skill base of the group, particularly of its management team, as well as to source specialised technical service providers required for BP implementation support. Long-term success will be assessed in terms of improved operational performance and financial viability of HUBs so they have the skills, confidence and access to services and business partners to more effectively and efficiently utilize market opportunities, provide value adding services to their owners or suppliers, execute contracts with other actors in value chains, and attract private sector commercial financing.

81. Following a district level awareness campaign, PASP will commence implementation through interested CIP-formed cooperatives in areas with pressing need for post-harvest investments or with presence of cooperatives, farmers organizations or SMEs with some post-harvest facilities or experience. The focus of the HUB capacity development programme and business coaching component is to create awareness of the principles and tools of marketing and value chain development and support capacity building and training designed to develop and operate climate resilient physical infrastructure and other investments planned in the BPs. The main activities of the component and their general sequence of implementation are as follows:

- Identify existing post-harvest HUBs owned by or linked with a cooperative, farmers organization or SME mostly comprised of PASP target groups (*Ubudehe* categories II, III and IV) in project areas with potential to further develop and support inclusive market access businesses and value addition, and lead to preparation of a BP.
- Undertake HUB capacity building needs and market linkage/development potential assessment with SME owners (cooperative or private) to develop an action plan for required skill development and capacity building. Depending on the needs identified, action plans may include development of organisational and financial management skills and other technical skills (business planning, costing, negotiation, market analysis, etc.) required to identify, implement and operate a priority post-harvest, handling and storage (PHHS) project that complements ongoing CIP investments in sustainable intensification of smallholder production.
- Support implementation and regularly review progress of capacity building action plan and investments. Consideration of targeting and inclusion issues will be prioritized when selecting and facilitating the start-up of the HUBs. Emphasis will be placed on assisting participating HUBs understand the roles of poorer and vulnerable women and youth in crop and dairy production and also provide tools and processes to ensure the inclusion of these groups in HUB planning and implementation activities, and to encourage them to participate in HUB capacity building activities by ensuring that participant selection processes and training activity formats are supportive to less (or non) literate participants.
- When minimum capacity of the group has been built, facilitate development of a simple BP to commercial viability which may involve conducting market and value addition studies and climate risk assessments required to formulate a priority project.
- PASP will maintain (and update based on performance) a list of BDS providers from which the participating HUBs will select a BDS provider to support development of their BP. Eligible HUBs would apply for a voucher to cover most of the costs of the BDS provider on a fee-for-service basis[10]. This would cover initial preparation of a BP concept that would be screened and assessed on a competitive basis.
- If selected to progress, the BDS provider would then be retained by the HUB to support preparation of a full BP as required by commercial banks in Rwanda. Emphasis will be

[10] For an initial BP this would be approximately US$900 with the HUB contributing 10%. For more substantial BPs, this could increase to US$2,500 with the HUB contributing 50% as by this stage the HUB would be operating a substantial commercial business.

placed on HUB members and associates driving BP development process rather than delegating the work to a BDS provider. The BP would include both physical investments such as equipment and buildings, and also capacity building and implementation support for technical, marketing, value adding and project management, as required.

- If co-financed by an external lender (component 2), component 1 will provide implementation support of the BP and assess performance, ensuring that the capacity building investments included in the BP are undertaken and that specialised technical service providers required for BP implementation are timely contracted and supervised. Support will be available for targeted training and capacity building in areas directly related to HUB action plans.
- If initial business plan is successfully implemented, PASP will support development of larger or more challenging HUB investments expanding their market linkages through post-harvest quality improvement and value addition. Focused project investments and capacity building resources will be linked to leverage borrowing from the commercial banking system once commercial viability and long-term sustainability have been independently verified (component 2). PASP intends that at least 20% of participating SMEs will develop their capacities to the stage of making an investment of US$100,000 or greater in value adding and/or market development activities in the course of the project based on expanded finance from commercial banks and the private sector.

82. Appendix 4 (Attachment 1) summarizes the key climate issues that will have impacts on the sustainability of PASP investments by geographical location, choices of specific ASAP activities to address these risks, and indicators of success. Through ASAP financing, PASP plans to incorporate climate risk management in the planning and implementation of the investments undertaken by HUB owners through the promotion and demonstration of climate resilient practices, structures and innovations. These innovations will range from promoting crop varieties with crop maturities periods better suited to the changing growing season lengths to demonstrating the use of solar power supplies and biogas as cost-effective approaches for grain drying and small-scale dairy producers and milk collection centres to enhance the storage life and quality leading to improved milk prices and incomes. ASAP funds will facilitate access to specialized service providers and link HUBs with support agencies for PHHS activities to ensure that climate risk management is incorporated into the institutional learning and services they provide to PHHS clients. Some of these funds will be available to demonstrate the technical and commercial viability of new technologies and equipment responding to environmental and climatic challenges.

83. The following activities will be eligible for ASAP financing under component 1:

- Establishment of agro-meteorological positions in MINAGRI and SPIU with appropriate capacity building.
- Analysis of available historical agro-meteorological data to quantify changes in seasonal characteristics and incidence of extreme events and how these impact upon harvest and post-harvest processes, and the rural infrastructure. Partners: LMS in collaboration with MINAGRI and relevant government and university departments as appropriate.
- Preparation and dissemination of early warning messages appropriate to the risks identified in each PASP area (droughts, floods, cessation of rains etc.) developed through climate information services. Warnings will be developed though an iterative process to meet the needs of farmers, HUBs, extension staff. Partners: LMS and MINAGRI/SPIU in collaboration with REMA and RDB.
- Estimation of the losses that occur at various stages of the harvest and post-harvest processes for maize, beans, potatoes, cassava and dairy. Partners: PHHSTF, ISAR and university.
- Identification and promotion of crop and forage varieties that mature earlier and are more tolerant to floods and droughts through appropriate field demonstrations with CIP. The focus of the demonstrations will be on the focused PASP commodities and forages for dairy cattle. Partners: CIP, PHHSTF, ISAR and university.
- Identification and adaptation of appropriate climate resilient post-harvest crop drying and storage techniques for focused commodities. Partners: PHHSTF, ISAR and PHHS.
- Identification and demonstration of appropriate solar and biogas powered dryers and coolers. Partners: PHHSTF, ISAR and PHHS.

- Support to Rural Infrastructure Building Services, including:
    - Survey of existing post-harvest and MCC structures. Partners: PHHSTF and DAIM.
    - Development of building codes and standards for siting and construction of climate smart-post harvest structures and milk collection centres. Partners: DIAM and RBS with support from consultants as appropriate.
        - Improvement of roof designs of rural infrastructures modified to cope with high winds and management of excess rainwater during intense storms.
        - Improvement of rainwater storage facilities design and standards.
    - Targeted capacity building of relevant government departments and local contractors on building code implementation and compliance. Partners: PHHSTF and DIAM in collaboration with appropriate training institutions (e.g. MINICOM PPMER II)
- Development of biophysical vulnerability maps to assist in modifying designs of storage structures and MCC for risks associated with different locations. Partners: LMS in collaboration with MINAGRI, REMA, and RDB and relevant government and university departments and support from consultants as appropriate.

84. Components 1 and 2 will be implemented in a synergetic manner to ensure integration of business enablers and off-takers (village traders/assemblers, agro-dealers, machinery workshops, agro-processors, bulk and cross-border traders, transporters, wholesalers in target markets, etc.), and that the capacity and skills of the public and private PHHS support services available to HUBs are improved to facilitate smallholders' linkages to national and regional markets. As discussed earlier, Rwanda has a developing pool of BDS providers but additional capacity building is needed to enable their effective support to HUBs to identify business opportunities attractive to financial institutions, support the participatory planning processes, and focus on the long-term viability of enterprises. These activities will be facilitated in each project district to ensure connecting relevant service providers with appropriate capacity building support. Capacity building investments under component 1 will be driven by the identified needs of the HUBs and will be linked strongly with priority BP implementation support requirements. These may relate to the following areas among others:

85. *HUB business management skills*. During the first year, PASP management will review the need for increasing the pool of suitably experienced BDS providers assisting HUBs with the design and implementation of their BPs, as well as the need for a certification process. Contracted trainers (appropriately skilled cooperative federations, NGO, or national/regional BDS providers) will develop HUB capabilities through training their SME owners or cooperative members and committee members in management, governance, accounting, marketing, project preparation and implementation, as well as in participatory M&E of group progress. In the first year, PASP may support upgrading financial skills and computer equipment as part of an action or business plan assisted by the project.

86. *HUB member functional literacy*. To address low literacy levels among cooperative members and SME owners, the project will facilitate or finance a functional literacy training activity for members to take a more active role in cooperative governance and planning. In addition, PASP will support 'new leaders' programmes to prepare young cooperative members, especially women, for cooperative committee and management positions. For both cooperative members and owners of small SMEs, this would also include entrepreneurship development activities to complement the annual MINICOM-sponsored national entrepreneur competition (*Hanga Umurimo*) for SMEs. A process to mentor the developing HUB businesses with other experienced HUB operators or business owners will be trialled and supported, if successful.

87. *HUB entrepreneurship competitions*. In addition to the *Hanga Umurimo* competition, there will be a competition to identify and recognize which HUBs have been able to introduce inclusive business activities and processes that have incorporated poorer vulnerable groups of women, youth and land-less households into the HUB activities. While the best achievements will be rewarded, the two competitions will provide a means for HUBs to benchmark their performance and progress against other project-supported HUBs and also provide guidance on where additional inputs are required to support lower performing HUBs with practical solutions.

88. *Post-harvest quality improvement and assurance*. The project will facilitate greater awareness of HUB members on product grades and market quality standards together with the related farm-level

working methods, especially timely harvesting and drying. PASP aims to support staff training of at least 200 HUBs and their supplying farmers to improve understanding of the importance of quality in creating market linkages as well as on improved product storage, which will include development and promotion of building codes for rural infrastructure, critical for the sustained development of post-harvest structures resilient to natural disasters and climate variability (see below).

89. *Rural infrastructure building services.* The lack of appropriate guidance and building codes for the construction of post-harvest structures that are resilient to natural disasters and adapted to climate change is a major risk to the success of PASP (WP 2 reviews the current status of post-harvest structures in Rwanda and suggests design guidelines for greater adaptation to emerging environmental and climate change challenges). Through ASAP financing, PASP will support a detailed survey of existing post-harvest storage structures and MCCs to develop appropriate guidance/ building codes that will ensure that current and future infrastructure investments are climate smart and include appropriate measures to manage excess rainwater. The project could also support selected capacity building investments for local building contractors and relevant government staff to design and construct safer structures. PASP will also consider supporting the Rwanda Bureau of Standards (RBS) with focused consultancies to fulfil its mandated role for staple food and dairy grades and standards, and provide capacity building to processors and other key stakeholders on these standards.

90. *Post-harvest mechanisation services*. Increased machinery servicing and simple fabrication capacity is often needed at district and sector level so essential maintenance and repairs of agricultural machinery for post-harvest processes can be carried out. PASP will pilot capacity building investments for a small number of automotive and truck garages, individual mechanics and welding workshops in the project districts. The project will develop short training packages and apprenticeships and youth internships linked with existing national vocational training providers. As the activity will target poorer youth and workers, successful graduates will be offered support through provision of a basic toolkit. The activity will be carried out through the RAB Department of Agricultural Infrastructure and Mechanisation (DAIM) and the PHHTF making use of the experience of the training specialist of the MINICOM PPPMER II project now working for the PHHTF.

91. *Climate information services*. The project, through a dedicated Climate/Agro-Meteorologist will facilitate greater collaboration between MINAGRI and Rwanda Meteorological Services (RMS) through capacity building to support development of climate information services providing relevant and timely information to project beneficiaries to mitigate the impacts of climate variability on harvesting and drying. TORs for this position can be found in Appendix 2 (Attachment 3). To complement this post and ensure that Agro-Meteorology is institutionalised within MINAGRI, the ministry has committed to establishing an Agro-Meteorological position to work closely with PASP, and with RMS and the REMA Project 'Reducing vulnerability to climate change by establishing disaster preparedness systems and support for integrated water shed management in flood prone areas' supported by UNEP and UNDP. TORs for the position can be found in Appendix 2 (Attachment 3). This new position will provide direct feedback to RMS and help improve the focus and delivery of the Agro-Meteorological bulletins, ensuring that they not only provide information on the start of the cropping season, but also detailed information on its duration and the likelihood of rainfall during the traditional drying periods. To date there has been no coordinated attempts to analyse the available meteorological data from an agricultural perspective, especially to quantify the probabilities of a shift in the timing of the wet seasons, number of wet days, daily rainfall amounts, increases in temperatures, incidence of thunder and lightning storms (and associated high winds), and how these changes impact upon traditional harvest periods and post-harvest processes and contribute to the building standards/codes that will be established for rural infrastructure investments with PASP support. The outputs of these investments will be communicated through various bulletins and written reports to inform farmers and extensions services of any changes that have taken place and feedback will assist in the revision in the format and delivery of future climate forecasts.

92. *Innovative products and services*. PASP will promote small businesses which are ready to invest in new innovative products and services. PASP will consider supporting development of innovative proposals from individual or groups of service providers with higher risk elements making them less attractive for potential commercial bank lending. A condition of support for equipment will be that proponents must be prepared to share the technical and financial aspects of the innovation with other

agricultural service providers. The proposals should demonstrate a direct link with the HUBs and the smallholder farmers who will benefit from these investments in PHHS support services by achieving better efficiency in post-harvest handling. As part of these initiatives, there will be exposure visits to relevant businesses and shows in the region. PASP will partially fund the costs and require participants to share their experience with other groups on their return.

Component 2: Post-harvest climate resilient agri-business investment support (US$69.42 million, including US$18.07 million IFAD loan/grant, US$4.17 million ASAP grant, US$10.39 million government counterpart funds in the form of foregone taxes and duties, US$7.35 million from project beneficiaries/value chain actors, and US$29.42 million leveraged from financial sector).

93. The main outcome from component 2 will be: HUB business investments in improved climate resilient and low carbon post-harvesting procedures, drying, processing and value addition, storage, logistics and distribution generate reductions in product losses and increase smallholder and rural labourer incomes. Based on viable BPs generated with component 1 support, component 2 will facilitate business activities that can thrive on agricultural production from CIP crops and dairy development by leveraging commercial loans-funded post-harvest investments that contribute to improving market access and linkages, HUB operational and management efficiency, and sustainability based on climate resilience and adaptability and water and energy use efficiency. ASAP funds will be allocated to support the incremental costs related to BPs-identified investments in low carbon energy supplies, and post-harvest equipment, infrastructure, climate resilient buildings and associated training to develop the capacity of the HUB to establish and operate such investments and improve their efficiency.

94. Component 2 will strictly link focused investment resources to leverage borrowing from the commercial banking system to finance HUB-proposed BPs that best contribute to improving the availability of inputs and post-harvest equipment and infrastructure to boost production in a sustainable and climate resilient manner, improving quality, reducing post-harvest losses, and enhancing environmentally sensitive waste management. PASP and ASAP contributions under components 1 and 2 are expected to leverage HUB commercial borrowing to generate an additional investment in climate resilient post-harvest handling, processing and marketing of approximately US$29 million.

95. Financial incentives will be awarded only to groups with business proposals strong enough to be awarded bank financing for a substantial portion of the financing requirements once viability and feasibility have been properly checked by MFI professionals and sustainability prospects independently verified by the financial institution. With this arrangement, PASP seeks to generate short-term and long-term benefits for both HUB owners and associates and financial institutions. Project resources will help participating groups establish or strengthen their track record with the financial institution of their choice enabling these groups to graduate into viable enterprises that are competitive and effectively linked to local, national or regional markets, and capable of attracting private sector commercial financing. This will allow financial institutions to enhance their client base at a slightly reduced risk exposure and gain experience in term and investment finance, which in the long-term is likely to improve the quality of their products and services.

96. To participate in the scheme, interested financial institutions will be subject to a number of conditions: (i) to be financially and operationally sound and have outlets in reasonable proximity to PASP target groups; (ii) have some experience in lending to PASP target groups and in appraising the technical and financial viability of eligible investment purposes; and (iii) bear all or most of the risk of the loan and provide additional working capital finance if needed.

97. To support implementation of component 2, PASP will partner with Rwanda Rural Investment Facility 2 (RIF 2), a programme supported by MINAGRI and administered by the BRD Development Fund (BDF). The objective of this partnership will be to provide financial incentives for RIF 2-affiliated institutions and entrepreneurs to cofinance PASP-facilitated BPs. Component 2 will provide a grant for a certain portion of an investment loan approved to a participating HUB which has obtained a loan from a RIF 2-licensed financial institution to cofinance the BP investment. Working capital and operating costs will not qualify. Participating farmer associations, cooperatives and SMEs owning or associated with a HUB borrowing from a licensed financial institution are eligible for support under RIF 2. Beneficiaries from RIF will also benefit from an existing guarantee extended by the Agriculture

Guarantee Fund (AGF), also administered by BNR (see Appendix 13 for a description of the RIF 2 facility).

98. Only financial institutions will be eligible to apply for PASP financial incentives, on behalf of their HUB clients, and they will bear the full credit risk. Applications will include a solid BP including a project description; an assessment of the social and economic impact on women, youth, landless and other vulnerable groups; a realistic assessment of the marketing prospects and the risks and post-loan sustainability; and a complete financing plan, also including working capital. The financial incentive or grant will be paid into the loan account through which the respective bank receives instalments from the HUB borrower. Upon signature of the loan and grant agreements by all parties, PASP will disburse the grant to the bank by the fund manager. When the principal and interest are paid off minus the grant amount, the debt is offset. If the principal borrower does not have obligations, such as by failing to make payment for more than six months, the bank will inform the principal borrower that the grant arrangement has been cancelled and returned to PASP. In that case the borrower must then repay the entire loan amount without grants, notwithstanding any other penalties imposed by the financial institution. Given that banks apply for the financial incentives and clients are told that they can obtain the grant-support only with continued repayment of the loan, there is little scope for misinterpretation about the difference between a grant and a loan.

99. All draft BPs will be assessed by experienced BDS providers and MINAGRI SPIU staff for compliance with project technical, environmental, financial analysis and PASP Operational Manual before final approval and submission to the participating financial institution. As indicated above, BP proposals will include specifically-determined investments in capacity building and implementation support that will be internalized in the BP budget. The financial institutions will evaluate independently the BP proposal using their own commercial assessment criteria. If the financial institution needs to revise or modify the BP before accepting the proposal for funding, the BDS provider who reviewed the BP will be an observer at the negotiations between the financial institution and HUB management to ensure the negotiated changes are still consistent with the project guidelines.

100. A challenge for the PASP management team reviewing each proposal is building credibility of the BP development process generated with PASP facilitation. This will be achieved by focusing primarily on the quality of the BPs, support for their implementation, and managing participatory M&E as the basis for improving the BP development, review and implementation processes. To ensure that only bankable BPs are generated, PASP will reward with bonuses service providers whose assistance to participating HUBs systematically obtain loans from MFIs. As a performance incentive, 50% of the voucher value would be retained pending approval of the BP proposal by a financial institution. Similarly, private sector and/or BDS providers contracted by the HUB to support implementation of their BP will be also competitively rewarded on a performance basis – both for meeting the targets set in the BPs and for assisting HUBs with a demonstrated loan repayment track record to become more sustainable, growing businesses.

101. As part of the initial cooperation agreement between PASP and RIF 2 and financial institutions participating in the scheme supporting commercial lending activities, interest earned by the credit account linked to the HUB bank loans will be used by the lending institution for continued financial education of HUB members, as well as SACCOs or MFIs or development of new financial services targeted to PASP target groups. These activities will be coordinated through the PASP Rural Finance specialist and the AFR to minimise duplication and maximise synergies with other GoR and donor supported initiatives to strengthen the rural finance sector.

102. Examples of the PHHS and value adding BP investments that could be financed under each PASP focused commodity are discussed in Appendix 1 (Attachment 3) and summarised in Table 2 below, illustrating the expected progression in the complexity and sophistication of the HUB investment plans as the BP planning and management capacity of the HUB owners develops with project assistance.

Table 2. Examples of Potential Investments for different HUBs

Investment Types	**HUB investment levels supported by PASP**			
	Small	Medium	Large	Start-up
	Rehabilitation, quality improvement	Innovation, market development	Commercial up-scaling	Basic storage, drying,
Maize	Shelling, drying and	Basic processing	Maize flour or starch,	Cob or grain storage,

Table 2. Examples of Potential Investments for different HUBs

	storage		Stock feed	Drying
Beans	Cleaning, sorting and grading on size, colour and storage	Market development	Processing and packaging	Storage, drying
Cassava	Improved PH handling, drying, chipping, waste management	Preparation of tubers for processing. Water supply and waste water management	Gari, cassava chip and/or starch	NA
Irish Potato	Drying, sorting, storage and packing. Water supply	Longer term storage. Consumer packs	Processing into crisps or fries	NA
Dairy	Improving milk quality and handling. MCC water supply	Development of new markets	Milk processing and marketing	NA

103. Under component 1, PASP may finance short-term technical assistance or consultancies as part of its support to BP implementation to facilitate introduction and adoption of innovation and best practices from the region to support value chain development and efficiency improvements. Building on the lessons learned from the IMI-funded Smallholder Post-harvest Innovations Project (SPIP) (2012-2013) and innovations from the RAB and other GoR research institutes, a holistic demonstration approach including technical, marketing, financial and environmental aspects will be applied by establishing a demonstration facility within the HUB itself. This approach will go beyond comparing techniques in a demonstration setting and will allow outside observers, for example from other cooperatives or SMEs, to gain understanding and confidence in assessing the risks and likely benefits from commercial investment in the technologies and processes being demonstrated. Processing and storage systems will be demonstrated using FFS/focus business approaches.

104. ASAP grant financing will be directly administered by MINAGRI SPIU to ensure that the incremental costs associated with establishing and operating climate resilient technologies and processes, including the climate proofing of HUBs and MMCs, are covered in the investment component of HUB BPs. For example, the use of a combination of solar power and biogas, linked to a simple milk pre-cooling system, would allow rapid cooling of milk early in the supply chain to increase its storage life and provide much greater flexibility for delivery of milk at night, increasing farmer returns. In the maize and bean sector, ASAP grant support could assist HUBs install more energy efficient and effective drying facilities using solar heat and/or biogas to speed up drying reducing losses and improving grain quality. The ASAP grant funding will be key to support the low carbon investments that may not show short-term financial benefits but will contribute to longer term adaption to climate change. For example, installation of solar electricity panels to provide the power to drive simple processing equipment for potatoes and cassava to replace petrol engines or installing water based evaporative cooling systems for potatoes, cassava and milk rather than more expensive refrigerated cooling systems to extend the life of the products which would not be economic to operate using conventional cooling systems and energy sources.

105. Examples of climate risk management activities that could be financed by ASAP grants as part of BPs under component 2 include:

- Mainstreaming resilience through capacity building of HUB suppliers and beneficiaries in establishing and operating climate smart harvest and post-harvest technologies, as internalized in HUB BPs. Partners: PHHSTF, ISAR and PHHS.
- Use of timely climatic information services to improve HUB BP implementation and decision making. Partners: LMS and MINAGRI/SPIU in collaboration with REMA and RDB.
- Adoption of best practices, including low-carbon technologies (mitigation) for drying and cooling. Partners:PHHSTF, ISAR and PHHS.
- Climate smart rural infrastructure, including rainwater management and harvesting. Partners: PHHSTF, DAIM and RAB.
- Diversification of crop, pasture and forage varieties that are more tolerant to flood damage and droughts. Partners: CIP, PHHSTF, ISAR and university.

- Use of biophysical vulnerability maps to assist in locating and designing climate smart HUB infrastructure. Partners: LMS in collaboration with MINAGRI, REMA, and RDB and relevant government and university departments and support from consultants as appropriate.
- Development of tailored checklists to ensure adequate costing and timely implementation of climate risk management activities contemplated as part of HUB BPs. Partners: SPIU and relevant partners.

106. Since ASAP grants will be addressing climate issues not typically included in a loan assessment process, an important activity of component 2 will be to sensitise the lending organisations providing most of the financial capital to the importance of ASAP grant funding as a part of the overall investment package and longer time horizon to HUBs required to ensure investment sustainability. Ensuring that the financial sector will be prepared to gradually internalize the full cost of climate resilience investments is critical for PASP since it is unlikely that the ASAP grant resources will be sufficient to address all climate risk management costs in all supported HUB BPs -- especially in view of PASP goal to leverage an additional US$29 million in commercial borrowing and other private sector resources for scaling up PHHS investments.

Component 3: Project management and coordination (US$3.92 million, including US$2.6 million IFAD loan/grant, US$0.26 million ASAP grant, US$0,93 million government counterpart funds, and US$0.12 million project beneficiaries/value chain actors contribution).

107. Component 3 will ensure that the project is efficiently and effectively managed to achieve the expected results. MINAGRI SPIU will have overall responsibility for coordinating and managing PASP and ASAP funds. Gender, youth, environmental, knowledge management and communication considerations will be integrated in all aspects of project management, and activities of the SPIU and the implementing partners (PHHTF, RAB, RCA and BDF). The performance indicators of this component will include quality and timely execution of annual work plan and budgets, timely submission of progress reports and annual audit reports, participatory M&E able to document key indicators and actual levels of disbursements in line with planning. Details of the component are provided in Section III and Appendices 5-8.

D. Lessons learned and compliance to IFAD policies

108. Since 2000, IFAD-supported projects in Rwanda have systematically invested in promoting a shift from subsistence agriculture to market-based farming, supporting rural microenterprises and farmer organisations, and strengthening the institutional capacities of relevant stakeholders at the central and decentralized levels. These projects provide relevant lessons for PASP design, including:

- Farmers need support not only to develop higher yields and better quality produce but also to reap a larger share of added value. Supporting viable production/value-addition cooperatives and the provision of relevant support services has significant potential. Marketing efforts need a critical mass of produce, with clearly established quality and recognised potential to meet buyers' expectations.
- Although some cooperatives have demonstrated that they can be successful, many are still unprofitable or very weak. Ensuring that they can be managed in a sustainable and profitable way and building autonomy at the very first stages of project implementation are key conditions for success. Capacity building strategies should build on proven approaches such as the 'Turnaround' Programme in the coffee sector, which is based on the provision of tailor-made support based on demonstrated cooperative commitment.
- SACCOs under the Smallholder Cash and Export Crops Development Project (PDCRE) demonstrated the great potential of appropriate financial services to: (i) accelerate rural economic development and (ii) directly benefit poorer farmers. The mobilisation of savings and credit among the target population of the *Umutara* Community Resource and Infrastructure Development Project (PDRCIU) succeeded because it was tied to genuine investment opportunities.
- Gender goals can best be achieved by making gender an integral part of the planning and realization of all project activities, rather than through isolated women targeted initiatives. PASP will strengthen the SPIU with a Targeting/Gender specialist who will be responsible for further

development, implementation and monitoring of the gender and targeting strategies, as well as supporting institutional strengthening.

- The Smallholder Post-harvest Innovations Project (SPIP) in Kirehe District identified the following initiatives to reduce post-harvest losses in the maize and bean value chains: (i) training at producer level and targeting women to address timely harvesting, drying, improved threshing, grading and sorting prior to storage, protective measures to reduce/eliminate weevil infestation in storage and during handling and prevent temperature and relative humidity fluctuation in storage; (ii) provision of drying, threshing and storage facilities; (iii) provision of packaging for beans sold on the market; (iv) grading of beans according to coloration to add value so as to sell "single variety" beans; and (iv) provision of seed storage facilities to maintain seed viability.

109. From other post-harvest initiatives in Rwanda the following lessons can be drawn:

- RADD (IFDC) has demonstrated a process to quickly build the capacity of agro-dealers which had grown from close to nil in 2007 to more than 1000 in 2012. The business development support model is applicable to other HUB agribusiness support services.
- The USAID-funded PHHSP with CARANA and ACDI/VOCA has demonstrated a successful training approach for farmer cooperatives, 'Sell More for More', to build capacity in financial and business management including marketing. Participating HUBs were coached in establishing private sector linkages with WFP P4P and Minimex. These training packages and market linkages facilitation are useful for the activities planned under PASP HUB capacity development programme and business coaching (component 1).
- EADD demonstrated the use of the HUB concept in supporting dairy MCCs in Rwanda. However, cooperative institutional constraints restricted the effectiveness of the activities related to an intensive technical assistance support package.
- CATALYST (USAID) trained farmers in the use of fertilizer through demo plots and FFS. This model is applicable to other HUB agribusiness support services addressing the production inputs. With CATALYST 2, the project will focus on developing more services around fertilizer distribution and on marketing the farmer outputs.
- The Rwanda Dairy Competitiveness Project I (USAID) provided a series of technical interventions at farm and MCC level but these may not have led to significant changes.

110. The 2011 Country Programme Evaluation (CPE) generated the following findings and recommendations which are relevant to the design of PASP and future operations:

- While many farm households have increased their production of food crops and livestock products beyond subsistence needs, the systems needed to handle these surpluses (e.g. warehouses, processing and marketing) are not available and marketing, or lack of adequate storage and processing facilities, does represent a major future risk or challenge. Major investments (capital and human resources investments) are required to handle the rapidly increasing surpluses. Support is therefore required for the development of value chains for food crops and livestock products through private-public partnerships.
- Past IFAD support has not effectively contributed to sustainable access to rural finance. This was partly due to a use of credit lines on subsidized end-user terms, rather than the development of sustainable financial intermediaries. A focus on supporting rural financial institutions to develop their capacity to manage risk and clients, mobilize savings and provide loans on market terms would be a more sustainable approach.
- Cooperatives play a crucial role in the portfolio but have sustainability challenges. Risks relate to unsustainable levels of debt, mismanagement and poor governance, and inability to pay and attract qualified staff. The sustainability risk declines with declining levels of complexity of the cooperative managed operation. Current IFAD support is relevant but fragmented and there is need for streamlining and harmonising the support from development partners for a more coherent effort. This should include support to RCA to help fulfill its supervisory and regulatory functions, the standardisation of training modules for office bearers/committee members, and the

gradual building of cooperative apex organisations which can support capacity development of its members.

- PPPMER micro-enterprise interventions have reached out to the poorest rural groups including unemployed rural women and youth, landless and orphans, but increased agricultural productivity in food and cash crops have benefited mostly the economically active poor.
- While acknowledging the environmental benefits of the ongoing portfolio, there is need to better assess environmental risks and opportunities, as past project design documents have not included detailed assessments of environmental risks and trade-offs, and thus mitigation plans.

111. **Compliance with IFAD policies**. In line with the new RB-COSOP 2013-2018, PASP will contribute to more sustainable rural finance strategies and instruments, post-harvesting business models and facilitation support services. The project complies with relevant IFAD policies on targeting, gender, rural finance, environment and climate change, and private sector development. Further details are provided in Appendix 12.

III. Project implementation

A. Approach

112. PASP will be implemented through the Single Project Implementation Unit (SPIU) mainstreamed in MINAGRI, which currently implements all IFAD-supported operations in Rwanda, including PRICE, KWAMP and PAPSTA. In line with SWAp principles and to mainstream project implementation within the agencies responsible for PHHS support, PHHTF, RAB and RCA will be responsible for supporting implementation of core project activities. As PASP implementation partners, these agencies will deliver the specialised facilitation and technical services within their mandated roles to support successful project implementation and incorporate assessment and mitigation of short- and long-term climate risks in their services. In addition, the commodity federations for the PASP focused CIP crops and diary, NCCR and RCA, where appropriate, will be retained on a fee for service basis to provide necessary capacity building and support services to the participating HUBs.

B. Organizational framework

113. The SPIU Coordinator is responsible for overall coordination of IFAD-supported projects, including PASP and for technical and financial reporting to the Permanent Secretary of MINAGRI.

114. PASP implementation involves capacity building and technical interventions from several agencies and service providers which require that the project is managed by a SPIU-based operations team with expertise on targeting, gender, socio-economic, technical and PHHS business development skills and resources. Appendix 5, Attachment 1 shows the SPIU organisation chart with the RAB organisation chart provided in Attachment 2. Attachment 3 sets out terms of reference for SPIU and the main implementation partners' staff.

115. To complement the post-harvest and handling expertise already based in the PHHTF and RAB, a Market and Value Chain Development adviser in the SPIU will provide specialised inputs into the market linkages and value addition activities. To promote climate resilient value chains the SPIU will be strengthened through appropriate training in and exposure to issues related to the broader national and regional climate change agenda. Supported by the ASAP funds, a Climate and Environment specialist will be appointed within the SPIU to support implementation of IFAD country programme.

116. The following agencies will be responsible for supporting implementation of core project activities as PASP implementation partners:

117. **Post-harvest and Handling Task Force.** The PHHTF is mandated to lead implementation of post-harvest and handling activities for the main staple and food crops in Rwanda. It has three departments focusing on Infrastructure Development, Post-harvest Loss Reduction and Quality, and National Strategic Reserves. The PHHTF policy advisor, infrastructure development and post-harvest technical specialists will provide specialised advice and training to crop related HUBs in all aspects of quality, handling, storage and simple processing.

118. **Rwanda Agriculture Board**. Two new boards, the Rwanda Agriculture Board (RAB) and the National Agricultural Export Development Board (NAEB) were established in January 2011 and became operational in the second half of 2011. RAB merges institutions that were responsible for research (Institute of Agriculture Research of Rwanda, IARR), general extension services (Rwanda Agricultural Development Authority, RADA) and livestock research and services (Rwanda Animal Resources Development Authority, RARDA). RAB has three directorates: Infrastructure and Mechanization, Animal Resources Extension, and Agriculture Extension, which will deliver the specialised facilitation and technical services for successful implementation of PASP.

119. *RAB Department of Agricultural Infrastructure and Mechanisation*. DAIM is responsible for research and extension of agricultural and agro-processing equipment, demonstration of business models for mechanisation and enhancing sustainability of the Irrigation and Mechanisation Task Force (I&MTF) activities. To support the PHHTF and DAIM to fulfil their mandate of mechanisation research and extension, PASP will assist in building the human as well as institutional capacity through the provision of technical assistance, short-term training courses and exposure visits. Some demonstrations of appropriate technologies may be supported. DIAM, with the RAB Research Department, will also lead activities to identify appropriate technologies to assist in climate risk management including low-carbon alternatives that need to be adapted or, if necessary, developed to improve the climate resilience of the post-harvest sector. The PHHTF technical team will work with the RAB DAIM to maximise synergies between the two agencies.

120. *RAB Department of Animal Resources Extension*. DARE is responsible for veterinary services and animal production working mostly through the district-funded sector veterinary officer network. To support PASP implementation, 1 or 2 selected sector veterinary officers in each district will be trained to facilitate the MCC HUB group activities there. It will require skill development in facilitation and group dynamics and business management, with other required technical and business skills being contracted as required.

121. *RAB Department of Agricultural Extension*. DAE is responsible for managing crop extension services. RAB or private service provider crop extension staff will be contracted to facilitate HUB groups on the CIP commodities. Cooperative development and agricultural extension experts based in DAE will also provide advice and implementation support to PASP.

122. PASP implementation arrangements build on the successful experiences of other IFAD-supported operations in Rwanda that are applying common approaches across the country programme. As with PRICE, *Memorandums of Understanding* (MOU) with the PHHTF and RAB will be used to retain part-time technical coordinators in the PHHTF and the three RAB technical departments working with PASP. These MOUs will define responsibilities and resources to be allocated for PASP implementation, contracting arrangements, and financial management and reporting requirements to meet MINAGRI and IFAD fiduciary requirements. These MOUs will also cover the PHHTF district cooperative/economic development officer, CIP private or RAB service providers and sector veterinarians who will coordinate required technical inputs from PHHTF and RAB specialists. Subject to meeting performance targets, the RAB DARE dairy group will implement the MCC HUB activities.

123. **Rwanda Cooperative Agency (RCA) and National Confederation of Cooperatives of Rwanda (NCCR)**. RCA is currently responsible for cooperative promotion and regulation. Because the national-level cooperative agencies and non-cooperative service providers have limited funds and staff, RCA will initially provide cooperative related services for PASP on a fee for service basis. PASP will contract RCA, in collaboration with the NCCR, to improve and expand its training materials for cooperative development and management; finance training for capacity building service providers and management, accounting, and similar professional personnel; and contract additional audits of project cooperative HUBs. This support will be short term and contribute to mainstreaming most current RCA activities, except registration and ‘public good’ general oversight of cooperatives, into the national-level cooperative organizations.

124. **Cooperatives, unions and federations.** Cooperatives and their apex structures will be central actors in PASP implementation, both for production development and marketing, provision of support services, and participation in value chain governance. Except for the bean value chain, cooperative commodity-based federations, with their own presidents and committees, are in place for all project

focused CIP commodities. PASP implementation strategy is geared towards ensuring that cooperatives become more professional contributors in their respective value chains, monitoring that their members reap a fair return of value chains' added value. Federations will directly take part in project management and oversight by participating in the Project Steering Committee, supporting planning of component activities, and as users of PASP M&E system. PASP may also support specific capacity building activities for these federations to enable their role as training service providers for cooperatives.

125. **District governments.** Consistent with GoR decentralization policies, district governments will have a lead role in project implementation. PASP will align with the district government activities under the Deputy Mayor, Finance and Economic Development to ensure close linkages with other HUB related SME development activities in the district. The district cooperative/economic development officer will be closely involved in planning and monitoring activities based in each district. As HUBs develop their confidence to develop and implement larger or more ambitious PHHS investments, their BPs will be put forward for inclusion in the District Development Plan. At the district level, PASP will work closely with the Deputy Mayor, Finance and Economic Development, and the JADF.

126. **Technical, financial and training service providers** will assist in implementing project activities. Possible service providers, including national and international NGOs established in Rwanda, have been identified during project design. As discussed in component 2, they will be contracted by the SPIU using competitive government procurement procedures and based on renewable performance-based contracts. Under the HUB capacity development programme and business coaching (component 1), PASP will also promote development of private sector BDS providers to support implementation of business partnerships.

127. **Other strategic partnerships.** In addition to the key institutions involved directly in project implementation, PASP will establish strategic partnerships with other institutions including:

128. *WFP-supported Purchase for Progress (P4P) programme* will contribute to PASP implementation with its experience and training package "sell-more-for more" resulting in a market linkage to their P4P programme. The five-year seed production and certification programme, Market – oriented Advisory Services and Quality Seeds (MASS) funded by Belgium Technical Cooperation (BTC) (valued at Euro 18 million) together with the RAB Rwanda Seed Initiative are addressing key constraints to quality seed development and multiplication. The MASS programme will facilitate the availability of good quality seeds in the participating districts and contribute to seed and tuber handling, treatment storage and transport issues as they are identified. The RADD programme completed in late 2012 has contributed significantly to agro-dealer development support and will be used as the basis for further agro-dealer support.

129. *Climate partnership*. PASP will establish operational linkages with the new Rwanda Environmental Management Authority (REMA) project 'Reducing vulnerability to climate change by establishing disaster preparedness systems and support for integrated watershed management in flood prone areas'. It will seek to expand the information product line to ensure that relevant and timely climate information is shared with beneficiaries to mitigate the impacts of climate variability on harvesting and drying. RDB through their UNFCCC focal point will link the SPIU into the national climate forum and other climate risk related initiatives within the Ministry of Environment.

130. *Potential private sector partnerships* will be identified and assessed on their commitment and capacity of providing stronger market linkages to PASP target groups. As discussed earlier, MINAGRI seeks to attract at least US$29 million in leveraged commercial borrowing and other private sector resources for scaling up inclusive business investments in climate resilient post-harvest handling, processing and marketing, and for actions that align scalable PPPs with such businesses. The selection criteria will follow the relevant principles of engagement in the IFAD Private Sector Strategy: (i) Support or partnership should be driven first and foremost by the interests and needs of smallholder farmers; more specifically, poor rural men and women should benefit from this engagement as producers, suppliers, customers, distributors or employees; (ii) If large and international companies are involved, these must comply with social and environmental standards; (iii) Impact of the engagement should be sustainable after project contribution has ended; and (iv)

partnerships should ensure transparency and clear and agreed responsibilities and accountability by all partners.

131. Possible private sector partners include: (i) Rwanda Agri-Business Industries Ltd (RABI), a bean processing and packaging company in southern Rwanda, which is interested in working with PASP as part of their bean outgrower development activities; (ii) ENAS, which is a major CIP input contractor and also trades in maize in Kirehe district, has indicated it seeks to partner with PASP in other districts to develop market linkages around maize and bean HUBs; (iii) The USAID-financed Land of Lakes (LO'L), which implements Rwanda Dairy Competitiveness Project II (2012-2017) is also interested in collaborating with PASP to increase the competitiveness of Rwandan dairy products in regional markets; (iv) The *Cooperative de Agriculteurs de Mais dans la Zone de Volcans* (COAMV), which has worked with outgrowers, provides a valuable product supply model for other HUBs; and (v) the new RDB-sponsored venture fund targeting small/medium agri-businesses could provide alternative sources for finance for HUBs expanding into consumer marketing and value adding activities.

132. **Project oversight** and overall guidance to PASP implementation will be provided at the national level by a Project Steering Committee, to be chaired by MINAGRI's Permanent Secretary. The Project Steering Committee will represent the main PASP stakeholders, including MINAGRI, value chain cooperative federations, the NCCR, the PHHTF, RAB and district governments. It will meet at least twice a year to review project progress against targets, assess management effectiveness, decide on corrective measures where appropriate, review lessons learned and good practices, approve AWPBs and review progress reports. If the project modality proves successful, this steering committee could evolve to an on-going advisory group for agricultural value chain development activities.

133. **Project start-up phase.** To facilitate a prompt project start-up, MINAGRI will commission the SPIU to carry out preparatory activities prior to project effectiveness. These include recruitment, systems and procedures development, launching of early tenders and studies, including the RIMS baseline value chain analysis and profiling of young people.

134. To improve start-up and early project performance through integration of PASP-funded activities and processes into RAB, IFAD will support a start-up workshop to enable the SPIU and implementing agencies staff to review and validate PASP implementation manual and develop a full and common understanding of the project implementation strategy.

135. During start-up, the roles, responsibilities and accountabilities of all implementers will be clarified and agreed. Their capacities will be assessed and matched with required skills so that adequate capacity development plans can be prepared. Feedback mechanisms will be also developed to enable quick decisions on what to adapt and improve in a flexible output-oriented manner.

136. **Conditions for disbursement.** The following conditions are proposed for IFAD to make the first disbursement of project funds:

- First AWPB receives IFAD no objection;
- MINAGRI opens PASP Designated Account in USD and Operations Account in RwF in the National Bank of Rwanda;
- Revised draft of the PASP implementation manual is submitted to IFAD;
- Appointment of the RAB-PASP Operations Manager; and
- Project Steering Committee is established.

C. Planning, Monitoring and Evaluation and learning

137. **Objectives and approach**. A participatory project learning system (PLS) integrating planning, M&E and knowledge management (KM) will be developed in the very early months of project implementation (including a detailed KM action plan), with the following objectives: (i) provide stakeholders in the focused CIP commodities, in the various support structures (implementing agencies, project staff and service providers), in MINAGRI and among financiers with information and analysis required to steer project implementation (i.e. to assess performance, detect difficulties and successes, identify lessons and support decision-making to improve project performance); (ii) provide

MINAGRI and RAB with information on progress, so as to measure project contribution to the implementation of PSTA III and to support coordination and synergies with other relevant programmes; (iii) monitor project impact on the various socio-economic categories, building on the *Ubudehe* participatory approach, to ensure full participation of the most vulnerable categories in the target group and to prevent elite capture; (iv) provide participating cooperatives with regular feedback reports containing analysis and comparative data so as to give them a good basis for requesting adequate support services; and (v) inform the IFAD country programme on achievement of RB-COSOP targets. The SPIU will manage the PLS.

138. The starting point for the PLS is to undertake a baseline survey based around the existing CIP cooperatives in each district. The baseline survey will provide an excellent opportunity for new project district HUBs to gain an understanding of the main issues impacting on the post-harvest sector. It will provide information on the current involvement of poor farmers in the product supply chains, the current roles of poor youth and women in the crop and dairy production systems and post-harvest activities, and the status of post-harvest infrastructures. The baseline survey sample will differentiate by gender and age to ensure differing responses and that needs are articulated and can be incorporated into the design and implementation of targeted interventions. Monitoring activities will include reporting processes to collect information on the inclusion and participation of the poorer farmer and community groups, particularly women and youth.

139. The PLS will: (i) measure achievement of the results framework indicators (including RIMS and ASAP); (ii) assess the relevance of the project strategy, methodologies and implementation processes; (iii) assess the performance of implementing agents and service providers; (iv) assess project outcomes and impact on the livelihoods of participating farmers, and specifically on vulnerable households, women and young people; (v) identify successes and good practices; and (vi) share knowledge under appropriate formats with project stakeholders to support dialogue and decision making. The system will therefore be *open*, i.e. its use will not be restricted to project or government agencies staff, but also provide information and learning for value chain stakeholders; *participatory*, i.e. involve project stakeholders, and specifically producers' organisations, in the definition of indicators, data collection, analysis and dissemination of results; *scalable*, thus small initially and develop progressively as needs and capacities develop; *focused* on analysis and learning in support of decision making and policy dialogue, and not merely on data production; and *connected* to MINAGRI's and RAB's information systems. While the M&E and KM officers will be key resources in conceiving and in implementing the system, the process will involve all project staff and main stakeholders, in particular those involved in PASP Steering Committee.

140. **Project planning**. The PLS cycle will start with the preparation of the AWPB, first at HUB level then at component level in RAB and the SPIU, then for the whole project. There will be an annual M&E and KM plan, where project stakeholders will seek to identify lessons and good practices. The PASP-ASAP AWPB will be part of the SPIU AWPB.

141. **Data management**. The PLS will be developed by the SPIU M&E and KM specialists who will work with project staff and stakeholders in: (i) agreeing on a shared understanding of project objectives, approaches and planned activities; (ii) agreeing on a vision of the objectives and expected results of the PLS, as well as on a broad framework for M&E and KM and on priority actions to implement it; (iii) identifying quantitative and qualitative indicators to initiate the system, both at the global level (based on PASP results framework) and within each component. Indicators will be developed with relevant stakeholders at each level; coherent with national information systems, easy to collect and gender-disaggregated. Key data will be collected by the participating cooperatives as part of their internal management systems, as supported by the HUB capacity development programme and business coaching (component 1). National poverty data from *Ubudehe* assessments will also be used for measuring impact, at both cooperative and sector level. Based on the MINAGRI MIS and consultations with stakeholders and in collaboration the M&E and KM staff, the SPIU M&E team will prepare a KM strategy for RAB, covering both M&E and qualitative information. The strategy will include a detailed plan for the first year, together with an M&E and KM manual. They will also guide design of a RAB MIS, to be set up by a service provider and accessible to project stakeholders.

142. The MIS will include project financial and technical data from the PLS, project and other RAB documentation, lessons learnt, good practices, and other important sector information to analyse performance of the project and other initiatives (such as prices or export statistics). It will process

information and present it along appropriate formats such as dashboards, charts and maps. Regular updates will be carried out to incorporate new information requirements that will arise during project implementation. Training will be organised for project and RAB managers and stakeholders to build capacities required to use the system.

143. **Knowledge sharing**. Tools and venues for knowledge sharing will be identified as part of the PLS and will be described in the M&E and KM manual. Every year, a Project Stakeholders' Annual Learning Workshop will be organised, whereby areas in which project stakeholders draw good practice and developing exchange of knowledge will be identified. Proposed good practices will be gathered through participatory methods. They will be screened and those presenting the best potential and opportunities to be replicated at a larger scale will be retained and validated by the SPIU. Extensive dissemination through appropriate supports and communication channels will then be carried out based on a communication plan, including also the creation and operation of peer learning groups.

144. **Progress reports**. Quarterly progress reports aligned with MINECOFIN formats will be prepared by RAB and the SPIU to be fully harmonised with government procedures. These formats cover performance assessment, identification of successes and problems, lessons learnt and recommendations for improvement. Limited IFAD-specific attachments will be added to the half-yearly and annual reports. RAB will prepare a project completion report following IFAD guidelines before closure.

D. Financial management, procurement and governance

145. **Financial management.** MINAGRI will have the overall responsibility for the financial management system of PASP. The ministry has a number of years of experience in managing external financed projects by IFAD, WB, and AfDB. Based on previous audits, staffing capacity and financial management systems are adequate. The project will adopt an accounting system consistent with international accounting standards and government requirements. The SPIU will be responsible and accountable to government for the proper use of funds in line with the financing agreement. In addition to a PASP Counterpart Account in RwF, MINAGRI will open and maintain two bank accounts for IFAD project funds: the Designated Account in US$ and the PASP Operations Account in RwF. The Authorised Allocation for the Designated Account will be USD 4 million to allow for the preferential use of project accounts for payments. Regular withdrawal applications to IFAD will be applied to ensure that a proper level of liquidity is maintained to sustain project implementation. RAB and the SPIU will prepare quarterly financial reports as well as annual financial statements within three months of the end of each fiscal year.

146. **Procurement.** Based on a Country Procurement Assessment Review undertaken by the World Bank in 2010 and a recent IFAD assessment carried out during the development of PRICE, the national procurement system was found to meet the requirements and suitable for use under PASP. The project will adopt the national procurement systems and comply with IFAD's prior-review requirements up to the agreed threshold set for goods, works and services. Most procurement of goods, works and services for components 1 and 2 will be the responsibility of RAB, with assistance from the project-financed RAB based procurement officer to ensure that the procurement of goods and services satisfies government regulations and IFAD prior-review requirements. Service providers will be hired through performance-based contracts. Annual SPIU and RAB organised client panels will assess the quality and outcomes the services.

147. **Audit.** PASP will be audited annually by Rwanda's Auditor General, with audit reports submitted not later than six months after the end of the financial year. Regular government anti-corruption procedures will be applied to project procurement and other relevant management processes. IFAD's direct supervision process includes modules on fiduciary compliance and the responsibility and accountability framework.

148. **Governance.** IFAD has recently assessed the overall Rwanda portfolio fiduciary risk as low. National governance indicators rank Rwanda 50th out of 174 countries in the 2012 Transparency International Corruption Perceptions Index (CPI), while both procurement and financial management scored well in the 2010 Public Expenditure and Financial Accountability (PEFA) and USAID's 2011 Public Financial Management Risk Assessment (PFMRAF) of MINAGRI. The Office of the Auditor-

General of State Finances, which audits all of the IFAD-financed projects, has been assessed as independent and follows International Standards on Auditing. MINAGRI's SPIU for IFAD-supported operations is ESA's regional leader in financial reporting and control, and is fully compliant with IFAD procurement and contract management guidelines. Rwanda's annual disbursement levels of IFAD portfolio, standing at around US$16.0 and US$17.4 million in 2011 and 2012, respectively, makes it one of the top four in the ESA Region.

149. In alignment with national efforts, the continued promotion of principles of good governance in project design and implementation is highly relevant. This entails a sustained effort to pursue dimensions of good governance, including fiduciary management, supply-side and demand-side measures. While supply-side measures relate to strengthening internal efficiency and effectiveness in delivery of public goods and services, PASP will emphasize demand-side initiatives that support the active participation of beneficiaries/clients, giving them voice in decision-making and monitoring processes for achieving development outcomes. Principles of transparency, accountability and participation will be upheld, requiring sensitization of communities in good governance principles and processes to mitigate the risk of corruption and promote more effective utilisation of project resources.

150. To address the governance issue, the project has identified key actions that will be promoted and mainstreamed during project implementation. These measures include: (i) increased and consistent disclosure of information to a wide audience, particularly at the community level (including an effective project communication process); (ii) encouraging beneficiary/civil society oversight, more especially for monitoring purposes and to ensure that project-related information can be discussed openly; (iii) a responsive complaints handling system; and (iv) sound accounting and audit measures within a context of rigorous financial management. It is expected that application of these measures will lead to greater transparency and accountability in project implementation.

E. Supervision

151. The project will be supervised directly by IFAD. Annual implementation support missions, followed initially by shorter follow-up missions six months later, will be organised with the participation of government (MINAGRI, RAB, RCA and MINECOFIN) and by farmer and service provider federations. Supervision will not be conducted as a general inspection or evaluation, but rather as an opportunity to assess achievements and lessons jointly, and to reflect ways to improve implementation and impact. Missions will be an integral part of the KM cycle, with mission members playing a supportive and coaching role for project staff and service providers. To ensure continuity, missions will have a core team of resource persons returning regularly, joined by specialists to address specific needs identified for each mission.

152. An in-depth joint mid-term review will be organised by government and IFAD half way during project implementation, in close collaboration with the above-mentioned stakeholders. Consultants not involved in supervision missions will undertake the review to provide a new perspective of project achievements and learning.

F. Risk identification and mitigation

153. The table below identifies the main risks and mitigation measures.

Main risks	Mitigation measures
PHHTF and RAB staff or CIP private service providers not available and/or not capable for HUB facilitator role	PASP contracts BDS providers from BDCs, PSF or PROBA or other service organisations (LO'L, Technoserve, SNV or Heifer International) to provide facilitation services while PHHTF and RAB develops this capacity before the MTR. PASP assesses and monitors existing capacities and rapidly moves to implement associated training programmes. Project regularly evaluates the need for additional importation of new skills.
Weak management capacities of cooperatives	Focused capacity development programmes to foster governance and management capacities. Turnaround programmes for established cooperatives that require higher level support. Annual cooperative audits. Incentives to reward performance (annual awards).
Domestic demand does not grow as quickly as increased production available for sale	Export focus introduced into all marketing activities from initial needs analysis through value addition activities.

Main risks	Mitigation measures
Business management capacity of the new HUBs does not develop fast enough to cope with their expansion and manage their activities to support the value chain development effectively	The project provides inputs appropriate to the needs of the HUB supported by an extensive training and business coaching programme. Where appropriate, the project finances a "turnaround" programme proven effective under other projects supporting cooperative development.
PASP financial incentives allow non-commercial HUB investments	PASP financial services strategy focuses on fostering the commercial lending sector by not subsiding interest rates, but instead by linking focused project investment resources to leverage borrowing from the commercial banking system once business proposals viability and sustainability have been independently verified by participating financial institutions. The financial sector partnership is key to the sustainability and scaling-up of PASP economic benefits since it will ensure that businesses can grow and advance to commercial scale based on expanded finance from commercial banks and the private sector well beyond the project's timeframe.
Price volatility and transport cost disadvantages compared to competing regional production	Project activities focused on reducing the unit costs and/or adding value in the priority CIP commodities to improve competitiveness of Rwanda products compared to competing regional products.
Adoption of post-harvest and value addition mechanisation slower than planned	Focus of agribusiness support services activities is to develop capacity of PHHTF and RAB DAIM to support development, extension and profitable adoption of all types of mechanisation which improve the efficiency of the priority CIP commodities. Transparent demonstration of the technical and financial outcomes of mechanisation linked to viable financing options.
Current losses for key commodities amount to about 30% of harvested products, but these losses are likely to increase given the country's reliance on rainfed agriculture and its vulnerability to climate change.	Post-harvest losses are recognized in Rwanda as one of the greatest sources of inefficiency in agricultural production; and therefore, one of the best 'no-regrets' opportunities for effectively improving crop productivity and resilience in more uncertain climatic and economic conditions. In view of the strong focus on climate-smart investments funded by ASAP, the project is expected to have many positive impacts on the environment and beneficiaries' ability to cope with climate change. PASP will promote investments on climate resilient and low carbon harvest and post-harvesting procedures, drying/ cooling, processing and value addition, storage, logistics and distribution to generate reductions in product losses and increase smallholder and rural labourer incomes. PASP will raise awareness of the need to manage available rainwater efficiently and promote alternative low carbon energy sources such as solar power and biogas as appropriate for drying and cooling of produce.

IV. Project costs, financing and benefits

A. Project costs

154. The project period is five year. The base exchange rate used is RwF 640 to US$1, the prevailing rate in September 2013. Information on taxes applied and rates used and other financial parameters used in the analysis are provided in Appendix 9. The total project costs including price and physical contingencies are estimated at US$85.86 million over the five-year project implementation period. Of this amount US$25.58 million represents the foreign exchange content and US$12.35 million are duties and taxes. Total base costs amount to US$76.96 million, while physical and price contingencies are estimated at US$8.9 million. Investment costs account for 93% and recurrent costs account for 7% of the base costs. Project costs tables are included in Appendix 9.

B. Project financing

155. PASP will be financed by IFAD, the GoR, leveraged commercial borrowing from the financial sector, as well as by contributions from project beneficiaries and other value chain actors. IFAD financing will be in the form of 50% DSF grant and 50% highly concessional loan, equivalent to US$27 million (31.3% of total project costs) and an ASAP grant of US$7 million (8.2% of project costs). The GoR will contribute US$12.35 million (representing 14.14% of total project costs) in the

form of foregone taxes and duties. Approximately US$10.17 million (11.9% of total project costs) would be provided by project beneficiaries in the form of cash, labour and in-kind inputs to the construction and operating costs of the PHHS investments. Finally, it is expected that PASP and ASAP contributions under components 1 and 2 will leverage commercial loans to project beneficiaries from the financial sector and private sector amounting to US$29.42 (34.3% of project costs) to support climate resilient post-harvest handling, processing and marketing investments. Financing tables are included in Appendix 9.

C. Summary benefits and economic analysis

156. **Beneficiaries.** PASP will target 32,400 rural households direct beneficiaries in 10 districts where the project will be intervening. These households will be associated with approximately 200 HUBs. Based on the national average of 4.8 people per household, the number of direct beneficiaries is estimated to be around 155,518 and the project cost per beneficiary will come to approximately US$494. For the focused 10 districts, this will include an average of 3,240 households or 15,552 beneficiaries per district. As PASP implementation capacities are gradually developed, MINAGRI intends to scale up successful operations to other major market-driven crops or livestock activities and geographical areas.

157. There will also be a much larger number of indirect beneficiaries who will benefit from access to financial services for smallholders, women, rural entrepreneurs and small and micro entrepreneurs; the increased capacity building of the different actors both at national and district levels through training, learning routes, and enhanced effectiveness of technical services. The emergence of three to four businesses support initiatives at each HUB, including agro-dealers, agricultural support service providers such as machinery or transport contractors, traders, paravets[11] will provide 4-5 people with employment opportunities for a total of 1,200-1,500 household members. Together with the HUBs, these businesses will also create employment for landless poor households and the youth.

158. **Benefits**. PASP will provide a range of benefits to participants. These will result from: (i) improved product quality, better margin on sales of produce; (ii) improved access to financial and non-financial services; (iii) reduced post-harvest losses, especially resulting from timely harvesting, climate smart processing, drying/cooling and storage facilities; (iv) enhanced market opportunities through improved linkages and contracts between producers and processors; (v) enhanced bargaining power for sale of outputs; (vi) employment in rural areas; and (vii) higher government's tax revenues as a result of increased economic activity and reduced imports resulting in foreign exchange savings.

159. **Non-quantified benefits**. Other, non-quantified benefits include:

- The conditions and service capacity of target agricultural extension services at district level will be enhanced. This will improve the effectiveness of technical development and delivery, consequently resulting in improved access of technical services to all smallholders, irrespective whether they are participating or not in the project.
- Cooperative and SMEs handling HUBs will enhance their capacities in self-management, financial management, negotiation skills, and development of remunerative markets and value chain services. This is expected to make HUB participation more attractive to non-cooperative member farmers.
- Access to financial services is expected to lead to investment in a wide range of production, post-harvest, processing and transport facilities for the selected CIP crops and dairy. These activities are expected to increase the income of all participating households as well as increase the capacity of the private sector for processing and exporting a higher volume of the selected agriculture commodities.
- Empowerment of smallholders, the rural poor and women taking significant decisions and risks affecting their livelihoods individually and collectively and lobby district governments and other institutions in favour of a supportive policy framework on their behalf.
- Key for longer-term sustainability, the project will strengthen the capacity of the responsible government agencies, principally RAB, to manage implementation of core PASP activities and making use of support agencies such as RCA, farmers' federations, training and technical service providers and MFIs.

[11] Local farmers trained in basic veterinary skills

- PASP is expected to have positive impacts on the environment and beneficiaries' ability to cope with climate change. ASAP support will provide resources to specifically address climate change vulnerability through better targeted climate information services and building codes/standards for rural infrastructure investments, helping rural communities to increase their resilience and adapt better, and managing risks in a different, more efficient way. As measures to address these climate vulnerability issues may provide low short-term returns which cannot be commercially justified, the ASAP grant funding will ensure that practical climate resilience measures are included in all PHHS related investments.

160. **Economic returns**. Using conservative assumptions for benefits that will be generated from project interventions, including reduced grain losses and improved margins through higher selling prices, PASP shows an ERR of 15.7%, with a NPV of US$8.3 million on a capital investment of US$46.4 million. These results indicate that, on the basis of an opportunity cost of capital of 12%, the project shows a satisfactory ERR and NPV, and is justified on economic grounds. Appendix 10 sets out the base ERR and shows the sensitivity of the ERR to changes in base assumptions.

D. Sustainability and scaling-up approach

161. PASP is organised as an innovative programme to develop and demonstrate a process to support product aggregation points in priority CIP commodities and dairy, and develop HUB business management capacity and linkages with related business and service providers which can improve their effectiveness and contribute to higher returns to the supplying farmers and the owners of the HUB. If the model, after adaption and improvement, is successful it can then be rolled out across other agricultural value chains and districts across Rwanda. This medium term objective is reflected in the following project innovative features:

- *Implementation by national structures:* there is no project coordination unit, but rather PHHTF and RAB will be responsible for project implementation. Outside donor financed experts are embedded in national structures.
- *Utilisation of national procedures:* National procedures for planning and reporting, contracting, auditing (including for cooperatives) will be applied so that PASP processes can be readily integrated into on-going government programmes.
- *Key role of cooperatives*, which are critical for smallholder farmers' attainment of productivity gains and effects of scale. A range of support interventions is financed by PASP and ASAP to ensure that cooperatives acquire the technical and management capacities as well as the financial resources allowing them to become sustainable, profitable organisations.
- *Non-financial support services:* In addition to directly financing capacity building, PASP facilitates development of sustainable support services so farmers are able to access them beyond project completion, building on public extension services, cooperatives and industry Apex structures, and the private sector.
- *Financial support services:* PASP seeks to leverage access to rural financial services from existing financial institutions, so HUBs and their farmer associates develop a long-term business relationship with the financial sector beyond the project timeframe. With this arrangement, PASP intends to generate short- and long-term benefits for HUBs and financial institutions. Project resources will help participating IFAD target groups establish or strengthen their track record with the financial institution of their choice enabling these groups to graduate into viable enterprises that are competitive and effectively linked to local, national or regional markets, and capable of attracting private sector commercial financing. This will allow financial institutions to enhance their client base at a slightly reduced risk exposure and gain knowledge and experience to respond to farmers' financing needs at both HUB and farm level, which in the long-term is likely to improve the quality of their products and services.
- *BDS performance-based contracts:* A special feature in Rwanda is the adoption of 'annual performance contracts' (*imihigo*) at all levels of government to create incentives for public-sector accountability and achievement of verifiable development targets. To build credibility of the business development process generated with PASP facilitation and to ensure that only bankable BPs are supported, PASP will reward with bonuses service providers whose assistance to participating HUBs systematically obtain loans from

financial institutions. As a performance incentive, 50% of the voucher value would be retained pending approval of the BP proposal by a financial institution. Similarly, private sector and/or BDS providers contracted by the HUB to support implementation of their BP will be also competitively rewarded on a performance basis – both for meeting the targets set in the BPs and for assisting HUBs with a demonstrated loan repayment track record to become more sustainable, growing businesses.

- *Leveraging resources for scaling-up results*: PASP will focus on fostering the commercial lending sector by not subsiding interest rates, but instead by linking focused project investment resources to leverage borrowing from the commercial banking system once project viability and sustainability have been independently verified by participating financial institutions. The financial sector partnership is key to the sustainability and scaling-up of PASP economic benefits since it will ensure that businesses can grow and advance to commercial scale based on expanded finance from commercial banks and the private sector well beyond the project's timeframe.
- *Climate change resilience of CIP commodities and dairy development:* PASP will be strengthened through an ASAP investment providing incremental support to reduce the vulnerability of post-harvest market chains to the impacts of climate change and ensure that appropriate mechanisms are established to safe guard food security. These actions are expected to increase the climate resilience of value chains and reduce the impact of climate change on productivity and profitability of smallholders farming systems through the promotion of best adaptation practices and technologies which will help build a low carbon and climate resilient postharvest agribusiness sector in Rwanda.

Appendix 1: Country, rural context and the Crop Intensification Programme

I. Introduction

1. Rwanda is a small, land-locked country with limited natural resources and a modest mining industry. The population has grown at a rate of 2.6% in the last ten years, reaching a total of 10.8 million and a population density of 416 in 2012, the highest in Africa. From a tragically-low starting point in 1994, Rwanda has achieved extraordinary results in two decades. Thanks to strong economic growth in the last 10 years, poverty has declined from 57% (2005) to 45% (2011) but it remains high in rural areas.

2. The long-term development goals of the Government of Rwanda (GoR or the government) are embedded in its Vision 2020 which is founded on good governance, development of human resources, a private-sector-led economy, infrastructure development, market-led agriculture, and regional economic integration. Vision 2020 seeks to transform the country from a low-income agriculture-based economy into a service-oriented economy by 2020.

3. It sets out ambitious objectives: by 2020, GDP per capita should have grown from US$250 to 900 (it has increased to US$520 since 2000) and less than 30% of the population should still live under the poverty line (estimated in 2012 at US$194 per adult per year). Rural economic transformation through the modernisation of the agriculture sector is one of the key priority areas: by 2020, agricultural production should have tripled, exports increased five times and the population depending on primary agricultural production reduced to 50%.

4. Strategies for achieving these objectives are articulated in the 2013-2018 Economic Development and Poverty Reduction Strategy II (EDPRS II). EDPRS II is structured around five thematic priorities: (i) economic transformation for rapid growth, including diversifying the economic base for exports; (ii) private sector development, competitiveness and service delivery; (iii) rural development, including agriculture modernization, environment and climate change[1]; (iv) productivity and youth employment creation, including education and skills development and job creation; and (v) accountable governance.

5. In recent years, Rwanda has made great progress in deepening reforms, especially those designed to improve the business environment to support a private sector led development model. The achievements made during the period of the first EDPRS (2008-2012) have been remarkable in terms of economic growth and increased incomes, but also in other dimensions of well-being[2]. The country's GDP has grown by an average of 8% annually during the past 20 years, and GDP per capita reached US$644 in 2012 (from US$479 in 2008).

6. Rwanda's successful performance has been driven by stable macroeconomic and market-oriented policies, improved regulatory frameworks and relatively transparent interactions with the private sector. A strong anti-corruption policy has increased business confidence. This growth, however, has had less-than-expected effects on the poorer strata of the population, as shown by the Gini coefficient in the last decade.

7. Despite the country's success in having established a sound investment climate, foreign direct investments remain at low levels. The private sector is still nascent and could profit much from access to technological know-how and established distribution channels abroad. The major constraints to accelerated growth, investments and exports are the lack of economic infrastructure, the still limited skills base and an increasing vulnerability to climate risks such as drought, floods, intense and erratic rainfall, associated high winds and temperature shifts. If not addressed, existing climate variability, will impose significant economic costs on this growth. A 2009 study by the Stockholm Environment Institute (SEI) estimates that adaptation to climate change will cost Rwanda US$50-300 million per

[1] Including establishment of an Environment and Climate Change Innovation Centre for piloting promising 'green' technologies.
[2] According to EDPRS II, child mortality declined from 86 to 50 infant deaths/1,000 live births, maternal mortality from 750 to 487/100,000 live births, and electrification cover increased from 3 to 13% of households since 2006.

year by 2030[3]. The potential impacts of increased climatic risk on agricultural productivity and post-harvest processes in Rwanda are discussed in WP 1 and summarized in Attachment 3 below.

8. Rwanda is also attributing high importance to increased regional integration and is already benefitting from the positive growth momentum in East Africa. But large growth potentials are yet to be realized, such as benefitting from regional power trade. On July 1, 2010 the East Africa Community (EAC) Common Market became effective, and Rwanda implemented the EAC Common External Tariff Framework.

II. National context

9. Over the last five years, the population of Rwanda has grown from 9.5 million to an estimated 10.8 million. Rwanda's society is still largely rural (85%) and agriculture dependent. Households manage complex, mostly rainfed, farming systems. Due to the country's mountainous geography, only about 60% of the total land area is currently under cultivation. The favourable climatic conditions and the generally fertile soils allow cultivation of a wide range of agricultural products comprised of both cash and food crops. Tea and coffee are by far the main traditional export crops, providing 70% of agricultural export earnings. Food crops cover around 67% of cultivated area with two-thirds consumed by the family but an increasing proportion of households are now selling staple crops. The main food crops include rainfed sorghum, banana, beans, sweet potato and cassava, but maize, rice, Irish potato and fruits and vegetables have emerged as important smallholder crops. Encouraged by government policy, dairy production is also widespread and increasing.

10. Recognized in EDPRS II as a priority sector, agriculture is at the heart of Rwanda's economy and, together with services, one of two key growth engines capable of contributing significantly to poverty reduction. The government objective is to move agriculture from subsistence to commercial production and from low- to high-value products. The agricultural sector grew at an average of 4.9% over the last five years, contributing about 36% to GDP. The sector occupies 80% of the labour force, a high percentage of which is composed of women, and generates more than 45% of the country's export revenues. Agriculture contributes to national food self-sufficiency, providing over 90% of all food consumed.

11. The realization of the Rwanda Vision 2020 and the EDPRS II will primarily depend on the dynamism of the agricultural sector and in particular the growth and sustainability of food crops in face of increasing climatic uncertainties. To achieve this goal, the GoR has made enormous strides in improving the physical and policy environment for agricultural intensification and growth, has created a dairy sector in which very large numbers of farm families participate, has established a fertilizer distribution network, has laid foundations for stronger cooperation among farmers for the purpose of bulking up output, and has initiated the development of modern post-harvest infrastructure in key value chains.

12. According to the recent World Bank Rwanda Economic Update (2013), higher agricultural productivity has been the main driver of growth and poverty reduction in Rwanda (14 percentage points) over the last 10 years. Together with increased commercialization of agriculture production, reflected in the rising share of harvests sold on local markets, the increase in production accounted for about 45% of the reduction in poverty in the last decade.

13. Public expenditure on agriculture consistently rose by an annual average of 10% for the last four years, corresponding to almost 6% of the total government budget. However, it remains small when compared with the Comprehensive Africa Agriculture Development Programme (CAADP) annual agricultural budget-share target of 10%. At an average of 5.5%, Rwanda is making progress to reach the CAADP 6% annual agricultural growth rate by 2015. However, the government budget is highly dependent on foreign aid (40% of the national budget). This could be a potential risk to public investment stability and sustainability.

14. Given these important demands on public sector resources, the development of partnerships with the private sector takes on increasing urgency in Rwanda. Government is aware of the

[3] The Economics of Climate Change in Rwanda. The report used case studies of recent natural disasters to estimate losses incurred because of the example disasters. However, the report did not make estimates of the annual total losses due to natural disasters.

importance that public resources be channelled to the sector in ways that are designed to promote efficiency. This has meant targeting public support on actions that have sector-wide reach, such as infrastructure development (including irrigation and terracing), strengthening of human capital, and interventions that catalyse public-private partnerships to help aggregate production for markets, support transformation, and create value-added.

15. **Rural poverty.** The recently published Third Integrated Household Living Conditions Survey (EICV3) shows that the standard of living of Rwanda's population has improved over the last five years, the birth rate has fallen, literacy levels among the young have grown, electrification has been improved as have sanitation methods and access to health. The proportion of the population below the poverty line decreased from 58.9 to 44.9% and extreme poverty fell from 40 to 24% in the last decade. Despite these achievements, poverty is still widespread and extremely deep.

16. Poverty and extreme poverty are estimated at 48.7% and 26.4% in rural areas. The Northern and Eastern provinces have seen the most improvement while the Western and Southern provinces still have the highest percentages of poverty at 56 and 48%, respectively. The prevalence of chronic malnutrition (stunting) among children under five remains very high (43%). In addition, Rwanda ranks 167th of 186 countries in the 2012 Human Development Index (HDI) and 76th out of 148 countries in the Gender Inequality Index (GII).

17. Production systems are based on small family farms that cultivate an average of 0.76 ha, with 26% having less than 0.2 ha, thus severely restricting the ability of the rural population to escape poverty. Poorest households tend to have no land or very small landholdings, low levels of literacy, and poor access to services. Food insecure households tend to be headed by women, elderly and uneducated.

18. **Rural women.** Progress in women's participation in society represents an ambitious national objective and an indicator of Rwanda's commitment to empowering women. An estimated 56% of the members of Parliament and one third of the Cabinet are women. While the GoR vision and national gender policy is inclusive of women with a target representation at 30% across the employment structure, further analysis shows that, while they not under-represented in management, women often lack a voice and true empowerment. They represent 53% of the population and close to 30% of the most vulnerable households are headed by women under 21 year old. The incidence of poverty is 7% higher in women-headed households (62% compared with 54% of the households headed by men). Women concentrate their work in agriculture (82% are active in the sector) and find it more difficult to find alternative non-farm employment (over the last five years, only 4% of women managed to find work outside of agriculture, as opposed to 9% among men). They have the lowest levels of schooling and highest levels of illiteracy (23%) and are often unable to move beyond subsistence agriculture, have limited market access information, lack access to knowledge and finance, and have difficulty in participating in new ventures and agri-businesses which could provide additional economic opportunities. Women are associated with primary processing and marketing of small quantities in the local markets. It is harder for women to accumulate livestock assets as cattle ownership is predominantly in men's hands which has direct implications for improving the milk value chain. Women-headed households are less resilient to both economic and climatic shocks and have limited or no savings. As agricultural wage labourers, they are paid as little as RwF 800 (US$1.3) per day. Impoverished women are also vulnerable to discrimination and to a vicious cycle of inadequate health care and education and a lack of awareness of their legal rights.

19. **Rural youth and employment**. The number of people aged 16 and above has grown from about 4.1 million in 2001 to 5.9 million in 2011, a growth of some 1.8 million adults. Ministry of Youth data report that youth (age 14-35) represent approximately 40% of the total population in 2011 and 51.6% are girls. No specific data is available as to youth employment breakdowns but given land constraints, providing sufficient work opportunities for those youth without access to productive resources is a major challenge for the country. The majority of the new off-farm jobs created are in small and microenterprises in the informal sector. The government has a target of 200,000 jobs created per year.

III. The Crop Intensification Programme

20. The Crop Intensification Programme (CIP) is a flagship programme implemented by the Ministry of Agriculture and Animal Resources (MINAGRI) since 2007. CIP focuses on six priority crops: maize, wheat, rice, Irish potato, beans and cassava and aims to significantly increase food crop production. The programme includes facilitation of access to improved seeds and fertilizers, consolidation of land use for more effective use[4], and provision of advisory services and improvement of post-harvest handling and storage facilities.

21. Key accomplishments under the CIP include: (i) increased use of improved seeds for maize (by 61.8%), wheat (46.3%) and Irish potato (16.3%); and (ii) doubled national average in the use of fertilizer: from 8.5 kg per ha in 2006 to around 16 kg per ha in 2010. Yields have significantly increased and overall production, assisted by the land-use consolidation programme, increased without expanding the total area under cultivation: The total production of maize, wheat and cassava tripled from 2007 to 2011, the production of beans doubled, and that of rice and Irish potato increased by 30%.

22. Concurrent with the increase in crop production, Rwanda has also seen a shift toward more commercial agriculture, with marketed output increasing in all provinces from 22% in 2005/6 to 27% in 2010/11. Future CIP challenges include increasing the effectiveness of the farm inputs used, gradually exiting from input subsidies without reducing input use and crop productivity, minimizing harvest and post-harvest losses in the face of an increasingly variable climate, and strengthening smallholders' links to markets and information services. An overview of production and the local and regional markets for the CIP crops, and a SWOT analysis on the prioritized crops are provided in Attachment 1 and 2, respectively. Attachment 3 discussed the impacts of climate variability on agricultural productivity and post-harvest processes for all major CIP crops and dairy.

23. **Livestock and crop-livestock integration.** Livestock, particularly dairy cattle, has historically been an integral part of production systems in Rwanda. This affinity with cattle and milk production has led the GoR to place a high priority on increasing milk production both to improve the level of nutrition in rural and urban areas and as a pathway for very poor families to lift themselves out of poverty. Diverse production systems are present, from agro-pastoral extensive systems in the Eastern province, where more than 40% of the herds are concentrated, to integrated crop/livestock systems. During the period of the genocide, 80% of the cattle and 90% of small ruminants were decimated, but restocking has been actively supported in the last decade, practically re-establishing the number of animals to 1994 levels.

24. The 'one cow per poor family's programme' (*girinka*) aims to distribute cattle to poor households, and has been successful in raising rural incomes and increasing milk production from 50,000 tons in 2000 to 450,000 tons in 2012 but there has been a lag in the effective management of milk collection and aggregation centres and transport services. Being predominantly an occupation of women, smallholder dairy farming holds great potential for economic empowerment of rural women. The sector is however vulnerable to climate change on the production side, as water becomes scarce for fodder production in some areas, and as temperature fluctuations require changes in forage feeding systems and complicate the safe storage and cooling of milk in the supply chain to consumers.

25. **Farmers' organizations, cooperatives and rural enterprises**. Rwanda has had a variety of traditional forms of self-help groups, some of which have survived to the present day[5]. The Government has supported transformation of these traditional systems of solidarity and mutual assistance into economically oriented development structures such as cooperatives. As a result of this effort, the number of cooperatives has increased from about 900 in 2005 to 4,987 registered cooperatives in 2012 with some two million individuals currently organised into these cooperatives. Over a third of cooperative members are women and they account for about 34% of cooperative

[4] Due to the growing demographic pressure on the land and natural resource base, agricultural lands in Rwanda are highly fragmented. Under recent government policy reforms, CIP supported consolidation of land use so farmers in a given area grow specific food crops in a coordinated way to improve productivity and environmental sustainability. As a result, the consolidated land for these crops has increased from 28,788 ha in 2008 to 254,000 ha in 2010 (see Attachment 3).

[5] *Ubudehe* (working together), *Umubyizi* (assisting each other) and *Umuganda* (community work).

management board members, above the legal requirement of 30%. It is commonly accepted that the majority of cooperatives' members have weak knowledge of their rights and duties as well as limited business skills and low levels of literacy.

26. The majority of smallholders are organised into cooperatives, and formal support to different agricultural products, including food crops, is organised along crop-specific supply or value chains. About 40% of cooperatives are product-specific agricultural cooperative societies based on the *Umurenge* (sector) or village levels and have formed commodity-specific unions, mostly at district level. The unions have established national federations to represent commodities or products which offers great potential, particularly in the markets for rice, tea, coffee, potato, cassava and maize or milk. These groups promote agricultural activities and extension services among their members, as do commodity-specific farmer federations which may encompass pre-production services, production support, and post-harvesting processing operations all the way to consumers. The large number of cooperatives provides a range of entry points for support to the rural sector and priority target groups. However, most local cooperatives have very weak financial management and poor control over their limited resources, and private-sector involvement remain limited or informal.

27. **The Rwanda Cooperative Agency** (RCA) plays an oversight role, but is also involved in building cooperatives' administrative and managerial capacities. Since the market orientation of the agricultural sector is increasing, there is general consensus that large numbers of smallholders with their small plot sizes can boost their revenue from agricultural production only if they are organised in well-functioning cooperative structures on consolidated land areas. The National Cooperative Confederations of Rwanda (NCCR), established in 2010, is the apex group for cooperative federations, unions, and local cooperatives. NCCR provides a vertical network of cooperative organisations and a structure for both advocacy and information channels from the village level to the national level and vice versa.

28. Many Rwanda farmers and rural business people do not belong to cooperatives and operate **micro, small and medium enterprises** (SME) and other forms of business partnerships outside the cooperative structures. Until recently, the SMEs have had limited access to government support which is largely directed through cooperatives. The Rwanda Chamber of Commerce supports private businesses in the agricultural sector and established an agricultural chamber in 2011. Private enterprises are also represented by the Private Sector Federation (PSF) which has a section addressing agricultural SME issues and another section providing business development services to SMEs across the country.

29. **Business Development Services** (BDS) are also provided through the recently privatised business development centres (BDC) created at each district centre by the Rwanda Development Board (RDB). The IFAD-funded Rural Small and Micro-Enterprises Promotion Project (PPPMER II) implemented through the Ministry of Industry and Commerce (MINICOM) has also developed a cadre of 416 business advisers (one per each sector) who are under the coordination of a rural small and medium enterprise facilitator in every district to support rural SMEs across Rwanda. In addition, individual BDS providers can be found across the country who develop business plans for SMEs and undertake contract work for banks assessing loan proposals.

30. **Extension services** are available to less than 15% of rural households. Public extension services have lacked resources, are generally not demand-driven or gender sensitive, and have focused mostly on agricultural techniques, leaving out critical elements such as climate information services, marketing and management. There is even less support for post-harvest handling and product handling with the Post-harvest and Handling Task Force (PHHTF) implementing some activities for the CIP crops. Most post-harvest and value addition issues are addressed through development partner-supported programmes. The National Extension Strategy (2008) promoted a new demand-driven approach aiming at developing professional cooperatives and building on the diversity of public, private and associative service providers in the rural areas. For agricultural research, the national agricultural research organisation has been integrated within the new Rwanda Agriculture Board (RAB) structure aimed at providing more responsive services to agricultural value chains.

IV. Policy, strategy and institutional context

31. Rwanda's governance culture is highly results oriented, thus ensuring that policies and strategies are implemented. Since the 1994 genocide, the Government has sought to create a more-inclusive form of governance based on one national identity and increased decentralization. A special feature in Rwanda is the adoption of 'annual performance contracts' (*imihigo*) at all levels of government to create incentives for public-sector accountability and achievement of verifiable development targets. Cooperatives have contributed to rebuilding social capital and cohesion among the rural poor and are increasingly providing technical assistance to members, extending credit, facilitating access to inputs and organizing collective marketing. Associations of off-farm producers are emerging, and farmers' organizations organized in commodity chains are also becoming vocal and representative.

32. **National rural poverty reduction strategy.** The most current policy document covering the agricultural sector is the 2013-2016 Strategic Plan for the Transformation of Agriculture (PSTA III). In the process of being adopted, PSTA III aims at translating GoR policy objectives into a comprehensive roadmap to transform Rwanda's agriculture from a subsistence to a knowledge-based, value-creating sector while ensuring food security and preserving natural resources. It places emphasis on value chains and markets; product quality and premium prices; bulking up production to facilitate access to inputs, services and markets; increasing exports; and expanding the role of the private sector in irrigated production. Strengthening value chains and reducing losses through post-harvest facilities are also expected to generate more income and employment in activities such as product processing, packaging, and marketing. MINAGRI exerts strong ownership and leadership over the agriculture-sector strategy, and development partners consider the operationalization of the strategic plan highly effective.

33. **The National Post-harvest Staple Crop Strategy** (PHSCS) aims to develop an efficient post-harvest system driven by the private sector to reduce post-harvest losses and ensure food security of staple crops. It seeks increased competitiveness by decreasing marketing costs along the value and supply chains, and enhancing farmers' access to and strengthening their linkages with markets. The strategy is currently being implemented through the Post-harvest and Handling Task Force (PHHTF)..

34. **National Multi-sectoral Strategy to Eliminate Malnutrition** (NSEM). Fighting malnutrition is high on the Government's policy agenda. A coordinating structure has been created responding directly to the Prime Minister, involving several key ministries (Ministry of Health [MINISANTE], Ministry of Local Government [MINALOC], MINAGRI, Ministry of Education [MINEDUC] and Ministry of Gender and Family Promotion [MIGEPROF]). The United Nations Renewed Efforts Against Child Hunger and Undernutrition (REACH) programme – launched at a global level by the United Nations Children's Fund (UNICEF), World Health Organization (WHO), World Food Programme (WFP) and FAO, and which IFAD intends to join – is assisting Rwanda in operationalizing the 2010-13 NSEM.

V. Access to financial services

35. Appendix 13 provides an assessment of rural financial services in Rwanda. Lack of access to finance is a significant constraint on equitable economic and social development in Rwanda. Less than 3% of farmers have access to adequate rural financial services. The GoR discourages the use of subsidized interest rates so lending to rural clients, however scarce, is largely undertaken on a commercial basis, albeit generally for 1-2 year periods which discourages longer term investment. These short-term loan periods, combined with high real interest rates, make loan repayment challenging. The growing number of commercial banks in Rwanda suggests that lending capital is not a major constraint to financial services. However, only two commercial banks have rural networks and charge high interest rates (up to 18%).

36. Government and project-sponsored guarantee funds have addressed collateral constraints in rural lending and have supported their consolidation under the *Banque Rwandaise de Développement* (BRD), with the Business Development Fund (BDF) more recently streamlining their management. BDF and experienced project managers report that some guarantee funding is still required to support poor rural borrowers with limited collateral.

37. Microfinance institutions (MFI) have limited outreach in rural areas and usually charge much higher interest rates to farmers (2-2.5% per month). To improve access to credit in the rural areas, the government has promoted the creation of 416 savings and credit cooperatives (SACCOs), one per sector. These have mobilised significant saving resources but much limited lending due to inadequate capacity.

38. A review of the SACCO sector completed in March 2012 found that the main constraints of Rwandan MFIs and SACCOs in the rural financing sector consist of lack of capacity and poor governance, isolation from financial markets, and capital lending resource structure not shaped for medium to long term financing. BRD, together with BDF and the BPR are assisting in developing SACCO's capacity so that they can be used to channel bank funds to and from rural clients and, at a later stage, to receive on-lending resources. The study also recommended some consolidation of SACCOs and continuation of the capacity building activities already implemented and supported through the RCA but the modest resources that are available severely limit the scope of the capacity building efforts.

39. The Government is committed to improving access to and quality of financial services and to remove constraints, in particular by approving and implementing sector strategies[6]; supporting capacity-building of MFIs and SACCOs as key entities serving IFAD target groups; and harmonizing state support by establishing the BDF. Under Access to Finance Rwanda (AFR), government and development partners are committed to implementing a common operational platform to address priority constraints such as sustainability of SACCOs, crop insurance, leasing and several other alternative financing mechanisms.

40. Previous IFAD-funded projects have had major rural finance components with varying degrees or success. As greater volumes of lending capital become available and the GoR and IFAD wish to foster the commercial lending sector by not subsiding interest rates, a new generation of projects will seek to link focused project investment resources to leverage borrowing from the commercial banking system once project viability and sustainability prospects have been independently verified. The design of the Climate Resilient Post-harvest and Agribusiness Support Project (PASP) has constituted an important entry point for full alignment with this strategic approach.

VI. Environment and climate change

41. Rwanda is ecologically diverse ranging from highland mountain forests to savannah grasslands and low altitude marshes. In the west and north west there are highland mountain landscapes changing to rolling plains in the lowland areas in the east. Most of the country has two agriculture seasons supported by two rainy seasons. Some lowland marshland areas have a third season. About 52% of the countries' 165,000 ha of marshlands are under cultivation.

42. The major natural resource management issue is the pressure a growing population is exerting on natural resources (land, water, forests, flora, fauna and non-renewable resources) which have been degrading for decades. This degradation includes major deforestation, depletion of bio-diversity, erosion and landslides, pollution of waterways and degradation of fragile ecosystems, such as swamps and wetlands. Environmental problems are exacerbated by poor location of industries and direct disposal of their untreated wastes into waterways and lakes. To support a more sustainable development pathway, the GoR is focusing on implementation of appropriate land and water management policies and programmes, coupled with a sound biodiversity and climate change policies.

43. As part of protecting and managing natural resources, Rwanda intends to reduce from 90 to 50% the number of households mainly dependent on traditional agriculture. To assist this change, environmental aspects are integrated into all sector policies, education and development plans, and in all decision-making spheres of government. Community involvement (including women and youth) is promoted in environmental protection and management.

[6] For example, the Rural and Agricultural Financial Services Strategy and the Rwanda National Microfinance Policy Implementation Strategy.

44. The Government has recently carried out an Strategic Environmental Assessment (SEA) of the agriculture sector with EU support. Regarding crop intensification, the SEA recommended to give special emphasis to soil acidity and nutrient management, pest and disease management, soil and water conservation and crop variety selection.

45. EDPRS II highlights climate change adaptation and mitigation strategies as cross cutting issues that must be incorporated in national economic and physical planning. Rwanda is highly vulnerable to climate change as it depends on rainfed agriculture for supporting rural livelihoods and exports. This is already borne out through frequent extreme weather events that cause major socio-economic impacts and reduce economic growth in different regions.

46. According to the National Adaptation Plan of Action (NAPA[7]), the impacts of recent floods and droughts associated with El Niño and La Niña are exacerbated by climate change and the poor environmental conditions prevailing in the country. Climate model scenarios show increases in mean annual temperature of up to 3.25°C by the end of the century, which are expected to cause further significant losses to agricultural production that are currently estimated anything from 15 to 40% depending on source and commodity[8]. Changes in rainfall are more uncertain, though most models predict that rainfall intensity will increase and there may be a change in the timing of the two cropping seasons that characterised Rwanda's rainfed systems.

47. The climate sensitivities of Rwanda's long-term development goals, first discussed in NAPA, have been re-examined in the 2011 National Strategy on Climate Change and Low-Carbon Development (NCCLCD). The need to manage the implications of climate variability for the social, environmental and economic development of the country is highlighted in the strategy. It provides the framework for the climate-change and low-carbon development incorporated into EDPRS II and Vision 2020, with emphasis on the development of "low-carbon and climate-resilient post-harvest agribusiness sectors".

48. The GoR has become one of a number of nations across the world that has developed a national climate change and environment fund (FONERWA) built on the newly adopted Green Growth and Climate Resilience Strategy. FONERWA will be the primary mechanism through which Rwanda accesses, programmes, disburses and monitors international and national extra-budgetary climate and environment finance. Funds will be distributed to government, private sector, civil society and communities to implement a range of projects.

49. The potential impacts of increased climatic risk on agricultural productivity and post-harvest processes in Rwanda are discussed in WP 1 and summarized in Attachment 3 below. Key activities and investments to address these emerging issues are discussed together with indicators of success.

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[7] National Adaptation Plan of Action (NAPA), Republic of Rwanda, 2006. Ministry of Lands, Environment, Forestry, Water And Mines, Kigali.

[8] African Post-Harvest Losses Information Systems (APHLIS website); USAID, MINAGRI and CARANA, Postharvest Baseline Survey of Rwandan Maize and Rice farming households; Smallholder Post-harvest Innovations Project (SPIP) – Mid Term Project Report, IFAD Policy and Technical Advisory Division, May 2013.

Attachment 1: An overview of production and markets for PASP-targeted commodities

Staple crop production. Under CIP the stable crop production has increase enormously over the past five years, as shown below:

Table 1. Production of PASP commodities, 2007-2011 (in Tonnes)

Commodity	2007	2008	2009	2010	2011	CAGR[1] 07-11
Maize	102,446	166,851	286,946	438,739	508,123	38%
Beans	331,106	308,562	327,728	320,361	332,892	0%
Cassava	967,282	1,161,942	1,289,620	2,287,473	2,616,424	22%
Irish Potato	776,942	1,681,823	2,019,738	1,724,856	2,177,164	23%
Dairy	265,000	354,000	369,000	402,000	472,000	16 %

Source: MINAGRI

PASP-targeted commodities show strong growth in production, apart from beans with a CAGR of 0%. Dairy production increase in Sub-Sahara Africa is estimated at 3.3% between 2012-2021[2]. PASP will address the demand for post-harvest and agribusiness services associated to this strong production growth. For maize this trend is likely to continue. In the season 2012A, maize production, in comparison with season 2011A, rose by 19%, at the same time maize yield increased by 6% between the two seasons. The main reason for the increase in production is the 12% increase in area under maize. Together with the strong growth in production the import of maize shows also strong growth, from a trade deficit of 1,131 MT in 2007 to a 76,664 MT trade deficit in 2011, as shown in Table 2 below. For beans the 2012A production increased by 37%, yield increased by 17% and area under beans increased by 17%.

Table 2. Rwanda's formal trade balance (deficit) in staple crops, 2007–2011 (in Tonnes)

Commodity	2007	2008	2009	2010	2011
Maize	(1,131)	(28,928)	(12,736)	(23,462)	(76,664)
Beans	(3,957)	(10,209)	(4,431)	(3,807)	(2,163)
Cassava	no data	(35)	10	(42)	(2,551)
Irish Potato	863	(260)	(1,376)	617	3,192
Dairy	(107)	(1,824)	(2,144)	no data	no data

Source: Rwanda Revenue Authority (RRA) and MINICOM

National market. Staples in Rwanda are largely traded through informal channels and transformed/processed by smaller informal processors. The general push among the public and private sector stakeholders is to strengthen commercial links between producers and their producer cooperatives with the formal markets, which remain limited in relative size and operate significantly below capacity. Traditionally beans, cassava and Irish potato are stable foods for the rural Rwandan population and therefore domestic demand is strong. Maize is fairly new to the Rwandan consumer but sees a strong demand. The national demand for maize outgrows the production growth of CAGR of 38% leaving a gap of 1,131 MT in 2007 to a 76,664 MT trade deficit in 2011. As with maize, milk consumption is not traditionally imbedded in the rural consumer pattern. Dairy, with milk consumption in particular, is with per capita consumption of 40 litres/year very low compared to the EAC countries[3]. Milk consumption growth is expected to be in line with the population growth of 3%[4]. Furthermore, the MINAGRI demand for the Rwanda Strategic Reserve expansion, currently 30,000 MT and by the end of the 2012 fiscal year 70,000MT, will rise to 200,000MT by 2015. With this expansion the Rwanda Strategic Reserve will absorb 6% of the 2011 total maize production and an estimated 13% of the 2012 total maize production.

[1] The Compound Annual Growth Rate (CAGR) is the year-over-year growth rate over a specified period of time, here five years.
[2] Source: OECD 2012 -2021 Agricultural Outlook Report outlook, on Dairy, page 187-198.
[3] According the OECD 2012 -2021 Agricultural Outlook Report
[4] Source: World Bank, Last updated: Jul 13, 2012, population growth of 2,96%

Regional market: Informal and formal. Rwanda runs a large net trade deficit[5] (all trade, not just staples) of over 485 billion RWF over the period May 2009 – April 2010. While informal trade only represents 5% of total trade, informal regional exports to East African Community (EAC) and the Economic Community of the Great Lake Countries (CEPGL) represent 20% of total exports. The DRC is the largest informal export market (all trade, not just staples) for Rwanda, representing 80% of informal exports. The PASP selected stable commodities: beans, maize, Irish potatoes and cassava all have a positive balance in the informal trade as shown in Table 3, below.

Table 3. Informal trade in staple crops, May 2009 – April 2010 (Rwf '000)

Commodity	Import Value	Export Value	Balance of Informal Trade (deficit)
Dried beans	604,475	1,352,501	748,026
Maize flour	494,476	1,219,526	725,049
Maize	407,380	124,886	(282,494)
Irish potatoes	236,647	1,111,648	875,000
Cassava flour	65,004	481,888	416,883

Source: Informal Cross Border Trade Survey Report (May 2009 – April 2010)

The formal trade of Rwanda within the EAC shows a different picture, with trade deficits on all commodities except Irish potato, as shown in Table 4 below. Comparing the formal with the informal trade, the data supports the above described large informal sector. With the exception of maize having a trade deficit in both formal and informal market with high demand from the formal sector maize operators.

Table 4. Rwanda's formal trade balance (deficit) in staple crops, 2007–2011 (in Rwf '000)

Commodity	2007	2008	2009	2010	2011
Maize	(4,306,632)	(2,830,301)	(1,447,855)	(1,558,125)	(7,818,468)
Beans	(128,917)	(2,412,648)	(192,413)	(352,883)	(219,813)
Cassava	no data	(1,034)	386	(2,250)	(161,487)
Irish Potato	53,547	(115,595)	(33,839)	55,703	231,105
Dairy	(87,038)	(1,041,369)	(1,359,634)	no data	no data

Source: Rwanda Revenue Authority (RRA) and MINICOM

Competitive position. The regional competitive position of Rwanda is not equally strong for all five project commodities. Rwandan beans have a strong price competitive position in the EAC, as show in Table 5 below. Irish potato has a strong competitive position because it is produced in ideal climatic conditions in the North and North-Western part of Rwanda. For cassava, the production base is large and with the new Kinazi processing factory, cassava flour has the potential of becoming a competitive export product. Maize is having a weak price competitive position in the region, as shown in Table 5. Kigali maize has not been price competitive in the EAC region over the last five years. Rwanda dairy (milk) is currently not price competitive in the region, resulting in milk imports from Uganda.

Table 5. Wholesale capital prices, year average, between 2007-2011 (USD / MT)

Commodity	In USD$ / MT	2007	2008	2009	2010	2011
Maize	Kigali Year average.	240	345	377	259	367
	EAC excluding Rwanda year average.	161	292	340	227	304
Beans	Kigali Year average.	436	571	444	456	481
	EAC excluding Rwanda year average.	517	744	711	695	667

Source:www.ratin.net, as service of the East Africa Grain Council (EAGC)

[5] Source: Informal Cross Border Trade Survey Report (May 2009 – April 2010) by BNR in collaboration with MINICOM, RRA, and NISR.

Attachment 2: SWOT Analysis of PASP-targeted commodities

Strength	Weaknesses
Maize: receives strong GoR support, strong domestic demand and production	**Maize:** difficult to dry, production and processing cost is high. Price competitive position in EAC is weak
Beans: perceived quality in region is good, local and region demand is strong. Price competitive position in EAC is strong	**Beans:** No good quality seed available, low production, low improved production techniques
Cassava: available in large volumes and expanding with a CAGR 07-11 of 22%	**Cassava:** difficult to dry, availability of quality small scale processing and drying machinery
Irish Potato: perceived quality in region is good. Established export product in formal and informal regional trade	**Irish Potato:** needs 2yr crop rotation, availability of good clean seed, seed multiplication capacity is low
Dairy: MCC being built throughout the country. 30 currently in operation with another 70 MCCs in the pipeline	**Dairy:** management of MCC, quality loss from farm to MCC, hygienic working awareness & procedures, high transport cost. Consumer preference for raw milk
Opportunities	**Threats**
Maize: introduction of small scale shelling, threshing etc. to improve efficiency.	**Maize:** competition from the region, gradual GoR exit on fertilizer and maize seed
Beans: new varieties seed, grading and sorting improvement. Higher production through better techniques and fertilizer use	**Beans:**
Cassava: Higher production through better techniques and fertilizer use, efficiency improvement in processing, small scale processing before transport. New established Cassava factory for cassava flour. Need for satellite processing / bulking stations	**Cassava:** transport of tuber is inefficient
Irish Potato: possibilities for value addition such as washing, grading, packing and processing to food products	**Irish Potato:** land exhaustion due to insufficient rotation, risk of disease outbreak
Dairy: decrease transport cost through volume, quality improvement and assurance. Growth in cheese, yoghurt, milk powder products	**Dairy:** difficult to compete on price with large informal market. Competition from Uganda on the formal market

Attachment 3: Environmental issues and climate change impacts on agricultural productivity and post-harvest processes

Climate overview and current environmental issues

The climate in Rwanda is dominated by the Inter-tropical Convergence Zone (ITCZ) which is characterised by low pressures, very high humidity and the convergence of southern trade winds. The migration of ITCZ from the southern to northern tropics, and its return through the course of the year, has led historically to two distinct seasonal rain patterns: the long rains of March, April and May as the ITCZ moves north; and the short rains of October, November and December that occur on its return south.

The short rain season is characterised by greater inter-annual variability owing to the fact that the southerly migration of the ITCZ tends to be more rapid. As an Oceanic system, the ITCZ is spread over the warmest areas of surface water while over land its position is influenced by geomorphology and altitudinal zones of the land mass and water resources. In fact, the tropical climate in Rwanda is further modified by widely varying altitudes across the country (900m in the south-west; 1500 to 2000m in the southern and the central regions; 1800 to 3000m in the highlands of the north and west; and 3000 to 4507m in the Congo Nile Crest and volcano chain), and by the presence of large water bodies throughout the region (Lakes Kivu, Lake Victoria and Lake Tanganyika).

The total annual rainfall varies between 700mm to 1,600mm accordingly to topographic features. In response to the spatial variation in rainfall, Rwanda has been divided into twelve agro-ecological zones namely Imbo, Impara, Kivu Lake Borders, Birunga, Congo- Nile Watershed Divide, Buberuka Highlands, Central Plateau, Granitic Ridge, Mayaga, Bugesera, Eastern Plateau, and Eastern Savanna (Figure 1).

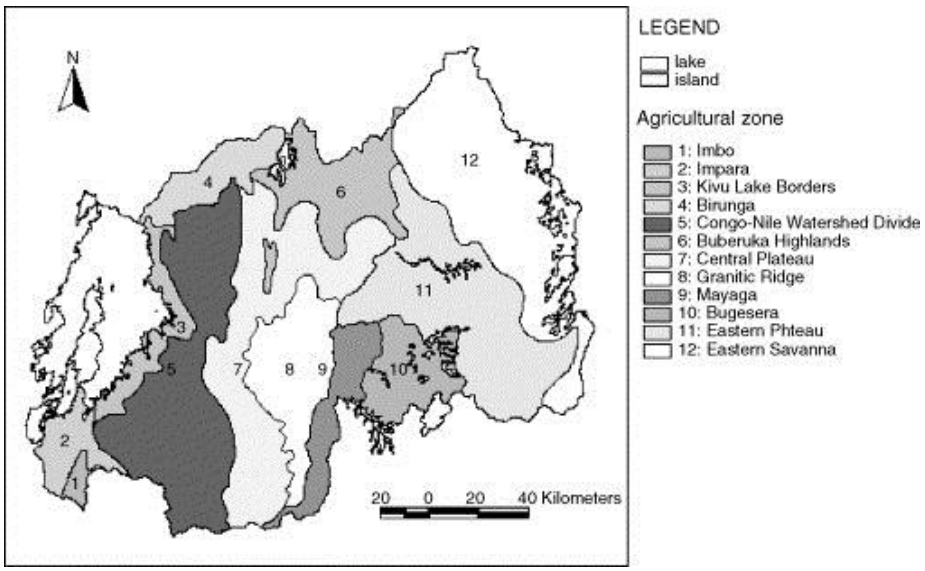

Figure 1. Agricultural zones of Rwanda, based on bio climatic zones and soil

From mid-September to mid-December, the ITCZ is controlled by the position and the intensity of subtropical anticyclones across the Indian and Atlantic Oceans, from Mascarene Islands, Saint Helena, Azores in the Atlantic, and the Arabian ridge. This season is dominated by winds from the North-east and the humidity which comes from air-masses carried from the Indian Ocean and Lake Victoria.

The dry season, which occurs from mid-December to end of February, is characterised by masses of cold, dry air from the Arabian Dorsal. However, the diversity of Rwandan topography and the

moderating effects of Lake Victoria mean that some rainfall does occur during this period (Figure 2 below).

From March to May, the climate in Rwandan is influenced by a weather front found between dry winds from the southeast and the southwest. This front carries across humidity from the South Atlantic that has passed over the Congo Basin.

Finally, a dry season occurs from June to mid-September, characterized by dried air masses from the South-east. A divergence in the low layers of the atmosphere results in unfavourable rainfall conditions. Nonetheless, while the total mean July rainfall for the period of 1961-1990 was 8.4 mm, the month of July in 2001 recorded a total rainfall of 120.8mm. Moreover, most of the rain fell in one day, 22 July 2001, leading to an exceptional flood in a supposedly dry month (Figure 2).

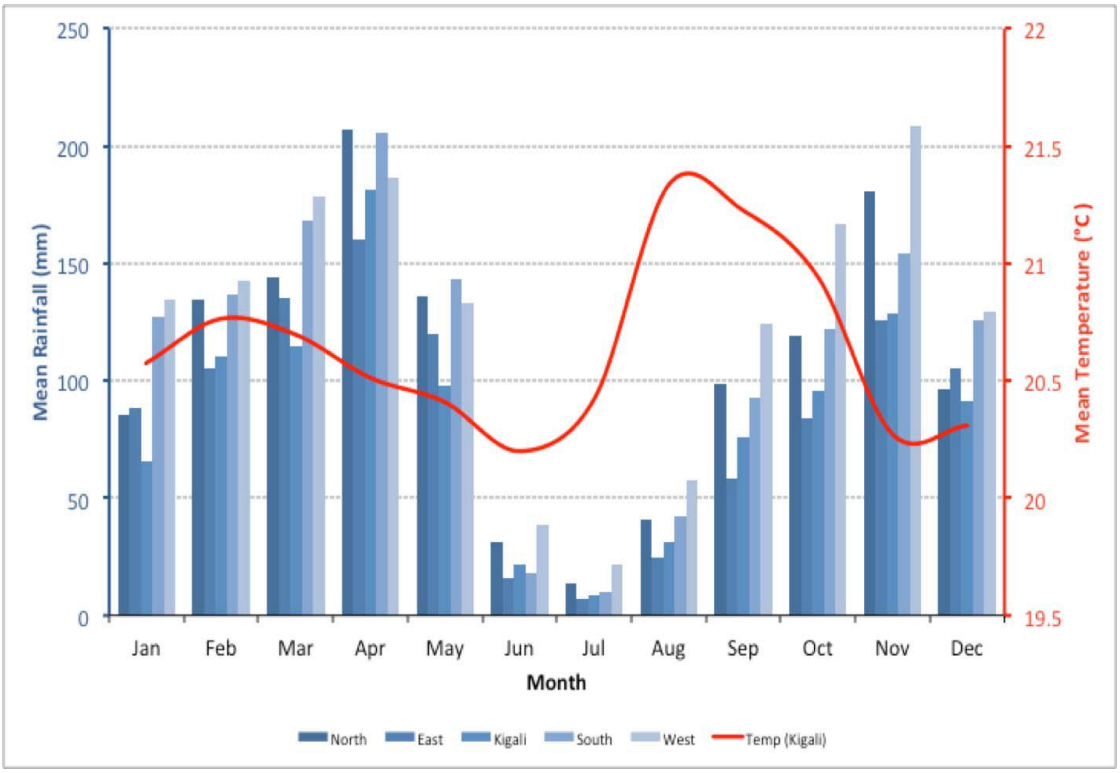

Figure 2. Mean monthly rainfall for each region based on stations of Rulindo (in North at 1140m), Kibungo (in the East at 1630 m), Kigali Airport (in Kigali at 1413 m), Kibeho (in the South at 1827 m) and Mugonero (in the West at 1680m) and monthly mean

The annual mean temperature varies between 15℃ to 28℃. The annual maximum temperatures above 25 ℃ are observed in the East, the South East and on the shores of Lake Kivu. The annual minimum temperatures vary from 5℃ to 20℃ and are observed in the Northwest, in the volcanic region, and to the Southwest, at the summits of the mountains surrounding the source of the Congo Nile.

Environmental and ecosystem degradation in Rwanda is triggered by two main factors: climate disturbances and anthropogenic activities. The former is caused by several factors including the El-Niño and La Niña phenomena associated with surface temperatures in the Indian and Atlantic Oceans.

A recent study by the University of Reading[1], shows that climate variability in Eastern Africa is due to the influence of ocean –atmosphere climate phenomena, namely El Niño Oscillations (ENSO) and the

[1] Black 2005. The relationship between Indian Ocean sea surface temperature and East African rainfall, *Phil. Trans. Roy. Soc., A.,*N 363, 43-47.

Indian Ocean Dipole (IOD). Warm ENSO events are thought to be responsible for a build-up of warm sea surface temperatures (SSTs) in the Eastern Pacific Ocean which lead to increasing rainfall. These events are specifically observed in the short rains seasons.

Furthermore, the recently discovered Indian Ocean Dipole (IOD), in addition to ENSO effects, most probably causes anomalously high rainfall in East Africa (see Marchal et al. 2006; REMA 2011). For some years (1963, 1972, 1982, 1997), El Niño events are thought to have coincided with positive IOD events leading to high rainfall in East Africa, whereas high rainfall anomalies in East Africa have been documented when positive IOD events occurred independently of ENSO events. However, as East Africa has varied topography (e.g. mountains and rift valleys) its features are not yet adequately represented in climate model projections and deserve further investigation. In fact it is difficult to predict future climate change scenarios for Rwanda owing to its location between two key climatic regions: Central Africa and East Africa with contrasting controls and drivers of the local climate associated with large water bodies (CASSALD 2012.)

El Niño events cause anomalously wet conditions during the short rains, while la Niña is associated with unusually dry conditions. Both events have led to increased intensity of climate related disasters in Rwanda such as severe flooding, droughts, landslides and erosion, which in turn have had considerable impacts on rural livelihoods, mainly through decreases in agricultural productivity, crop failure, and losses of infrastructure. Yet rainfed agriculture is considered the backbone of Rwanda's economy, benefitting from favourable climatic conditions and the generally fertile soils which allow cultivation of a wide range of crops. The sector suffers, however, from low productivity due to the low use of inputs and a lack of adaptive agricultural techniques that could reduce the impacts of extreme climatic events, which in recent decades have increased in frequency.

These impacts are exacerbated by a rapid growth of the Rwandan population, which have increased the pressure on land and natural resources and resulted in unsustainable levels of resource exploitation. This degradation is observed through: massive deforestation; depletion of biodiversity; erosion and landslides; pollution of waterways; and degradation of fragile ecosystems, such as swamp and wetlands. These environmental problems are exacerbated by the poor location of industries and the direct disposal of their untreated wastes into waterways and lakes[2]. Table 1 summarizes the government agencies and ministries in charge of climate and environmental issues.

Table 1. Rwandan agencies and Ministries with environmental and climate responsibilities

Organisation	Mandate	Responsibilities
Rwandan Environmental Management Authority (REMA)	Created in 2006 as part of the Ministry of Natural Resources	Coordination and oversight of the implementation of national policy and subsequent legislation and to oversee the integrity of Rwanda's environment for sustainable development
Rwandan Meteorological Service (RMS)	Created in 1962 in Ministry of Infrastructures	Operationalization of station to monitor and record observations of the state of the environment; provision of forecast and warning to public sector and other specialised users; monitoring detection and prediction of climate change; and exchange of meteorological data and advices on the use.
Disaster Management and Programme Coordination	Division of Ministry of Disaster Preparedness and Refugee Affairs	Strengthening disaster preparedness; planning and building effective disaster response mechanisms; raising community awareness and public education; disaster mitigation and prevention

[2] Outlook Doc REMA 2009, Rwanda: State of the Environment and Outlook: Our Environment for Economic Development. Rwanda Environment Management Authority (REMA).

Ministry of Agriculture and Animal resources (MINAGRI)	Several divisions which tackle cross-cutting concerns related to agricultural vulnerability	Post-harvest Task Force; Crop Intensification division

Climate change impacts and predictions in Rwanda

Rwanda is highly vulnerable to climate change as it is reliant on rainfed agriculture both for rural livelihoods and exports, particularly, tea and coffee. A study by SEI (2009)[3] found that existing climate variability has significant economic costs in Rwanda, at least 1% of GDP per year if not addressed. This is already borne out through frequent extreme weather events such as floods and droughts that cause major socio-economic impacts and reduce economic growth.

The impact of floods and droughts associated with El Niño and La Niña events of recent years are thought to have been exacerbated by climate change and the environmental degradation observed throughout the country (NAPA 2006). In regard to its location between two key climate regions, East Africa and Central Africa, with contrasting controls and drivers of the local climate, it is difficult to simulate possible future climate scenarios, thus climate projections are currently hold a degree of uncertainty (weADAPt, 2013).

The mean annual temperature is expected to increase up to 3.25°C for the region by the end of the century, with as consequence substantive losses and damage to agricultural production. Yet rainfall variability is more uncertain, though most of the models predict more extreme events with higher rainfall intensities. These scenarios are consistent with mounting anecdotal evidence that, in parts of country closest to the main water bodies, there is an increase in the number and severity of thunder and lightning storms, and localised high wind speeds (even tornados and water spouts) that create large amounts of structural damage (Palmer pers comm). In fact, buildings and building designs will need to modified for the areas most affected to ensure that wind pressures are addressed and roofs are correctly tied to walls and trusses (see WP2).

Unfortunately, the 187 meteorological stations that are currently operational across Rwanda do not collectively have representative enough temporal data set to provide a true picture of spatial climate variability nor allow for the accurate downscaling of future predictions, due to past civil strife[4] and a lack of investment in meteorological infrastructure. The temporal meteorological data needed to assess climate variability and make future predictions more reliable are namely: daily precipitation; mean temperature; average maximum temperature; relative humidity; average maximum humidity; average minimum humidity; atmospheric pressure; vapour pressure; and evaporation and sunshine duration.

The only complete long term record of note is from the Kigali Airport station. However, observations and analysis of existing data sets suggest that over the last 30 years, some parts of Rwanda have experienced unusual irregularities in climate patterns. These emerging trends will have serious impacts on the rural agrarian economy if not managed, and include an increased frequency of droughts in dry areas; and floods or landslides in areas experiencing heavy rains. Heavy rains have been being observed especially in the Northern and the Western province. These heavy rains coupled with a loss of ecosystems services resulting from deforestation and poor agricultural practices have resulted in soil erosion, rock falls, landslides and floods which destroy crops, houses, post-harvest storage facilities and other infrastructure (roads, bridges and schools), as well as loss of human and animal lives.

[3] Stockholm Environment Institute 2009, Economic of climate change in Rwanda

[4] The 1990-1994 Genocide and war in Rwanda devastated more than 80% of meteorological infrastructures. Since then the actual climate change analysis can rely only on the meteorological station of Kigali as it is the only station with continuous historic data from 1990 to 2000. Other stations reopened in 1998 and currently ten are operating.

Agriculture is the Rwandan economic sector that is hardest hit by adverse climate conditions, as agricultural production, both pre and post-harvest, is extremely susceptible to prevailing climate change risks such as drought, intense and erratic rainfall, high winds and temperature shifts. Rural households and associated commodity basket areas rely heavily on climate-sensitive resources such as local water supplies and agricultural land; and climate sensitive activities such as rain-fed crop and livestock production, and natural resources such as fuel woods. A changing climate will have serious impacts on the availability of these natural resources and will limit options for rural households that depend on natural resources for producing food for consumption.
According to recent climate risk analysis, there may be some intensification of heavy rainfall in the wet seasons, while periodic droughts are likely to continue, associated with the current ENSO affecting some parts of the country. As a result, rainy seasons are expected to become shorter with higher intensity, but these model predictions are averaged over long periods and across many different models, and so remain uncertain (weADAPT, 2013).

Additionally, there is a wide variation in predictions of the potential change in the frequency, intensity or duration of rainfall. In fact, climate change is a gradual process and signals of its manifestation need to occur over at least a 30 years period. Climate model predictions are also averaged over longer periods than more applicable daily, monthly or annual variability. While significant changes can be discerned for temperatures, rainfall variability does not present a reliable pattern, rainfall maxima being very high in some years and the rainfall minima very low in others years (Figure 3).

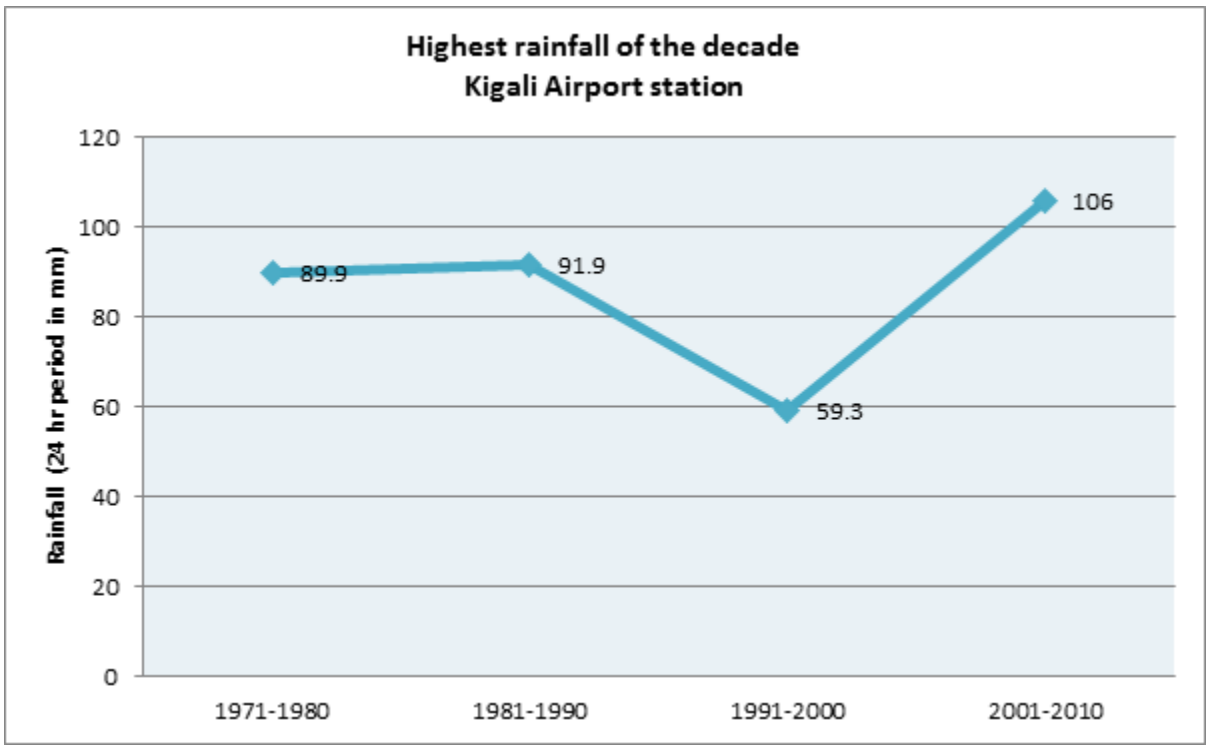

Figure 3. Mean highest rainfall measures in 24 hours for decades over the period from 1961 to 2010 at Kigali Airport Station Source: Data from Rwanda Meteorological Services (2013)

Over the last forty years (1971-2011), temperatures have also increased, with higher frequencies of warm days exceeding 30℃, Figure 4 below depicts those trends. Moreover, the numbers of annual rain days are reported as having decreased, which is likely to have severe impacts on agricultural productivity, as the sprouting of seeds requires a certain quantity of water and moderate temperatures within a given number of days. In fact, the total number of rainfall days was 146 days for the period from 1971 to 1990 while for the period from 1991-2009 this number fell at 131 days (Mutabazi 2011). Climate specialists have observed that the frequency of torrential rain has increased, with daily rainfall sometimes exceeding the quantity of the previous total monthly rainfall, which in turn are then

followed by severe droughts. Thus, the number of rainy days cannot be considered as a reliable measure to discern climate variability issues.

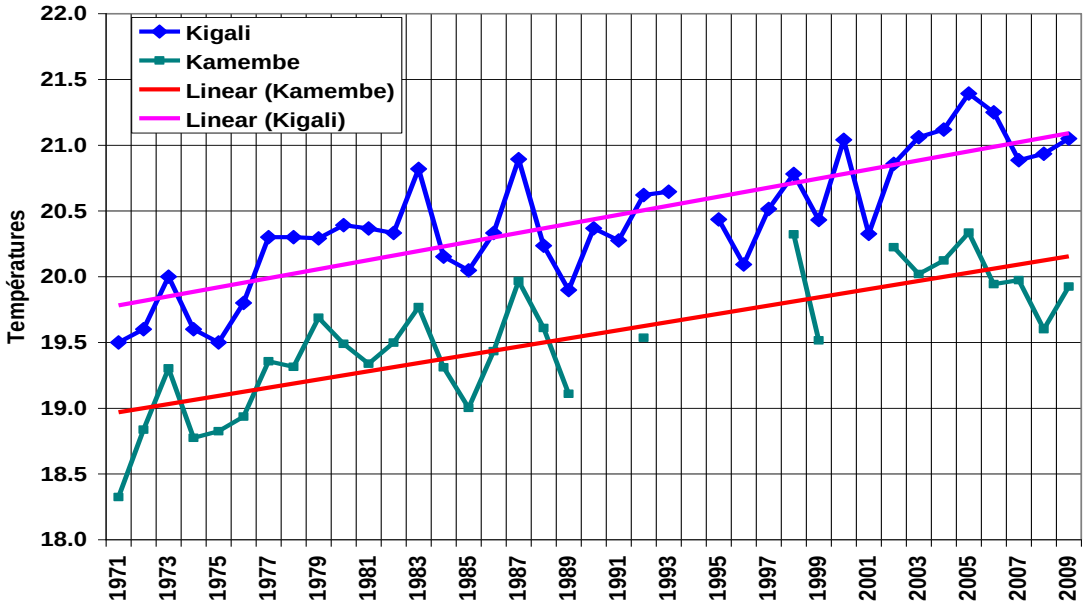

Figure 4. Variation of the annual average temperature in °C at Kigali(1559 m) and Kamembe (1591 m) stations. Source: Rwanda Second National Communication related to Climate Change (REMA 2009)

Anecdotal evidence is also mounting that seasonal rainfall is becoming less reliable, the late onset of rainfall and early rainfall cessation, resulting in poor performance of agricultural seasons. Indeed, knowledge about the number of rainy days is essential for planning farming activities due to the relationship between start, end and length of the growing season (Mupangwa et al. 2011). To date, there have been limited studies on the correlation between late onset, early rainfall and the number of wet days in Rwanda, and yet this information is crucial for better agricultural planning and monitoring.

Available evidence regarding short droughts between the March to May and September to December rainy seasons and pluviometric deficits and excesses suggests impacts in different agro-bioclimatic regions in different ways (Figure 5). For Instance, pluviometric excesses have been detected in some part of northern regions (Gisenyi, Ruhengeri and Byumba), the southwest regions (Gikongoro and Butare), the western regions (Kibuye and Cyangugu), the north of Kigali and some parts of the centre (Ndiza). Floods in these areas have led to disruption, including loss of agricultural operations through flood damage, such as the washing away of fields and infrastructure. These events have then led to severe impacts in terms of health, livelihoods and even fatalities when critical infrastructure such as water treatment plants, roads and power sources are affected.

On the other hand, pluviometric deficits, specifically short droughts, have been observed in the Northeast (Umatara), the East (Kibungo) and the Southeast (Bugesera and Mayage regions). Drought effects include principally: lack of pasture for domesticated animals; decreases in the levels of lakes and rivers, with impacts on rainfall; and drops in rainfed agricultural productivity. The most affected regions where access to food has become more problematic due to these effects include the eastern curve, the southeast region, and the southern region and the Lake Kivu border. Indeed, in 1998 and 2000, a drought affected the eastern regions and resulted in a famine affecting 266,993 people. As a consequence the government had to distribute emergency food relief in these zones.

Similar impacts on agricultural productivity were observed in the eastern and southern regions in 1999, 2000 and 2005/2006 which coincided with la Niña episodes. The ENSO effects which led to drought events in 1997, 2000 and 2010 resulted in significant losses in maize, beans and animal production and exacerbated food security issues in the eastern and south-eastern regions. National production losses were not quantified, but the coffee crop was reduced by an estimated 26%.

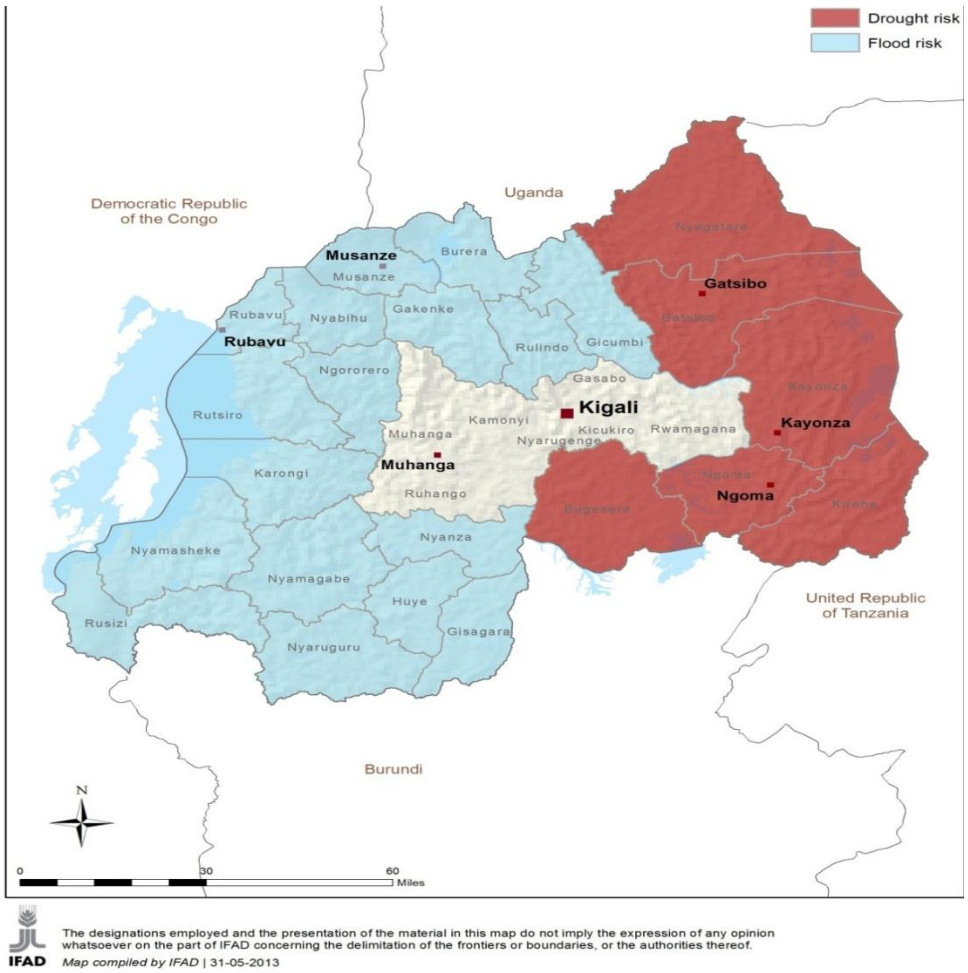

Figure 5. Regional variation in the occurrence of droughts and floods in Rwanda. Source: IFAD 2013

Environmental issues and climate change impacts on agricultural productivity and post-harvest processes

Rwanda possesses a varied topography with highland mountains in the north and west, and forests, savannah grasslands and low altitude marshes in the southern and the eastern parts of the country. The traditional food crops are banana, cassava, sorghum, beans, Irish potatoes, rice, and wheat which are extremely dependent on seasonal climatic conditions, and are frequently vulnerable to drought (Table 2).

While the eastern and south-eastern regions are most affected by prolonged drought (see Table 2 and Figure 5) the northern and western regions have experienced abundant rainfalls, leading to erosion, flooding and landslides. Table 2 presents information on the drought, irregular rains, and dry spells since the 1990s. Severe droughts have been mostly observed in October to December whereas floods are recorded mainly in September to December.

These severe climate events have had adverse environmental impacts on agricultural productivity, post-harvest processes and rural infrastructure.

Table 2. Inventory of risk associated to droughts and floods

Disaster	Type	Damages and consequences	Affected regions	Period (year)
Droughts	**Prolonged seasonal droughts**	-Failure at post-harvest, loss of young seedlings, increased water demand -266,993 people threatened by famine during 1999/2000 La Niña episode -Owing to increase of temperature and high evapotranspiration, there is a risk of fluctuations in the production, food insecurity and favourable conditions for famines -Loss of soil fertility by leaching of arable lands	South-east of the country East (central valley)	1976 Oct. 84 Dec. 89 Dec. 96 1998 Nov.99 2000 Mar. 03
	Short period of droughts in rainy seasons (dry spells)	-Short critical growth of food producing crops -Reduced productivity of harvests	South-east of the country East (central valley)	2005/2006
	Recurrent droughts on 2 or 3 successive years	Reduction in water resources Drying of bananas planting Food aid	South-east of the country East (central valley)	1998-2000
Floods	**High precipitation**	-Destruction of biodiversity of humid zones - Crop destruction in swamps and shallows -Environmental degradation and disappearance of rare species - Landslides and landslips 1,077.5 ha damaged	-North-west and west of the country -North-west, south-west and in Kigali City, the capital.	Sept. to Dec. 2001 Apr. 2002 Nov. 2006 Sept. 2007

Rwanda has traditionally had to two distinct cropping seasons: Season A (September-November) and Season B (March-May) (Figure 6). The dry season from mid-December to mid-February appears to have gradually disappeared since the early 1990s as rains continue to fall until the beginning of May which causes the delay of Season B. As a result, farmers are planting later in Season B (March to May),exposing them to early onset of the dry season (July to September) and thus lower yields, intensification of crop diseases, and reduced availability of irrigation water (REMA 2012). Rwanda is relatively unique in that it benefits from a third season in the marshland.

Based on a recent study by the Famine Early Warning Systems Network (FEWS Net, 2013), the most recent planting Season A (Sept. to Nov. 2012) started 20 days earlier than normal across the country. From 1971 to 2007, Rwandan Meteorological Service has recorded changes in onset and cessation of the rainy season from March to May; while in 1971, the beginning and the end of the rainy season was set between 20th March to 1st June, in 2007, those dates were from the 13th March to 18th May.

Moreover, a survey from Agency for Cooperation and Research in Development (ACORD) reveals that the local population perceived that rainfalls have highly varied in timing and in amounts. As a result, some likely effects of climate change were observed, such as increasing poor nutrient return from the soil, shift of maturing days of some crops, prevalence of some crop pest and insufficient seasonal rains or excesses seasonal rains. In the eastern region, the decline and uneven distribution of rains in September negatively impacted on the germination stage of crops which led to a re-planting of those crops in some areas, mostly in the South-eastern region (Bugesera and Kayonza districts). Unfortunately, available evidence in the literature is inconclusive in this. Unfortunately, available evidence in the literature is inconclusive with regard to changes in the growing seasons as few of the

available meteorological records have been analysed from the perspectives of crop production constraints in Seasons A and B.

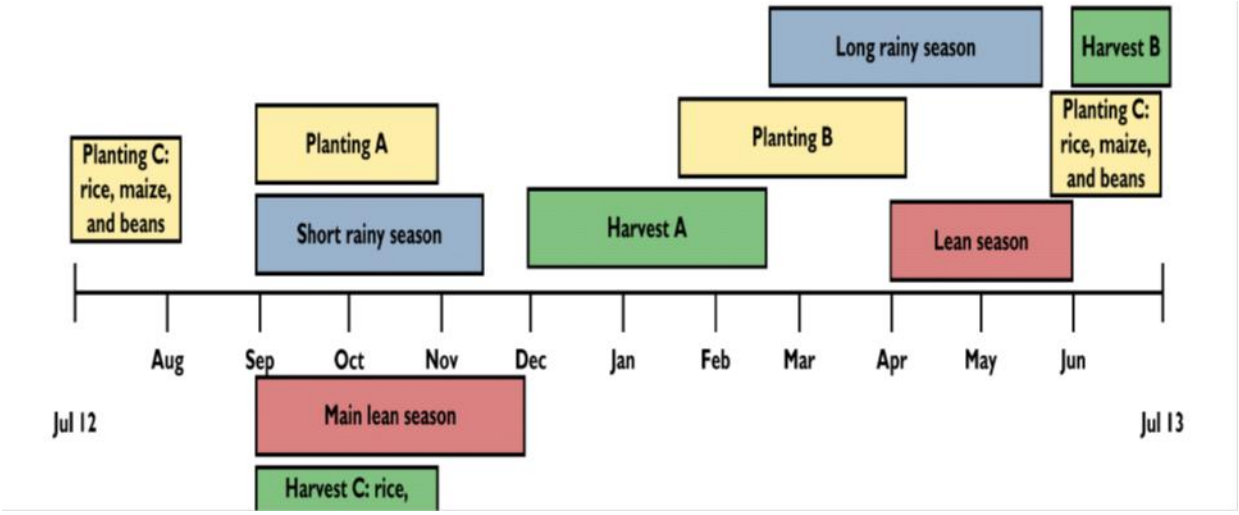

Figure 6. Seasonal Calendar for a typical year. Source: Fews Net 2012

Given agriculture's vulnerability to climate change, REMA has urged development of a mitigation strategy in tandem with an adaptation strategy, with the aim of ensuring a productive and more resilient agricultural sector, to enhance the efficiency of the favourable climatic conditions and the generally fertile soils that allow cultivation of a wide range of crops. Therefore, in 2007, the Government of Rwanda, with the support of development partners and local service providers, began a programme to distribute improved seeds and fertilizers across the country at subsidized prices (Table 3). This initiative is part of the Crop Intensification Programme (CIP) which is focused on 6 priority crops, namely maize, wheat, rice, Irish potato, beans and cassava, with inputs imported from Kenya and Tanzania as national seed production is still in its infancy and organic fertilizer availability cannot meet the nutrient requirements of more intensive crop production which requires imports of inorganic fertilizers.

The programme has increased the use of improved seed, from 3 to 40%, as well as agricultural productivity and efficiency without expanding the total area under cultivation. The Government aims at increasing the use of fertilizers from 14 kg ha^{-1} to 45 kg ha^{-1} by 2017. Since the introduction of a country wide programme for using improved seeds in 2007, CIP has significantly increased the local demand as well as the capacity for seed production. Moreover, selection of crop and varieties that are appropriate for the length and diversity of agricultural seasons are part of CIP. At the beginning of this programme, 83% of fertilizers users were farmers growing wheat, maize, rice and Irish potato.

Table 3. Key figures and records of combined distribution of improved seeds (in tons) and planting materials (in tons) under CIP. REMA 2011

Crop	2008 A	2009 A	2009 B	2010 A	Total
Maize	520	893	179.58	1,417	3,009.58
Wheat	60	327	300.85	181	687.85
Cassava	42,932,600	95,987,000	0	0	138,919,600
Beans	0	32	28	0	60
Potato	400	0	0	0	400

Without expanding the total area under cultivation, CIP has increased the production of major crops (Figure 7). However, as one of the focused crop for intensification, the area planted to cassava has increased in recent years given its role in household food security and its characteristic as drought resistant.

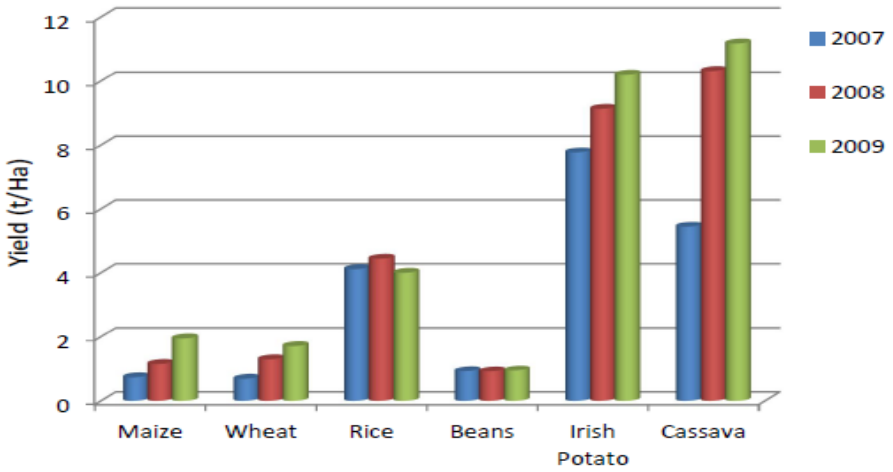

Figure 7. Changes in on-farm productivity of major crops in response to the use of distributed inputs (Improved seeds, planting materials and or fertilizers). Source: REMA 2010

Through CIP, Rwanda has launched a national programme of land-use consolidation that recommends the cessation of fragmentation of land smaller than 1 ha and the introduction of cooperatives of family farming as a way to preventing further subdivisions of agricultural land leading to the size of family farms falling below an economically viable threshold[5]. The consolidation of land is also a factor in increasing agricultural productivity (Figure 7). Although fragmented lands allow a diversification of agricultural production, consolidated land has ensured surplus in agricultural production by increasing yields through access to improved varieties and fertilizer access. By 2012, the Land Tenure Regularization Programme (LTR) had demarcated and adjudicated title certificates of 10.4 million parcels out of the existing 11 million. For the major crops, the use of consolidated land has increased from 28,788 ha to 254,000 ha in 2010 and reached 502,916 ha in 2011 (Figure 8).

[5] In 2005 the Land law was instituted to resolve the issue of land fragmentation replacing the customary tenure system with registered titles which can be used as collateral.

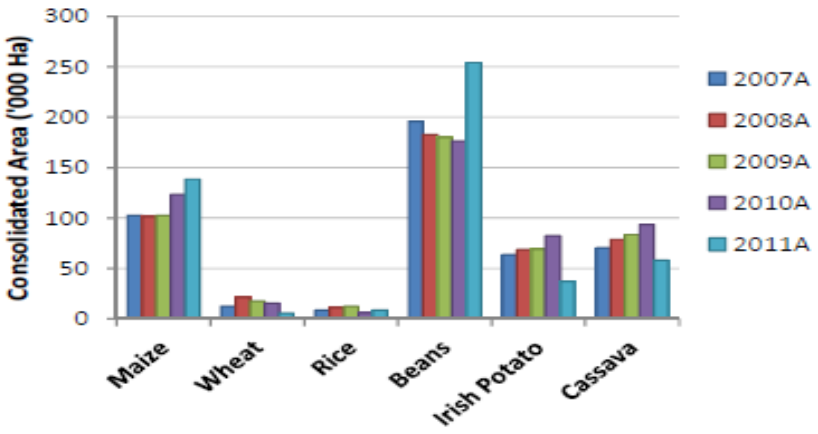

Figure 8. Recent trends in consolidation of land use area under cultivation of priority crops in Season A in Rwanda. Source: REMA 2008

Post-harvest losses

Traditionally crop harvesting has typically occurred during the dry periods between Seasons A and B followed by post-harvesting processes, which are extremely complex and involve several stages, namely: harvest, threshing, drying, sifting, storage, transformation, picking, washing and transport. At each stage, there are qualitative and/or quantitative losses. The qualitative loss means that the crop loses some of its nutritive value. Quantitative losses are due to a biophysical deterioration of the crop, rather than the weight loss associated with moisture-loss during the drying process. In fact, grains are harvested at a moisture level that must be decreased to stabilize or condition the grain for storage and sale in order to avoid infestations by aflatoxins, moulds and insects pests or rotting.

In reality, the quality of crop and its susceptibility to losses depends upon its state of physiological maturity at harvest, drying practices and used modes of transport, storage facilities, and hygiene. Drying is the most critical stage, both technically and economically, and is done in the fields using the sun and air. In Rwanda, field drying is the most common practise but this technique has increasing limitations as in recent years harvest is occurring while is still raining. Traditionally, for storage purpose, ashes, pepper and lime were used to protect crops from insects after harvest, though the efficiency of these methods is no well quantified.

Thus far, the impacts of climate variability on agricultural productivity and post-harvest processes have been subject to very little investigation, apart from a small IFAD Grant Smallholder Post-harvest Innovations Project (SPIP) focusing on maize and beans in Kirehe District. Most of the scientific analysis has focused on crops such maize, potatoes, and rice, due to the intensification of their production, and to the expectation that they might become cash crops because of their higher yields. Yields are also increasing extremely rapidly due to the promotion of early maturing varieties, higher rates of fertilizer application and the introduction of mechanisation.

Cassava production and post-harvest practices

Cassava has been introduced into sub-Saharan Africa because of its plasticity and tolerance to hydric stresses. The planting of cassava cuttings is generally done from October to November but can be done during the long rainy season from May to June. The harvest of cassava tubers occurs after a period of 10 to 24 months according to the variety. Cassava is a staple crop which is mostly planted in the northern and western regions, and Lake Kivu shores. This crop is traditionally perceived as requiring few inputs and little labour, and as the most adaptable to variable and extreme climatic conditions.

However, some misconceptions have been dispelled over the years by researchers from the International Institute for Tropical Agriculture (IITA) which have been summarised on their website[6]. Cassava can no longer be considered as a "poor man crop", a minimal labour crop or one that does not need fertilizer. Not only does cassava is the third highest staple food consumed in many Africans countries, but it is also an important cash crop. In fact cassava requires even more labour at the weeding stage than any other crops and will only give very low yields if planted on poor soils. With good fertilization cassava will benefit from the higher temperatures that will come from climate change and increase its productivity.

Unfortunately, the current white cassava variety grown in Rwanda is poor in Vitamin A and protein with typical yields of between 1000 and 1250 kg $ha^{-1.}$ Under CIP, the introduction of new varieties and improved fertilization yields are increasing to more than 10 tons per ha, with potentials in excess of 30 tonnes. In Rwanda, cassava is either consumed as green cassava or transformed in flour. There are many industrial uses for this crop such as glucose, flour, biscuits, starch, and glue. Cassava is mostly a food crop and few studies have been conducted on its postharvest processes. Yet, due to its drought resistance, cassava has been proposed for intensification as a food security crop. Despite its adaptability to climatic conditions, cassava's tubers are highly perishable. During post-harvest processes, cassava is vulnerable to humidity, rodents, rain and moulds. The major losses occur during processing with an average of 23.2% loss and an average estimated at 13.6%, and during handling, where loss is estimated to be up to 8.5%.

Irish potatoes production and post-harvest practices

Irish potato crop represents a huge production opportunity. It is one of the most important and increasingly popular crops in Rwanda. Indeed, from 1966 to 2010, the area cultivated for potatoes has increased from 9,5000 to 130,000 ha. This plant is water-demanding especially during the germination stage. Irish potato has been commonly planted in both Seasons A and B in the northern and the southern regions. Irish potato is extremely vulnerable to blight, pests and mildews and selected improved varieties have been made increasingly available due to the existence of producer's cooperatives. The harvest of Irish potato of Season A occurs in December while in Season B this process is done in the middle of July.

Due to the changing rainfall patterns that have been reported in recent years it is essential to know the critical periods for harvesting in order to minimize losses; yet farmers tend to harvest Irish potatoes prematurely to earn some early cash which negatively affects the storage and handling quality of the crop. The main deterioration factors are bruising, humidity, rain (which leads to rot and chemical reactions), and loss of water. To improve the quality of the products to meet market demands, innovative technologies are applied: sorting is used to eliminate potatoes that fail to meet consumers demands; grading is used to categorize potatoes in regard to size which corresponds to different uses; washing or scrubbing (without water) involves cleaning the soil from tubers; and finally packaging and handling.

Farmers have often been trained to employ sound production methods, and proper and appropriate post-harvest handling techniques in order to improve the quality of tubers[7]. However, rapid physical alteration of cassava and Irish potatoes still occur due to lack of application of techniques in cleaning, drying and storage. Indeed, significant losses are observed during the storage and handling stages, which are estimated between 30-50% over a 3-4 month period. The best practice to ensure the quality of tubers is to harden the skins by destroying the haulms a week to ten days before harvest. This leads to less bruising on the skins, and when well dried over a couple of days, potato tubers will be more suitable for storage and transport, resulting in lower losses.

Bean production and post-harvest practices

Beans are a staple food for the majority of the population in Rwanda, an important source of protein in the daily diet. This crop is cultivated by 95% of Rwandan farmers and occupies 30% of the cultivated

[6] http://old.iita.org/cms/details/news_details.aspx?articleid=3477&zoneid=81

[7] See Nyamulinda B. et al. 2010, "Agricultural post-harvest Innovative technologies and access to niche markets : Experience from Gataraga IP", Rwanda, Learning Publics Journal of Agriculture and Environment Studies, Vol. 2, 1-23

land. It is cultivated twice a year, primarily by women. Beans have a comparative advantage in the region as farmers are already familiar with good growing practices, and it constitutes one of the biggest exports to neighbouring countries. Beans have the largest area under cultivation, which has remained stable at around 330,000 ha since 2000 and are mostly cultivated in the eastern regions.

Despite the importance of beans, their production and trade do not have an organized structure in comparison to other staple crop value chains. The crop is highly vulnerable to high temperatures and water stresses. Under the CIP, improved bean seeds have been distributed to farmers by the Rwandan Agricultural Board and private entrepreneurs. It is reported that most farmers start harvesting their beans when the leaves and pods start drying. Yet little information is available on the post-harvest processes for the crop. Drying is done on the bare floor and the storage is done in polypropylene bags or used fertilizer/sugar bags. Nationally, the average loss of beans in post-harvest processes is 8.4%, and usually due to rodents, insects, spoiling and roof leaking. The minimum post-harvest loss reported is 0.35% while the maximum is 30.5% and these losses are linked to the storage stage.

As with other staple crop value chains, no reliable data could be found on the extent of bean post-harvest losses in Rwanda; however, studies based on interviews and review of secondary data indicate that: (i) Quantitative losses of beans in storage are caused mainly by weevil and other insect infestations; (ii) a phenomenon known as “hard-shell-hard-to-cook,” which renders the beans unusable, is brought about by lack of control of relative humidity and temperatures in storage; (iii) quantitative losses also occur due to rudimentary threshing techniques; and (iv) qualitative losses include discoloration, physical damage during shelling, and aflatoxin build up. In terms of post-harvest initiatives which would reduce losses in the bean value chain, the following have been identified as important entry points by SPIP in Kirehe District[8]:

- Training at producer level targeting women. This should include improved threshing as well as grading and sorting prior to storage, protective measures to reduce/eliminate weevil infestation in storage, measures to prevent temperature and relative humidity fluctuation in storage
- Provision of drying, threshing and storage facilities
- The provision of packaging for beans sold on the market
- Grading according to coloration to add value so as to sell “single variety” beans
- Seed storage facilities to maintain seed viability.

Maize production and post-harvest practices

Most studies on post-harvest processes have been carried out for maize, due to its status as a cash crop and the third largest crop in the country in terms of area planted. Maize is a crop cultivated in both seasons and in diverse agro bioclimatic regions, with the North and the West being where its cultivation has been the longest established (with an average of 9.75 years history of cropping during Season A and 6.75 years in Season B). Maize in Rwanda is a rising cash crop, with more than 80% of total production sold in both seasons and is mostly cultivated on consolidated land. Its production has vastly increased due to the introduction of farm mechanisation equipment in some parts of the country and the CIP, with its emphasis on targeting women farmers. Yet, some varieties of maize are vulnerable to high temperatures, drought and water stresses. Thus these emerging climatic trends will make the cultivation of current varieties promoted under the CIP more difficult in the eastern and southern parts of the country where rainfall deficiencies are more common and temperatures are increasing.

During the only complete survey on post-harvest losses of maize in Rwanda conducted by MINAGRI with the support of USAID, the amounts were judged to be higher than those given by the African Post Harvest Losses Information System (APHLIS[9]), a general modelling tool for East and Southern Africa.

[8] Smallholder Post-harvest Innovations Project (SPIP) – Mid Term Project Report. Policy and Technical Advisory Division, May 2013.
[9] APHILIS is a development model that calculates losses for cereal crops of Sub-Saharan Africa, for individual countries and their provinces. The Post-Harvest Loss (PHL) calculator responds to queries about the PHLs for countries, provinces, crops,

This highlights the need for a modelling tool based on local data. Indeed, APHLIS calculations can be seen as initial estimates, but is a weak tool; given the fact only three main parameters are taken into consideration: rain at harvest, period of storage and the quantity of marketed crops. This calculation misses individual farmer's characteristics (storages practices or training) which give more accurate data.

Harvesting stage has been identified as the greatest source of loss by MINAGRI reports, one of the indicators being whether or not cobs were left in the field. A significant challenge faced by farmers is that the harvest season may be followed almost immediately by a new planting season giving rise to two issues: (i) farmers may have to divide their time between harvesting crops and preparing for planting new ones; and (ii) the weather may be wet at harvest times making drying a challenge and predisposing harvested crops to moisture related quality deterioration. Post-harvest technologies applied to maize include drying, shelling and storage. During the drying process, a range of options are available such as drying on the floor, on racks, hanging from the house, or rarely on mats. While the use of sheets to dry maize is widespread in the East and South, its usage is low in the North and the West regions.

During post-harvest processes, rain is reported as one of the main determinants of post-harvest losses. According to the Post-harvest Task Force reports, significant losses are observed during storage and milling processes with an average of 8.15% and 5% respectively. The storage losses are estimated between 0.8 to 30%, while for milling it varies between 1.7 to 9.5%. The shelling processes are diverse and vary between regions. In both seasons, half of producers reported using only their hands; in the Western region this is especially high, with a rate of 76.6% in Season A, and 90% in Season B. This technique is performed over extended periods ranging from 5 to 18 days. When they have received training on post-harvest techniques, farmers are more likely to use mechanical hand shellers.

In both seasons, maize is likely to be stored as grain for household consumptions and cobs for market. Storage is the stage of post-harvest most vulnerable to loss. Indeed, the national loss average is estimated at 4.9%, with 2.9% due to rats, 1.3% to insects, and 0.7% to moulds. Rats were reported as the main cause of loss, with the highest rates recorded in the Northern (7.6%) and Western provinces (6.2%), while in the Southern, the most damaging factor was insects. The majority of maize is stored in the house in the Northern provinces, and significant proportions were stored in cooperatives in the South and the West. Maize is mostly stored in jute sacks. Losses were higher in the storage of maize for consumption than in maize for markets, which reflects the rapid rate of sale. Only 25 % of farmers were using insecticides to protect stored maize rain. Given these issues, there is a need for training for maize farmers on improved drying, shelling, grading and storages techniques.

In terms of post-harvest initiatives which could reduce losses in the maize value chain, the following one have been identified as important entry points by SPIP in Kirehe District[10]:

- Training at producer level and targeting women. This should cover issues such as timely harvesting, drying, improved threshing, storage and protective measures to reduce/eliminate weevil infestation in storage, and handling
- Provision of drying, threshing and storage facilities
- Seed storage facilities to maintain seed viability.

climatic areas, seasons and farming system. The estimated PHLs take account of extreme or unusual climatic events such as rain at harvest or particular pest problems. For more information: http://www.aphlis.net

[10] Smallholder Post-harvest Innovations Project (SPIP) – Mid Term Project Report. Policy and Technical Advisory Division. May 2013.

Dairy

There are three types of dairy farms in Rwanda according to the way cattle are grazed: (i) Open-grazing, when cattle are left to sleep out in the open; (ii) semi-grazing, which combines a mix of grazing and fodder use; and (iii) zero-grazing where cattle are raised in stalls with feed and water troughs nearby. The dairy sector relies mostly on naturally growing or cultivated grass as the sole source of nutrition and thus is heavily dependent on weather, leading to fluctuations in milk prices based on supply changes between rainy and dry seasons. Up to this point, few studies have been done on the daily value chain, although Rwanda increased cattle livestock numbers through a large national programme in 2006.

The *'One cow programme'* distributed a cow to households in East and South which had suffered from the famine. The programme and other livestock infrastructure developments, such as drinking troughs and cowsheds have increased rural household living standards. Cooperatives of small dairy farmers have been established to prevent the vulnerability of cattle breeding. In 2009, in the Northern province, on the basis of an one year subscription of 1000 Frwa by cow, a cooperative has set up a "cow healthcare insurance" to enable farmers to pay veterinary care and develop a more sustainable and profitable cattle breeding sector.

Indeed, this system includes veterinary pharmacy and service in each sector. Through the PAPSTA and KWAMP projects, it has been replicated throughout the country. Nonetheless, daily value chains have suffered from a lack of knowledge from traditional cattle farmers, and suitable transportation to bring raw milk to processing centres. Unpasteurized milk represents the largest share of domestic consumption, which represents greater profit margins for traders because it requires less processing. The poor processing of milk has led to the closure of some milk processing centres in the eastern regions. Indeed, estimation of milk production range from 0.7 litres per cow per day to 3.2 liters[11], due to the prevalence of local breeds which are not fed sufficiently and thus do not supply high yields. Yet this product has high value in neighbouring country markets and therefore the dairy supply chain should be modernised through development of the processing industry, and demand for milk should be encouraged through raising consumers' awareness of the benefits of milk. So far no studies have been carried out on the impact of climate change on the daily value chain.

Key climate issues with impacts on the sustainability of PASP PHHS investments

To ensure PASP sustainability, it is essential to understand how current and future agro-meteorological conditions influence the production, harvest and post-harvest activities in both crop and livestock sectors, and the initiatives required to ensure the associated rural infrastructures are resilient to these changing climatic patterns. Table 4 summarises the key climatic issues that have been identified in Rwanda, the impacts they have upon various sectors and their associated infrastructure, and suggests activities and investments to address these emerging issues together with indicators of success.

Current losses for key commodities in Rwanda reported by the APHLIS website, USAID and the MINAGRI Post Harvest Task Force have been summarised in the section above and amount to more than 30% of the harvested commodity. In the past, farmers and most of the industry relied on the sun for drying cereals and pulses to safe moisture content levels for storage. With climate change and the double (triple in some areas) cropping systems promoted under CIP, harvesting is taking place at wetter times of the year than before. In addition, with the increases in production from the CIP supported activities there is more crop production to be handled post-harvest, which the traditional systems cannot cope.

In a more variable climate, the wetter, higher humidity conditions at harvest are more conducive for the development of micro-organisms and insects causing higher levels of deterioration of crops in-store, and highlighting the importance of faster, cost-effective grain drying techniques. In areas with growing water stress and declining productivity of rainfed crops, there is an additional problem of price fluctuations which requires more farmers to store produce until they can sell without a loss. With

[11] Data from TechnoServe Rwanda, 2008, the Dairy Value Chain in Rwanda, East African Dairy Development Programme.

current post-harvest facilities, poor farmers are unable to store agricultural produce for long periods without incurring physical losses or receive lower product prices at harvest. Additional investments in post-harvest technology are needed to enable Rwandan farmers to buffer climatic and economic uncertainties and variability.

The growing high priority dairy industry in Rwanda is susceptible to climate change both on the production side as water becomes scarce for fodder production in some areas, and as temperature fluctuations require changes in forage feeding systems and complicate the safe storage and cooling of milk in the supply chain to consumers. Without major unit cost-reducing improvement in the milk supply and marketing chain, many of the short term gains and improvements in livelihoods for very poor families from the large GoR investment in the *Girinka* programme will be reduced due to increasing climatic risks and higher energy costs to ensure high quality milk reaches poor consumers. The sector is also vulnerable to climate change on the production side, as post-harvest losses and the spoilage of milk represent the greatest sources of inefficiencies in food production in Rwanda, and therefore one of the best 'no-regrets' opportunities for effectively improving crop and dairy productivity and resilience in more uncertain climatic and economic conditions.

Modern infrastructure facilities will need to reflect the growing concern over climate change. In this respect, a US$ 7,000,000 investment from the Adaptation of Smallholder Agriculture Programme (ASAP) will focus on ways to design climate-smart post-harvest and dairy infrastructure that takes advantage of advances in the engineering sciences as well as ecologically sound systems design. ASAP investments will identify successful harvesting and post-harvest interventions from IFAD's on-going portfolio in Rwanda including climate service information provision, solar drying tunnels, biogas fuelled grain driers, sealed bag grain storage (to minimise stored grain losses) and appropriate crop maturity length seeds, and provide mechanisms and processes for these and other identified technologies (see Table 5) while helping create the development space for them to grow through policy and institutional development within PASP. The project will directly benefit from complementary investments made within the framework of PSTA III (USAID 2010; National Crop Post-harvest Strategy 2011; and the National Strategy on Climate Change and Low Carbon Development 2011).

Table 4. Key climate issues with impacts on the sustainability of PASP PHHS investments

Issues identified	Impacts on production or post-harvest stages	Geographical location	Eligible activities for ASAP support	Indicators
Flood damage	Destruction of crops, pastures, forage, post-harvest facilities and rural infrastructure	Northern and western regions, and areas north of Kigali	• Early Warning through Climate Information Services • Explore appropriate weather based insurance schemes • Promote rainwater management on post-harvest facilities and rural infrastructure	• Early warning bulletins that enable farmers to undertake preventative actions • Insurance schemes developed and value chain members participating • US $ value of new or existing post-harvest facilities and rural infrastructure made climate resilient • Guidelines developed to ensure current and new rural infrastructure are climate smart, including appropriate measures to manage excess rainwater • Bridges, culverts and drains cleared of obstructions prior to heavy rains to maintain access for value chains • Number of km of climate resilient farm access roads • Numbers of farmers reporting production/yield increase

Drought damage	Crop, pasture and forage failure, delays in planting and harvest. Lack of water for value adding processes/cleaning	Northeast, the east, south eastern regions	• Early Warning through Climate Information Services • Explore appropriate weather based insurance schemes • Diversification of crop, pasture and forage varieties that are more drought tolerant • Protection of water sources • Promote rainwater management on post-harvest facilities and rural infrastructure	• Early warning bulletins that enable farmers to undertake preventative actions • Insurance schemes developed and value chain members participating • Ha of crop, pasture and forage production under climate resilient practices • % increases in diversification of crop and pasture/forage species (drought tolerant) • US $ value of new or existing post-harvest facilities and rural infrastructure made climate resilient • Guidelines developed to ensure current and new rural infrastructures are climate smart and include appropriate rainwater harvesting measures. • No. of rainwater harvesting structures established on rural infrastructure • Number of litre of milk production by cow per day • Numbers of farmers reporting production/yield increase

High Winds associated with increased incidence of thunderstorms	Destruction of crops and post-harvest facilities	Eastern, southern and western regions where large water bodies influence local climate	• Early warning through climate information services • Explore appropriate weather based insurance schemes • Roof designs of rural infrastructures modified. • Wind breaks	• Early warning bulletins that enable farmers to undertake preventative actions • Insurance schemes developed and value chain members participating • US $ value of new or existing post-harvest facilities and rural infrastructure made climate smart-less susceptible to wind damage
Change in duration of traditional dry seasons, increased incidence of rainfall and higher temperatures	Drying of the crop in the field is one the most critical stages of the harvest/post-harvest process and is becoming more unreliable due perceived changes in the dryness and duration of the dry seasons at the end of cropping seasons 'A' and 'B'. These changes are associated with increased temperatures and humidity levels that increase spoilage of stored commodities, including dairy products	Throughout the country	• Early warning through climate information services • Develop appropriate climate resilient post-harvest drying and storage facilities • Quantify the losses that occur at various stages of the harvest and post-harvest processes for key commodities • Introduce Solar and Biogas powered dryers and coolers as appropriate	• Early warning bulletins that enable farmers to undertake preventative actions • Number and types of dryers installed and number of household benefited • Time for drying • Reduction in level of post-harvest losses and milk spoilage • US $value of new or existing post-harvest facilities and rural infrastructure made climate smart • Better climate control and improved drying facilities • Number of household with access to storage facilities • Number and capacity of community storage facilities • Number of farmers trained on drying and storage practices • Change in source and patterns of energy usage

Table 5. Indicative investments eligible for ASAP grant support under PASP focused commodities

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	**Indicative PHHS investments**	
Maize	Cob or grain storage, shelling, drying and storage. Basic processing. Maize flour or starch. Stock feed.	• Household silo, drum or sealed bag storage to reduce losses during in-house storage for both own consumption and sale • Simple shelling mechanisation to reduce household labour needs • Maize cleaning and bagging facilities to meet buyer requirements • Specialised grain storage sheds designed to be vermin and pest proof with associated bag handling equipment • Appropriate transport equipment to move cobs/maize grain from farm to HUB and then HUB to markets • Improved feeder road access to allow commercial transport equipment all-weather access to HUB storage areas • Simple maize flour milling (hammer mill) and bagging equipment for domestic market • Maize milling equipment, cleaning and bagging facilities for more sophisticated markets	• Selection and use of maize varieties with growing days more suited to intervals between wet seasons to reduce wet season drying needs and work • Natural (columnar or chimney) draft or solar powered fan forced ventilation solar tunnel drying (available from Kenya) • Improved drying mats for concrete pads with retention sides and easy cover for protecting from rain (eg. GrainPro Dryer Case ™) • Where suitable raw animal manure is available from intensive animal housing supplemented with corn cobs and other organic matter to provide biogas for drying through higher volume gas-fired column or flat-bed type driers. Residue from biogas reused as fertiliser • Use of improved higher storage density cribs (correct orientation and airflow) for storing and drying down bulk moist whole corn on the cob • Hermetically sealed small-scale and larger storage bags for dry grain to eliminate pest losses (and control humidity) • Improved warehouse designs to reduce pest/vermin wastage while using natural ventilation rather than forced ventilation to save energy. • Demonstrate cost-effective bulk storage to allow

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	Indicative PHHS investments	
		• Stock feed formulation and mixing equipment to make use of maize flour and bean processing by-products	consolidation of grain at sector level for bulk transport to processors.
Beans	Cleaning, sorting and grading on site, colour and storage. Market development. Processing and packaging. Storage, drying.	• Household silo, drum or sealed bag storage to reduce losses during in-house storage for both own consumption and sale • Simple shelling mechanisation to reduce household labour needs and damage (in process by USAID PHHSP) • Bean cleaning, sorting and bagging facilities to meet buyer requirements • Specialised grain storage sheds designed to be vermin and pest proof with associated bag handling equipment • Collection of broken beans and bean waste as raw material for stock feeds • Introduction of cost-effective colour sorting of mixed beans to produce higher value single colour selections. • Processing of second grade (broken, etc.) beans into bean flour • Packing single colour/variety beans	• Selection and use of single bean varieties with growing days more suited to intervals between wet seasons to reduce wet season drying needs and work • Natural or forced ventilation solar tunnel drying (available from Kenya) • Improved drying mats for concrete pads with retention sides and easy cover for protecting from rain • Hermetically sealed small-scale and larger storage bags to eliminate pest losses (and control humidity) • Improved warehouse designs to reduce pest / vermin wastage while providing natural ventilation rather than forced ventilation to save energy • Water harvesting off new storage/processing buildings to provide clean water for cleaning / processing beans

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	Indicative PHHS investments	
		into retail consumer packs • Packing and pre-preparing/cooking of retail (or catering) size consumer packs	
Cassava	Improved PH handling, drying, chipping and waste management. Preparation of tubers for processing. Water supply and waste water management. Gari, cassava chip and/or starch.	• Water conservation and reduced water primary processing are high priority activities which are needed for climate resilience. Management of the dangerous by-products of the initial preparation will be addressed • The mobile processing plants (installed in 1-2 shipping containers) developed in Nigeria demonstrate a way to reduce field losses, reduce the energy needed for transportation of the wet product and improve product quality • Investigate market demand and required characteristics for cassava based products including gari, cassava chips and starch. • Small-scale processing into gari, cassava chips and starch • For new (and existing) large-scale cassava production units, investigate ways to improve energy and production efficiency by upgrading harvesting and	• As with potatoes, significant gains will be achieved in making cassava more climate resilient by adjusting the planting/management regimes to provide a more constant flow of cassava to the market, limiting the time that cassava roots are left stored in the ground. This has the added benefit of extending the availability of the cassava leaves to improve the growing family diet • The energy efficiency of cassava processing (and loss reduction) can be improved by encouraging farmers to slice and pre-dry cassava chips at field level. This process use similar techniques for drying as proposed for maize/beans and reduces the need for energy intensive drying at the central processing plant • Simple cleaning and water recycling systems to reduce the need for water in the initial processing stage • Introduction of new cassava varieties with extended in-ground storage life to increase flexibility of harvesting and reduce weight loses while left in the ground • Introduction of energy efficient gari roasting ovens. • For new (and existing) large-scale cassava production

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	**Indicative PHHS investments**	
		pre-delivery processing systems	units, investigate ways to improve energy and production efficiency by upgrading harvesting and pre-delivery processing systems
Irish Potato	Pre-harvest tuber management. Drying, sorting, storage and packing. Water supply. Longer term storage. Consumer packs. Processing into crisps or fries.	• Emphasis placed on pre/post-harvest handling and transport as a major problem is harvesting of immature tubers • Run screening program on existing potato varieties to assess growing and yield characteristics and which varieties suit particular markets • Cost-effective diffused light cool storage is important for both seed potato and potato held for later sale • Small-scale cleaning, sorting and prepacking into wholesale (shop) and smaller retail packs aimed at supermarket trade • Prepared potatoes (whole, French fries) in small sealed retail packs ready for cooking (possibly partially pre-cooked) • Small-scale processing into string, French fries or crisps in worker friendly conditions	• Haulm and soil condition management before harvest allows potatoes to mature / 'harden' greatly extending their storage and shelf life and reducing damage to them during transport. This links into CIP production related initiatives • Potato storage life can be extended in temperature controlled storage using controlled atmosphere storage with controlled airflows to maintain consistent temperatures rather than using refrigeration • 'CoolBot' type (charcoal walled) small cool rooms with small electric A/Cs run off solar or convection type refrigerators run off biogas can be used to take out the field heat and quickly bring the potatoes down to 10^{o} C before storage in energy efficient insulated (and night ventilated for cooler temperatures) large community owned cool stores • The chemical chloropropam (CIPC) (or similar) used to maintain tuber condition by inhibiting sprouting at higher storage temperatures (10-12^{o}C, reducing weight losses, tuber condition plus cooling requirements and operating costs • In warmer areas/times of year, rainwater collected

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	Indicative PHHS investments	
			from the roof can be used with evaporative coolers and solar powered fan forced air movement to maintain the temperature of the storage area • Improvements in storage life for potatoes allows planting of potatoes at times best suited to the climatic conditions for maximising yields with the known varieties • A high priority for any value adding activity is to introduce processes that minimise the use of potable water for cleaning and overall water use

Dairy	Improving milk quality and handling.
	MCC water supply.
	Development of new markets.
	Milk processing and marketing.
		• Improved access to clean cool water supplies for improving milk quality through quicker pre-cooling at farm level and improved cleaning equipment/storage processes
		• Improved cooling and milk hygiene in the liquid supply chain to increase milk storage life after sale
		• New products include packing liquid milk in low cost sterilised containers or new cheese products
		• Alternative milk transport options for:
		  • Farm to village aggregation point and then to milk collection centre (MCC) – pushbike, motorbike, low
			• Use of solar panels for:
			  • pumping water and milk for pre-cooling and cleaning at village level
			  • pumping water for cattle use – a major restraint on milk production levels
			  • heating water for cleaning
			  • operating small-scale milk cooling units at village

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	Indicative PHHS investments	
		stainless steel tank trailer to tow behind motorbike (can also be pulled by hand in difficult conditions • MCC to milk processing. Small (3000-400 l specialised tanker or slide on-slide off tank to make use of conventional transport vehicles	level using A/C type sealed units for direct cooling or icebank type cooling systems that build up ice during the day for use in cooling the milk late in the afternoon and at night • supplementing mains / petrol generated electricity for cooling bulk milk • Introduce convection refrigeration units for small-scale cooling of milk at farm/village level that can be run from gas (biogas or bottle) to reduce dependency on electricity • Collection of rainwater (tin-roof policy) to provide rain water that can be used for both cleaning and cooling, and also drinking • Introduction of low energy/easily cleaned simple drop milk coolers. Milk can be reduced to 3-4^{o}C of the water temperature which can be cooled further by running the used cooling water over a simple evaporative cooling tower ready for reuse • In new kraal type (or intensive) dairy units, include biogas powered electricity generator to operate cooling systems and pumps. Surplus gas should be available

Food commodity	HUB investments supported by PASP		Suggested incremental ASAP investments to improve climate resilience
	Investment type	Indicative PHHS investments	
			for cooking with associated benefits of reduced wood usage and improved environment in the house. Where these are close to MCCs, include waste milk/milky waste water into biogas raw material • Support introduction of technologies that allow village collection points and MCCs to receive and cool milk at night to allow additional milk sales. Research by the USAID RDICPII project shows that night milk delivery is a key determinant of farm profitability. Solar electricity and biogas will allow the afternoon / night-time cooling • Introduce UV milk pasteurisation which eliminates need for heating milk for sterilising, makes cleaning easier (no baked on/burnt milk residues) and can be used several times in supply chain without affecting the chemical structure of the milk • HUBs run demonstrations of high productivity drought resistant pasture species that can be supplemented with stock feeds produced by maize/bean HUBs (could be in the same areas)

Appendix 2: Poverty, targeting and gender

1. **Poverty**. Over the past five years the population of Rwanda has grown from 9.5 million to an estimated 10.8 million. Women represent 53% of the population and 54% of the total is aged 19 or under. Rwanda's society is still deeply rural (85%) and agriculture dependent. The recently published Third Integrated Household Living Conditions Survey (EICV3) shows that the standard of living of Rwanda's population has improved over the last 5 years, the birth rate has fallen, literacy levels amongst the young have grown, electrification was improved and so have sanitation methods and access to health. Overall the Government of Rwanda (GoR) reports a reduction in poverty by 12 percentage points between 2005/6 and 2010/11. Moreover, while between 2000/01 and 2005/06 poverty reduction had mostly benefited the richer strata of society, the comparative data between 2005/06 and 2010/11 show that over the last five years the benefits have been more evenly spread out.

	EICV 3	EICV2
Poverty rate	44.9%	56.7%
Rural poverty rate	48.7%	61.9%
Gini Coefficient	0.49	0.52
GDP per capita	US$540	US$333
Net primary enrollment	91.7%	86.6%
% with access to electricity	10.8%	4.3%
maternal mortality	487	750
infant mortality	50	86

2. Despite considerable progress, poverty is still widespread and extremely deep. Rwanda ranks 166 out of 187 countries in the 2011 Human Development Index. Poverty is estimated at 44.9% nationally and 48.7% in rural areas, calculated at current RwF 118,000 per year (US$198/year), representing the minimum food consumption basket needed by someone involved in physically demanding work. Extreme poverty which is estimated at 24% nationally and 26.4% in rural areas is calculated at RwF 83,000 a year (US$138/year). Moreover, national data demonstrate that the decrease in poverty was mostly achieved by an increase of non-agricultural wage work.

3. Agriculture is still the backbone of the Rwandan economy and the sector is regarded as a major catalyst for growth and poverty reduction. The sector occupies 80% of the labour force, a high percentage of which is composed of women, contributes one-third of GDP and generates more than 45% of the country's export revenues. Agriculture is also important for national food self-sufficiency, accounting for well over 90% of all food consumed in the country[1]. It is widely accepted that population pressure, compounded by limited land availability is one of the major challenges faced by the government and by the largely agricultural workforce. Supported by policies and strategies aimed at reducing the poverty rate by 30% by 2020, the GoR has invested substantially in agriculture over the last years through its Crop Intensification and Land Consolidation programmes. This has led to bringing together a fragmented land structure and encouraging the concentration of crop production areas through subsidised seed and partly subsidized (50%) fertiliser distribution. Moreover, while decentralization measures have delegated authority to districts, cooperatives have been encouraged to strengthen farmers' productivity and access to market. The share of marketed output increased strongly in all provinces, from 22% in 2005/6 to 27% in 2010/11.

4. **Livelihood groups.** Besides the EICV data, based on household income, expenditure and consumption, two other sources, the Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey (CFSVA 2012) defines livelihood groups based on their resource base, capacity and livelihood strategy (9 categories) and the *Ubudehe*, a classification of poverty based on a participatory self-assessment (6 categories), provide substantive information on livelihood groups, comparable over time[2]. The objective of the CFSVA is to measure the extent and depth of food and nutrition insecurity in Rwanda, analyse trends over time, and integrate the findings with those from the EICV 3 and the Rwanda Demographic Health Survey 2010 (DHS 2010).

[1] WB Rwanda economic update (2013).
[2] Attachment 2 provides the description of the EICV, *Ubudehe* and CFSVA categories.

5. Production systems are largely constituted by small family farms that cultivate an average of 0.76 ha, with 26% cultivating less than 0.2 ha. Households manage complex, mostly rainfed farming systems and food crops cover around 67% of cultivated area; whereas two-thirds are consumed by the family, but an increasing proportion of households are involved in marketing staple crops (up to 20%). Often, one or more members of the family work as wage laborers to bring in additional income. The staple crops to be targeted by PASP are the source of livelihood and food security for these groups.

6. Based on the EICV, the highest poverty levels remain among farm wage laborers who increased by 2.8% since 2005/6 (from 6.2 to 9%) followed by those working in agriculture, who remain the vast majority, at 49.5% (54.1% in rural areas). Even though more thorough analysis would be required, this data are consistent with evidence from Rwanda's *Ubudehe* participatory poverty mapping. According to the six categories assessed, the extremely poor, the poor and the resourceful poor, mostly employed in agriculture, correspond to poor smallholders who have access to some land and are able to be productive. Some of them are ready to "professionalise" and they will be able to better address the challenges they face by joining cooperatives and accessing training.

7. **Gender and youth dimension.** Women and youth are particularly disadvantaged. Close to 30% of the most vulnerable households are those headed by women and those under the age of 21 (20% of these are orphans). The Ministry of Youth data[3] report that youth (age 14-35) represents approx. 40% of the total population in 2011 and 51.6% are girls. No specific data are available as to youth employment breakdowns, but the pressure on land translates into few opportunities for youth to easily become independently productive while agricultural wage work is not well paid (average of RwF 100 a day, US$1.6).

8. Women tend to concentrate their work in agriculture (82% of women currently work in this sector) and find it more difficult to move out of agriculture (only 4% of women have managed, as opposed to 9% of men). MINAGRI's Agricultural Gender Strategy was recently launched (March 2012) and confirms the challenges for women in the sector. While agriculture has a high employment rate of women, they have the lowest levels of schooling and highest levels of illiteracy (23%). They are, therefore, often unable to move beyond subsistence agriculture, lack access to knowledge and finance and have also difficulty, due to their reproductive role, in participating in agri-businesses ventures which could reap them economic benefits. Moreover, women-headed households are less resilient to shocks and have usually no financial savings. As agricultural wage laborers women appear to be paid less than men, as little as RwF 800 for a day's work (US$1.3).

9. While the GoR vision and national gender policy is inclusive of women with a target representation at 30% across the employment structure, further analysis shows that women often lack a voice and true empowerment. Therefore, while farmers at large lack market information skills, knowledge for improving processing and storage, and have limited access to credit, there is fear that women will not benefit from the optimization of productivity at the same level as men as the more economically rewarding activities are often managed by men, including the income from sales. MINAGRI's Gender Strategy notes that as far as access and control over livestock and its products is concerned, women have weak decision making powers over the product and sales and are unable to build any physical assets as cattle ownership is predominantly in men's hands.

PASP targeting strategy

10. **Focused commodities**. Based on a review of existing value chain studies and market information available on the CIP crops and dairy sector, MINAGRI has decided to initially focus PASP on maize, beans, cassava, Irish potato and dairy. The five selected commodities[4] were ranked according to: (i) competitiveness, including potential domestic and regional demand, as well as value addition opportunities; (ii) potential impact, including number of rural households benefiting or participating in the product chain and potential to increase income; (iii) harmonisation, including synergies with government and other development partners strategies and programmes; and (iv) potential to increase household food security, women's income, and economic inclusion of the rural

[3] Rwanda Statistical Youth indicators 2010.
[4] MINAGRI excluded rice as there has already been substantial PHHS and value adding inputs under ongoing government programmes.

poor (see Attachment 1 below for a detailed matrix). An overview of production and the local and regional markets for the CIP crops, and a SWOT analysis on the prioritized crops are provided in Appendix 1, Attachment 1 and 2, respectively.

11. **National and district outreach**. PASP will initially support 200 HUBs nationwide across the 10 districts identified by the project, with an average of 20 per district. Rwanda's cooperative movement is relatively young but currently covers approximately 750 cooperatives active in the agricultural sector: 600 agricultural cooperatives organised by value chain, and 150 dairy ones focusing on milk collection and local marketing and, to some extent, processing into cheese and yogurt. The average number of members of each of these cooperatives is 150 households.

12. Conservative assumptions based on an initial involvement of 200 HUBs, mainly cooperative owned but including some privately owned SMEs, suggest that PASP will directly benefit 32,400 rural households in 10 districts where the project will be intervening. Based on the national average of 4.8 people per household, the number of direct beneficiaries is estimated to be around 155,518 and the project cost per beneficiary will come to approximately US$494. For the planned 10 districts, this will include an average of 3,240 households or 15,552 beneficiaries per district. Considering the breakdown by district of the value chain cooperatives under consideration, PASP will target 30 milk collection centres, 30 potato cooperatives in the north, 30 cassava cooperatives in the south and east, and 110 multi-cropping maize and bean cooperatives country wide. As PASP implementation capacities are gradually developed, MINAGRI intends to scale up successful operations to other major market-driven crops or livestock activities and geographical areas.

13. **Geographical targeting.** While most targeted commodities are found nationwide, initially project support will focus on three geographical areas determined using three main criteria (see Attachment 3):

- Land area dedicated to individual crops, according to the 2011-2012 MINAGRI Crop Intensification data;
- Poverty, assessed by cross referencing the incidence of *Ubudehe* self-targeting categories II, III and IV out of six categories (covering the very poor, poor and resourceful poor), and the 2012 Household Living Conditions Survey (EICV3) data on province poverty average, percentage of province population engaged in small-scale farming and agricultural wage labour (respectively, the poorest and the poor) and incidence of province households headed by the vulnerable; and
- Potential for value chain development and growth based on current and prospective processing facilities.

In order to facilitate market linkages, the geographical targeting will focus on 'food-basket' areas where several agricultural value chains function in parallel and which correspond to different agro-ecological zones of the country. This concept is consistent with moving locally processed crops to the regional markets in RDC, Burundi, Uganda, and Tanzania. The selected food baskets areas are described in detail in Attachment 3, and summarized in Table 1 below which presents socio-economic and targeting data on the districts with the main CIP commodities to be supported by the project.

Table 1. Socio-economic profile of PASP targeted food basket areas

	Food basket area			
	North-west	**Southern**	**Eastern**	**Average / Total**
Districts	Musanze, Nyabihu, Rubavu	Kamonyi, Muhanga, Ruhango	Gatsibo, Kayonza, Ngoma, Nyagatare	
Estimated population	844,800	894,100	1,307,000	3,045,900
In *Ubudehe* cat. II, III and IV (very poor, poor and resourceful poor)	89.2%	90.0%	90.0%	89.8%
HHs headed by most vulnerable group	40%	43%	37%	40%
Number of HUBs in area	65	65	70	200
No. of HHs per HUB	150	150	150	
Plus HHs in services	12	12	12	

supporting HUBs				
No. of HHs participating in project	10,530	10,530	11,340	32,400
No. of people benefiting from project	50,544	50,544	54,430	155,518
Families in categories II, III and IV	9,400	9,450	10,200	29,050
No. of poor people	44,800	45,120	48,960	138,880
Supported PASP value chains	Irish potato, maize, beans, milk	Cassava, beans, milk	Maize, beans, Milk	

Sources: MINAGRI CIP crop areas (2011-2012), EICV3 and *Ubudehe* data by district

14. The North-west food-basket area includes the districts of Musanze, Nyabihu and Rubavu. This area covers potato, maize, beans and milk and is partly endowed with fertile volcanic soil, high altitude and high rainfall. It therefore has a strong potential, with over 50% of households growing high quality Irish potatoes, over 70% growing maize and over 90% growing beans. Two growing seasons allow two different crops during the same year. This area also covers 20% of the national milk production and has a potential for the project to focus on improving the processing and market linkages in the dairy sector. SNV could become a local partner due to its focus on dairy production in the region. The poverty incidence of the region remains high, with 40% of households headed by the vulnerable (women, under 21 and disabled) and over 80% who would fall in the project target group following the *Ubudehe* self-assessment.

15. The second identified food-basket area covers the Southern province districts of Muhanga, Kamonyi and Ruhango. In terms of agro-ecological zone, this area is of medium to low altitude and receives moderate rainfall. Farming households in this area concentrate predominantly on two crops, with over 70% of households growing cassava, which is less vulnerable to drought or other climatic events and 93% of households growing beans. The proximity to milk processing facilities in Nyanza and the government investment in milk cooling centres in the region would also allow PASP to address dairy processing. These districts have a high incidence of poverty with 43% households headed by the most vulnerable groups (women, underage youth and disabled) and 90% who fall in the project target group. There is an opportunity to strengthen market linkages with a number of already existing local processing facilities which could be easily connected to the neighbouring central region where the capital Kigali could provide additional outlets.

16. The third food basket area comprises the Eastern districts of Gatsibo, Kayonza, Ngoma and Nyagatare which benefit from more rolling topography and medium rainfall**.** PASP will focus on the larger areas of beans and maize, dairy production and, to a much lesser extent, cassava. By alternating cropping seasons, 90% of households in this region cultivate maize and 94% beans. Dairy development has also potential in this area. Rural poverty is high, with 37% vulnerable households (women, underage youth and disabled) and an 89% average falling into the project target group. Commercialisation of crop production as measured by share of harvest sold is highest in this province at 25%, compared to 20% in other provinces. Few processing facilities already exist but the area is covered by MINIMEX for maize processing and a soy bean processing facility is due to open soon in Kayonza.

17. **Direct beneficiaries.** The primary target group for PASP are poor smallholder farmers either engaged in production and primary processing in the focused commodities (maize, beans, cassava, Irish potato and dairy), including poor farmers with some production potential and members of cooperatives who own small land plots (the national average household owns 0.76 ha), and smallholders who supplement their income through agricultural wage work.

18. The target group specific to the project was chosen among the *Ubudehe* categories II, III and IV and also correspond to the EICV income group of small scale farmers (nationwide 61.8%) and wage farm labourers (nationwide 9.8%). This broad group also finds a match among the CFSVA categories of agriculturalists low income (24%) and agriculturalist medium/high income (24.8%). Agro-sellers (3.7%), who have some income gained from small scale commercial activities are also within the targeted group, as well as agro-labourers (18.6%) who benefit from income generation. Detailed poverty and livelihood targeting data are provided in Attachments 2 and 3.

19. The focus will therefore be on small scale agricultural producers, among which many women (currently the Rwanda Cooperative Agency reports 42% women membership among agriculture cooperatives). Women and youth would represent a large percentage of the target group and attention will be given specifically to build the capacity of cooperative members who are not in the governing bodies but need empowerment through training and development of entrepreneurial skills.

20. **Gender targeting.** The management structure of cooperatives visited usually included women representatives who received training and exposure through the RCA. Many of the other cooperative women members who were interviewed, however, particularly those between 30 and 50 year old, referred to their poor literacy and access to information and knowledge and subsequent incapacity to speak up. The younger women had many ideas they wish explore and develop in order to buy their first plot of land or to improve the workload linked to post-harvest processing (access to more small shelling tools, easier access to communal drying and storage facilities to avoid buyers dismissing their individual harvest), but they felt uninformed and unprepared to access rural finance facilities (no collateral to guarantee , husbands unwilling to allow them to use family land as a guarantee).

21. PASP will promote women's participation in value chain development equally with men, assisting them to move out of low input-low output activities with equal access to agricultural support and financial services, and to play an active role in cooperatives and cooperative-owned businesses. Specific attention will be given to women throughout the project starting by strengthening MINAGRI SPIU with a Targeting and Gender specialist who will be responsible for further development, implementation and monitoring of the targeting strategy, as well as supporting institutional strengthening. The specialist will conduct gender sensitive value chain analysis, disaggregate M&E data by gender, carry out gender baseline studies, and develop a gender action plan. The SPIU M&E unit will collect, analyse and interpret sex and age aggregated performance and impact data, and propose specific indicators on gender equality and women's empowerment, as well as a set quantitative targets for participation in project activities. The specialist will also establish links with the IFAD-financed regional grant to OXFAM NOVIB 'Gender and Value Chain Development', to scale up the Gender Action Learning System and organize learning routes and exchange visits on GALS.

22. Specific measures to ensure gender equitable participation and benefits from project activities will include: (i) establishing and monitoring minimum participant quotas for women and youth in capacity building activities within the participating cooperatives, both at management level and among the overall membership to ensure that women knowledge about access to finance is improved; (ii) developing women's capacities to become service providers, and where appropriate, organising special training sessions targeted to them; (iii) ensuring that both male and female family members have access to visits, exchange programmes, farmer field schools (FFS) and other technical training, with a target of at least 50% women; (iv) incorporating gender audits in cooperative capacity assessments and supporting cooperatives to increase the number of women members and in leadership positions, and to ensure that they have equal access to cooperative services; and (v) designing a competition on a yearly basis to recognize the most entrepreneurial women in every district.

23. **Youth targeting.** For the youth, limited land availability is an incentive to look for an income outside agriculture. Despite increased openings in income generation linked to non-farm activities (from 10.9% in 2005 to 16.9% between 2005 and 2010), the main livelihood source remains agriculture. PASP will therefore assist youth in exploring agricultural income generating activities and it will reach out to those who have managed to buy land through non-agricultural wage earning and are prepared to grow into future entrepreneurs and leaders. Further linkages will be established with the USAID/EDC Youth Livelihoods Project, which is planning to move into rural areas in 2013-2014 and will work with vocational technical schools to identify employment possibilities. Similarly, the project exploration of simple mechanisation would be a suitable context for youth employment.

24. To overcome the constraints the youth face and ensure their opportunities to participate and benefit from PASP investments, the project will: (i) profile young people as part of the baseline analysis and identify those that are household heads in the *Ubudehe* categorization to have a better understanding of their poverty levels; (ii) prioritise young people for training related to the development of skills and capacities in off-farm income generation, including linkages to the *Hangumurimo* programme in MINICOM that took over the apprenticeship programme of PPPMER II for the establishment of training positions with cooperatives and cooperative-owned businesses; (iii)

ensure that the poorer young households gain access to employment generated by project activities; and (iv) identify within cooperatives high potential youth with good literacy skills for leaders' training. Linkages will be established with the USAID/EDC Youth Livelihoods Project and vocational technical schools to identify employment opportunities. Finally, opportunities for youth participation in simple mechanisation will be also explored.

Attachment 1: Value chain ranking matrix for targeted crops/enterprises

Category and Criteria		Category Weight	Criterion Weight	Product Score					
				Dairy	Maize	Potatoes	Cassava	Beans	Banana
A	Competitiveness (subtotal)	3		2.28	1.78	3.64	3.18	4.04	3.18
1	Potential demand domestic		30%	3	2	4	5	5	4
2	Potential demand regional		40%	2	2	5	3	5	4
3	Value addition opportunities		10%	4	2	2	3	3	2
4	Perceived quality		20%	3	3	4	3	4	3
B	Impact (subtotal)	2		2.24	2.24	1.68	2.24	2.6	1.84
1	Number of rural households benefiting/ participating in the chain		40%	5	5	3	5	5	4
2	possibility to Increase Income		60%	2	2	4	2	5	2
C	Received support (subtotal)	3		2.6	2.4	1.65	1.6	1.95	1.25
1	Synergy with donor programmes		20%	4	3	3	2	3	1
2	Inclusion in GoR		30%	5	5	2	2	2	2
3	Room for future involvement		50%	2	2	3	4	5	3
D	Cross-cutting issues (subtotal)	2		2.04	2.56	2.04	3.76	3.76	2.96
1	Women's income opportunities		40%	2	2	3	5	4	3
2	Inclusion of the rural poor		40%	3	4	2	4	5	4
3	Reduction of food insecurity		20%	1	4	1	4	4	4
	TOTAL	10		9.16	8.98	9.01	10.78	12.35	9.23

Ratings: 1 Negligible 2 Low 3 Average 4 High 5 Highest

Attachment 2: Poverty targeting data

Livelihood categories from 2010/2011 EICV3

Main activity of those working aged 16 and above	EICV3 (2010/2011)			EICV2 (2005/2006)		
	% of total	% of poor 118,000 RwF/year	% extremely poor 83,000 RwF/year	% of total	% poor	% extremely poor
Wage farm	9.9	11.8	17.9	8.2	7.2	13.3
Small scale farmer farmer	61.8	71.4	67	71.3	80	77
Wage non- farm	16.9	9.3	9.1	10.9	5.3	4.4
Independent non-farm	9.7	6.5	4.8	8.1	6.8	4.5
Unpaid non-farm & other	1.8	0.9	1.3	1.6	0.7	0.8

Source: National Institute of Statistics

Participatory poverty mapping categories from 2011 *Ubudehe*

Poverty Category		Main characteristics
Category I *Umutindi nyakujya* (those in abject poverty) **4%** of the population		Those who need to beg to survive. They have no land or livestock and lack shelter, adequate clothing and food, medical care and access to school.
Category II *Umutindi* (the very poor) **20.6%** of the total population		The main difference with the first category is that this group is physically capable of working on land owned by others, although the households have no or very small landholdings, and no livestock.
Category III *Umukene* (the poor) **51.3%** of the total population	**89%**	They have some land and housing, live on their own labour and produce, and though they have no savings, they can eat, even if the food is not very nutritious. However, they have no surplus to sell in the market and poor access to medical care and education.
Category IV *Umukene wifashije* (the resourceful poor) **17.3%** of total population		This group shares many of the characteristics of the *umukene*, but they have small ruminants and their children go to primary school.
Category V *Umukungu* (the food rich) **1.7%** of total population		They have larger landholdings with fertile soil and enough to eat. They have livestock, often have paid jobs, and can access health care. They hire labour to cultivate their land.
Category VI *Umukire* (the money rich) **0.4%** of total population		They have land and livestock, often have salaried jobs, and hire labour on their land. They have good housing, often own a vehicle, and have enough money to lend and to get credit from the bank. Many migrate to urban centres.

Source: Rwanda Local Development Support Fund (allows for 4% outside of any category

Livelihood groups according to CFSVA 2012

(Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey)

Livelihood group and Percentages of households each livelihood group represents in Rwanda, and per village urban/rural status	Description, based on average characteristics of the group
Agriculturalists (low income). Rwanda: 40%; Urban: 5%; Rural: 44%; Semi/peri-urban: 42%	Households depending nearly uniquely on agriculture to sustain their livelihood (the relative contribution of the activity to the overall livelihood of the household is estimated at 92%). They have the lowest average yearly per capita expenditure (44,000 RWF). This group has the highest proportion of households conducting only one activity (64%). 90% of the agriculturalist households are in rural areas.
Agriculture and unskilled daily labourers. Rwanda: 14%; Urban: 23%; Rural: 13%; Semi/peri-urban: 15%	Households depending on unskilled labour (paid in cash or in-kind) which accounts for 72% of the livelihood. Agriculture remains important and accounts for 26% of the livelihood. The average yearly per capita expenditure is the third lowest at 84,000 RWF.
Agro-pastoralists. Rwanda: 13%; Urban: 1%; Rural: 15%; Semi/peri-urban: 12%	Agro-pastoralists on average generate 65% of their livelihood from agriculture, and a third from the exploitation of livestock. Their average annual per capita expenditure is 142,000 RWF, slightly above the average for the entire sample. 9% of the agro-pastoralist households live in a rural setting.
Agriculturalists (medium/high income). Rwanda: 8%; Urban: 4%; Rural: 8%; Semi/peri-urban: 8%	As low income agriculturalists, these households depend predominantly on agriculture for their livelihood (89%). However, their annual per capita expenditure of 264,000 RWF is well above that of the low income agriculturalists. 86% of the agriculturalist households are in rural areas.
Agricultural workers. Rwanda: 7%; Urban: 2%; Rural: 8%; Semi/peri-urban: 8%	Households depending on agricultural work (paid in cash or in-kind) which accounts for 69% of the livelihood. Agriculture remains important and accounts for 28% of the livelihood. The average yearly per capita expenditure is the second lowest at 56,000 RWF. 87% of agricultural workers are in rural areas.
Employees and business. Rwanda: 4%; Urban: 25%; Rural: 2%; Semi/peri-urban: 4%	This group has the highest annual per capita expenditure at 708,000 RWF and depends predominantly on salaries from their work as civil servants, employees, NGO/UN staff, and pensions for their livelihood (56%), and 23% on skilled labor. They also continue some agricultural production which accounts for 10% of their livelihood on average. It is a predominantly urban type of livelihood - 64% of them live in urban areas.
Agro-sellers. Rwanda: 4%; Urban: 6%; Rural: 4%; Semi/peri-urban: 3%	Households dependent mostly on the commerce of agricultural, livestock and other (hunting/fishing) products (57%), on agriculture (35%) and have an average annual per capita expenditure of 250,000 RWF.
Other marginal livelihoods.	The marginal livelihood group mixes several profiles that are characterized by a limited role of agriculture (contribution to the livelihood averages 15%), and additional marginal activities including assistance, remittances, transport and

Rwanda: 4%; Urban: 13%; Rural: 3%; Semi/peri-urban: 4%	unspecified other activities. Even though an important share of these households are poor and have unacceptable food consumption, their average annual per capita expenditure is 255,000 RWF - well above the survey average - reflecting the high expenditure of the rich households in this livelihood group. 35% of households in this category are in urban areas.
Informal sellers. Rwanda: 3%; Urban: 15%; Rural: 2%; Semi/peri-urban: 2%	Households with an average 75% of their livelihood generated by petty/small trade, the rest coming predominantly from agriculture (18%). The average annual per capita expenditure is the second highest, at 353,000 RWF. More than half of the households depending on informal sales live in villages classified as urban.
Agro-artisans. Rwanda: 2% Urban: 6%; Rural: 1%; Semi/peri-urban: 1%	On average, agro-artisans generate 69% of their livelihood from artisanal work and most of the rest from agriculture (23%). Their average annual income is estimated at 184,000 RWF. 34% of agro-artisans are in urban areas.

Source: CFSVA and Nutrition Survey, 2012

Attachment 3: Geographical targeting criteria

1. Land area dedicated to individual crops, according to the 2011-2012 MINAGRI CIP data;
2. Poverty, assessed by cross referencing EICV3 (province average; percentage engaged in small-scale farming and agricultural wage laborers- respectively the poorest and the poor; and incidence of household-headed by the vulnerable) and *Ubudehe* categories II,III and IV covering the very poor, poor and resourceful poor (the percentage refers to the incidence of these three categories over the total I-VI, the highest percentage of all districts is 94%); and
3. Potential for value chain development and growth based on current and prospective processing facilities.

North-western Food Basket Area

Value chain	District Information				Province Information				
	Rubavu **Ubudehe II,III,IV** **84.6%**	**Nyabihu** **Ubudehe II,III,IV** **89.8%**	**Musanze** **Ubudehe II,III,IV** **93.1%**	Factories/processing plants in district or nearby	% HH cultivating crop in North and West & cattle ownership	% HH engaged in processing in North and West	Poverty in north and west	% engaged in small scale farming (poor[1]) & wage farming (extremely poor)	% of HH headed by vulnerable: women, under 21 and disabled
Potato	21500 ha	24000 ha	21000 ha		57.8% and 46.3%	51.3% and 55.8%	42% and 48%	average 63% small scale farmers; average 11% wage farmers	38,01% (411.000 HH) and 41.6% (528.000 HH)
	24 coops	16 coops	17 coops						
Maize	23000 ha	25000 ha	14000 ha	- Maize flour plant in Nyabihu -COAMVU processing coop	72.9% and 71.6%				
	16 coops	8 coops	7 coops						
Beans	14595 ha	11488 ha	14098 ha		95% and 85.2%				
	-	-	2 coops						
Dairy	10 MCC (12 planned)[2]			- Milk factory due to open in Mukamira 2013 - La Reine Cheese factory in Rubavu	76% and 69%				
	4 dairy coops	-	2 dairy coops						

[1] EICV3 data: **Small scale farmers**: nationwide 71.4% poor and 67% extremely poor; **Wage farm labourers:** nationwide 11.8% poor and 17.9% extremely poor
[2] Land O' Lakes data

Southern Food Basket Area

Value Chain	District Information				Province Information				
	Muhanga **Ubudehe II,III,IV 90.9%**	**Kamonyi** **Ubudehe II,III,IV 88.8%**	**Ruhango** **Ubudehe II,III,IV 92%**	Factories/processing plants in district or nearby	% HH cultivating crop in south province & cattle ownership	% of HH involved in processing	Province Poverty	% engaged in small scale farming (poor) and wage farming (extremely poor)	% of HH headed by vulnerable (women, under 21 and disabled)
Cassava	12661 ha	13567 ha	10500 ha	- Plant to open in April 2012 in Ruhango - Lumen Cassava processing Rusatira/Huye - Mayaga (Ruhango-Byimana) due to open	65.7%	61.6%	56.5%	70.1% engaged in small scale farming 39.8% wage farmers	43.1% (549.000 HH)
	5 coops	16 coops	16 coops						
Beans	17686 ha	16455 ha	15227 ha	- Kubumwe Beans conservation operational in Huye - RABI Agric Business, bean processing and export	93.1%				
	-	-	2 coops						
Dairy		6 MCCs (7 planned)		- Nyanza District: milk factory in Nyabisindu & Haji Enterprises, private processor	73.1%				
	-	-	1 dairy coop						

Source**:** MINAGRI CIP 2011-2102 staple crop areas, EICV3 and *Ubudehe* preliminary 2011 data by district

Eastern Food Basket Area

Value Chain	District Information					Province Information				
	Kayonza **Ubudehe II,III,IV:** **91.4%**	**Gatsibo** **Ubudehe II,III,IV:** **90.0%**	**Ngoma** **Ubudehe II,III,IV:** **87.2%**	**Nyagatare** **Ubudehe II,III,IV:** **91.2%**	Factories / processing plants in District or nearby	% HH cultivating crop in East province & cattle ownership	% of HH involved in processing	Poverty	% engaged in small scale farming and wage farming	% of HH headed by vulnerable (women, under 21 and disabled)
Maize	14 500 ha	22 000 ha	20 200 ha	31,000 ha	- MINIMEX serves the province	90%	74.1%	42.6%	70.9% engaged in small scale farming; 9.2% wage farmers	36.7% (542.000 HH)
	17 coops	24 coops	10 coops							
Beans	26 506 ha	22 147 ha	28 735 ha	23,734 ha	- Soy bean processing in Kayonza	94.2%				
	3 coops	-	1 coop							
Cassava	5 900 ha	1 351 ha	4 909 ha	3,058 ha	- Gatsibo Cassava Coop KIAY, PPMER demo plant	71.9				
	4 coops	1 coop	-							
Milk	8 MCCs (12 planned)			16 (3)						
	1 coop	1 coop	-		- Savannah Milk Co					

S**ource:** MINAGRI CIP 2011-2102 staple crop areas, EICV3 and *Ubudehe* preliminary 2011 data by district

Appendix 3: Country performance and lessons learned

1. The Country Programme Evaluation (CPE) undertaken during the second half of 2011 reported: 'The performance of the (IFAD) portfolio has improved significantly since the CPE of 2005, especially with regard to regard to effectiveness and efficiency, impact on household incomes and food security. A key factor contributing to such improvement has been the stronger policy and institutional environment that the country has built up over the past decade which has started to show results in recent years. At the same time, IFAD has improved the alignment of its interventions with national strategies and has introduced direct supervision and implementation support together with a country presence'.

2. The CPE further observed: 'Key issues encountered in the programme (rural finance, cooperative development, support to local governments) are of systemic nature and cannot be adequately addressed by the project components alone. Furthermore, the replication and scaling up of innovations or successful experience calls for more IFAD involvement in policy dialogue, partnerships and knowledge management. As the Government of Rwanda moves further towards the harmonization of international cooperation, this will require IFAD to adopt a more coordinated approach to cooperation with adequate emphasis on higher-level institutional issues'.

3. PASP project design has given due consideration to issues highlighted in the CPE, particularly responding to the lessons learned and recommendations arising. The project builds on the experience of past and on-going projects, focusing on addressing issues related to: (i) further align IFAD support with the Paris Declaration and build on national systems and strategies, especially EPDRS II; (ii) provision of institutional support and non-lending activities for harmonized approaches to rural finance and cooperative development; and (iii) strengthening support activities in the food crops and agricultural value chains sub-sector. A summary of lessons learned and opportunities arising for PASP intervention is presented below.

Building on national systems and aligning IFAD support with the Paris Declaration:

- *National systems to promote sustainability*. The Government of Rwanda's accountability and implementation systems are recognized as among the best and most efficient in Sub-Saharan Africa, which have positively contributed to improved financial management performance and implementation of IFAD-supported projects. However, it is also recognized that more efforts are required to strengthen national systems to enable greater ownership and promote sustainability of activities. Therefore, continued support institutional capacity development is fundamental.

  Opportunity. PASP makes a firm commitment to support development of the capacity of national institutions, notably the Rwanda Agricultural Board (RAB), to promote a gradual process of ownership, accountability and responsibility for development activities in the agricultural sector.

Institutional support and non-lending activities to promote innovation and harmonized approaches:

- *Harmonized support to the rural finance sector*. Support for rural finance has not yet been effective in terms of contributing to enhanced and sustainable access to rural finance by IFAD target groups. The support provided under different IFAD-funded projects has not entirely contributed to strengthening the financial partner institutions as planned and the revolving credit lines are losing value due to inflation and poor repayment performance combined with subsidised interest rates. The limited achievements are particularly disappointing because Rwanda has a population density in rural areas that in principle should make it feasible to partly use urban microfinance concepts in rural finance. The ad hoc nature of the past support to the sector is likely an outcome of inconsistent and differing approaches and methodologies across development partners. This however, presents an opportunity for IFAD, with its experience both in-country and regionally, to engage in higher-level policy dialogue with government and partners to develop more harmonized and consistent support to the sector.

  Opportunity: The new RB-COSOP and PASP provide a strategic entry point for IFAD to refine its rural finance interventions towards a more sustainable and climate smart approach that strengthens the financial sector. In a bid by GoR and IFAD to foster the commercial lending sector

by not subsiding interest rates, PASP will seek to link focused project investment resources to leverage borrowing from the commercial banking system once project viability and sustainability prospects have been independently verified by the financial institutions. The project will use the Rwanda Rural Investment Facility 2 (RIF 2) managed under BDF, to provide incentives for financial institutions and entrepreneurs to finance post-harvest climate resilient agribusiness investments. The project will also explore means to deepen engagement with Access to Finance Rwanda (AFR)[1], leveraging existing resources and providing complementary support. In partnership with AFR, PASP can assess capacity building needs of MFIs including *Umurenge* SACCOs, design effective support measures, and thus facilitate access to improved financial services by the project's target group.

- *Cooperatives*. Despite a largely nascent cooperative movement, past and on-going IFAD projects have been consistent in the effort to provide support to capacity development of cooperatives in the agricultural sector. While some agricultural cooperatives are demonstrating relative success, most of them remain unprofitable and weak, requiring substantive support to ensure that they can manage their affairs in a sustainable and profitable manner. Challenges faced include: unsustainable levels of debt, mismanagement and poor governance, and inability to pay and attract qualified staff. To this end, a first measure to build their autonomy is critical as a condition for success. A second measure will need to address and build the evolving commercial and financial management capacities of these agricultural cooperatives in the context of a more market-oriented environment.

  Opportunity: Proven approaches such as the Turnaround Programme and the provision of tailor-made support can be adapted to meet the evolving needs of cooperatives at different levels of maturity, and to ensure their sustainability. In addition, the development of a harmonized support framework for cooperative development is also considered to be fundamental. PASP seeks to promote these interventions through supporting development of a vertical support structure (to include the RCA, NCCR, and cooperative federations) for cooperatives.

- *Rwanda Cooperative Agency* (RCA) and other service providers such as Centre IWACU have been providing capacity and skills development to various cooperatives countrywide. However, the current support is fragmented and there is need for streamlining and harmonising the support from development partners for more impact. In order to ensure that cooperatives can manage their business in a sustainable and profitable manner, capacity building in the project's areas of intervention will be vital.

  Opportunity: The RCA reports that it is planning to harmonize the current highly fragmented support for cooperative development; PASP will support this endeavour.

Strengthening sub-sectoral support activities:

- *Development of value chains for food crops and livestock products*. In recent years, the GoR has defined a number of agricultural policies, strategies, programmes and targets for the agricultural sector and its sub-sectors. These include: the *Girinka* programme, Crop Intensification Programme, Soil Conservation and Watershed protection as well as Irrigation programmes. These programmes have been instrumental in improving the production and household food security situation, and continue to be extremely relevant. However, while many households have increased their production of food crops and livestock products beyond subsistence needs over the last three years, the processes and systems needed to handle these surpluses remain largely undeveloped. For example, drying facilities, cooling facilities, warehouses, processing and marketing remain limited and susceptible to a range of climatic hazards (see Appendix 1, Attachment 3 for a discussion).

  Opportunity. It is evident that major investments (capital and human resources investments) are required to handle rapidly increasing farm surpluses, and to similarly promote value addition. While there is a food security rationale in supporting staple food crop production, it is also

[1] Established by the GoR and several development partners led by the UK Department for International Development (DfID), AFR is expected to address systemic issues with a view to increasing access to finance, particularly for the large numbers of people who lack of have only limited access to financial services. To date, AFR has supported government in developing a Rural and Agricultural Finance Strategy and are finalising a sustainability strategy for SACCOs.

recognised that the country's long-term competitive advantage would be in higher-value commodities produced in intensive systems with a high labour input, and with potential for creating significant non-farm employment in processing and marketing enterprises. To this end, PASP places emphasis on the non-production aspects of the food crop value chain, promoting climate smart harvesting and post-harvest processing, and value addition and improved access to markets.

- *Access to markets*. While the marketing of food crops and livestock was not given high priority until relatively recently, the experience gained by IFAD through its partnership with WFP's P4P programme provides valuable lessons to be adopted and built upon in the effort to facilitate improved access to markets. It is evident that capacity building support at the farmer and cooperative level is fundamental, including support in: (i) harvest and post-harvest management; (ii) organizational behaviour; (iii) business skills; (iv) climate resilient storage and warehouse management; (v) introduction to access to finance; and (vi) records keeping.

  Opportunity. Capacity building support needs to be expanded to numerous cooperatives. Furthermore, business and management coaching is not a one-time endeavour; rather, follow-up and refresher coaching is essential. PASP responds to this need, and places emphasis on supporting the development of marketing skills to capture market opportunities.

Other lessons learned and opportunities arising:

- *Rural small and micro enterprises (SMEs)*. In Rwanda, non-farm agricultural enterprises (along the coffee, tea, silk, maize, beans and dairy value chains) have benefited from interventions by national institutions, IFAD and other development partners. Despite this support, many SMEs continue to have major sustainability challenges and require continued assistance. Most notably, it is recognised that what is needed by many SMEs is access business development services. In response to this unfulfilled need and consistent with the SME Policy, the districts and sectors would be well placed and mandated to facilitate such business development services.

  Under PPPMER II, the Proximity Business Advisory (PROBA) scheme was set up in partnership between the SPIU and the districts. To coordinate and implement the scheme, each district contracted the services of a SME Facilitator with performance incentives in each district in order to organize the identification and accreditation of the PROBAs (416 in the country with one per sector) and the voucher distribution. With the vouchers, SMEs have been able to contract the services of nearby PROBAs on a 1-to-1 basis. Subsidies for the vouchers are being slowly reduced and all payments are done through SACCOs on a commission basis. The PROBA scheme started in July 2012 and will contribute significantly to the sustainability of rural SMEs. Currently, the scheme has been adopted by the MINICOM which will continue its implementation with government funds.

- *Knowledge management*. Integration of knowledge management and learning into project management has improved significantly throughout IFAD portfolio. In the individual projects, M&E systems have been strengthened and learning routes to innovative IFAD-supported activities in other countries have been organized for projects' stakeholders. With respect to knowledge generation, some pilots/innovations have been introduced (Community Innovation Centers, SRI, animal health insurance scheme, Water Users Associations, etc). Efforts have been made to promote project synergies: for example, experienced procurement, M&E and finance staff from one project has been used to train staff in other project through peer learning groups.

  Outside individual projects, knowledge management activities are limited, and there is room for improving the transfer of knowledge. To this effect, there is a need for sharing best practices and lessons learnt with other development partners in the agriculture sector but also with IFAD-supported projects in the Eastern and Southern Africa region through the IFADAfrica network. Moreover, the SPIU for IFAD-supported projects can be more pro-active in capturing experiences and lessons generated by other projects/programmes financed by government and other development agencies. For example, the new REMA project 'Reducing vulnerability to climate change by establishing disaster preparedness systems and support for integrated watershed management in flood prone areas' supported by UNEP and UNDP and the initiatives that will be funded through FONERWA offer important learning opportunities relevant to PASP. The

establishment of the SPIU in MINAGRI for all IFAD-supported projects provides an excellent opportunity to streamline integration of M&E and KM across all projects. As part of PASP, the SPIU will develop a 'learning system' that encompasses these two important elements of project management (see Appendix 6).

- *Environment and natural resource management*. While acknowledging environmental benefits achieved in the ongoing portfolio, the CPE identified a need to better assess and document environmental risks as well as opportunities, as past project design documents did not include a detailed assessment of environmental risks and trade-offs, and thus no mitigation plans. These risks include biodiversity loss, quality and quantity of water downstream from developed marshland, safe disposal of agricultural waste from post-harvest processing, and associated human health risks that include malaria and bilharzias. Future programming and projects will need to include a strategic analysis of environmental and natural resource management issues, in line with the requirements of IFAD's Environment and Natural Resource Management Policy, and explore opportunities for qualifying for carbon financing.

4. **USAID-funded Post Harvest Handling and Storage Project (PHHS).** To inform PASP design, in collaboration with USAID, IFAD sponsored a rapid assessment of rural cooperatives and private SMEs involved in post-harvest activities through the PHHS project. These cooperatives and SMEs received grants, technical support and trainings from PHHS and are located in different districts in Rwanda. The PHHS was a three-years project launched in 2010 and closed in June 2013. The main activities of PHHS were focused but not limited to grants, training of farmers, market linkages, investment finance and policy formulation. The main purpose of the assessment was to obtain a better understanding of how post-harvest activities are carried out by rural cooperatives/SMEs and therefore use the lessons learnt during the design process of PASP.

Key achievements:

- Following the trainings provided, rural cooperatives and SMEs made significant improvements in harvesting, handling and storage of their grains (maize and beans). Almost 67% of cooperatives and SMEs that were visited had high quality grain. Moreover, while post-harvest losses were estimated at 30% prior to PHHS supported trainings, they were reduced to 10% according to the survey conducted by USAID in 2012.
- Both rural cooperatives and SMEs have created markets linkages with regular buyers who are mainly MINAGRI through its food strategic reserves and the private sector. The improved quality of the grains resulted into increased prices (for instance the price increased from RWF 250 to RWF 400/kg of beans).
- Storage facilities are kept clean and in good conditions. They are used at the harvesting period and all cooperative members have access to them. In some cases, non-members can use these facilities but they have to sell their grains to the cooperative or pay RWF 10/kg of grain stored while members pay only RWF 5/kg.

Key areas for improvements:

- Limited business management skills of cooperatives result into poor management. Participating HUBs should be assisted to fill in identified gaps in order to make them sustainable business partners.
- Insufficiency and/or lack of post-harvest infrastructures. In some areas, infrastructures set up do not match available levels of production resulting in the use of rudimentary facilities for drying and storage. In areas where cooperatives do not have post-harvest infrastructures, they cannot collect the production of their members thus resulting into increased post-harvest losses. To address this constraint, PASP will support the construction of climate resilient infrastructures in accordance with the needs expressed by beneficiaries.
- Insufficiency and/or lack of climate information at harvest and post-harvest equipment. Farmers' cooperatives are missing key equipment such as moisture meters, maize threshers, dryers (especially those in the Northern province where they have long and heavy rainy seasons), pallets, scales, etc. Consequently, PASP will ensure that such equipment is included in the business plans for the construction of climate resilient post-harvest infrastructures.

Appendix 4: Detailed project description

I. Introduction

1. This Appendix provides a detailed description of the project components and main activities to be supported by PASP. The design of the project concurrently with the formulation of PSTA III has allowed its full alignment with MINAGRI's sector strategies and investment programme. PASP overall project goal is to alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda. PASP development objective is to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from CIP crop and dairy businesses, especially those related to aggregating production for markets, supporting transformation, and creating value-added to enable smallholders to capture a higher share of the value.

2. The project's primary focus will be the facilitation of inclusive[1] business activities that can thrive on increased agricultural production from CIP crops and dairy development. Investments in improved post-harvesting procedures, drying, processing, storage, distribution, logistics and capacity building of cooperatives and farmers organizations are expected to generate reductions in product losses that are just as important as improved crop yields in preserving food production and localized value addition in a changing and more uncertain climate. PASP design capitalizes on the significant production gains achieved in recent years in the agriculture and livestock-dairy sectors, and aims at supporting the technical, marketing, infrastructure, and direct capacity building needs of cooperatives, self-help groups and SMEs seeking to undertake viable post-harvest investments.

3. PASP will be strengthened through an ASAP US$7 million investment providing incremental support to reduce the vulnerability of post-harvest market chains to the impacts of climate change and ensure that appropriate mechanisms are established to safe guard food security. ASAP support will facilitate a better understanding of how current and future agro-meteorological conditions influence harvest and post-harvest activities, so as to ensure that rural infrastructure and related investments supported by the project are resilient to these changing climatic patterns. ASAP investments will be fully embedded in PASP components and results framework.

4. Achievement of PASP development objective will be evaluated by considering changes in average smallholder net incomes over the project life, assessing changes in the proportion of the farmer incomes that comes from increased returns from marketing and other activities at post-harvest handling and value addition level, as well as the number of beneficiaries from project-supported activities with access to climate smart low carbon post-harvest technologies and infrastructure.

5. **Overall project strategy**. The first significant point where primary produce is aggregated – a product aggregation point or business hub[2] (HUB), will be the focus of project implementation to serve smallholders post-harvest services' needs. A HUB includes the physical place where primary products are aggregated and where value addition could be generated, together with facilitation of the necessary managerial and technical skills, technologies and equipment (e.g., for quality control, sorting, packaging, storing, value adding, etc.).

6. A HUB could be part of a CIP-formed cooperative, a cooperative-owned business or an existing or newly formed SME allowing them to benefit from value addition. For dairy, a typical HUB could be an existing milk collection centre (MCC) developed under a government programme (see figure below). For maize or beans a HUB could be the place where cooperatives or privately-owned SMEs consolidate grain for drying, cleaning, sorting, bagging or storage prior to dispatch to market. A key component of the HUB is its linkage to agribusiness support services which the project will facilitate and strengthen, either directly or by ensuring access to services by other relevant institutions and/or private sector providers. PASP will also contribute to developing these support services.

[1] The term 'inclusive' means businesses that have Base-of-the-Pyramid (BoP) populations *(Ubudehe* cat. II, III and IV: very poor, poor and resourceful poor) as both customers and clients, and through which smallholder producers and entrepreneurs can hold on to their primary assets, i.e. land, water and labor to leverage technology, markets, jobs, capital from the larger scale investor.

[2] PASP has adopted the term HUB to describe these aggregation points. The HUB concept is consistent with the definition used by other rural business development programmes in Rwanda.

7. The HUB will be the focus for development of the services needed to add value, assure product quality and quantity, and facilitate market linkages. PASP will support HUBs seeking to professionalise their business processes by facilitating their collaboration with: (i) local agro-dealers providing seeds, fertilizers or other agro-chemicals to cooperative members associated with these HUBs; (ii) SACCOs, MFIs and financial institutions providing savings and other financial services complementing larger lending facilities available from commercial banks; and (iii) other specialized pre- and post-harvest technical service providers, including climate information services.

8. The process will be assisted by experienced Post-harvest and Handling Task Force (PHHTF), RAB, district-based BDS or private post-harvest service providers for the CIP crop-related HUBs[3]. In the dairy value chain, district or sector livestock extension or veterinary officers will be selected and trained specifically to work with the participating MCCs. They will receive training in working with groups, facilitation and needs analysis differentiated by gender and age to ensure inclusion of vulnerable groups including women, single headed households and youth.

9. As part of PASP strategy to build HUB technical and business capacities, a climate resilient and low carbon development pathway will be encouraged for the HUB to move to more advanced value adding activities such as product differentiation, processing, packaging, distribution and development of new products. Where appropriate, certification for fair trade and/or organic status could be developed. ASAP investments will focus on facilitating introduction of climate-smart post-harvest technologies and infrastructure that take advantage of advances in the engineering sciences as well as ecologically sound systems design, including climate service information provision, solar drying tunnels, biogas fuelled grain driers, and sealed bag grain storage among others. Choices for specific ASAP investments across the focused commodities are presented in Tables 4 and 5 in Appendix 1 (Attachment 3), and summarized later in this Appendix (Attachment 1). ASAP support will be instrumental to help create the development space for adoption of these technologies within PASP through policy and institutional development.

10. PASP will promote value addition through a staged progression from improved harvesting procedures, basic rural agro-processing (cleaning, grading, sorting, packing), transport, bulking and storage options to more sophisticated climate-resilient processing, transformation, and packaging to meet the needs of more sophisticated domestic and export markets. The project will support participating HUBs to build their capacity to meet market needs and increase their efficiency and competitiveness by creating product added value. Links to market actors (retail or wholesale) in the value addition process will be an important aspect in integrating the value addition to the actual market demand and thereby developing or deepening market linkages.

11. PASP's financial services strategy will be based around three streams (see Appendix 13): (i) partnership with BDF, GoR-mandated institution for facilitating SMEs and cooperative access to finance; (ii) use of financial incentives to stimulate innovation, address market weaknesses and build resilience to climate change; and (iii) focus on fostering the commercial lending sector by not subsiding interest rates, but instead by linking focused project investment resources to leverage borrowing from the commercial banking system and private sector once project viability and sustainability have been independently verified by participating financial institutions. The financial sector partnership is key to the sustainability and scaling-up of PASP economic benefits since it will ensure that businesses can grow and advance to commercial scale based on expanded finance from commercial banks and the private sector well beyond the project's timeframe.

12. In line with IFAD Private Sector Strategy, PASP will support private sector investment promotion and incentives aimed at establishing public private sector partnerships (PPP). The project is designed to align scalable PPPs capable of leveraging commercial borrowing and other private sector resources for inclusive PHHS business investments. Potential PPPs will be identified and assessed on their commitment and capacity to provide stronger market linkages and inclusive business development services to PASP target groups. Along the pathway, the private sector will be the driver of improved efficiency and increased investment after project closure. PASP support will enable smaller or less developed SMEs to participate in the process starting from basic levels so they can

[3] If PHHTF or RAB managed staff are not available or suited for the work, experienced district based private BDS providers or NGOs will be recruited on a competitive basis. These may be BDS providers from the district BDC centre, the PPPMER supported Proximity Business Advisory (PROBA) scheme or independent BDS providers.

advance to higher levels of value addition, if and when they have matured their technical and business capacities required to scale-up their businesses.

13. An estimated 750 cooperatives are active in the agricultural sector: 600 cooperatives are organized by crop value chain and 150 are dairy cooperatives focusing on milk collection and local marketing with some cheese and yoghurt processing. The average membership of these cooperatives is 150 households. Initially, PASP will target about 200 SMEs which are mainly cooperative owned but will also assist a number of privately owned businesses selected using agreed criteria. Although the number of HUBs participating in the project will be based on demand, MINAGRI has estimated that a possible breakdown could include 30 MCCs across all regions, 30 potato cooperatives in the north, 30 cassava cooperatives in the south and east, and 110 multi-cropping maize and bean cooperatives in the three food basket areas initially targeted by PASP.

14. Final HUB selection will be undertaken through a process of initial awareness raising and calling for expression of interests to participate. Selection criteria will include: having a HUB function with market-led growth potential; being a cohesive group with some formal structure/registration; cooperative membership with most members in the PASP target groups (*Ubudehe* categories II, III and IV); and having a functioning leadership structure. While initially focusing on the ten specified districts, as PASP implementation advances, opportunities will be explored for the project to assist other HUBs in areas where other government programmes have developed post-harvest infrastructure and support facilities.

15. Following a district level awareness campaign, PASP will commence implementation through interested CIP-formed cooperatives in areas with a need for post-harvest investment or existing SMEs with some post-harvest facilities or experience. Participating HUBs will be systematically supported to develop their capacity to identify market opportunities and constraints leading to preparation of action and business plans. The management capacity needs and physical investment requirements to implement these business and action plans will be supported and annually reviewed and assessed on performance.

II. Project Description

16. PASP will be implemented over a five-year period and comprises the following three mutually reinforcing components: (i) HUB capacity development programme and business coaching; (ii) Post-harvest climate resilient agri-business investment support; and (iii) Project management and coordination.

Component 1: HUB capacity development programme and business coaching (US$12.57 million, including US$6.3 million IFAD loan/grant, US$2.5 million ASAP grant, US$1,03 million government counterpart funds, and US$2.7 million project beneficiaries/value chain actors contribution).

17. The main outcome from component 1 will be: Cooperatives, farmers organizations or SMEs associated with participating HUBs have the skills and knowledge, as well as access to specialized service providers, to create viable and competitive businesses capable of delivering larger volumes of improved produce to the market chain and provide climate resilient and low carbon value adding to an expanding number of clients.

18. The first component will assist HUBs in each selected commodity to identify and address their business management and financial skill gaps and produce bankable business plans (BPs) to develop and manage their services more profitably with stronger linkages to supplying farmers and integrating low carbon and climate resilience activities. Depending on the stage of development of the HUBs, the BPs will include investment in physical capital items such as storage sheds, simple value adding, sophisticated storage and complex processing and marketing to suit identified new markets in Rwanda or in the EAC. To support management and operation of this physical investment, there will be a range of capacity building activities included in the BPs to develop the specialised skill base of the group, particularly of its management team, as well as to source specialised technical service providers required for BP implementation support. Long-term success will be assessed in terms of improved operational performance and financial viability of HUBs so they have the skills, confidence and access to services and business partners to more effectively and efficiently utilize market

opportunities, provide value adding services to their owners or suppliers, execute contracts with other actors in value chains, and attract private sector commercial financing.

19. Following a district level awareness campaign, PASP will commence implementation through interested CIP-formed cooperatives in areas with pressing need for post-harvest investments or with presence of cooperatives, farmers organizations or SMEs with some post-harvest facilities or experience. The focus of the HUB capacity development programme and business coaching component is to create awareness of the principles and tools of marketing and value chain development and support capacity building and training designed to develop and operate climate resilient physical infrastructure and other investments planned in the BPs. The main activities of the component and their general sequence of implementation are as follows:

- Identify existing post-harvest HUBs owned by or linked with a cooperative, farmers organization or SME mostly comprised of PASP target groups (*Ubudehe* categories II, III and IV) in project areas with potential to further develop and support inclusive market access businesses and value addition, and lead to preparation of a BP.
- Undertake HUB capacity building needs and market linkage/development potential assessment with SME owners (cooperative or private) to develop an action plan for required skill development and capacity building. Depending on the needs identified, action plans may include development of organisational and financial management skills and other technical skills (business planning, costing, negotiation, market analysis, etc.) required to identify, implement and operate a priority post-harvest, handling and storage (PHHS) project that complements ongoing CIP investments in sustainable intensification of smallholder production.
- Support implementation and regularly review progress of capacity building action plan and investments. Consideration of targeting and inclusion issues will be prioritized when selecting and facilitating the start-up of the HUBs. Emphasis will be placed on assisting participating HUBs understand the roles of poorer and vulnerable women and youth in crop and dairy production and also provide tools and processes to ensure the inclusion of these groups in HUB planning and implementation activities, and to encourage them to participate in HUB capacity building activities by ensuring that participant selection processes and training activity formats are supportive to less (or non) literate participants.
- When minimum capacity of the group has been built, facilitate development of a simple BP to commercial viability which may involve conducting market and value addition studies and climate risk assessments required to formulate a priority project.
- PASP will maintain (and update based on performance) a list of BDS providers from which the participating HUBs will select a BDS provider to support development of their BP. Eligible HUBs would apply for a voucher to cover most of the costs of the BDS provider on a fee-for-service basis[4]. This would cover initial preparation of a BP concept that would be screened and assessed on a competitive basis.
- If selected to progress, the BDS provider would then be retained by the HUB to support preparation of a full BP as required by commercial banks in Rwanda. Emphasis will be placed on HUB members and associates driving BP development process rather than delegating the work to a BDS provider. The BP would include both physical investments such as equipment and buildings, and also capacity building and implementation support for technical, marketing, value adding and project management, as required.
- If co-financed by an external lender (component 2), component 1 will provide implementation support of the BP and assess performance, ensuring that the capacity building investments included in the BP are undertaken and that specialised technical service providers required for BP implementation are timely contracted and supervised. Support will be available for targeted training and capacity building in areas directly related to HUB action plans.

[4] For an initial BP this would be approximately US$900 with the HUB contributing 10%. For more substantial BPs, this could increase to US$2,500 with the HUB contributing 50% as by this stage the HUB would be operating a substantial commercial business.

- If initial business plan is successfully implemented, PASP will support development of larger or more challenging HUB investments expanding their market linkages through post-harvest quality improvement and value addition. Focused project investments and capacity building resources will be linked to leverage borrowing from the commercial banking system once commercial viability and long-term sustainability have been independently verified (component 2). PASP intends that at least 20% of participating SMEs will develop their capacities to the stage of making an investment of US$100,000 or greater in value adding and/or market development activities in the course of the project based on expanded finance from commercial banks and the private sector.

20. Attachment 1 summarizes the key climate issues that will have impacts on the sustainability of PASP investments by geographical location, choices of specific ASAP activities to address these risks, and indicators of success. Through ASAP financing, PASP plans to incorporate climate risk management in the planning and implementation of the investments undertaken by HUB owners through the promotion and demonstration of climate resilient practices, structures and innovations. These innovations will range from promoting crop varieties with crop maturities periods better suited to the changing growing season lengths to demonstrating the use of solar power supplies and biogas as cost-effective approaches for grain drying and small-scale dairy producers and milk collection centres to enhance the storage life and quality leading to improved milk prices and incomes. ASAP funds will facilitate access to specialized service providers and link HUBs with support agencies for PHHS activities to ensure that climate risk management is incorporated into the institutional learning and services they provide to PHHS clients. Some of these funds will be available to demonstrate the technical and commercial viability of new technologies and equipment responding to environmental and climatic challenges.

21. The following activities will be eligible for ASAP financing under component 1:

- Establishment of agro-meteorological positions in MINAGRI and SPIU with appropriate capacity building.
- Analysis of available historical agro-meteorological data to quantify changes in seasonal characteristics and incidence of extreme events and how these impact upon harvest and post-harvest processes, and the rural infrastructure. Partners: LMS in collaboration with MINAGRI and relevant government and university departments as appropriate.
- Preparation and dissemination of early warning messages appropriate to the risks identified in each PASP area (droughts, floods, cessation of rains etc.) developed through climate information services. Warnings will be developed though an iterative process to meet the needs of farmers, HUBs, extension staff. Partners: LMS and MINAGRI/SPIU in collaboration with REMA and RDB.
- Estimation of the losses that occur at various stages of the harvest and post-harvest processes for maize, beans, potatoes, cassava and dairy. Partners: PHHSTF, ISAR and university.
- Identification and promotion of crop and forage varieties that mature earlier and are more tolerant to floods and droughts through appropriate field demonstrations with CIP. The focus of the demonstrations will be on the focused PASP commodities and forages for dairy cattle. Partners: CIP, PHHSTF, ISAR and university.
- Identification and adaptation of appropriate climate resilient post-harvest crop drying and storage techniques for focused commodities. Partners: PHHSTF, ISAR and PHHS.
- Identification and demonstration of appropriate solar and biogas powered dryers and coolers. Partners: PHHSTF, ISAR and PHHS.
- Support to Rural Infrastructure Building Services, including:
    - Survey of existing post-harvest and MCC structures. Partners: PHHSTF and DAIM.
    - Development of building codes and standards for siting and construction of climate smart-post harvest structures and milk collection centres. Partners: DIAM and RBS with support from consultants as appropriate:
        -- Improvement of roof designs of rural infrastructures modified to cope with high winds and management of excess rainwater during intense storms.
        -- Improvement of rainwater storage facilities design and standards.

  - Targeted capacity building of relevant government departments and local contractors on building code implementation and compliance. Partners: PHHSTF and DIAM in collaboration with appropriate training institutions (e.g. MINICOM PPMER II).

- Development of biophysical vulnerability maps to assist in modifying designs of storage structures and MCC for risks associated with different locations. Partners: LMS in collaboration with MINAGRI, REMA, and RDB and relevant government and university departments and support from consultants as appropriate.

22. Components 1 and 2 will be implemented in a synergetic manner to ensure integration of business enablers and off-takers (village traders/assemblers, agro-dealers, machinery workshops, agro-processors, bulk and cross-border traders, transporters, wholesalers in target markets, etc.), and that the capacity and skills of the public and private PHHS support services available to HUBs are improved to facilitate smallholders' linkages to national and regional markets. As discussed earlier, Rwanda has a developing pool of BDS providers but additional capacity building is needed to enable their effective support to HUBs to identify business opportunities attractive to financial institutions, support the participatory planning processes, and focus on the long-term viability of enterprises. These activities will be facilitated in each project district to ensure connecting relevant service providers with appropriate capacity building support. Capacity building investments under component 1 will be driven by the identified needs of the HUBs and will be linked strongly with priority BP implementation support requirements. These may relate to the following areas among others:

23. *HUB business management skills*. During the first year, PASP management will review the need for increasing the pool of suitably experienced BDS providers assisting HUBs with the design and implementation of their BPs, as well as the need for a certification process. Contracted trainers (appropriately skilled cooperative federations, NGO, or national/regional BDS providers) will develop HUB capabilities through training their SME owners or cooperative members and committee members in management, governance, accounting, marketing, project preparation and implementation, as well as in participatory M&E of group progress. In the first year, PASP may support upgrading financial skills and computer equipment as part of an action or business plan assisted by the project.

24. *HUB member functional literacy*. To address low literacy levels among cooperative members and SME owners, the project will facilitate or finance a functional literacy training activity for members to take a more active role in cooperative governance and planning. In addition, PASP will support 'new leaders' programmes to prepare young cooperative members, especially women, for cooperative committee and management positions. For both cooperative members and owners of small SMEs, this would also include entrepreneurship development activities to complement the annual MINICOM-sponsored national entrepreneur competition (*Hanga Umurimo*) for SMEs. A process to mentor the developing HUB businesses with other experienced HUB operators or business owners will be trialled and supported, if successful.

25. *HUB entrepreneurship competitions*. In addition to the *Hanga Umurimo* competition, there will be a competition to identify and recognize which HUBs have been able to introduce inclusive business activities and processes that have incorporated poorer vulnerable groups of women, youth and land-less households into the HUB activities. While the best achievements will be rewarded, the two competitions will provide a means for HUBs to benchmark their performance and progress against other project-supported HUBs and also provide guidance on where additional inputs are required to support lower performing HUBs with practical solutions.

26. *Post-harvest quality improvement and assurance*. The project will facilitate greater awareness of HUB members on product grades and market quality standards together with the related farm-level working methods, especially timely harvesting and drying. PASP aims to support staff training of at least 200 HUBs and their supplying farmers to improve understanding of the importance of quality in creating market linkages as well as on improved product storage, which will include development and promotion of building codes for rural infrastructure, critical for the sustained development of post-harvest structures resilient to natural disasters and climate variability (see below).

27. *Rural infrastructure building services.* The lack of appropriate guidance and building codes for the construction of post-harvest structures that are resilient to natural disasters and adapted to climate change is a major risk to the success of PASP (WP 2 reviews the current status of post-harvest

structures in Rwanda and suggests design guidelines for greater adaptation to emerging environmental and climate change challenges). Through ASAP financing, PASP will support a detailed survey of existing post-harvest storage structures and MCCs to develop appropriate guidance/ building codes that will ensure that current and future infrastructure investments are climate smart and include appropriate measures to manage excess rainwater. The project could also support selected capacity building investments for local building contractors and relevant government staff to design and construct safer structures. PASP will also consider supporting the Rwanda Bureau of Standards (RBS) with focused consultancies to fulfil its mandated role for staple food and dairy grades and standards, and provide capacity building to processors and other key stakeholders on these standards.

28. *Post-harvest mechanisation services*. Increased machinery servicing and simple fabrication capacity is often needed at district and sector level so essential maintenance and repairs of agricultural machinery for post-harvest processes can be carried out. PASP will pilot capacity building investments for a small number of automotive and truck garages, individual mechanics and welding workshops in the project districts. The project will develop short training packages and apprenticeships and youth internships linked with existing national vocational training providers. As the activity will target poorer youth and workers, successful graduates will be offered support through provision of a basic toolkit. The activity will be carried out through the RAB Department of Agricultural Infrastructure and Mechanisation (DAIM) and the PHHTF making use of the experience of the training specialist of the MINICOM PPPMER II project now working for the PHHTF.

29. *Climate information services*. The project, through a dedicated Climate/Agro-Meteorologist will facilitate greater collaboration between MINAGRI and Rwanda Meteorological Services (RMS) through capacity building to support development of climate information services providing relevant and timely information to project beneficiaries to mitigate the impacts of climate variability on harvesting and drying. TORs for this position can be found in Appendix 2 (Attachment 3). To complement this post and ensure that Agro-Meteorology is institutionalised within MINAGRI, the ministry has committed to establishing an Agro-Meteorological position to work closely with PASP, and with RMS and the REMA Project 'Reducing vulnerability to climate change by establishing disaster preparedness systems and support for integrated water shed management in flood prone areas' supported by UNEP and UNDP. TORs for the position can be found in Appendix 2 (Attachment 3). This new position will provide direct feedback to RMS and help improve the focus and delivery of the Agro-Meteorological bulletins, ensuring that they not only provide information on the start of the cropping season, but also detailed information on its duration and the likelihood of rainfall during the traditional drying periods. To date there has been no coordinated attempts to analyse the available meteorological data from an agricultural perspective, especially to quantify the probabilities of a shift in the timing of the wet seasons, number of wet days, daily rainfall amounts, increases in temperatures, incidence of thunder and lightning storms (and associated high winds), and how these changes impact upon traditional harvest periods and post-harvest processes and contribute to the building standards/codes that will be established for rural infrastructure investments with PASP support. The outputs of these investments will be communicated through various bulletins and written reports to inform farmers and extensions services of any changes that have taken place and feedback will assist in the revision in the format and delivery of future climate forecasts.

30. *Innovative products and services*. PASP will promote small businesses which are ready to invest in new innovative products and services. PASP will consider supporting development of innovative proposals from individual or groups of service providers with higher risk elements making them less attractive for potential commercial bank lending. A condition of support for equipment will be that proponents must be prepared to share the technical and financial aspects of the innovation with other agricultural service providers. The proposals should demonstrate a direct link with the HUBs and the smallholder farmers who will benefit from these investments in PHHS support services by achieving better efficiency in post-harvest handling. As part of these initiatives, there will be exposure visits to relevant businesses and shows in the region. PASP will partially fund the costs and require participants to share their experience with other groups on their return.

Component 2: Post-harvest climate resilient agri-business investment support (US$69.42 million, including US$18.07 million IFAD loan/grant, US$4.17 million ASAP grant, US$10.39 million government counterpart funds in the form of foregone taxes and duties, US$7.35 million from project beneficiaries/value chain actors, and US$29.42 million leveraged from financial sector).

31. The main outcome from component 2 will be: HUB business investments in improved climate resilient and low carbon post-harvesting procedures, drying, processing and value addition, storage, logistics and distribution generate reductions in product losses and increase smallholder and rural labourer incomes. Based on viable BPs generated with component 1 support, component 2 will facilitate business activities that can thrive on agricultural production from CIP crops and dairy development by leveraging commercial loans-funded post-harvest investments that contribute to improving market access and linkages, HUB operational and management efficiency, and sustainability based on climate resilience and adaptability and water and energy use efficiency. ASAP funds will be allocated to support the incremental costs related to BPs-identified investments in low carbon energy supplies, and post-harvest equipment, infrastructure, climate resilient buildings and associated training to develop the capacity of the HUB to establish and operate such investments and improve their efficiency.

32. Component 2 will strictly link focused investment resources to leverage borrowing from the commercial banking system to finance HUB-proposed BPs that best contribute to improving the availability of inputs and post-harvest equipment and infrastructure to boost production in a sustainable and climate resilient manner, improving quality, reducing post-harvest losses, and enhancing environmentally sensitive waste management. PASP and ASAP contributions under components 1 and 2 are expected to leverage HUB commercial borrowing to generate an additional investment in climate resilient post-harvest handling, processing and marketing of approximately US$29 million.

33. Financial incentives will be awarded only to groups with business proposals strong enough to be awarded bank financing for a substantial portion of the financing requirements once viability and feasibility have been properly checked by MFI professionals and sustainability prospects independently verified by the financial institution. With this arrangement, PASP seeks to generate short-term and long-term benefits for both HUB owners and associates and financial institutions. Project resources will help participating groups establish or strengthen their track record with the financial institution of their choice enabling these groups to graduate into viable enterprises that are competitive and effectively linked to local, national or regional markets, and capable of attracting private sector commercial financing. This will allow financial institutions to enhance their client base at a slightly reduced risk exposure and gain experience in term and investment finance, which in the long-term is likely to improve the quality of their products and services.

34. To participate in the scheme, interested financial institutions will be subject to a number of conditions: (i) to be financially and operationally sound and have outlets in reasonable proximity to PASP target groups; (ii) have some experience in lending to PASP target groups and in appraising the technical and financial viability of eligible investment purposes; and (iii) bear all or most of the risk of the loan and provide additional working capital finance if needed.

35. To support implementation of component 2, PASP will partner with Rwanda Rural Investment Facility 2 (RIF 2), a programme supported by MINAGRI and administered by the BRD Development Fund (BDF). The objective of this partnership will be to provide financial incentives for RIF 2-affiliated institutions and entrepreneurs to cofinance PASP-facilitated BPs. Component 2 will provide a grant for a certain portion of an investment loan approved to a participating HUB which has obtained a loan from a RIF 2-licensed financial institution to cofinance the BP investment. Working capital and operating costs will not qualify. Participating farmer associations, cooperatives and SMEs owning or associated with a HUB borrowing from a licensed financial institution are eligible for support under RIF 2. Beneficiaries from RIF will also benefit from an existing guarantee extended by the Agriculture Guarantee Fund (AGF), also administered by BNR (see Appendix 13 for a description of the RIF 2 facility).

36. Only financial institutions will be eligible to apply for PASP financial incentives, on behalf of their HUB clients, and they will bear the full credit risk. Applications will include a solid BP including a project description; an assessment of the social and economic impact on women, youth, landless and other vulnerable groups; a realistic assessment of the marketing prospects and the risks and post-loan sustainability; and a complete financing plan, also including working capital. The financial incentive or grant will be paid into the loan account through which the respective bank receives instalments from the HUB borrower. Upon signature of the loan and grant agreements by all parties, PASP will disburse the grant to the bank by the fund manager. When the principal and interest are

paid off minus the grant amount, the debt is offset. If the principal borrower does not have obligations, such as by failing to make payment for more than six months, the bank will inform the principal borrower that the grant arrangement has been cancelled and returned to PASP. In that case the borrower must then repay the entire loan amount without grants, notwithstanding any other penalties imposed by the financial institution. Given that banks apply for the financial incentives and clients are told that they can obtain the grant-support only with continued repayment of the loan, there is little scope for misinterpretation about the difference between a grant and a loan.

37. All draft BPs will be assessed by experienced BDS providers and MINAGRI SPIU staff for compliance with project technical, environmental, financial analysis and PASP Operational Manual before final approval and submission to the participating financial institution. As indicated above, BP proposals will include specifically-determined investments in capacity building and implementation support that will be internalized in the BP budget. The financial institutions will evaluate independently the BP proposal using their own commercial assessment criteria. If the financial institution needs to revise or modify the BP before accepting the proposal for funding, the BDS provider who reviewed the BP will be an observer at the negotiations between the financial institution and HUB management to ensure the negotiated changes are still consistent with the project guidelines.

38. A challenge for the PASP management team reviewing each proposal is building credibility of the BP development process generated with PASP facilitation. This will be achieved by focusing primarily on the quality of the BPs, support for their implementation, and managing participatory M&E as the basis for improving the BP development, review and implementation processes. To ensure that only bankable BPs are generated, PASP will reward with bonuses service providers whose assistance to participating HUBs systematically obtain loans from MFIs. As a performance incentive, 50% of the voucher value would be retained pending approval of the BP proposal by a financial institution. Similarly, private sector and/or BDS providers contracted by the HUB to support implementation of their BP will be also competitively rewarded on a performance basis – both for meeting the targets set in the BPs and for assisting HUBs with a demonstrated loan repayment track record to become more sustainable, growing businesses.

39. As part of the initial cooperation agreement between PASP and RIF 2 and financial institutions participating in the scheme supporting commercial lending activities, interest earned by the credit account linked to the HUB bank loans will be used by the lending institution for continued financial education of HUB members, as well as SACCOs or MFIs or development of new financial services targeted to PASP target groups. These activities will be coordinated through the PASP Rural Finance specialist and the AFR to minimise duplication and maximise synergies with other GoR and donor supported initiatives to strengthen the rural finance sector.

40. Examples of the PHHS and value adding BP investments that could be financed under each PASP focused commodity are discussed in Appendix 1 (Attachment 3) and summarised in Table 1 below, illustrating the expected progression in the complexity and sophistication of the HUB investment plans as the BP planning and management capacity of the HUB owners develops with project assistance.

Table 1. Examples of Potential Investments for different HUBs

Investment Types	**HUB investment levels supported by PASP**			
	Small	Medium	Large	Start-up
	Rehabilitation, quality improvement	Innovation, market development	Commercial up-scaling	Basic storage, drying,
Maize	Shelling, drying and storage	Basic processing	Maize flour or starch, Stock feed	Cob or grain storage, Drying
Beans	Cleaning, sorting and grading on size, colour and storage	Market development	Processing and packaging	Storage, drying
Cassava	Improved PH handling, drying, chipping, waste management	Preparation of tubers for processing. Water supply and waste water management	Gari, cassava chip and/or starch	NA
Irish Potato	Drying, sorting,	Longer term	Processing into crisps	NA

Table 1. Examples of Potential Investments for different HUBs

	storage and packing. Water supply	storage. Consumer packs	or fries	
Dairy	Improving milk quality and handling. MCC water supply	Development of new markets	Milk processing and marketing	NA

41. Under component 1, PASP may finance short-term technical assistance or consultancies as part of its support to BP implementation to facilitate introduction and adoption of innovation and best practices from the region to support value chain development and efficiency improvements. Building on the lessons learned from the IMI-funded Smallholder Post-harvest Innovations Project (SPIP) (2012-2013) and innovations from the RAB and other GoR research institutes, a holistic demonstration approach including technical, marketing, financial and environmental aspects will be applied by establishing a demonstration facility within the HUB itself. This approach will go beyond comparing techniques in a demonstration setting and will allow outside observers, for example from other cooperatives or SMEs, to gain understanding and confidence in assessing the risks and likely benefits from commercial investment in the technologies and processes being demonstrated. Processing and storage systems will be demonstrated using FFS/focus business approaches.

42. ASAP grant financing will be directly administered by MINAGRI SPIU to ensure that the incremental costs associated with establishing and operating climate resilient technologies and processes, including the climate proofing of HUBs and MMCs, are covered in the investment component of HUB BPs. For example, the use of a combination of solar power and biogas, linked to a simple milk pre-cooling system, would allow rapid cooling of milk early in the supply chain to increase its storage life and provide much greater flexibility for delivery of milk at night, increasing farmer returns. In the maize and bean sector, ASAP grant support could assist HUBs install more energy efficient and effective drying facilities using solar heat and/or biogas to speed up drying reducing losses and improving grain quality. The ASAP grant funding will be key to support the low carbon investments that may not show short-term financial benefits but will contribute to longer term adaption to climate change. For example, installation of solar electricity panels to provide the power to drive simple processing equipment for potatoes and cassava to replace petrol engines or installing water based evaporative cooling systems for potatoes, cassava and milk rather than more expensive refrigerated cooling systems to extend the life of the products which would not be economic to operate using conventional cooling systems and energy sources.

43. Specific examples of climate risk management activities that could be financed by ASAP grants as part of BPs under component 2 include the following:

- Mainstreaming resilience through capacity building of HUB suppliers and beneficiaries in establishing and operating climate smart harvest and post-harvest technologies, as internalized in HUB BPs. Partners: PHHSTF, ISAR and PHHS.
- Use of timely climatic information services to improve HUB BP implementation and decision making. Partners: LMS and MINAGRI/SPIU in collaboration with REMA and RDB.
- Adoption of best practices, including low-carbon technologies (mitigation) for drying and cooling. Partners:PHHSTF, ISAR and PHHS.
- Climate smart rural infrastructure, including rainwater management and harvesting. Partners: PHHSTF, DAIM and RAB.
- Diversification of crop, pasture and forage varieties that are more tolerant to flood damage and droughts. Partners: CIP, PHHSTF, ISAR and university.
- Use of biophysical vulnerability maps to assist in locating and designing climate smart HUB infrastructure. Partners: LMS in collaboration with MINAGRI, REMA, and RDB and relevant government and university departments and support from consultants as appropriate.
- Development of tailored checklists to ensure adequate costing and timely implementation of climate risk management activities contemplated as part of HUB BPs. Partners: SPIU and relevant partners.

44. Since ASAP grants will be addressing climate issues not typically included in a loan assessment process, an important activity of component 2 will be to sensitise the lending organisations providing most of the financial capital to the importance of ASAP grant funding as a part of the overall investment package and longer time horizon to HUBs required to ensure investment sustainability. Ensuring that the financial sector will be prepared to gradually internalize the full cost of climate resilience investments is critical for PASP since it is unlikely that the ASAP grant resources will be sufficient to address all climate risk management costs in all supported HUB BPs -- especially in view of PASP goal to leverage an additional US$29 million in commercial borrowing and other private sector resources for scaling up PHHS investments.

Component 3: Project management and coordination (US$3.92 million, including US$2.6 million IFAD loan/grant, US$0.26 million ASAP grant, US$0,93 million government counterpart funds, and US$0.12 million project beneficiaries/value chain actors contribution).

45. Component 3 will ensure that the project is efficiently and effectively managed to achieve the expected results. MINAGRI SPIU will have overall responsibility for coordinating and managing PASP and ASAP funds. Gender, youth, environmental, knowledge management and communication considerations will be integrated in all aspects of project management, and activities of the SPIU and the implementing partners (PHHTF, RAB, RCA and BDF). The performance indicators of this component will include quality and timely execution of annual work plan and budgets, timely submission of progress reports and annual audit reports, participatory M&E able to document key indicators and actual levels of disbursements in line with planning. Details of the component are provided in Section III of the PDR and Appendices 5-8.

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Attachment 1: Key climate Issues that will have impacts on the sustainability of PASP, choice of ASAP investments and indicators of success

Issues identified	Impacts on production or post-harvest stages	Location	Choice for ASAP investments under PASP	Indicators for issues identified
Change in duration of traditional dry seasons, increased incidence of rainfall and higher temperatures	Drying of the crop in the field is one the most critical stages of the harvest/post-harvest process and is becoming more unreliable due perceived changes in the dryness and duration of the dry seasons at the end of cropping seasons 'A' and 'B'. These changes are associated with increased temperatures and humidity levels that increase spoilage of stored commodities, including dairy products	Throughout the country	• Analysis of available historical agro-meteorological data to quantify changes in seasonal characteristics and incidence of extreme events and how these will impact upon harvest and post-harvest processes, and rural infrastructure • Early warning through climate information services • Promotion of crop varieties that mature earlier • Development of appropriate climate resilient post-harvest drying and storage facilities • Estimation of losses that occur at various stages of the harvest and post-harvest processes for key commodities • Introduction of Solar and Biogas powered dryers and coolers as appropriate	• Early warning bulletins that enable farmers to undertake preventative actions • 80% of participating farmers (disaggregated by sex) adopt best practices[1] for post-harvest, crop drying/milk cooling and storage • Guidelines and building codes developed to ensure current and new rural infrastructural investments are climate smart[2] • US$ value of new and existing post-harvest facilities and infrastructure made climate resilient • 80% of participating HUBs introduce relevant water-harvesting and management technology and/or show significantly reduced water usage • 20% reduction in level of CIP crops post-harvest losses and milk spoilage over available baseline • Ha of crop, pasture and forage production under climate resilient practices • % increases in diversification of crop and pasture/forage species (drought tolerant) • No. of rainwater harvesting structures established on rural infrastructure • Number of litre of milk production by cow per day • Number and types of dryers installed
Flood events	Destruction of crops, pastures, forage, post-harvest facilities and rural infrastructure	Northern and western regions, and areas north of Kigali	• Preparation of Biophysical vulnerability maps • Early Warning through Climate Information Services • Developing building codes and standards for siting and construction of post-harvest structures and milk	

[1] Best practices include access to appropriate climate information services to ensure timely harvest and drying, low carbon energy source for drying and cooling, improved storage methods such hermetically sealed bags, sufficient pallets to keep produce of the floor and assist with ventilation, and building codes and standards to ensure infrastructure resilient to high winds and intense rainfall events.

[2] A climate smart structure is defined as one that has been properly sited to avoid flood damage, and constructed to agreed standards that reduces susceptibility to wind damage, provides good aeration and includes appropriate measures for rainwater management (see WP 2).

			collection centres • Promotion of rainwater management on post-harvest facilities and rural infrastructure • Diversification of crop, pasture and forage varieties that are more tolerant to flood damage • Promotion of best practices for post-harvest crop drying and storage	• Number of farmers trained on drying and storage practices • Change in source and patterns of energy usage • Number of household with access to storage facilities • Number and capacity of community storage facilities
Drought events	Crop, pasture and forage failure, delays in planting and harvest. Lack of water for value adding processes/cleaning	Northeast, the east, south eastern regions	• Early Warning through Climate Information Services • Diversification of crop, pasture and forage varieties that are more drought tolerant • Protection of water sources • Developing building codes and construction of post-harvest structures and milk collection centres to manage and collect rainwater during intense storms • Promotion of rainwater management on post-harvest facilities and rural infrastructure	
High winds associated with increased incidence of thunderstorms	Destruction of crops and post-harvest facilities	Eastern, southern and western regions where large water bodies influence local climate	• Early warning through climate information services. • Modification of roof designs in rural infrastructure to cope with high winds • Developing building codes and standards for siting and construction of post-harvest structures and milk collection centres • Preparation of biophysical vulnerability maps • Construction of wind breaks	

Appendix 5: Institutional aspects and implementation arrangements

A. Approach

1. PASP will be implemented through the Single Project Implementation Unit (SPIU) mainstreamed in MINAGRI, which currently implements all IFAD-supported operations in Rwanda, including PRICE, KWAMP and PAPSTA. In line with SWAp principles and to mainstream project implementation within the agencies responsible for post-harvest support, the Post-harvest and Handling Task Force (PHHTF), Rwanda Agricultural Board (RAB) and Rwanda Cooperative Agency (RCA) will be responsible for supporting implementation of core project activities. As PASP implementation partners, these agencies will deliver the specialised facilitation and technical services within their mandated roles to support successful project implementation and incorporate assessment and mitigation of short- and long-term climate risks in their services. In addition, the commodity federations for the PASP focused CIP crops and diary, the National Confederation of Cooperatives of Rwanda (NCCR) and RCA, where appropriate, will be retained on a fee for service basis to provide necessary capacity building and support services to the participating HUBs.

B. Organizational Framework

2. The SPIU Coordinator is responsible for overall coordination of IFAD-supported projects, including PASP and for technical and financial reporting to the Permanent Secretary of MINAGRI.

3. PASP implementation involves capacity building and technical interventions from several agencies and service providers which require that the project is managed by a SPIU-based operations team with expertise on targeting, gender, socio-economic, technical and PHHS business development skills and resources. Attachment 1 shows the SPIU organisation chart with the RAB organisation chart provided in Attachment 2. Attachment 3 sets out terms of reference for SPIU and the main implementation partners' staff.

4. To complement the post-harvest and handling expertise already based in the PHHTF and RAB, a Market and Value Chain Development adviser in the SPIU will provide specialised inputs into the market linkages and value addition activities. To promote climate resilient value chains the SPIU will be strengthened through appropriate training in and exposure to issues related to the broader national and regional climate change agenda. Supported by the ASAP funds, a Climate and Environment specialist will be appointed within the SPIU to support implementation of IFAD country programme.

5. The following agencies will be responsible for supporting implementation of core project activities as PASP implementation partners:

6. **Post-harvest and Handling Task Force.** The PHHTF is mandated to lead implementation of post-harvest and handling activities for the main staple and food crops in Rwanda. It has three departments focusing on Infrastructure Development, Post-harvest Loss Reduction and Quality, and National Strategic Reserves. The PHHTF policy advisor, infrastructure development and post-harvest technical specialists will provide specialised advice and training to crop related HUBs in all aspects of quality, handling, storage and simple processing.

7. **Rwanda Agriculture Board**. Two new boards, the Rwanda Agriculture Board (RAB) and the National Agricultural Export Development Board (NAEB) were established in January 2011 and became operational in the second half of 2011. RAB merges institutions that were responsible for research (Institute of Agriculture Research of Rwanda, IARR), general extension services (Rwanda Agricultural Development Authority, RADA) and livestock research and services (Rwanda Animal Resources Development Authority, RARDA). RAB has three directorates: Infrastructure and Mechanization, Animal Resources Extension and Agriculture Extension, which will deliver the specialised facilitation and technical services for successful implementation of PASP.

8. *RAB Department of Agricultural Infrastructure and Mechanisation*. DAIM is responsible for research and extension of agricultural and agro-processing equipment, demonstration of business models for mechanisation and enhancing sustainability of the Irrigation and Mechanisation Task Force

(I&MTF) mechanisation activities. To assist the PHHTF and DAIM to fulfil their mechanisation research and extension mandate, PASP will assist in building the human as well as institutional capacity through the provision of technical assistance, short-term training courses and exposure visits. Some demonstrations of appropriate technologies may be supported. DIAM, with the RAB Research Department, will also lead activities to identify appropriate technologies to assist in climate risk management including low-carbon alternatives that need to be adapted or, if necessary, developed to improve the climate resilience of the post-harvest sector. The PHHTF technical team will work with the RAB DAIM to maximise synergies between the two agencies.

9. *RAB Department of Animal Resources Extension*. DARE is responsible for veterinary services and animal production working mostly through the district-funded sector veterinary officer network. To support PASP implementation, 1 or 2 selected sector veterinary officers in each district will be trained to support the MCC HUB group activities there. It will require skill development in facilitation and group dynamics and business management, with other required technical and business skills being contracted as required.

10. *RAB Department of Agricultural Extension*. DAE is responsible for managing crop extension services. RAB or private service provider crop extension staff will be contracted to facilitate HUB groups on the CIP commodities. Cooperative development and agricultural extension experts based in DAE will also provide advice and implementation support to PASP.

11. PASP implementation arrangements build on the successful experiences of other IFAD-supported operations in Rwanda that are applying common approaches across the country programme. As with PRICE, *Memorandums of Understanding* (MOU) with the PHHTF and RAB will be used to retain part-time technical coordinators in the PHHTF and the three RAB technical departments working with PASP. These MOUs will define responsibilities and resources to be allocated for PASP implementation, contracting arrangements, and financial management and reporting requirements to meet MINAGRI and IFAD fiduciary requirements. These MOUs will also cover the PHHTF district cooperative/economic development officer, CIP private or RAB service providers and sector veterinarians who will coordinate required technical inputs from PHHTF and RAB specialists. Subject to meeting performance targets, the RAB DARE dairy group will implement the MCC HUB activities.

12. **Rwanda Cooperative Agency (RCA) and National Confederation of Cooperatives of Rwanda (NCCR)**. RCA is currently responsible for cooperative promotion and regulation. Because the national-level cooperative agencies and non-cooperative service providers have limited funds and staff, RCA will initially provide cooperative related services for PASP on a fee for service basis. PASP will contract RCA, in collaboration with the NCCR, to improve and expand its training materials for cooperative development and management; finance training for capacity building service providers and management, accounting, and similar professional personnel; and contract additional audits of project cooperative HUBs. This support will be short term and contribute to mainstreaming most current RCA activities, except registration and 'public good' general oversight of cooperatives, into the national-level cooperative organizations.

13. **Cooperatives, unions and federations.** Cooperatives and their apex structures will be central actors in PASP implementation, both for production development and marketing, provision of support services, and participation in value chain governance. Except for the bean value chain, cooperative commodity-based federations, with their own presidents and committees, are in place for all project focused CIP commodities. PASP implementation strategy is geared towards ensuring that cooperatives become more professional contributors in their respective value chains, monitoring that their members reap a fair return of value chains' added value. Federations will directly take part in project management and oversight by participating in the Project Steering Committee, supporting planning of component activities, and as users of PASP M&E system. PASP may also support specific capacity building activities for these federations to enable their role as training service providers for cooperatives.

14. **District governments.** Consistent with GoR decentralization policies, district governments will have a lead role in project implementation. PASP will align with the district government activities under the Deputy Mayor, Finance and Economic Development to ensure close linkages with other HUB related SME development activities in the district. The district cooperative/economic

development officer will be closely involved in planning and monitoring activities based in each district. As HUBs develop their confidence to develop and implement larger or more ambitious PHHS investments, their BPs will be put forward for inclusion in the District Development Plan. At the district level, PASP will work closely with the Deputy Mayor, Finance and Economic Development, and the JADF.

15. **Technical, financial and training service providers** will assist in implementing project activities. Possible service providers, including national and international NGOs established in Rwanda, have been identified during project design. As discussed in component 2, they will be contracted by the SPIU using competitive government procurement procedures and based on renewable performance-based contracts. Under the HUB capacity development programme and business coaching (component 1), PASP will also promote development of private sector BDS providers to support implementation of business partnerships.

16. **Other strategic partnerships.** In addition to the key institutions involved directly in project implementation, PASP will establish strategic partnerships with other institutions including:

17. *WFP-supported Purchase for Progress (P4P) programme* will contribute to PASP implementation with its experience and training package "sell-more-for more" resulting in a market linkage to their P4P programme. The five-year seed production and certification programme, Market – oriented Advisory Services and Quality Seeds (MASS) funded by Belgium Technical Cooperation (BTC) (valued at Euro 18 million) together with the RAB Rwanda Seed Initiative are addressing key constraints to quality seed development and multiplication. The MASS programme will facilitate the availability of good quality seeds in the participating districts and contribute to seed and tuber handling, treatment storage and transport issues as they are identified. The RADD programme completed in late 2012 has contributed significantly to agro-dealer development support and will be used as the basis for further agro-dealer support.

18. *Climate partnership*. PASP will establish operational linkages with the new Rwanda Environmental Management Authority (REMA) project 'Reducing vulnerability to climate change by establishing disaster preparedness systems and support for integrated watershed management in flood prone areas'. It will seek to expand the information product line to ensure that relevant and timely climate information is shared with beneficiaries to mitigate the impacts of climate variability on harvesting and drying. RDB through their UNFCCC focal point will link the SPIU into the national climate forum and other climate risk related initiatives within the Ministry of Environment.

19. *Potential private sector partnerships* will be identified and assessed on their commitment and capacity of providing stronger market linkages to PASP target groups. As discussed earlier, MINAGRI seeks to attract at least US$29 million in leveraged commercial borrowing and other private sector resources for scaling up inclusive business investments in climate resilient post-harvest handling, processing and marketing, and for actions that align scalable PPPs with such businesses. The selection criteria will follow the relevant principles of engagement in the IFAD Private Sector Strategy: (i) Support or partnership should be driven first and foremost by the interests and needs of smallholder farmers; more specifically, poor rural men and women should benefit from this engagement as producers, suppliers, customers, distributors or employees; (ii) If large and international companies are involved, these must comply with social and environmental standards; (iii) Impact of the engagement should be sustainable after project contribution has ended; and (iv) partnerships should ensure transparency and clear and agreed responsibilities and accountability by all partners.

20. Possible private sector partners include: (i) Rwanda Agri-Business Industries Ltd (RABI), a bean processing and packaging company in southern Rwanda, which is interested in working with PASP as part of their bean outgrower development activities; (ii) ENAS, which is a major CIP input contractor and also trades in maize in Kirehe district, has indicated it seeks to partner with PASP in other districts to develop market linkages around maize and bean HUBs; (iii) The USAID-financed Land of Lakes (LO'L), which implements Rwanda Dairy Competitiveness Project II (2012-2017) is also interested in collaborating with PASP to increase the competitiveness of Rwandan dairy products in regional markets; (iv) The *Cooperative de Agriculteurs de Mais dans la Zone de Volcans* (COAMV), which has worked with outgrowers, provides a valuable product supply model for other HUBs; and (v) the new RDB-sponsored venture fund targeting small/medium agri-businesses could provide

alternative sources for finance for HUBs expanding into consumer marketing and value adding activities.

21. **Project oversight.** A Steering Committee will provide project oversight and overall guidance to PASP implementation at the national level. The Project Steering Committee will represent the main PASP stakeholders, including MINAGRI, value chain cooperative federations, the NCCR, the PHHTF, RAB and district governments. It will meet at least twice a year to review project progress against targets, assess management effectiveness, decide on corrective measures where appropriate, review lessons learned and good practices, approve AWPBs and review progress reports. If the project modality proves successful, this steering committee could evolve to an on-going advisory group for agricultural value chain development activities. The proposed composition of the Steering Committee is as follows:

- The Permanent Secretary, MINAGRI (chairperson)
- The Director General of RAB
- The Chairman of the PHHTF
- The SPIU coordinator
- The PASP Operations Manager
- The three Deputy Director Generals for Agricultural Extension, Animal Resources Extension and, Infrastructures and Mechanisation
- A representative of the Rwanda Cooperative Agency
- One representative (President or Executive Secretary) of the Confederation of Cooperatives, each of the crop farmer organisations, the national dairy farmers union and, once in place, of the Federation of SACCOs
- One representative from each of the RDB Development Fund (BDF), the Private Sector Federation (PSF), Access to Finance Rwanda and the Building an Inclusive Financial Sector in Rwanda (BIFSIR) project in MINECOFIN
- A representative chosen by grain traders and commercial users
- A representative of dairy processors and traders
- A representative selected by the participating financial institutions

22. **Project start-up phase.** To facilitate a prompt project start-up, MINAGRI will commission the SPIU to carry out preparatory activities prior to project effectiveness. These include recruitment, systems and procedures development, launching of early tenders and studies, including the RIMS baseline value chain analysis and profiling of young people.

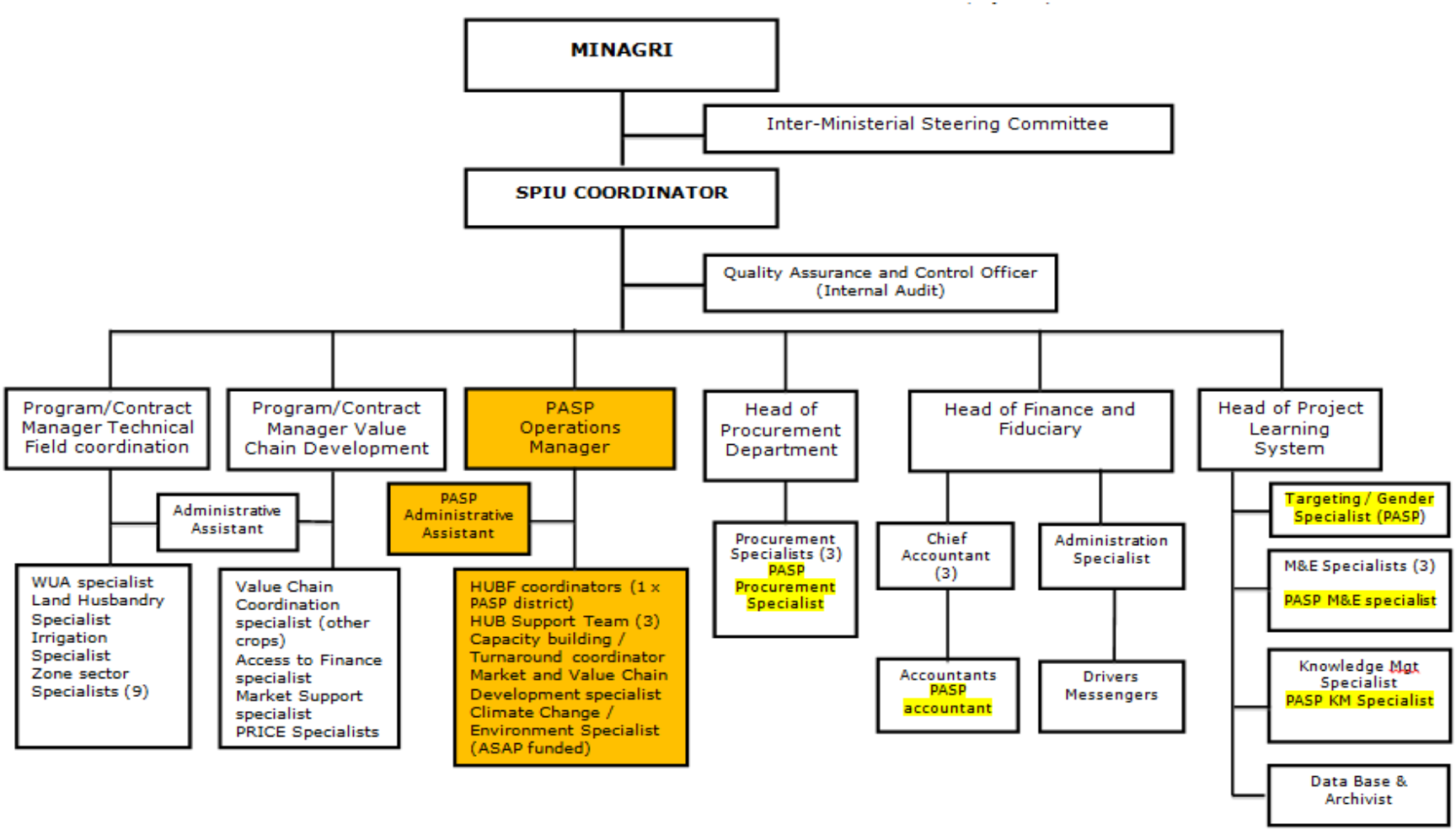
23. To improve start-up and early project performance through integration of PASP-funded activities and processes into RAB, IFAD will support a start-up workshop to enable the SPIU and implementing agencies staff to review and validate PASP implementation manual and develop a full and common understanding of the project implementation strategy.

24. During start-up, the roles, responsibilities and accountabilities of all implementers will be clarified and agreed. Their capacities will be assessed and matched with required skills so that adequate capacity development plans can be prepared. Feedback mechanisms will be also developed to enable quick decisions on what to adapt and improve in a flexible output-oriented manner.

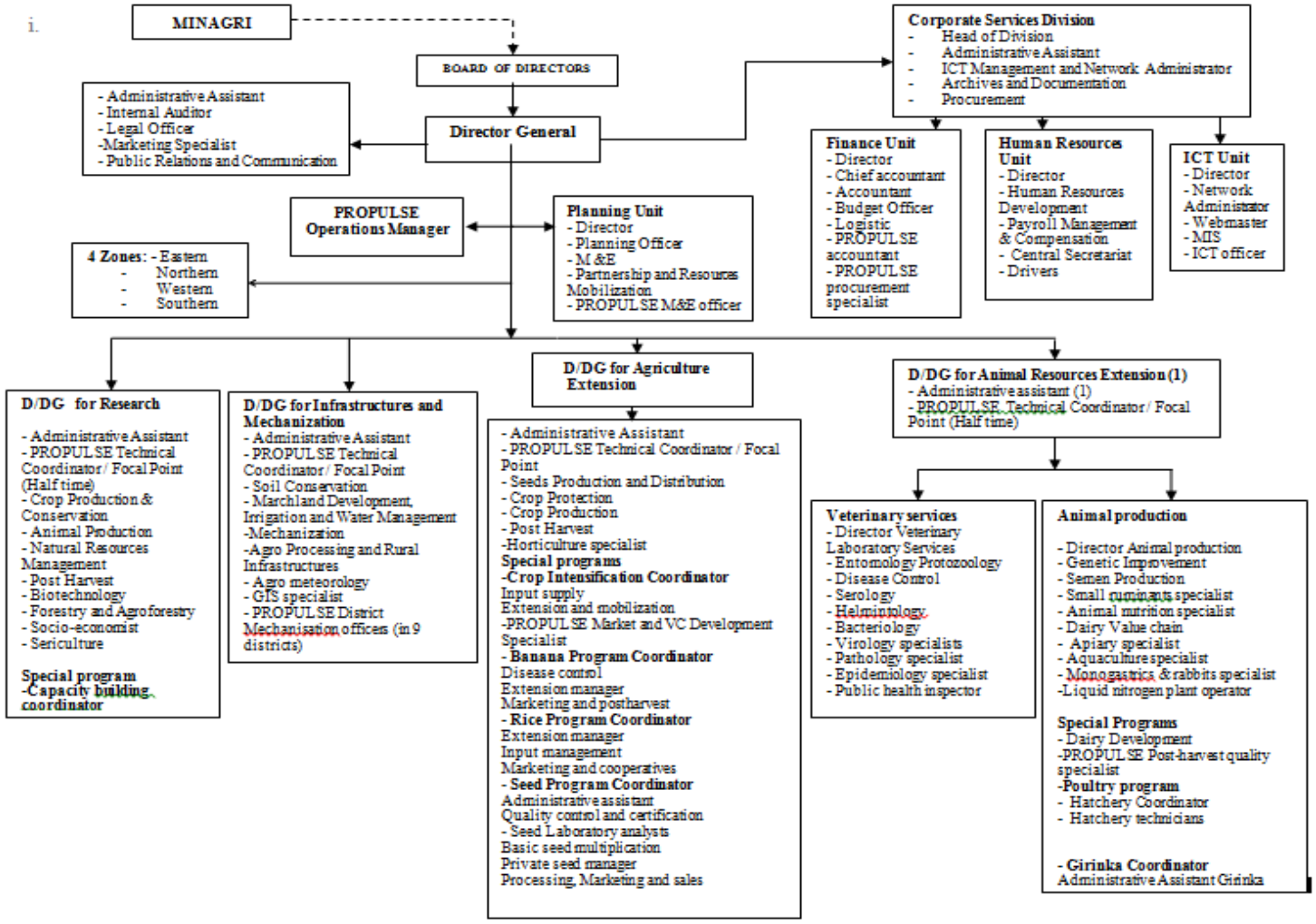
25. **Conditions for disbursement.** The following conditions are proposed for IFAD to make the first disbursement of project funds:

- First AWPB receives IFAD no objection;
- MINAGRI opens PASP Designated Account in USD and Operations Account in RwF in the National Bank of Rwanda;
- Revised draft of the PASP implementation manual is submitted to IFAD;
- Appointment of the RAB-PASP Operations Manager; and
- Project Steering Committee is established..

Attachment 1: Organogramme of MINAGRI SPIU



Attachment 2: RAB organizational chart with PASP positions



Attachment 3: Draft Job Descriptions for PASP staff

PASP Operations Manager (located in SPIU)

Duration: Two years renewable based upon positive performance assessment with a probation period of 6 months.

Qualifications: A university degree, preferably in economics, agricultural economics, management or business administration. Practical experience of at least 10 years in project management and planning, in or with internationally financed multi rural sectorial projects. Proven skills in commercial negotiations, communications and management of human resources. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Sound computer skills in major software (MS Office, email and internet). Working under pressure and meet deadlines in an interdisciplinary team.

Location: Kigali with frequent travels inside the project area (all regions)

Main duties: Under the direct authority of the SPIU Coordinator and the Project National Steering Committee of the Project, the PASP Operations Manager is in charge of the overall management of PASP's activities. S/he will respect all financing agreements signed between the Government of Rwanda, SPIU MINAGRI and the External International Donors and any subsequent official documented agreements related to the management of the Project (Aide mémoires of missions, back-to-office reports, evaluation reports, mid-term reviews, etc.). S/he will report to the authorities mentioned in the above agreements and will issue the financial statements and physical progress reports timely and in the recommended formats.

Specific Duties:

- Project development, including:
  - providing orientations for the development of the Project strategy and methodology;
  - guiding the development of the most appropriate implementation tools and management methods to ensure Project performance, in accordance with national policies and with the financing agreements;
  - ensuring coordination and team working of PASP staff, local actors and programme partners within RAB and outside;
  - ensuring appropriate synergies between Project components to maximise their impact.
- Project implementation, including:
  - supervising the implementation of Project activities in accordance with the financing agreements, with the decisions of the National Steering Committee and with the agreements with IFAD;
  - supervising the preparation, negotiation and oversight of memoranda of understanding, agreements and other contracts with project partners and services providers;
  - ensuring and overseeing the implementation of the gender action plan;
  - preparing annual work plans and budgets, and progress and thematic reports;
  - executing the approved budget, and ensure payments;
  - identifying areas which require support from external consultants, and recruiting them;
  - guiding the efforts of consultants, experts and contractors towards the realization of planned Project outputs and evaluating their performance;
  - providing overall leadership for the four technical coordinators / focal points located in the four divisions of RAB, and the RAB based PASP accountant, procurement officer and M&E officer to ensure that objectives and outputs for the two four components are met and that inputs are timely available;
  - coordinating and managing the inputs of the above RAB based PASP staff into preparation of the AWPB, monitoring activities and supporting supervision and follow-up missions and the mid-term review.
- Project monitoring, including:
  - overseeing the setting up process and effective operation of the M&E system;
  - ensuring the solid internal use of the M&E system;

- ensuring the timely preparation of progress and financial reports
- Project external relations, including the coordination of activities with other projects pursuing similar objectives, within and outside Rwanda;
- Project administrative management, including:
- reviewing and approving pre-selection of project partners, bidding documents, job descriptions and terms of reference for PASP staff and external services providers;
- supervising and managing PASP staff (up to their full integration in the RAB units);
- maintaining internal transparency for the most important technical and project management decisions through regular meetings with PASP staff;
- ensuring proper use and conservation of Project assets, in line with the national legislation and financial agreements.

Outputs (expected results):

1. Project general objective, specific objectives and project activities timely and progressively reached within the frame of the financial agreements;
2. Planning and budgeting process implemented timely on a participatory approach ;
3. Project financial and physical progresses available to the MINAGRI Programme 3 and to all project partners on a regular basis as per national rules and regulations and in accordance with the provisions of the financial agreements;
4. Disbursement procedures respected and adequate and appropriate percentage of disbursement of funds per year, per component or sub-component compared to the AWPBs and to the indicative final design report;
5. Project impact information regularly updated and available to all project partners for measuring the results of the project for all components;
6. Good communications with all project partners, including the project staff;
7. Faculty of development and argumentation of new strategies to reach the global objective of the project and the mission or vision statement of RAB;
8. Excellent relations with the parent ministry, donors and other ministries sector.

Minimum Deliveries during the Probation Period:

Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period

Part-time PASP Technical Coordinators / focal points

Number: 4 positions (1 each in RAB Divisions of Crop Extension (DAE), Animal Resource Extension (DARE) and Agriculture Infrastructure and Mechanisation (DAIM), and the Post-harvest and Handling Task Force (PHHTF).

Duration: 2 years renewable upon positive performance assessment with a 6 months' probation period.

Location: In the RAB offices of the Deputy Director Generals for DAE, DARE and DAIM, and in PHHTF.

Minimum Qualifications:

- Master's degree in the relevant field (agronomy, livestock, mechanisation, agriculture, international rural development), preferably MBA Marketing.
- 3 years of experience in similar nature jobs specifically in agriculture/livestock development or research; experience in project management, implementation, M&E, research, value chain development, and business oriented approach for economic development
- Proven experience working with the private sector to build and sustain mutually beneficial market linkages, preferably experience working for the private sector
- Formal training and / or a good understanding of the application of gender and vulnerable group analysis to the targeting and implementation of PASP
- Excellent writing skills
- Strong coordination, networking and relationship building skills
- Excellent communication, presentation and negotiation skills
- Organized, punctual and detail oriented
- Fluent in English or French (reading, writing and speaking) with very good knowledge of the second language (French or English). Fluent in Kinyarwanda.
- Ability to work in team setting, taking initiatives and performing multiple tasks
- Proficient in use of MS Office (Word, Excel and PowerPoint).
- Able to travel to project sites

Main duties: The Technical Coordinators / focal points reports initially to the RAB PASP Operations Manager. S/he works directly with the respective Deputy Director General for their division providing technical and institutional support to the implementation of the respective components. Specifically, s/he will:

- Guide the participatory preparation of the relevant sub-component AWPB;
- provide technical support to project partners in value chain development, market analysis and capacity building to establish strong organisational structures and effective marketing systems;
- provide support to cooperatives and groups with regard to market orientation;
- Support to the establishment and functioning of public private partnerships (PPPs);
- Facilitate development of innovations to transform HUB activities, smallholder production and marketing into sustainable and resilient profitable enterprises;
- Facilitate empowerment of key actors in the value chain to operate efficiently and profitably;
- Facilitate systems for the generation and dissemination of market information;
- Facilitate the establishment and strengthening of producer and trader associations to increase their bargaining power in the input-output market continuum;
- Facilitate the establishment and functioning of value chain coordination platforms;
- Facilitate the provision of financial, input supply and other business services to value chain actors;

Participate in developing and implementing the PASP M&E activities and the project learning system (PLS).

Cooperative Development Officer (one in SPIU initially)

Duration of the engagement: The original duration of the contract is for 2 years**,** renewable following a positive annual performance evaluation. The original probation period is six months.

Qualifications: At least a Bachelor's degree in Rural Development, Economics, Social science, Business Administration (preference will be given to candidates with a Master's degree). At least three years of working experience with rural economic institutions, preferably cooperatives. In-depth knowledge of cooperative principles, norms and values and laws. Shall be prepared to work in an interdisciplinary team, under pressure and meet deadlines. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Sound computer skills in MS office, email and Internet.

Location: In Kigali, with frequent travels to the districts where PASP is active.

Main duties: The Cooperative Development Officer reports initially to the PASP Operational Manager. He/she works with the other specialist in the project management unit, in particular with the Cooperative Training Adviser, providing institutional capacity building and technical support and guidance to the implementation of the programs designed for participating cooperatives and their apex institutions. Specifically, he/she will:

- Lead the processes to select competent service providers for the activities financed for developing cooperatives under PASP, collaborating closely with the project's Procurement Officer;
- Support and oversee service-provider activities aimed at developing and implementing efficient and effective internal structures, membership policies, management procedures, governance and internal control processes at participating cooperatives;
- Support and oversee service-provider activities aimed at establishing appropriate technical and organisational structures and capacities at participating cooperatives;
- Support and oversee service-provider activities aimed at establishing business-oriented operations that offer attractive producer prices and services to cooperative members, and help provide regular and accurate reporting to these members and the agency supervising the project;
- Ensure that the service providers working with the participating cooperatives provide appropriate and high-quality services, in close cooperation with the District Cooperative and Development Officers;
- Support the establishment and use of a functioning internal monitoring system for the participating cooperatives;
- Ensure maintenance of functioning linkage between the cooperatives and service providers and reporting and the project learning system (PLS);
- Ensure that information feedback is provided from the PLS to the participating cooperatives;
- Support implementation of the program designed for promoting private partners, including their capacity building and promotion of potential Public-Private Partnerships and other collaboration programs;
- Help support strengthening NCCR, federations and unions to become capable to represent the interests of the cooperative movement and to provide useful services to cooperatives;
- Ensure that the participating cooperatives are regularly audited and that the results of the audits are acted upon;
- Assist cooperatives in linking with financial institutions, such as commercial banks, development banks, and financial cooperatives.

Outputs (expected results):

a) TORs prepared and service providers recruited for cooperative activities according to annual plans and budgets.
b) Performance of service providers on cooperative activities reviewed regularly and follow-up action taken without delay, if necessary.
c) Annual training and support plans for private partners prepared in consultation with them.
d) Support for strengthening RCA, NCCR, federations and unions is delivered according to mutually agreed annual plans.
e) Quarterly project progress reports on cooperative activities are available to all project partners.
f) Good communications are maintained with all project partners, including those at district level.

Access to Finance Officer (based on SPIU)

In the framework of the PASP management, the SPIU financial services expert will be mandated for part time intervention on the implementation of the PASP rural finance activities.

Duration: Rural finance activities are planned over the 5 years period. The financial services expert's working time is estimated per year according to the phasing and consistency/importance of activities to be implemented. It is estimated to be 90 persons/days for the first 2 years and will be reduced gradually to 70, 50 and 40 persons/days on the last 3 years.

The project phasing foresees:

(1) First 2 years: identification and selection of participating financial institutions, feasibility survey for new products to meet with HUBs specific financial services needs, starting of pilot experience for new products, capacity building activities for selected SACCOs, and training to trainers; partnership with BDF, institutional support to AMIR.

(2) Third year: SACCO Apex institutionalization process, evaluation of pilot experiences of financial products newly developed, continuing of capacity building activities, enhancement of management information systems.

(3) Last 2 years: eventual scaling-up of proven financial products, rating of participating IF, capacity building.

Minimum Qualifications:

- Master's degree in finance, management, economy or related field.
- 10 years of experience in banking/microfinance sector or in financial services project; experience in project management, M&E, research, value chain development, and business oriented approach for rural economic development;
- Proven experience working with the private finance sector.
- Excellent writing skills.
- Strong coordination, networking and relationship building skills.
- Excellent communication, presentation and negotiation skills.
- Organised, punctual and detail oriented.
- Fluent in English or French (reading, writing and speaking) with very good knowledge of the second language (French or English). Fluent in Kinyarwanda.
- Ability to work in team setting, taking initiatives and performing multiple tasks.
- Proficient in use of MS Office (Word, Excel and PowerPoint).
- Able to travel to project sites.

Location: In Kigali with frequent travels inside the project area.

Main duties: Under the supervision and authority of the SPIU manager, s/he will:

- Prepare the Annual Work plan and Budget (AWPB) for the rural finance activities;
- Negotiate agreements with the participating institutions and partners;
- Supervise and monitor service providers hired to implement capacity building activities, and provide quality assessment of their assignment;
- Monitor the indicators of participating financial institutions related to volume of activities, portfolio quality and overall performance. This includes the outreach assessment to ensure HUB's mainstreaming, (ii) No of HUBs in portfolio and financed; (iii) volume of credit and saving activities; (iv) penetration rate; (v) repayment, portfolio at risk and arrears rates; (vi) operational self-sufficiency;

Prepare progress reports on the project rural finance activities and participate in supervision missions.

PASP Accountants (one in SPIU and one in RAB)

Duration: 2 years renewable based upon positive performance assessment on a full time basis with a probation **period** of 6 months.

Location: Kigali with **occasional** visits in the country

Qualifications: At least a specialised degree in accounting and finances from a recognized high school; practical experience of at least 5 years in a project financial management unit and acquainted with accounting procedures in the public administration sector in or with internationally financed projects; a previous experience with IFAD procedures and financial regulations would be an added advantage; a good knowledge of computer applications in accounting such as TOMPRO, PASTEL, SUN would be essential. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Used to work under pressure and meet crucial deadlines.

Main Duties: Under the direct supervision of the Chief Accountant, the Accountants will have the following specific tasks:

- Verification of supplier's invoices for payment;
- Timely posting of all project accounting vouchers on the accounting software;
- Exercise proper custody of all posted vouchers and other accounting documents;
- Verification and checking of bank statements and accounting software printouts;
- Supervise and direct the accounting and logistical functions, to ensure efficiency;
- Preparation and submission of periodical financial reports on deadlines (SPIU/ RAB and IFAD formats);
- preparation of Withdrawal Applications;
- Regular spot check of petty cash fund and other reconciliation reports;
- Timely replenishment of operations account with project bank account;
- Authorisation of payment vouchers;
- Deputise for the Chief Accountant in his absence;
- Facilitate financial audits and implementation support missions;
- Regular follow up of smooth functioning of the accounting software, and make contact with ITC staff and software suppliers;
- Submission of account printouts by components to the heads of components for analysis and comments;
- Give advice to management on accounting and administration matters;
- Liaise with bankers for bank matters;
- Any other relevant duties as may reasonably be assigned by the Chief Accountant.

Minimum Deliverables during the Probation Period:

Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period.

Procurement Officers (one in SPIU, one in RAB)

Duration: 2 years renewable based upon positive performance assessment on a full time basis with a probation **period** of 6 months.

Location: Kigali with **occasional** visits in the country

Qualifications: Masters or Higher Level University Degree in Engineering, Finance, Management, Purchasing or equivalent qualifications. Minimum of 6 years of relevant post qualification experience Strong background and experience in successfully carrying out procurement using similar procedures, methods, specifications etc. Knowledge (at least 4 years) of internationally accepted 'best practice' systems, the Rwandan Procurement Laws and guidelines and experience in working with donor funded projects. Good writing skills and good computer skills required. Ability of team spirit, good interpersonal and conflict management skills. Integrity and confidentiality. Interpersonal and time management skills. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Prepared to work in an interdisciplinary team, under pressure and meet crucial deadlines.

Main Responsibilities

The Procurement Officer will be responsible for the management of programme procurement activities as part of Programme Implementation arrangements, in accordance with relevant National and IFAD Procurement Guidelines, building capacities of other Programme Implementing Partners.

Main Duties

- Undertake procurement activity as per the draft Procurement Plan which provides the estimated costs and the basis for the procurement methods for each procurement item under the programme.
- Prepare technical specifications for procurement of goods, works and services.
- Prepare bidding documents, tender notices, and invitations for bids.
- Receive, open and evaluate bids, as well as finalize contracts.
- Administer contracts to ensure compliance with the contracts conditions, payment terms.
- Maintain all the records relating to procurement.
- Maintain a separate record relating to complaints and responses to them.
- Update periodically the Procurement Plan in agreement with the Programme team to reflect the actual programme implementation needs and improvements in institutional capacity.
- Ensure implementation of agreed procurement arrangements.
- Prepare procurement implementation reports in accordance with the reporting requirements of IFAD and the government for both the NPMU and consolidated reports for the entire programme.
- Providing guidance and supervision to the state, the beneficiaries and service providers.

Ensuring that the procurement capacity of state, beneficiaries and service providers is developed.

M&E Officer (one in SPIU and one in RAB)

Duration: **2** years renewable based upon positive performance assessment and with a probation period of 6 months

Qualifications: Advanced degree in Project Management, Rural Development, Development or Agricultural Economics, or Business Administration. Proven knowledge and practical experience of at least 5 years in project M&E. Computer literacy (Microsoft Office and statistical software). Communication and result oriented management skills. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Prepared to work in an interdisciplinary team, under pressure and meet crucial deadlines.

Location: In Kigali with frequent travels inside the project area

Main duties: Located in the Planning Unit of RAB or the SPIU, the M&E Officer reports to the PASP Operational Manager/ Head of Project Learning System. Being responsible for development and updating of the M&E system, s/he assists in project planning and data management. S/he will provide a mechanism for systematic flow of information on the project's performance, and assist in institution building for M&E of RAB/SPIU. The tasks for the M&E Officer include:

- Developing and establishing a practical participatory project learning system (PLS) within RAB/SPIU to capture input-output data as well as impact on project objectives, possibly assisted by consultants.
- Identify appropriate monitoring indicators for each component (gender disaggregated as relevant) and ensure that they are used in measuring the Project progress;
- Systematic collection of monitoring data provided by component heads (who will obtain most of it from reports by participating cooperatives), collation of the information and compilation of quarterly comprehensive M&E and progress reports;
- Providing feedback to component heads for onward transmission to the cooperatives;
- Analysing data (linking inputs to outputs, and outputs to impact) and preparing analytical reports for project management on implementation progress, performance and impact;
- Establishing and managing the framework for any baseline survey;
- Measuring achievements against targets and measuring the impact of project activities on beneficiaries through agreed indicators and using both data that flows regularly from the M&E system and additional data collected through special surveys, participatory workshops with the beneficiary groups and participatory impact assessment studies that s/he will organise;
- Coordinating activity planning through AWPB within RAB/SPIU in collaboration with other PASP staff, and also monitoring performance of all Project parties;
- Ensuring that all participating institutions and project officers maintain updated records on their activities and feed this information into the overall PLS with the close collaboration of the MIS officer;
- Carrying out regular internal evaluations, so as to give early warning on project performance;
- Developing a simple reporting system in monitoring all project activities.

Outputs (expected results):

- Simple, efficient and cost effective PLS;
- Planning and budgeting process implemented timely on a participatory approach and final consolidate project AWPB submitted timely to MINAGRI and IFAD;
- Quarterly project progress reports available to all project partners;
- Project impact information regularly updated and available to all project partners;
- Good communications with all project partners, especially at local structure levels;

Minimum Deliverables during the Probation Period: Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period.

Targeting and Gender Officer (in SPIU)

Duration: 2 years renewable based upon positive performance assessment and with a probation period of 6 months

Qualifications: Advanced degree in, Rural Development, Sociology, Anthropology, Development or Agricultural Economics. Proven knowledge and practical experience of at least 5 years in social and gender issues in Agriculture and Rural Development. Computer literacy. Communication and result oriented management skills. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Ability to work in an interdisciplinary team, and meet crucial deadlines.

Location: In Kigali with frequent travels inside the project area

Main duties: Located in the SPIU, the Targeting and Gender Officer reports to the PASP Operations Manager/ Head of Project Learning System. Being responsible for targeting and gender, including the participation of women and youth in all aspects of project development, implementation and follow-up, S/he will assist in institution building.

The tasks to be performed by the Targeting and Gender Officer are:

- Further develop and be responsible for the implementation of the targeting and gender strategy
- Develop a communication strategy for government and other key players on the relevance of gender and targeting for project implementation and impact
- Work with colleagues in the SPIU and implementing partners in ensuring sensitisation and pro-poor approaches to project implementation and Contribute to the gender and targeting aspects of the AWBP preparation.
- Work with the Cooperatives Development Officer to identify, adapt and support implementation oftraining materials for women and youth and liaise with district level local representation coordinator
- Conduct gender sensitive value chain analysis and establish links with IFAD-financed regional grant 'Gender and Value Chain Development' to OXFAM NOVIB, to explore the possibilities of up-scaling the Gender Action Learning System (GALS) that will be advanced by the grant at community level.
- Work closely with M&E Officer to develop gender sensitive indicators to gather and interpret sex disaggregated data to inform project management
- Contribute to quarterly comprehensive M&E and progress reports to be made available to all project partners
- Carry out monitoring and evaluation to assess the impact of project activities on gender empowerment and women empowerment and, in turn, the impact of gender empowerment and women empowerment on project performance and poverty reduction
- Engage in policy dialogue when appropriate to strengthen an enabling policy environment and a gender and pro-poor agriculture and rural development.
- Undertake any other activities that may be assigned by the Project Coordinator.

Minimum Deliverables during the Probation Period: Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period.

- Develop a targeting and gender strategy and prepare a communication strategy
- Work with colleagues in the SPIU to start developing adapted training material
- Conduct a gender sensitive value chain analysis
- Responsible for overseeing targeting aspects

Knowledge Management Officer (one in SPIU)

Duration: 2 years renewable upon positive performance assessment and with a probation period of 6 months.

Qualifications: Bachelor degree in Information/ Knowledge Management, Information Science or relevant field; At least 5 years of relevant experience in information management. Demonstrated experience in developing and managing information systems and in training users in their use; Sound understanding and awareness of issues relating to the access and use of information and knowledge in Africa and a good understanding of the development environment; Strong analytical and problem solving skills (creative, innovative, persistent and resourceful) to develop and build functioning information system and monitoring tools; Excellent oral and written communication skills; Demonstrated knowledge and experience of team building concepts; a team player with excellent interpersonal skills and ability to work within a multicultural and multidisciplinary environment. Knowledge of databases is an asset, but not a requirement. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Prepared to work in an interdisciplinary team, under pressure and meet crucial deadlines.

Location: In Kigali with frequent travels inside the project area

Main duties: Located in the Department of Project Learning Systems of the SPIU, the Knowledge Management Officer reports to the Head of this department. S/he by capturing and sharing information on PASP and RAB activities. In particular, s/he will:

- Develop and implement processes to ensure that lessons learned and good practice are captured systematically, shared, and used to improve project implementation;
- Ensure documentation and wide sharing of project results;
- Support advocacy efforts through providing evidence of impact gathered through the project learning system (PLS), closely linked to knowledge management activities;
- Set up knowledge sharing/peer learning groups;
- Set up and facilitate regular feedback to participating cooperatives (separate per value chain) and institutions on project and partner institution performance;
- Establish capacity building needs of key staff, including private and public service providers;
- Develop or adapt relevant tools and processes for PASP staff to collect, process, analyse, store and share information and knowledge, and ensure relevant staff have the capacity to use them;
- Set up a “Good Practice and Innovation Tracking System”;
- Use information technology for effective knowledge management;
- Develop relevant guidelines for building an institutional culture of learning and sharing;
- Ensure that innovative experiences, learning and good practices are captured, synthesized, documented and shared continuously within the project, within MINAGRI, RAB and RAB, with the IFAD Country Programme Management Team (CPMT) and other partners;
- Ensure that lessons and good practice emerging from the project support decision making and policy dialogue;
- develop a format for annual reporting of innovations and best practices for each of the main project stakeholders;
- Assist the Planning and M&E Officer in the preparation of the experience-based Annual Work plan and Budget (AWPB);
- Provide communication support to project participants, including building understanding of the project objectives and potential benefits;
- Foster broad knowledge-sharing and learning within sub-sector groups;

Minimum Deliverables during the Probation Period: Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period.

Cooperative Training Adviser (based initially in SPIU, location reviewed after 12 months)

Duration of the engagement: The duration of the contract is two years**,** with no renewal unless financed from non-PASP sources. The original probation period is 12 months.

Qualifications: The contribution by the Cooperative Training Adviser will be critical for the success of the capacity building effort of Rwandan cooperatives, and a person occupying this post must have highly relevant experience for the task. The candidate shall have at least a Master's degree in Rural Development, Economics, Social science, Business Administration or Cooperative Development; at least 10 years of working experience in rural economic institutions, and of it at least five years in cooperatives, with a minimum of two years in developing countries. He/she shall be prepared to work in an interdisciplinary team, be a good communicator and fluent in English or French (reading, writing and speaking) with a good knowledge of the second language (French or English). Sound computer skills in MS office, email and Internet are required.

Location: In Kigali, with some travelling to the districts where PASP is active. The office will initially be in the Project Management Unit, but may be moved to the National Cooperative Confederation of Rwanda (NCCR) after the initial period (the Adviser will still continue reporting to the head of the Project Management Unit).

Main duties: The Cooperative Training Adviser will work with the other specialist in the Project Management Unit, in particular with the Cooperative Development Officer, coordinating and organising preparation of curricula, manuals and training material needed in cooperative capacity building, as well as helping organise—together with NCCR--production and supply of uniform but value-chain specific stationery and record books for cooperatives supported by PASP. Specifically, he/she will:

- Collect specimens of the existing curricula used by Rwanda Cooperative Agency (RCA), NCCR, various NGOs and bi- and multilateral agencies for cooperative training; review their usefulness for the capacity building tasks in Rwanda cooperative movement;
- Collaborating with RCA and NCCR, draft new curricula for the training courses needed for upgrading the knowledge level and competence of the cooperative members, committee members, internal supervisors (auditors) and cooperative staff; organise testing of the new curricula in the field; and facilitate their review and approval as an collaborative effort with the Rwanda Cooperative Agency (RCA) and NCCR;
- Collect specimens of the existing manuals, pamphlets and training material used by Rwanda Cooperative Agency (RCA), NCCR, various NGOs and bi- and multilateral agencies in cooperative training; and review their usefulness in relation to the needs of the cooperatives in the value chains selected for PASP support;
- Besides preparing some of the training materials him/herself, participate in the process of selecting competent service providers for the drafting of new manuals and training materials for the courses planned for cooperative members, committee members, supervisory committees, and staff; draft TORs for the selected service providers; and guide and oversee them in their work;
- Organise testing and improvement of such manuals and training materials in field conditions. Collaboration with RCA and NCCR Collaboration in planning and testing in these tasks is essential;
- Advise RCA, NCCR and national value-chain federations in preparing effective training plans within the resources available;
- Design and help implement a commercial system of producing value-chain specific stationary and record books for PASP-supported cooperatives and market them through NCCR;
- Ensure that cooperative training activities are appropriately reflected in the cooperative and PASP monitoring systems and that they include disaggregation by gender; and
- Do other assignments linked to the cooperative capacity building, as may be requested by the head of the Project Management Unit.

Outputs (expected results):

- New curricula for the training courses needed for upgrading the knowledge level and competence of the cooperative members, committee members, internal supervisors (auditors) and cooperative staffs have been prepared, tested and approved.

- New training material, pamphlets and manuals for upgrading the knowledge level and competence of the cooperative members, committee members, internal supervisors (auditors) and staff have been prepared, tested and approved.
- RCA, NCCR and national value-chain federations have gained competence and experience in preparing effective training plans and within the resources available.
- A commercial system of producing value-chain specific stationary and record books for PASP-supported cooperatives has been established at NCCR.
- Quarterly progress reports on cooperatives reflect the training achievements and are available to all project partners.

Minimum deliverables during the probation period:

Please indicate here at appraisal, which are the minimum activities to be completed successfully by the incumbent during the probation period as a condition for continuing to second year of the contract

Climate and Environment Officer (based in SPIU)

Duration: 2 years renewable based upon positive performance assessment and with a probation period of 6 months

Qualifications: Agricultural Development/Climatology/Hydrology/Engineering with at least 5 years of experience in adaption work and risk management or risk disaster management in the smallholder sector. Experience in mainstreaming climate change adaptation issues within both public and private sector organizations for a wide range of agricultural sub-sectors within the Southern African Region would be advantageous, particularly post-harvest issues. Computer literacy. Communication and result oriented management skills. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Ability to work in an interdisciplinary team, and meet crucial deadlines.

Location: In Kigali with frequent travels inside the project area

Main duties: Located in the SPIU, the Climate and Environment Officer reports to the PASP Operations Manager. Being responsible for climate and environment issues in all aspects of project development, implementation and follow-up, S/he will assist in institution building.

Under the direct supervision of the PASP Operations Manager, the Climate and Environment Officer will be responsible for for orienting and ensuring the climate resilient implementation of PASP activities supporting value chain development, so as to ensure that the project's climate resilience as financed by the Adaptation for Smallholder Agriculture Programme (ASAP) becomes reality. The specific tasks to be performed by the Climate and Environment Officer are:

- Supervise the operations and performance of the field testing plots to be installed in each district, with the support of the public and private sector institutions working with PASP.
- Supervise baseline assessments of the post-harvest infrastructure and develop a strategy/guidelines for necessary modifications to make them climate resilient
- Supervise the development of building codes/standards to ensure future post-harvest infrastructure investments are climate resilient
- Working with appropriate local partners develop capacity building programmes to ensure engineers and technicians can supervise the construction of post-harvest structures according to the agreed building codes and standards.
- Providing guidance to Hubs and Lead Service Providers on climate risk management in the PASP project. This includes the
    - identification, planning, implementation, monitoring and evaluation of climate resilient project activities for value chain support,
    - the preparation, implementation and monitoring of HUB Business Development Plans
    - and the promotion of climate smart post-harvest practices in farmers' organisations;
- Act as point of liaison for the Rwanda Meteorological Services (RMS), REMA risk management projects and RDB in the receipt and transmission of climate and agro-climate information
- Work with RMS to collect data from the additional agro-met stations in each of the project districts and facilitate analyses relevant to PASP
- Participate in all modeling, simulations and downscaling trainings and product development for the harvest and post-harvest needs of PASP
- Assist in the development of agro-meteorological products and decision support systems designed for transmission to the various departments of the ministry, relevant extension services and the private sector/business HUB partners
- Ensuring the sound integration of climate-resilient technologies in value chain development
- Building SPIU and MINAGRI capacities in climate resilient approaches;
- supporting the M&E and KM Officer in developing the Project Learning System;
- Monitoring the climate resilient activities and, in collaboration with the M&E and KM Officer, ensure related knowledge management the identification of policy lessons;
- Identifying training needs for public and private sector stakeholders and planning and implementing a capacity building programme based on identified need;

- Assisting in the preparation, implementation of and follow up to Learning Routes, with regard to climate resilient development.

Minimum Deliverables during the Probation Period: Please indicate here the minimum of successful activities to be completed by the incumbent during the probation period, and evaluated by MINAGRI before its termination. In case of unsuccessful or partial realisation, the contract will be terminated at the end of the probation period.

- Develop a climate strategy and prepare a communication strategy
- Baseline assessment of rural infrastructure and strategy to develop the new rural building codes and the necessary capacity building begun
- Communication strategy with Rwanda Meteorological Services (RMS), REMA risk management projects and RDB developed
- Baseline assessment of capacity building needs of the SPIU and MINAGRI undertaken

Terms of Reference for MINAGRI Agro-meteorologist

Duration: 2 years renewable based upon positive performance assessment and with a probation period of 6 months

Qualifications: Agricultural Climatology/Hydrology/Engineering/Science with at least 5 years of experience in adaption work and risk management or risk disaster management in the smallholder sector. An MSC in Agricultural Meteorology (To be provided through ASAP grant to PASP) Experience in mainstreaming climate change adaptation issues within both public and private sector organizations for a wide range of agricultural sub-sectors within the Southern African Region would be advantageous. Computer literacy. Communication and result oriented management skills. Fluent in English or French (reading, writing and speaking) with a very good knowledge of the second language (French or English). Fluent in Kinyarwanda. Ability to work in an interdisciplinary team, and meet crucial deadlines.

Location: In Kigali with frequent travels MINAGRI projects

Main duties: The below Terms of Reference are designed to guide the establishment of a permanent agro-meteorological function within the MINAGRI, for which the ASAP grant, through PASP, will provide additional training and support.

The functions of the agro-meteorologist would be as follows:

- Act as point of liaison for the Rwanda Meteorological Services and REMA Climate Risk Management Projects, and RDB in the receipt and transmission of climate and agro-climate information;
- Develop agro-meteorological products and decision support systems designed for transmission to the various departments of the ministry, relevant extension services and the private sector/business HUB partners;
- Support the downscaling of climate information and products for application in crop and animal agriculture and food security sectors at all levels to reduce climate variability and change related risks, with an emphasis on harvest periods;
- Coordinate delivery of agro-meteorological products and services (information, warnings, and advisories) on climate related risks to crop and animal agriculture and allied sectors in partnership with National Meteorological Services and other relevant institutions;
- Support efforts to integrate Indigenous (local) knowledge in agro-meteorological management practices including decision support systems;
- Agro-meteorological data analysis for Rwanda
- Issuing of crop-yield forecasts based on statistical analysis
- Contribution to research and development in particular with regards to the calibration and extension of crop growth models and crop yield forecasting techniques, as well as to climate change impacts on agriculture.

It is proposed that this permanent position be administratively housed in the Department of xxxxx, but with dedicated liaisons within the departments of Research, Field Extension and MINAGRI SPIUs. This person would be required and authorized to communicate directly with district agricultural offices during the delivery of their function.

Appendix 6: Planning, M&E and learning and knowledge management

1. The M&E structure of PASP is anchored in principles of in-country ownership, a participatory nature, and as a management tool for effective planning and tracking of implementation progress. To achieve this, the M&E system will be based on the nature of the project's investments, planned activities and implementation arrangements, and will be complemented by the M&E systems of the Rwanda on-going portfolio. As a whole, the system's contribution to rural sector policy dialogue will be fundamental.

National systems

2. MINECOFIN**:** The Ministry of Finance and Economic Planning has designed an overall management information system (MIS) that serves as the national M&E system for all development projects across multiple sectors. The objectives of this system are to capture planning and M&E data during project implementation, for consolidation and to inform national economic development policy.

3. MINAGRI**:** The Ministry of Agriculture and Animal Resources has developed a simplified M&E system with key indicators to monitor main achievements in the sector. While the system consists mainly of output indicators related to the PSTA programmes, there is utility in the establishment of key indicators to be monitored and reported against by all development partners; this not only allows a means to measure project contribution towards implementation of the PSTA, but facilitates improved coordination and synergies among multiple development projects in the rural sector.

4. **SPIU:** In accordance with government priorities, the SPIU with coordination responsibility for IFAD-supported projects is operational and includes a core M&E unit complemented by a Knowledge Management officer. As a still underdeveloped function, the special emphasis on knowledge sharing and management foresees a more inclusive and participatory approach that is geared towards learning, integrated planning and project management.

5. By building on the M&E experience and lessons learnt of recent IFAD-supported projects in Rwanda, a project learning system (PLS) will be developed as an integrated approach to effective and efficient planning, M&E and knowledge management. This system will be compatible with IFAD RIMS and key M&E principles, and will inform national policy and interventions in the rural sector through its feedback mechanism into the national M&E system.

I. THE M&E SYSTEM APPROACH

A. Overall objectives and principles of the M&E system

6. In order to assess achievement of PASP development objective, the proposed M&E system will be responsive to tracking the effectiveness and impact of the complementary and related sets of project activities. Special attention is also required towards monitoring the progress with respect to capacity strengthening of the target groups, their institutions and supporting structures and services. Implementation performance and quality, including the rendering of services, beneficiary experience and adoption/uptake of technologies will be monitored.

7. To be effective, the M&E system will be responsive to the needs of various users, with the overall longer-term view to assess project impact, derive lessons learnt and to inform future interventions (IFAD-supported and other development partners' interventions) and policy dialogue more generally. Fluidity is imperative to the system, which must continually inform planning processes; in this sense, its contribution in influencing annual work planning and budgeting is essential, and its ability to compare actual versus planned activities will reflect effectiveness of the project performance on a global level.

8. The M&E system aims to provide accurate and reliable data to ensure the effectiveness of project management, the achievement of the project objective and targets and the sustainability of benefits provided through project interventions. The **key functions of the M&E system** are to ensure that the project activities: (i) are implemented according to plan; (ii) have the intended impact on the

beneficiaries; (iii) are effectively delivering benefits that are sustainably managed and owned by communities; (iv) are relevant to the needs of, and prioritized by the beneficiaries; and (v) are monitored so as to identify risks and problem areas in a timely manner.

9. The M&E system to be developed will be customized to the objectives and needs of the project. To ensure that objectives are achieved, consistent tracking of output and outcome level results is fundamental. This enables results-based management that makes use of information generated, and implements timely and adequate improvements or adjustments to project components to ensure activities and results are on track. In addition, the effectiveness and sustainability of project benefits will need to be closely monitored. Promoting community ownership will also contribute to ensuring that benefits are effectively delivered, and that benefits continue beyond project-completion (i.e. as a fundamental aspect of the project exit strategy). In addition, the M&E system needs to be cognizant of targeting-related issues.

10. The M&E system will be based on three levels of monitoring (output, outcome and impact) and four key **principles**[1], including: (i) a results-based management approach; (ii) a system focused on people and beneficiaries; (iii) a targeted M&E system; and (iv) a sustainability-focused system.

B. Core elements of the M&E system

11. **The Logical Framework (logframe):** The logframe is the core element of the M&E system and provides the indicators related to the three-levels of monitoring noted above. It is a living structure, designed to reflect a participatory process in project design, and with flexibility to adapt to changing conditions at the grassroots and country level more generally.

12. The logframe will be shared and explained to all project stakeholders through sensitization and working sessions. At start-up, a workshop will be organized with those responsible for and implicated in M&E (MINAGRI, SPIU, service providers, decentralized government agencies and beneficiary representatives). Similarly, all the Memorandums of Understanding (MoU) established with Implementing Partners (IPs) and contracts with service providers (SPs) should refer to the project logframe as per good practice. The M&E and Knowledge Management unit within the SPIU will be in charge of following up with the IPs and SPs to ascertain that the logframe is well understood and used as a key instrument in progress monitoring. The logframe will be reviewed during the mid-term review (MTR) to ensure that its indicators are adapted, relevant and measurable.

13. Given the overarching logframe, the process by which to develop a functioning and operational M&E system is contingent on inclusion of the following:

14. **Baseline:** A baseline study will be carried out within the project's geographic target areas, which will include a measurement of household assets and child malnutrition (impact level indicators). This will contribute to benchmarking and assessing the extent to which the project contributes to longer term agricultural and rural development. The study will be conducted by an external service provider in the 1st semester of project implementation.

15. **Planning and the Annual Work Plan and Budget (AWPB):** The PLS cycle starts with a planning process through preparation of the AWPB. The objective is to provide a detailed overview of the activities that will be carried out under the direction of the SPIU during any given year in order to reach the objectives set for each project component, including an estimate of the related costs to achieve this. The AWPB sets the project objectives and priorities for the coming year (based on the project fiscal year), details activities to be conducted, specifies resources required and indicates expected results and corresponding indicators (with special focus on RIMS indicators in particular). By reference to the AWPB, any implementation delays, constraints and challenges in achieving targets are made more evident.

16. Preparation of the AWPB will be highly participatory, involving all stakeholders including beneficiaries, decentralized government, implementing partners and service providers. Preparation will take place at multiple stages by implementing partners and service providers. The SPIU and the M&E unit with the support of the Financial officer, will have overall responsibility for coordinating the process and consolidating the overall project AWPB to be sent to the Steering Committee and IFAD for no objection.

[1] See Attachment 1 for a description of the principles and levels of reporting.

17. Reporting will take place against the AWPB, detailing technical and implementation progress, as well as financial implications. At mid-year, the AWPB will be reviewed so as to fine-tune the work plan and targets. At the end of each year, a final AWPB report will be prepared to detail actual achievements against planned activities; reporting includes targets, activities, outputs and outcomes where possible.

18. **Progress monitoring** refers to the first and second level of monitoring with the systematic and continuous gathering of qualitative and quantitative information on the activities, inputs and outputs of the project. Progress monitoring will be conducted through the Project Reporting Format (Attachment 2) that has been developed by government for all development projects for a more harmonized and streamlined effort. This should cover all the important output and outcome-level indicators, RIMS and important log-frame indicators. The Project Reporting Format will be used by IPs and SPs at the grassroots and district levels, who will be responsible for reporting to the SPIU. The SPIU will then report to MINAGRI at the central level. Note that output indicators will be reported on a quarterly basis, and outcome indicators on a six-monthly basis.

19. **A Mid-term review (MTR)** will be undertaken to assess progress, achievements and constraints of project implementation; this will culminate in the provision of recommendations to improve project performance over the remaining period of disbursement. Specifically, the MTR will assess: (i) project achievements against targets; (ii) efficiency and effectiveness of project management and approaches; (iii) validity of project design; and (iv) outcome and impact achieved.

20. **Periodic participatory impact assessment studies** may be carried out as appropriate (and indicated in the M&E Plan) to assess the impact of project interventions on the rural households engaged in farming, value addition, and off-farm economic activities. Impact assessment refers to the third level of monitoring with the evaluation of the performance of the project activities in terms of impact on beneficiaries. The impact evaluation will enable an assessment of the relevance, efficiency and sustainability of the activities that will feed into the knowledge management process.

21. **Project Completion Report (PCR):** At the end of the project, the SPIU will prepare a PCR to be submitted to Government and IFAD within three months after project completion. The PCR will cover key criteria and aspects associated with achievement of project objectives; these include the relevance of the project design, effectiveness of project benefits, efficiency, performance of institutions (and arrangements), impact, innovation, lessons learned, opportunities for replication and scaling-up of activities/ approaches, sustainability of benefits and institutions, and effectiveness of the targeting and gender strategies.

C. Data collection

22. The PLS and M&E system will follow the approach already developed by the MINAGRI SPIU for on-going projects (HUBSTA, KWAMP, PRICE). The basic approach lies with shared understanding of objectives, approaches and planned activities, agreed expected results of the PLS and identification of the quantitative and qualitative indicators.

23. **Project indicators**: In keeping with the principles outlined above, indicators will be developed at the corresponding output, outcome and impact levels with relevant stakeholders, and in coherence with MINAGRI and MINECOFIN information systems. Indicators will be gender-disaggregated to the extent possible.

24. Each indicator will have associated quantitative or qualitative targets which contribute to achievement of the project objectives by the end of the project life cycle. To facilitate more effective planning into the system, yearly targets will be established within the AWPB, and monitored and reviewed through the Project Reporting Format. IFAD promotes the use of “Results and Impact Management System” (RIMS) as a standardised system of results and impact reporting for all IFAD-supported projects, allowing for data aggregation and reporting; RIMS indicators will be integrated in the Reporting format and will therefore be reported on at least six monthly intervals.

25. **Responsibility for data generation and collection** will take place at multiple levels and as outlined below:

- *Cooperative/SME level (HUBs)*: As part of its participatory and demand-driven approach, both planning for and monitoring of project activities is extended to the beneficiary/client

level and/or their organisations; in addition, any studies, discussions for sustainability and ownership should be conducted in collaboration with the target group. Of note, monitoring the maturity of cooperatives and SMEs will be particularly relevant, requiring consistent tracking and reporting of their own activities and performance; a tracking system and reporting formats will be designed to support this process. This approach will promote transparency and the dissemination of information to members and the public.

- *Implementing partner/service provider level*: IPs and SPs will be instrumental in output and outcome monitoring as they will be heavily involved in the actual implementation of a large number of activities at the field level. Their reporting will be directed to both district and national levels, and will be outlined in the detailed M&E manual. The Rwanda Agriculture Board (RAB) as a key implementing partner, will have wide-ranging M&E responsibilities, which will include financial and technical reporting based on the project reporting format.
- *District level (decentralized local government level and structures)*: Field-level data will be reported through the district administration/authority, so that the district can exercise district-level oversight responsibilities, including validating findings and results reported by IPs and SPs. The district authorities also play a fundamental role in the dissemination of information to key stakeholders through platforms such as the Joint Action Development Forum (JADF).
- *SPIU*: Data analysis and consolidation will take place at the level of the SPIU, which will be the intersection for value addition to the information generated from multiple sources (district, IPs, SPs). Technical specialists in the SPIU will consolidate and analyse reports from the district and field levels; with support from the M&E unit, they will provide information on the performance of the project components, identify problems, constraints and also opportunities going forward. This will serve to contribute to improved project management, developing and identifying solutions and good practices that feed into knowledge generation and management. Some specific activities of the M&E unit will also include: (i) M&E training and supervision for stakeholders involved in monitoring; (ii) developing reporting templates in collaboration with the stakeholders responsible for monitoring; (iii) updating and managing the database and RIMS reporting template for all indicators; (iv) contributing to the establishment and update of the AWPB in terms of monitoring indicators and targets; (v) consolidating final project reports; and (vi) communication and coordination with IFAD, including presenting the six-monthly progress reports.
- Data collection and frequency of reporting (output level indicators reported on a quarterly basis; outcome level indicators reported on a six-monthly basis), including identification of risks and challenges, is to be outlined to all stakeholders. Tools and schedules to update tracking are essential. Based on the data collected at the field and district levels, the SPIU M&E unit will prepare the following reports: quarterly progress reports to MINAGRI; half-yearly reports to MINAGRI and IFAD; annual progress reports to Steering Committee and IFAD; and the annual RIMS report to IFAD.

26. As a whole, consolidated data contributes to MINAGRI's M&E system, facilitating policy dialogue and decision making.

27. **IFAD implementation support and supervision**: PASP will be also undergo monitoring and evaluation through IFAD implementation support and supervision modalities, including: (i) bi-annual supervision and implementation support missions; (ii) RIMS impact surveys; (iii) the Mid Term Review; and (iv) yearly audits conducting by independent consulting firms.

II. KNOWLEDGE MANAGEMENT

28. The integration of knowledge management in all aspects of project management aims at improving management processes and delivery of the project's objectives. Learning from successes and failures and a continuous improvement process within PASP will strengthen the M&E system. The main purpose of knowledge management processes is to ensure that knowledge generated within the project is systematically identified, analysed, documented and shared. This systematic

learning and knowledge management approach will enable the project to be flexible and responsive to changing circumstances. In addition, knowledge management processes will ensure that appropriate lessons learned and good practices from different actors are gathered and disseminated to the benefit of stakeholders for adoption and use.

29. **Good practice and innovation tracking system**: The KM officer will set up a "Good Practice and Innovation Tracking System" that will be validated by the M&E and KM Unit and by the Project Steering Committee. This will allow keeping track of day-to-day good practices from a variety of stakeholders e.g. cooperatives, service providers, etc, learning from their achievements and feeding them into policy dialogue. This system will also allow for the identification of innovative case studies that PASP's stakeholders can learn from and adopt/implement in their work.

30. **Setting up an annual reporting format:** The KM officer will develop a format for annual reporting about innovations/best practices by main project stakeholders (RAB departments, cooperatives/apex structures, service providers). The format will require information on the features of innovation/good practices, on who can benefit of it, on outcomes achieved, inputs required and modalities of implementation as well as costs. Particular attention will be devoted to describing the context in which the innovation/best practices were developed, critical factors of success, difficulties met and solutions found to mitigate them. Attention will be also given to describing how the innovations/best practices are accessible by both men and women, poorer and less poor groups, and how access by a larger range of stakeholders could be improved. The KM officer will provide assistance in the preparation of these reports.

31. **Dissemination.** The packaging and dissemination of information about achievements, innovation and good practices will not only contribute to improved transparency and accountability, but will facilitate opportunities for replication or scaling-up. Appropriate supports (written material, videos, radio programmes) and communication channels (apex farmer organisations, rural/community innovation centres, district/sector agronomists, private sector structures, rural radio) will be selected according to targeted audiences and in line with project's knowledge management approach. In addition, the project will finance the organisation of an annual good practice workshop to support dissemination of information and provide recommendations for policy development. The project will also promote peer learning groups (amongst key stakeholders such as cooperatives, service providers, etc.) as a platform for sharing best practices and knowledge, and which will encourage greater impetus for problem-solving and ownership.

A. Implementation Arrangements

32. The SPIU (M&E / KM Unit) will be in charge of overall coordination of PLS activities in close collaboration with Technical Specialists, implementing partners and service providers. This will include supervising the work of specialized service providers who will be contracted to implement specific M&E activities. The M&E/KM Unit will also be responsible for finalizing the PLS system (M&E system and KM strategy, including detailed manuals) within three months after project start-up (and making subsequent adjustments during the project life as required), supported by short-term experts and service providers. To the extent possible, the PLS will be coordinated and harmonized with the existing national systems; after one year, the system will be reviewed and adapted where needed.

33. Other main functions of the M&E/KM Unit include: (i) facilitating the mainstreaming of project M&E and KM activities into the national processes; and (ii) contributing to and coordinating M&E/KM capacity building at decentralised and national levels.

34. As noted previously, data collection will be undertaken by multiple actors at various levels, and will be consolidated and analysed at the level of the SPIU. Table 1e provides an overview of the reporting and monitoring responsibilities of each actor for each level of monitoring.

Table 1. Reporting and Monitoring Responsibilities

Document	Responsible	Reporting interval	Sharing tool	Users
Progress report	M&E officer	Quarterly, Semester and Annual	Electronic mailing	MINAGRI, MINECOFIN (Projects Management and Monitoring Unit) IFAD
Financial report	DAF, SPIU	Monthly	Electronic mailing	MINECOFIN
Implementation support mission	KM officer	Year	CICA & RAB websites BDS Centres CCIs	All stakeholders
PASP documentation	KM officer		CICA & RAB website	Stakeholders
Best practices documented in peer learning groups/value chain	KM officer	Every year	CICA & RAB websites BDS Centres CCIs	All stakeholders, components and Project Steering committee
Innovation plans	KM officer	Every year	CICA & RAB websites, BDS Centers CCIs	All stakeholders

Attachment 1: M&E Principles and Levels of Monitoring

1. The M&E system is based on the following key **principles:**

   (i) **A results-based management approach:** The aim of the M&E system should be to ultimately enhance results-based management. Therefore, management at decentralised and national levels need to keep abreast of M&E data and tools, and make use of them in the planning processes.

   (ii) **A system focused on people and beneficiaries:** The M&E system should focus on benefits flowing to the people; monitoring should not be limited to inputs or activities. Instead, the final benefits of each project activity should be measured against the number of final beneficiaries. To the extent possible, the M&E system should be community-based and results should be measured by directly involving the beneficiaries through their organisations and/ or groups.

   (iii) **A targeted M&E system:** The M&E tools and data should pay special attention to gender, youth and vulnerable groups. Wherever possible, gender and youth issues should be highlighted and results data should be dis-aggregated accordingly. Other vulnerable groups (and the relevance and effectiveness of project activities towards them) should be highlighted. The system will build on the Ubudehe participatory approach and concepts, ensuring full participation of the vulnerable, and as to avoid elite capture.

   (iv) **A sustainability-focused system:** The M&E system and related indicators, should place special attention to sustainability of project initiatives. Sustainability-related indicators and impact measurement indicators will have to be incorporated for M&E across all interventions.

2. The M&E system will build on **three levels of monitoring**:

   - *Output monitoring (or RIMS first level)* refers to reporting of the transformation from inputs and activities into project outputs. Outputs are typically the products, capital goods and services that result from a development intervention. These are usually the tangible immediate results that are produced through the implementation of activities. Outputs will be monitored on monthly and quarterly basis.

   - *Outcome monitoring (or RIMS second level)* relates to an assessment of the utility of project outputs and benefits accruing. It will thus be appropriate to monitor whether (i) the project outputs are useful or accessible for the target group; (ii) whether the target group applies new practices and/or uses the output; and (iii) when using the output or applying practice, the target group experiences improvements to their activities. Outcomes reflect the likely or achieved short-term or medium term effects of an intervention's outputs. Outcomes should be given special attention and measured on a half-yearly basis.

Impact monitoring (or RIMS third level) refers to an evaluation of the project with respect to the achievement of its overall objective. This covers the positive and negative, direct or indirect long term effects of the project intervention.

Attachment 2: Project Reporting Format

1. ***Name of the project**:*
2. ***Basic information***

i) Amount:
ii) Donor/Financier(s):
iii) Government Contribution:
iv) Date of signature of credit/grant agreement:
v) Date of effectiveness:
vi) Date of initial closure:
vii) Date extended:
viii) Line Ministry
ix) sector

3. ***Objective(s) of the Project:***
4. ***Project components**:*
5. ***Physical Implementation progress Vis à Vis the planned ouputs.***

Main Components	*Cumulative outputs achieved from the starting date to end June 2011*	*AWP/ PTBA*		
		Expected result(s)/ Output(s) for FY2010 /2011	*Outputs achieved as for 30/06/2011*	*Comments*

6. ***Financial implementation progress by Donor, Y 2010/11:*** (*Please specify the used currency)*

Donor	*Total allocation*			*Cumulative disbursements*			*Cumulative expenditures as end of june2011*			*2010/11 Annual Budget*			*Expenditures made in the year 2010-2011*		
	Loan	*Grant*	*CP (Frw)*	*Loan*	*Grant*	*CP (Frw)*	*Loan*	*Grant*	*CP (Frw)*	*Loan*	*Grant*	*CP (Frw)*	*Loan*	*Grant*	*CP (Frw)*
TOTAL															

7. Financial Implementation by category: Y 2010/11

Payment mode	*Category*	Note[1]	*Currency*	*Total allocation*	*Cumulative disbursements*	*Cumulative expenditures as end of June2011*	*2010/11 Annual Budget*	*Expenditures made for Semester I of FY 2010/11 (July10 to December 2010)*	*Expenditures made for Semester II of FY 2010/11 (January11 to June 2011)*
Local payments	*Salaries*	1							
	Technical Assistance	2							
	Others	3							
Direct payments	*Salaries*	1							
	Technical Assistance	2							
	Others	3							
Total									

8. Success stories/ best Practices to share during the project implementation phase

9. Problems and issues that require urgent attention

- *Monitoring and Evaluation*
- *Procurement*
- *Financial*

Name_____**Signature**_____**Date**_____

[SPIU/Project Coordinator /Chief Budget Manager]

[1] *(1): Amount paid for project staff salaries, (2): Amount paid to expert (s) supporting technically an institution or amount paid for consultancy services in order to fill the skill gap, (3): amount paid for other project activities*

Appendix 7: Financial management and disbursement procedures

1. As with the other IFAD-supported operations in Rwanda, PASP financial management system will be under the responsibility of MINAGRI, with the SPIU Coordinator, the MINAGRI DG for Strategic Planning and Program Coordination and the Permanent Secretary of MINAGRI as joint signatories to all withdrawal applications on the project bank accounts. They will be supported by the Head of Finance and Fiduciary, a Chief accountant and three accountants. To ensure proper financial management of the projects resources, PASP plans to recruit two other accountants, one in RAB and one in the MINAGRI SPIU, to manage all accounting transactions related to PASP.

A. Project Accounts

2. The SPIU will open and maintain three bank accounts for PASP: a PASP Counterpart Account in RwF for the government counterpart funds, and for the IFAD project funds, the PASP Designated Account in US$, and the PASP Operations Account in RwF. All three accounts will be held in the National Bank of Rwanda (BNR), with the following signatories for withdrawal applications: the Permanent Secretary of MINAGRI, MINAGRI DG for Strategic Planning and Program Coordination and the SPIU Coordinator. For payments from the project accounts, the following signatories will be used: the Permanent Secretary of MINAGRI, the SPIU Coordinator and the SPIU Director of Administration and Finance (DAF).

3. The Designated Account (DA) (formerly Special Account) will be used to replenish the PASP Operations Account, and to make payments in foreign exchange directly to suppliers, service providers and contractors. Management rules for the DA are based on provisions 4.04 of the new IFAD General Conditions for Financing, according to which operational conditions (bank, Authorized Allocation, currency, signatories) will be specified in the financing agreement.

4. The DA will be maintained by the SPIU in US$. It will operate with an advance payment from IFAD (Authorized Allocation) of US$4 million, in line with expected patterns of expenditure, withdrawal application processing timeframes, and requirements for financial efficiency. The DA will be replenished following the rules set out in the IFAD Disbursement Handbook provided with the Letter to the Borrower.

5. In order to avoid difficulties in the replenishment of funds, the SPIU Director of Administration and Finance (DAF) and Chief Accountant must ensure that all expenditures made with project funds by the various Offices of the SPIU and by the other contracted services providers (RAB, RCA, etc.) are duly justified by proper documentation on a strict regular basis as per procedures developed in the Project Implementation Manual (PIM).

6. The following conditions need to be met by MINAGRI for IFAD to make the first disbursement of project funds to the DA:

- First AWPB receives IFAD no objection;
- MINAGRI opens PASP Designated Account in US$ and Operations Account in RwF in the National Bank of Rwanda;
- Revised draft of the PASP implementation manual is submitted to IFAD;
- Appointment of the RAB-PASP Operations Manager; and
- Project Steering Committee is established.

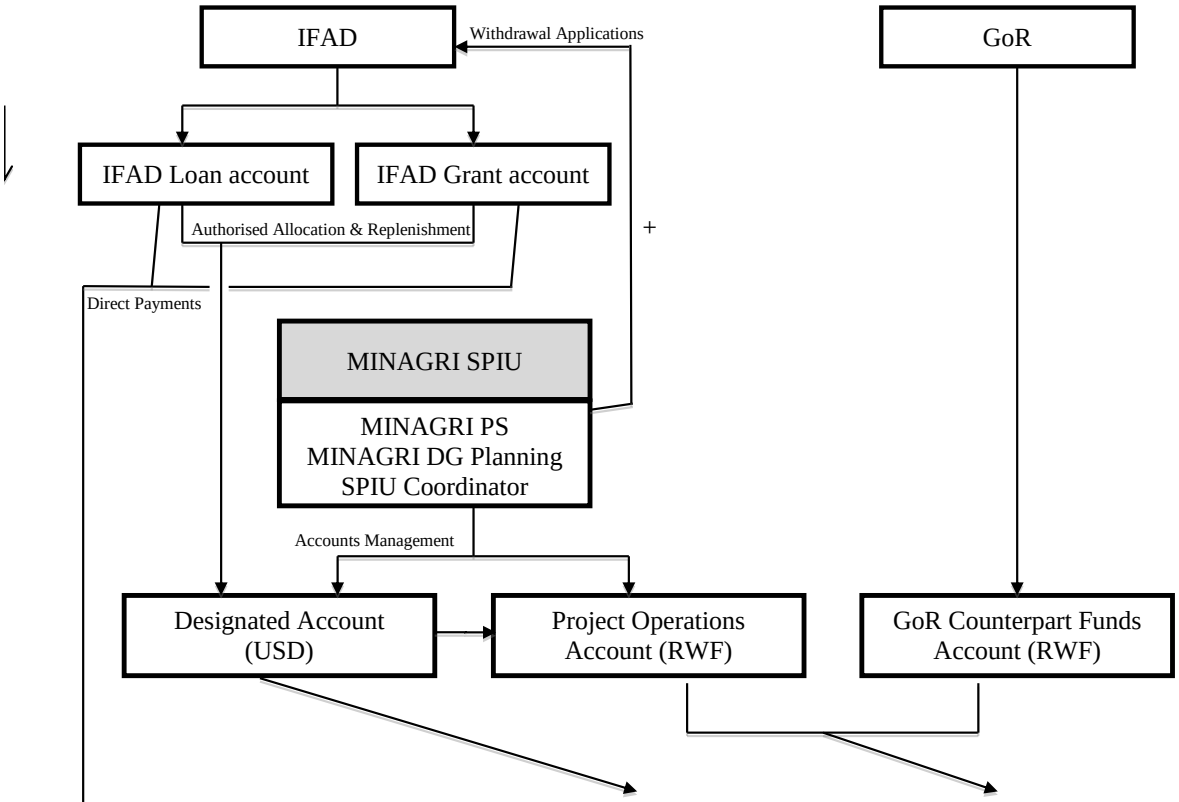
7. The PASP Operations Account will be used to make payments in local currency (RwF) directly to suppliers, service providers and contractors. The PASP Counterpart Account will be used to make payments of local taxes and activities fully funded by government, again directly to suppliers, service providers and contractors.

B. Flow of Funds for Project Operations

8. Figure 1 illustrates the flow of funds for PASP. The Designated Account and the PASP Operations Account would be the preferred accounts for making payments to local and international contractors, suppliers and service providers. Direct Payments from IFAD would only be used for

exceptionally large payments (more than US$500 000) and in case serious cashflow problems are encountered in the project accounts.

Figure 1. PASP Flow of Funds



By IFAD (direct payment) in any currency (over USD 500,000, or if project accounts cannot be used)	By RAB/SPIU from Designated Account (expenditure in foreign exchange)	By RAB/SPIU from PROPULSE Operations Account and PROPULSE Counterpart Account (expenditure in RWF)
Suppliers of vehicles, equipment, etc	Suppliers of goods (international)	Suppliers of goods
Services providers (local and international)	Services providers (international): eg. consultants,	Services providers
Contractors-builders (local and international)	Contractors (international)	Contractors (local)
PROPULSE: allocation & replenishment of the Designated Account	PROPULSE: allocation & replenishment of the PROPULSE Operations Account	Component 3 expenses not spent in RAB (institutional support & capacity building, etc)

9. **Accounting system**: PASP will adopt the TOMPRO system that is currently used in the MINAGRI SPIU. Previous and current experiences in IFAD-funded projects have shown that the use of the TOMPRO system is perfectly responding to the minimum best practice disclosures in the field of expenditures per component, per category of funds, in cash flow/sources of and uses of funds, in detailed accounts per cost centre compared with the AWPB. For the financial reporting of RAB, specific arrangements will be agreed upon between RAB and MINAGRI SPIU on the reporting requirements including the information system involved.

10. **Accounting procedures**: The Financial Management Manual (part of the PIM) will include the main operational methods, procedures and arrangements to be followed by the Accounting Unit of the Project. It will include, not exhaustively, the chart of accounts, the codification of accounts by component, by cost centre, by location, by category and origin of funds, the practical measures for bank reconciliation, for payment by bank transfer or petty cash, and all internal control measures to ensure a proper record keeping and posting, an effective balancing and checking of the accounts and

the physical safety and security measures.

11. **Reporting obligations:** Reporting obligations as defined in the financing agreement are related to project financial statements, the independent audit reports and the project progress reports. For the project progress reports, the obligatory quarterly reports to MINECOFIN will be used, to which specific attachments will be added as per the documented and regularly updated agreement for the overall IFAD country programme in Rwanda.

12. **Audit Requirements**: Article 7, section 1(c) of the Agreement Establishing IFAD requires the Fund to ensure that the proceeds of any financing are used only for the purpose for which a loan or grant was provided, with due attention to economy, efficiency and social equity. IFAD's General Conditions for Agricultural Development Financing require the borrower to have the accounts relating to a project audited each fiscal year by independent auditors acceptable to the Fund, in accordance with auditing standards acceptable to the Fund and with the Audit Guidelines.

13. As stipulated in the General Conditions, The Borrower/Recipient shall:(a) each Fiscal Year, have the accounts relating to the Project audited in accordance with auditing standards acceptable to the Fund and the Fund's Guidelines on Project Audits (for Borrowers' Use) by independent auditors acceptable to the Fund;(b) within six (6) months of the end of each Fiscal Year, furnish to the Fund a certified copy of the audit report. The Borrower shall submit to the Fund the reply to the management letter of the auditors within one month of receipt thereof; (c) if the Borrower/Recipient does not timely furnish any required audit report in satisfactory form and the Fund determines that the Borrower/Recipient is unlikely to do so within a reasonable period, the Fund may engage independent auditors of its choice to audit the accounts relating to the Project. The Fund may finance the cost of such audit by withdrawal from the Loan and/or Grant Accounts. Additional audit requirements are provided in the new audit guidelines.

14. PASP will be audited annually by Rwanda's Office of the Auditor General. As per the practice with the other IFAD-supported projects, the SPIU will ensure that PASP audits be completed timely to comply with IFAD's submission deadline of 6 months after the end of the financial year. The non-reception within 180 days from the original due date may trigger suspension of further disbursements.

15. Attachments 1-3 below provide the updated sample for the terms of reference for a project audit, a sample for an auditor's opinion, and an outline of a management letter.

Attachment 1:Terms of reference for an audit of [project name] financed under IFAD financing [xxx]

The following are the terms of reference (TORs) on the basis of which **the lead project agency (LPA)** agrees to engage the **audit firm (**"the auditor") to perform an audit and to report in connection with the agreement with the International Fund for Agricultural Development (IFAD) concerning [**title of the project and loan/grant number].**

Responsibilities of the parties to the engagement

The **LPA** refers to the entity that executes the project on behalf of the borrower/recipient and that has signed the agreement with IFAD.

- The **LPA** is responsible for providing financial statements for the activities financed by the financing agreement and for ensuring that these financial statements can be properly reconciled to the **LPA** records and accounts in respect of these services.
- The **LPA** accepts that the ability of the auditor to perform the procedures required by this engagement effectively depends on the LPA's providing full and free access to its staff and records and accounts.
- The **LPA** shall provide the auditor with all necessary documentation to perform the assignment properly; in particular, the following information shall be provided to the auditor before the beginning of the assignment:
    - Financing agreement;
    - Annual progress report;
    - Project implementation manual;
    - Financial management manual;
    - Organizational charts along with names and titles of senior managers;
    - Names and qualifications of officers responsible for financial management,
    - accounting and internal audit;
    - Description of information technology facilities and computer system in use; and
    - Copies of the minutes of negotiations, the project design document, the annual work programme and budget, and the Letter to the Borrower, if available.

"The auditor" refers to the auditor who is responsible for performing the agreed procedures as specified in these TORs, and for submitting a report of factual findings to the **LPA**.

The auditor shall provide:

- **A separate opinion on the project financial statements (PFSs).** Minimum content of the PFSs to be provided by the project:
    - Yearly and cumulative statements of sources and application of funds, which should disclose separately IFAD's funds, other donors' funds and beneficiaries' funds;
    - Yearly and cumulative SOEs by withdrawal application and category of expenditures;
    - Reconciliation between the amounts shown as received by the project and those shown as being disbursed by IFAD should be attached as an annex to the PFSs. As part of that reconciliation, the auditor will indicate the procedure used for disbursement (SA funds, letters of credit, special commitments, reimbursement or direct payment) and indicate whether the expenditure is fully documented or uses the summary of expenditures format;
    - Cumulative status of funds by category;
    - Reconciliation of SA/DA account statement;
    - A statement of comparison between actual expenditures and budget estimates;
    - Notes accompanying the PFSs; fixed assets;
    - Full disclosure of cash balances; and
    - Other statements or disclosures relevant to the project, e.g. financial monitoring reports, credit lines, etc.
- **A separate opinion on the use of the SA/DA.** The auditor is also required to audit the activities of the SA/DA associated with the project, including the initial advance, replenishments, interest that may accrue on the outstanding balances, and the year-end balances. The auditor must form

an opinion as to the degree of compliance with IFAD procedures and the balance of the SA/DA at year-end. The audit should examine: (i) the eligibility of withdrawals from the SA/DA during the period under review; (ii) the operation of the SA/DA in accordance with the financing agreement and other instructions provided to the borrower/recipient by IFAD; (iii) the adequacy of internal controls within the project appropriate for this disbursement mechanism; and (iv) the use of correct exchange rate(s) to convert local currency expenditures to the denominated currency of the SA.

- **A separate opinion on withdrawal applications/ statements of expenditure/summary of expenditures (SOEs)**. The audit will include a review of SOEs used as the basis for submitting withdrawal applications. The auditor will carry out tests and reviews as necessary and relevant to the circumstances. SOE expenditures will be carefully compared for eligibility with relevant financial agreements and the disbursement letter, with reference to the project design report for guidance when necessary. Where ineligible expenditures are identified as having been included in withdrawal applications and reimbursed, auditors will note these separately. A schedule listing individual SOEs withdrawal applications by reference number and amount should be attached to the PFSs. The total withdrawals under the SOE procedure should be part of the overall reconciliation of IFAD disbursements described above. The auditor's opinion should deal with the adequacy of the procedures used by the project for preparing SOEs and should include a statement that amounts withdrawn from the project account on the basis of such SOEs were used for the purposes intended under the agreement.
- **A separate management letter** addressing the adequacy of the accounting and internal control systems of the programme, including compliance with the IFAD Procurement Guidelines and such other matters as IFAD may notify the LPA to include in the audit.

The auditor is requested to comment on:

- Economy, efficiency and effectiveness in the use of project resources;
- Achievement of planned project results;
- Legal and financial obligations and commitments of the project and the extent of compliance or non-compliance thereof;
- Systems and procedures such as improvements in accounting, information technology or computer systems, and operations that may be under development, on which the auditor's comments are necessary to ensure effective controls; and
- Other activities on which the auditor may consider it appropriate to report.

Auditors shall certify:

- Whether the PFSs are drawn up in conformity with internationally accepted accounting standards;
- Whether the PFSs are accurate and are drawn up from the books of accounts maintained by the project;
- Whether the provisions of the financing agreement are adhered to;
- Whether procurement has been undertaken by the project in accordance with applicable procurement procedures and the IFAD Procurement Guidelines;
- The existence of any significant assets purchased and confirm their existence and use for project purposes;
- Whether the project has an effective system of financial supervision or internal audit at all levels; and
- Whether the expenditures claimed through SOEs are properly approved, classified and supported by adequate documentation.

The auditor is a member of the Institute of Registered Auditors of [**country],** which in turn is a member of the International Federation of Accountants (IFAC). In the case of supreme audit institutions, these should be members of the International Organization of Supreme Audit Institutions (INTOSAI).

Subject of the engagement

The subjects of this engagement are the financial statements dated [dd/mm/yyyy] in connection with the agreement for the period covering [dd/mm/yyyy to dd/mm/yyyy]. The information, both financial

and non-financial, that is subject to verification by the auditor is all information that makes it possible to verify that the expenditures claimed by the LPA in financial statements have occurred, and are accurate and eligible. Annex 1 to these TORs contains an overview of key information about the agreement and the services concerned.

Reason for the engagement

The LPA is required to submit to IFAD an audit report produced by an external auditor under article IX of the General Conditions for Agricultural Development Financing

Engagement type and objective

This constitutes an engagement to perform specific agreed procedures following the IFAD Guidelines on Project Audits provided to the auditors by the LPA in Annex 2 of these TORs. The objective of this audit is for the auditor:

- To verify that the expenditures claimed by the LPA in the financial statements for the activities covered by the agreement have occurred ("reality"), are accurate ("exact") and are eligible (i.e. that expenditure has been incurred in accordance with the terms and conditions of the agreement); and
- To submit a report of factual findings with regard to the agreed procedures performed.

Scope of work

The auditor shall undertake this engagement in accordance with these TORs and with:

- International Standards on Auditing (ISAs) to perform agreed procedures regarding financial Information as promulgated by IFAC;
- The Code of Ethics for Professional Accountants issued by IFAC. Although the International Standard on Related Services 4400 provides that independence is not a requirement for agreed procedures engagement, IFAD requires that the auditor also complies with the independence requirements of the Code of Ethics for Professional Accountants.
- IFAD Guidelines on Project Audits.

Terms and conditions of the agreement

The auditor verifies that the funds provided by the agreement were spent in accordance with the terms and conditions of the agreement.

Planning, procedures, documentation and evidence

The auditor should plan the work so that an effective audit can be performed. For this purpose, the auditor performs the procedures specified in the IFAD Guidelines on Project Audits and uses the evidence obtained from these procedures as the basis for the report of factual findings. The auditor should document matters that are important in providing evidence to support the report of factual findings, and evidence that the work was carried out in accordance with ISAs and these TORs.

Reporting

The report on this audit should describe the purpose and the agreed procedures of the engagement in sufficient detail to enable the LPA and IFAD to understand the nature and extent of the procedures performed by the auditor. Use of financial and audit reporting is governed by IFAD rules.

Other terms

[As necessary]

Information about the subject of the audit

(The table below should be completed by the project coordination unit and be attached as Annex 1 to the TORs for use by the auditor.)

Information about the Subject of the Audit	
Reference number and date of the Agreement	
Country	
Legal basis for the agreement	
Start date of the agreement	
End date of the agreement	

Attachment 2: Sample of Auditor's Opinion

INDEPENDENT AUDITOR'S REPORT

[Addressee]

Report on the financial statements

We have audited the accompanying financial statements of_____, which comprise the statement of financial position as at [dd/mm/yyyy], the statement of sources and uses of funds, statement of expenditures (SOEs) and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with International Financial Reporting Standards (or others), and for such internal control as Management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing (ISAs) and the International Fund for Agricultural Development Guidelines for Project Audits ("the IFAD Guidelines").

Those standards (ISAs and IFAD Guidelines) require that we comply with ethical requirements, and plan and perform the audit to obtain reasonable assurance that the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by Management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence that we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, [or give a true and fair view of] the financial position of [name of project] financed with the IFAD [mention financial product] as at [dd/mm/yyyy] and (of) its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards and the IFAD Guidelines.

In addition, (a) with respect to the SOE withdrawal application schedule, adequate supporting documentation has been maintained to support claims for reimbursements of expenditures incurred; and (b) such expenditures are eligible under the agreement referred to in [_____].

In addition, in our opinion, the accompanying special/designated account statement presents fairly, in all material respects, the funds received and disbursements made from the special/designated account of the project for the year ended on [dd/mm/yyyy], in accordance with the accounting convention as described in the note above [_____].

Restriction of use

This report is intended solely for the use of the Management of the project, IFAD, and the Government of [_____], and should not be used for any other purpose.

Report on other legal and regulatory requirements

[Form and content of this section of the auditor's report will vary depending on the nature of the auditor's other reporting responsibilities.]

[Auditor's signature]

[Date of the auditor's report]

[Auditor's address]

Attachment 3:Sample of outline of a Management Letter

MANAGEMENT REPORT FOR THE YEAR ENDED [dd/mm/yyyy]

We have recently completed our audit of [name of project] for the year ended [dd/mm/yyyy]. In accordance with our normal audit practice, the purpose of this letter is to comment on certain matters that we identified during the course of the audit. Our comments, together with our recommendations for improvements, are presented in the report that follows.

Our audit procedures are designed primarily to enable us to obtain sufficient assurance to express an opinion on the project's financial position and the results of its operations. Consequently, a risk-based approach is used, which enables us to direct the major part of our audit effort to addressing general and specific identified risk areas within your organization.

AUDIT SCOPE

The scope of our audit included:

• Obtaining an understanding of the operations of the organization and the accounting systems in place;

• Identifying specific risks and potential misstatements relating to the major account balances and transactions;

• Identifying the computer processing environments existing within the organization;

• Substantive tests of detail of the material accounts; and

• Following up on issues identified in the prior year management report.

STATEMENT OF RESPONSIBILITY

It should be noted that the implementation and maintenance of systems of accounting and internal control are primarily the responsibility of Management. Our responsibility is to plan and perform audit work such that there is a reasonable expectation of detecting material irregularities and control weaknesses. As a result, the attached report should not be regarded as a complete list of internal control weaknesses.

STATUS OF INTERNAL CONTROL SYSTEM

In general, the control environment continues to be reliable although we encourage Management to address the issues raised in the attached report.

The report has been discussed with Management and their comments have been included as Management comments. However, should you wish to discuss any of the points further, do not hesitate to contact us.

UPDATE ON THE IMPLEMENTATION STATUS OF RECOMMENDATIONS ISSUED DURING PREVIOUS AUDIT EXERCISES

[To list here an update on the status of implementation of previous years audit recommendations].

CONCLUSION

We would like to take this opportunity to express our appreciation for the courtesy and assistance afforded us by both Management and staff during the course of our audit

Appendix 8: Procurement management

I. Background and Rationale

1. IFAD has the fiduciary responsibility to ensure that the proceeds of loan and grant financing be used solely for the purpose intended under the related agreement and in accordance with the activities described in the Annual Work Plan and Budget (AWPB).

2. Adherence to procurement regulations is a critical step to ensure that the IFAD loan and ASAP grant financing are used solely for their intended purpose. As stipulated in the IFAD's revised General Conditions for Agricultural Development Financing of April 2009, the "Procurement of goods, works and services financed by IFAD shall be carried out in accordance with the provisions of the Borrower/Recipient's procurement regulations, to the extent such are consistent with the IFAD Procurement Guidelines.

3. In adopting this approach, IFAD is following the principles set out in the Paris Declaration on Aid Effectiveness and the Accra Agenda for Action in respect of the use of existing national procurement systems.

4. In addition, based on a Country Procurement Assessment Review (CPAR) undertaken by the World Bank in 2010 and a recent IFAD assessment during PRICE formulation, the national procurement regulations were found to meet the requirements and suitable for use. As such, in accordance with the practice with all other IFAD-supported projects, the national procurement regulations will also be adopted for all the procurement activities under PASP.

5. This Appendix provides key principles of IFAD procurement guidelines and an overview of the procurement management process to be followed by the project. However it is not meant to provide the detailed operational procedures for undertaking project-related procurement. That information is contained in the Procurement Handbook for use by IFAD staff and borrowers/recipients, Project Implementation Manual (PIM) and the national procurement regulations.

II. Procurement Management

6. The general and specific principles that should guide the project during implementation and procurement in particular, are as follows:

General principles

- The responsibility for project implementation and for procurement using IFAD funds lies with the Government.
- IFAD ensures that the proceeds of any financing are used only for the purposes for which the financing was provided, after a full, fair and legitimate competition among the bidders with due attention to the principles of transparency, efficiency, effectiveness and economy.

Project Specific principles

- Procurement is carried out in accordance with the Financing Agreement and the Letter to the Borrower (and PIM) and any subsequent changes reflected in IFAD's mission reports (e.g. supervision reports, mid-term reviews, back-to-office reports, aide-memoires, correspondence).
- Procurement is to be conducted within the project implementation period (from the date of effectiveness to the date of completion). Procurement cannot be undertaken between the date of completion and the closing date.
- Does not exceed the availability of funds duly allocated by the financial agreement
- Is consistent with the approved AWBP.
- Provides the best value for money: Best value does not necessarily mean the lowest initial price option, but rather represents the best return on investments, taking into consideration the unique and specific circumstances of each procurement activity; the balance of time, cost and quality required; and the successful overall outcome of the contract in meeting its original objectives.

7. In accordance with the national procurement regulations, the following procurement principles will govern every procurement activity undertaken by the project or its implementing partners:

- Ethics;
- Accountability ;
- Competition;
- Fairness;
- Transparency;
- Efficiency, effectiveness and economy; and
- Value for money

8. Notwithstanding the adoption of the national procurement regulation, the project will have to adhere to the following additional requirement:

- IFAD's prior review for contract for goods and works whose value is equal or over US$80 000 and for services for value equal or over US$40 000.
- As per IFAD procurement guidelines (module F5 of Procurement Handbook), ICB (International Competitive Bidding) is the mandatory method of procurement for the following contracts:

Category	**Contract Value**
Services	Above US$100,000
Goods	Above US$200,000
Civil works	Above US$1,000,000

9. **Procurement planning and management**: Accurate and realistic planning and prioritization of needs is an essential prerequisite to effective procurement and a key tool for monitoring project implementation. Before the first withdrawal of funds, the project must have established and submitted to IFAD for no objection, an 18-month AWPB together with its accompanying 18-month procurement plan. A procurement officer will be recruited in both RAB and the MINAGRI SPIU to ensure that the procurement of goods, works and services related to PASP are well managed and that they are carried out in accordance with the established national regulations and IFAD guidelines.

10. **Contract register and Contract Monitoring Forms:** All contracts (and MoUs) should be listed in the Register of Contracts with the dates of approval by IFAD. This register must be continuously updated and submitted to IFAD as this report facilitates the review and approval of payment requests on contracts. It is also an excellent tool to appreciate the engagements or commitments of the project during the supervision missions.

11. **Project Implementation Manual** provides further details on the procurement management process. It also provides a model and format of key documents including the register of contracts, the contract Monitoring Form (CMF) and the model of contracts and MOU.

Attachment 1: Draft 18 month Procurement Plan

Section A: Goods

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 1: Strengthening Business Capacity and Linkages																							
1	PAP IT equipment	package	65	2,500	162,500	1,500	97,500	I	RAB	NCB	Planned date	1-Jul-13	3-Jul-13	8-Jul-13	13-Jul-13	3-Aug-13	18-Aug-13	20-Aug-13	25-Aug-13	30-Aug-13	4-Sep-13		
											Revised date												
											Actual date												
2	Stationery for PAPs	unit	65	200	13,000	120	7,800	I	RAB	NCB	Planned date	1-Jul-13	N/A	N/A	6-Jul-13	27-Jul-13	11-Aug-13	N/A	N/A	16-Aug-13	21-Aug-13		
											Revised date												
											Actual date												
3	IT equipment for PAP unions	package	17	2,500	42,500	1,500	25,500	I	RAB	NCB	Planned date	20-Sep-13	N/A	N/A	25-Sep-13	16-Oct-13	31-Oct-13	N/A	N/A	5-Nov-13	10-Nov-13		
											Revised date												
											Actual date												
4	Motorcycles for District Monitoring officer	unit	6	2,500	15,000	1,500	9,000	I	RAB	ICB	Planned date	5-Aug-13	N/A	N/A	10-Aug-13	31-Aug-13	15-Sep-13	N/A	N/A	20-Sep-13	25-Sep-13		
											Revised date												
											Actual date												
5	IT & office equipment, materials for NCCR & new employees	lumpsum	7	2,500	17,500	1,500	10,500	I	RCA	NCB	Planned date	5-Aug-13	N/A	N/A	10-Aug-13	31-Aug-13	15-Sep-13	N/A	N/A	20-Sep-13	25-Sep-13		
											Revised date												
											Actual date												
6	Equipment and materials for value chain federation	lumpsum	4	5,000	20,000	3,000	12,000	I	RCA	NCB	Planned date	1-Aug-13	N/A	N/A	6-Aug-13	27-Aug-13	11-Sep-13	N/A	N/A	16-Sep-13	21-Sep-13		
											Revised date												
											Actual date												
7	Computerization of SACCO partners	pack	17	7,000	119,000	4,200	71,400	I	RCA	NCB	Planned date	1-Sep-13	3-Sep-13	8-Sep-13	13-Sep-13	4-Oct-13	19-Oct-13	21-Oct-13	26-Oct-13	31-Oct-13	5-Nov-13		
											Revised date												
											Actual date												
8	Management system software for SACCO partners	license	1	50,000	50,000	30,000	30,000	I	RCA	ICB	Planned date	1-Nov-13	N/A	N/A	6-Nov-13	27-Nov-13	12-Dec-13	N/A	N/A	17-Dec-13	22-Dec-13		
											Revised date												
											Actual date												
9	Solar equipment for SACCO partners	unit	7	27,000	189,000	16,200	113,400	I	RCA	NCB	Planned date	10-Aug-13	12-Aug-13	17-Aug-13	22-Aug-13	12-Sep-13	27-Sep-13	29-Sep-13	4-Oct-13	9-Oct-13	14-Oct-13		
											Revised date												
											Actual date												
10	Motorcycles for SACCOs	unit	17	2,500	42,500	1,500	25,500	I	RCA	NCB	Planned date	7-Nov-13	N/A	N/A	12-Nov-13	12-Dec-13	27-Dec-13	N/A	N/A	1-Jan-14	6-Jan-14		
											Revised date												
											Actual date												
11	Kits for mechanics and youths	kit	84	250	21,000	150	12,600	I	RAB	NCB	Planned date	5-Nov-13	N/A	N/A	10-Nov-13	1-Dec-13	16-Dec-13	N/A	N/A	21-Dec-13	26-Dec-13		
											Revised date												
											Actual date												
	Total Goods				692,000		415,200																

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 2: Strengthening Downstream services																							
12	Value addition investment support	number	12	20,000	240,000	12,000	144,000	I	RAB	NCB	Planned date	1-Jun-14	3-Jun-14	8-Jun-14	13-Jun-14	4-Jul-14	19-Jul-14	21-Jul-14	26-Jul-14	31-Jul-14	5-Aug-14		
											Revised date												
											Actual date												
13	Small-scale milk coolers	number	10	2,500	25,000	1,500	15,000	I	RAB	NCB	Planned date	12-Aug-13	N/A	N/A	17-Aug-13	7-Sep-13	22-Sep-13	N/A	N/A	22-Sep-13	27-Sep-13		
											Revised date												
											Actual date												
14	4 WD twin cab pick up for RAB mechanization field activities	number	2	43,000	86,000	25,800	51,600	I	RAB	ICB	Planned date	1-Jan-14	3-Jan-14	8-Jan-14	13-Jan-14	12-Feb-14	27-Feb-14	1-Mar-14	6-Mar-14	11-Mar-14	16-Mar-14		
											Revised date												
											Actual date												
15	Equipment for field testing	lumpsum	1	100,000	100,000	60,000	60,000	I	RAB	ICB	Planned date	1-Jan-14	3-Jan-14	8-Jan-14	13-Jan-14	12-Feb-14	27-Feb-14	1-Mar-14	6-Mar-14	11-Mar-14	16-Mar-14		
											Revised date												
											Actual date												
16	ICT equipment for DAIM	lumpsum	18	1,000	18,000	600	10,800	I	RAB	NCB	Planned date	15-Aug-13	N/A	N/A	20-Aug-13	10-Sep-13	25-Sep-13	N/A	N/A	30-Sep-13	5-Oct-13		
											Revised date												
											Actual date												
17	ICT equipment for district mechanisation services	lumpsum	9	1,200	10,800	720	6,480	I	RAB	NCB	Planned date	5-Aug-13	N/A	N/A	10-Aug-13	31-Aug-13	15-Sep-13	N/A	N/A	20-Sep-13	25-Sep-13		
											Revised date												
											Actual date												
18	Motorcycles for district mechanisation officers	unit	9	4,000	36,000	2,400	21,600	I	RAB	NCB	Planned date	20-Aug-13	N/A	N/A	25-Aug-13	15-Sep-13	30-Sep-13	N/A	N/A	5-Oct-13	10-Oct-13		
											Revised date												
											Actual date												
COMPONENT 3: Project Management																							
19	4WD Twin cab pick ups	number	3	43,000	129,000	25,800	77,400	I	SPIU	ICB	Planned date	1-Jul-13	3-Jul-13	8-Jul-13	13-Jul-13	12-Aug-13	27-Aug-13	29-Aug-13	3-Sep-13	8-Sep-13	13-Sep-13		
											Revised date												
											Actual date												
20	Office furniture and equipment	lumpsum	3	10,000	30,000	6,000	18,000	I	SPIU	NCB	Planned date	1-Jul-13	N/A	N/A	6-Jul-13	27-Jul-13	11-Aug-13	N/A	N/A	16-Aug-13	21-Aug-13		
											Revised date												
											Actual date												
	Total Goods				674,800		404,880																

Section B: Works

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 1: Strengthening Business Capacity and Linkages																							
1	Office refurbishment for cooperative federations	lumpsum	4	10,000	40,000	6,000	24,000	I	RCA	NCB	Planned date	1-Sep-13	N/A	N/A	6-Sep-13	27-Sep-13	12-Oct-13	N/A	N/A	17-Oct-13	22-Oct-13		
											Revised date												
											Actual date												
COMPONENT 2: Strengthening Downstream services																							
2	Rehabilitation of PAPs	unit	22	10,000	220,000	6,000	132,000	I	RAB	NCB	Planned date	20-Sep-13	22-Sep-13	27-Sep-13	2-Oct-13	23-Oct-13	7-Nov-13	9-Nov-13	14-Nov-13	19-Nov-13	24-Nov-13		
											Revised date												
											Actual date												
3	Investment in innovation and demonstration facility	number	2	5,000	10,000	3,000	6,000	I	RAB	NCB	Planned date	5-Aug-13	N/A	N/A	10-Aug-13	31-Aug-13	15-Sep-13	N/A	N/A	20-Sep-13	25-Sep-13		
											Revised date												
											Actual date												
	Total Works				270,000		162,000																

Section C: Services

Nº	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF "000"	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 1: Strengthening Business Capacity and Linkages																							
1	Need assessment and sensitization/ Market and value chain dvpt	person-month	2	5,000	10,000	3,000	6,000	II	RAB	NCB/QCBS	Planned date	1-Jul-13	N/A	N/A	6-Jul-13	27-Jul-13	11-Aug-13	N/A	N/A	16-Aug-13	21-Aug-13		
											Revised date												
											Actual date												
2	TA for market analysis	person-month	2	7,500	11,250	4,500	6,750	II	RAB	ICB/QCBS	Planned date	15-Jul-13	N/A	N/A	20-Jul-13	10-Aug-13	25-Aug-13	N/A	N/A	30-Aug-13	4-Sep-13		
											Revised date												
											Actual date												
3	Value addition need asssessment & market actor identification	person-month	2	7,500	11,250	4,500	6,750	II	RAB	ICB/QCBS	Planned date	2-Aug-13	N/A	N/A	7-Aug-13	28-Aug-13	12-Sep-13	N/A	N/A	17-Sep-13	22-Sep-13		
											Revised date												
											Actual date												
4	Facilitation (market actor & district linkages)	lumpsum	3	5,000	15,000	3,000	9,000	II	RAB	NCB/LCS	Planned date	5-Oct-13	N/A	N/A	10-Oct-13	31-Oct-13	15-Nov-13	N/A	N/A	20-Nov-13	25-Nov-13		
											Revised date												
											Actual date												
5	National TA for assessment of PAPs seeds needs	person -month	1	5,000	5,000	3,000	3,000	II	RAB	NCB/QCBS	Planned date	5-Sep-13	N/A	N/A	10-Sep-13	1-Oct-13	16-Oct-13	N/A	N/A	21-Oct-13	26-Oct-13		
											Revised date												
											Actual date												
6	National TA for assessment of research needs within PROPULSE	person-month	1	5,000	5,000	3,000	3,000	II	RAB	NCB/QCBS	Planned date	5-Sep-13	N/A	N/A	10-Sep-13	1-Oct-13	16-Oct-13	N/A	N/A	21-Oct-13	26-Oct-13		
											Revised date												
											Actual date												
7	Training of PAPs staff, committee members, internal auditors	Lumpsum			447,000	0	268,200	II	RAB	NCB/QCBS	Planned date	15-Jul-13	17-Jul-13	22-Jul-13	27-Jul-13	17-Aug-13	1-Sep-13	3-Sep-13	8-Sep-13	13-Sep-13	18-Sep-13		
											Revised date												
											Actual date												
8	Audit of PAPs	Lumpsum			361,000	0	216,600	II	RAB	NCB/QCBS	Planned date	20-Jul-13	22-Jul-13	27-Jul-13	1-Aug-13	22-Aug-13	6-Sep-13	8-Sep-13	13-Sep-13	18-Sep-13	23-Sep-13		
											Revised date												
											Actual date												
9	Turnaround program	number	50	10,000	500,000	6,000	300,000	II	RAB	NCB/QCBS	Planned date	15-Aug-13	17-Aug-13	22-Aug-13	27-Aug-13	17-Sep-13	2-Oct-13	4-Oct-13	9-Oct-13	14-Oct-13	19-Oct-13		
											Revised date												
											Actual date												
10	Liiteracy training	number	65	1,000	65,000	600	39,000	II	RAB	NCB/LCS	Planned date	10-Aug-13	12-Aug-13	17-Aug-13	22-Aug-13	12-Sep-13	27-Sep-13	29-Sep-13	4-Oct-13	9-Oct-13	14-Oct-13		
											Revised date												
											Actual date												
11	Traning of PAP facilitators and future leaders	lumpsum			38,000	0	22,800	II	RAB	NCB/LCS	Planned date	12-Aug-13	N/A	N/A	17-Aug-13	7-Sep-13	22-Sep-13	N/A	N/A	27-Sep-13	2-Oct-13		
											Revised date												
											Actual date												
12	Training of auditors-regional level	unit	4	2,500	10,000	1,500	6,000	II	RCA	NCB/QCBS	Planned date	20-Jul-13	N/A	N/A	25-Jul-13	15-Aug-13	30-Aug-13	N/A	N/A	4-Sep-13	9-Sep-13		
											Revised date												
											Actual date												
13	Training of coaches/coop. service providers (turnaround prog)	unit	20	1,000	20,000	600	12,000	II	RCA	NCB/QCBS	Planned date	20-Jul-13	N/A	N/A	25-Jul-13	15-Aug-13	30-Aug-13	N/A	N/A	4-Sep-13	9-Sep-13		
											Revised date												
											Actual date												
14	International TA-Cooperative training advisor	person-month	7	20,000	132,000	12,000	79,200	II	RCA	ICB/QCBS	Planned date	1-Aug-13	3-Aug-13	8-Aug-13	13-Aug-13	12-Sep-13	27-Sep-13	29-Sep-13	4-Oct-13	9-Oct-13	14-Oct-13		
											Revised date												
											Actual date												
15	TA to NCCR (organizing stationery, developing monitoring systems, training mat)	lumpsum			106,000		63,600	II	RCA	NCB/QCBS	Planned date	1-Aug-13	3-Aug-13	8-Aug-13	13-Aug-13	3-Sep-13	18-Sep-13	20-Sep-13	25-Sep-13	30-Sep-13	5-Oct-13		
											Revised date												
											Actual date												
16	Training of federations and union committees	lumpsum			20,000		12,000	II	RCA	NCB/LCS	Planned date	10-Nov-13	N/A	N/A	15-Nov-13	6-Dec-13	21-Dec-13	N/A	N/A	26-Dec-13	31-Dec-13		
											Revised date												
											Actual date												
	Total Services				1,756,500		1,053,900																

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF "000"	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 1: Strengthening Business Capacity and Linkages (continued)																							
17	Training of executive secretaries and officers in federations	lumpsum			29,000		17,400	II	RCA	NCB/LCS	Planned date	1-Dec-13	N/A	N/A	6-Dec-13	27-Dec-13	11-Jan-14	N/A	N/A	16-Jan-14	21-Jan-14		
											Revised date												
											Actual date												
18	Training to non-coop PAP (management, business plan prep, acctg, auditing)	lumpsum			105,000		63,000	II	RAB	NCB/QCBS	Planned date	10-Sep-13	12-Sep-13	17-Sep-13	15-Sep-13	6-Oct-13	21-Oct-13	23-Oct-13	28-Oct-13	26-Oct-13	31-Oct-13		
											Revised date												
											Actual date												
19	TA to non-coop PAP (potential partnership, linkages)	lumpsum			67,500		40,500	II	RAB	NCB/QCBS	Planned date	1-Sep-13	3-Sep-13	8-Sep-13	6-Sep-13	27-Sep-13	12-Oct-13	14-Oct-13	19-Oct-13	17-Oct-13	22-Oct-13		
											Revised date												
											Actual date												
20	Market development studies for MFIs	person-month	3	5,000	15,000	3,000	9,000	II	AMIR	NCB/QCBS	Planned date	1-Sep-13	N/A	N/A	6-Sep-13	27-Sep-13	12-Oct-13	N/A	N/A	17-Oct-13	22-Oct-13		
											Revised date												
											Actual date												
21	TA to design sector database system for AMIR	person-month	2	20,000	40,000	12,000	24,000	II	AMIR	ICB/QCBS	Planned date	1-Aug-13	3-Aug-13	8-Aug-13	6-Aug-13	27-Aug-13	11-Sep-13	13-Sep-13	18-Sep-13	16-Sep-13	21-Sep-13		
											Revised date												
											Actual date												
22	Training of trainers programme	session	3	15,000	45,000	9,000	27,000	II	AMIR	NCB/QCBS	Planned date	13-Sep-12	15-Sep-12	20-Sep-12	25-Sep-12	16-Oct-12	31-Oct-12	2-Nov-12	7-Nov-12	12-Nov-12	17-Nov-12		
											Revised date												
											Actual date												
23	Rating of MFIs	study	3	11,000	33,000	6,600	19,800	II	AMIR	ICB/QCBS	Planned date	1-Oct-13	N/A	N/A	6-Oct-13	5-Nov-13	20-Nov-13	N/A	N/A	25-Nov-13	30-Nov-13		
											Revised date												
											Actual date												
24	Capacity development of SACCO-proximity coaches	person-month	8	5,000	40,000	3,000	24,000	II	RCA	NCB/QCBS	Planned date	20-Jul-13	22-Jul-13	27-Jul-13	1-Aug-13	22-Aug-13	6-Sep-13	8-Sep-13	13-Sep-13	18-Sep-13	23-Sep-13		
											Revised date												
											Actual date												
25	Elaboration of MFIs/SACCO business plan	lumpsum	22	5,000	110,000	3,000	66,000	II	SPIU & RCA	NCB/QCBS	Planned date	1-Sep-13	3-Sep-13	8-Sep-13	13-Sep-13	4-Oct-13	19-Oct-13	21-Oct-13	26-Oct-13	31-Oct-13	5-Nov-13		
											Revised date												
											Actual date												
26	Strengthening capacity of agro-dealers	lumpsum			126,000	0	75,600	II	RAB	NCB/QCBS	Planned date	12-Sep-13	14-Sep-13	19-Sep-13	24-Sep-13	15-Oct-13	30-Oct-13	1-Nov-13	6-Nov-13	11-Nov-13	16-Nov-13		
											Revised date												
											Actual date												
27	Support to PAP/SME development	lumpsum			184,000		110,400	II	RAB	NCB/QCBS	Planned date	15-Dec-13	17-Dec-13	22-Dec-13	27-Dec-13	17-Jan-14	1-Feb-14	3-Feb-14	8-Feb-14	13-Feb-14	18-Feb-14		
											Revised date												
											Actual date												
	Total Services				794,500		476,700																

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF "000"	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 1: Strengthening Business Capacity and Linkages (continued)																							
28	Training for district mechanisation services	lumpsum			28,000	0	16,800	II	RAB	NCB/QCBS	Planned date	1-Jan-14	N/A	N/A	6-Jan-14	27-Jan-14	11-Feb-14	N/A	N/A	16-Feb-14	21-Feb-14		
											Revised date												
											Actual date												
COMPONENT 2: Strengthening Downstream services																							
29	Needs assessment and sensitization	person-month	1	5,000	5,000	3,000	3,000	II	RAB	NCB/QCBS	Planned date	10-Sep-13	N/A	N/A	15-Sep-13	6-Oct-13	21-Oct-13	N/A	N/A	26-Oct-13	31-Oct-13		
											Revised date												
											Actual date												
30	Voucher for developing business plan	person-month	22	1,500	33,000	900	19,800	II	RAB	NCB/QCBS	Planned date	1-Sep-13	N/A	N/A	6-Sep-13	27-Sep-13	12-Oct-13	N/A	N/A	17-Oct-13	22-Oct-13		
											Revised date												
											Actual date												
31	Training in facility management and maintenance	number	650	10	6,500	6	3,900	II	RAB	NCB/QCBS	Planned date	11-Nov-13	N/A	N/A	16-Nov-13	7-Dec-13	22-Dec-13	N/A	N/A	27-Dec-13	1-Jan-14		
											Revised date												
											Actual date												
32	National TA for designing value addition demonstrations	person-month	1	5,000	5,000	3,000	3,000	II	RAB	NCB/QCBS	Planned date	1-Feb-14	N/A	N/A	6-Feb-14	27-Feb-14	14-Mar-14	N/A	N/A	19-Mar-14	24-Mar-14		
											Revised date												
											Actual date												
33	Voucher for design and evaluation of value addition business plan	number	12	1,500	18,000	900	10,800	II	RAB	NCB/QCBS	Planned date	1-Mar-14	N/A	N/A	6-Mar-14	27-Mar-14	11-Apr-14	N/A	N/A	16-Apr-14	21-Apr-14		
											Revised date												
											Actual date												
34	TA for PAP identification and set up of milk cooler test model	person-month	1	7,500	7,500	4,500	4,500	II	RAB	ICB/QCBS	Planned date	7-Oct-13	N/A	N/A	12-Oct-13	11-Nov-13	26-Nov-13	N/A	N/A	1-Dec-13	6-Dec-13		
											Revised date												
											Actual date												
35	TA in post harvest best practices	person-month	1	5,000	5,000	3,000	3,000	II	RAB	NCB/QCBS	Planned date	8-Aug-13	N/A	N/A	13-Aug-13	12-Sep-13	27-Sep-13	N/A	N/A	2-Oct-13	7-Oct-13		
											Revised date												
											Actual date												
36	Training in milk cooler operation, hygiene and maintenance	number	400	15	6,000	9	3,600	II	RAB	NCB/QCBS	Planned date	1-Sep-13	N/A	N/A	6-Sep-13	6-Oct-13	21-Oct-13	N/A	N/A	26-Oct-13	31-Oct-13		
											Revised date												
											Actual date												
37	Training in management, costing, facility mgmt & maintenance	lumpsum			102,000	0	61,200	II	RAB	NCB/QCBS	Planned date	1-Jan-14	3-Jan-14	8-Jan-14	13-Jan-14	3-Feb-14	18-Feb-14	20-Feb-14	25-Feb-14	2-Mar-14	7-Mar-14		
											Revised date												
											Actual date												
38	Feasibility study for new financial products	person-month	4	20,000	80,000	12,000	48,000	II	SPIU	ICB/QCBS	Planned date	4-Oct-13	6-Oct-13	11-Oct-13	16-Oct-13	15-Nov-13	30-Nov-13	2-Dec-13	7-Dec-13	12-Dec-13	17-Dec-13		
											Revised date												
											Actual date												
	Total Services				296,000		177,600																

N°	Description	Unit	Quantity	Unit Price in USD	Total Cost in USD	Unit Price in RWF "000"	Total Cost RWF "000"	Cat.	Implementing Agency	Procurement Method	Bidding documents preparation		Request for IFAD N.O. on Bidding Document	IFAD N-O Date	Bid Invitation date/Publication (+ 5 days)	Bids Opening	Evaluation report (T&F)	RNO on evaluation report	IFAD N-O on evaluation report	Final Notification award	Contract Signature	Observations	Contract N°
COMPONENT 2: Strengthening Downstream services																							
39	Credit policies improvement	person-month	1	20,000	20,000	12,000	12,000	II	SPIU/AFR	ICB/QCBS	Planned date	4-Nov-13	N/A	N/A	9-Nov-13	9-Dec-13	24-Dec-13	N/A	N/A	29-Dec-13	3-Jan-14		
											Revised date												
											Actual date												
40	Labour survey	person-month	1	40,000	40,000	24,000	24,000	II	RAB	ICB/QCBS	Planned date	20-Oct-13	22-Oct-13	27-Oct-13	27-Oct-13	26-Nov-13	11-Dec-13	13-Dec-13	18-Dec-13	23-Dec-13	28-Dec-13		
											Revised date												
											Actual date												
41	Assessment of equipment requirement under Agriculture support services	person-month	2	10,000	20,000	6,000	12,000	II	RAB	NCB/QCBS	Planned date	10-Sep-13	N/A	N/A	15-Sep-13	6-Oct-13	21-Oct-13	N/A	N/A	26-Oct-13	31-Oct-13		
											Revised date												
											Actual date												
42	Support to development of business plans for mechanisation services	person-day	150	150	22,500	90	13,500	II	RAB	NCB/QCBS	Planned date	1-Sep-13	N/A	N/A	6-Sep-13	27-Sep-13	12-Oct-13	N/A	N/A	17-Oct-13	22-Oct-13		
											Revised date												
											Actual date												
43	Technical assistance to RAB for agriculture support services	person-month	18	7,500	135,000	4,500	81,000	II	RAB	ICB/QCBS	Planned date	1-Jul-13	3-Jul-13	8-Jul-13	6-Jul-13	5-Aug-13	20-Aug-13	22-Aug-13	27-Aug-13	1-Sep-13	6-Sep-13		
											Revised date												
											Actual date												
COMPONENT 3: Project Management																							
44	International TA to support RAB and SPIU management	person-month	3	20,000	60,000	12,000	36,000	II	SPIU	ICB/QCBS	Planned date	1-Jul-13	3-Jul-13	8-Jul-13	6-Jul-13	5-Aug-13	20-Aug-13	22-Aug-13	27-Aug-13	1-Sep-13	6-Sep-13		
											Revised date												
											Actual date												
45	Thematic studies	Number	1	15,000	15,000	9,000	9,000	II	SPIU	ICB/QCBS	Planned date	1-Oct-13	N/A	N/A	6-Oct-13	27-Oct-13	11-Nov-13	N/A	N/A	16-Nov-13	21-Nov-13		
											Revised date												
											Actual date												
46	Baseline and impact studies	Lumpsum	1	25,000	25,000	15,000	15,000	II	SPIU	NCB/QCBS	Planned date	1-Jul-13	N/A	N/A	6-Jul-13	27-Jul-13	11-Aug-13	N/A	N/A	16-Aug-13	21-Aug-13		
											Revised date												
											Actual date												
47	Local TA for preparation of first AWPB	person-month	2	5,000	25,000	3,000	6,000	II	SPIU	NCB/QCBS	Planned date	1-Jul-13	N/A	N/A	6-Jul-13	5-Aug-13	20-Aug-13	N/A	N/A	25-Aug-13	30-Aug-13		
											Revised date												
											Actual date												
	Total Services				362,500		208,500																

Appendix 9: Project cost and financing

A. Project costs

1. The total project costs including price and physical contingencies are estimated at US$ 85.862 million (RwF 58.009 billion) over a five-year project implementation period. Table 1 below presents the project base costs by component; Table 2 shows the project costs (total including contingencies) by category of expenditure by year; and Table 3 presents the expenditure accounts (including contingencies) by component. The other summary tables and detailed cost tables can be found in the Project Life File (PLF).

Table 1. Project base costs by component, contingencies and total project costs

	RWF('000)			(US $)				
	Local	Foreign	Total	Local	Foreign	Total	% Foreing Exch	Total Base Costs
1. HUB capacity development programme	5,846,913	1,761,817	7,608,731	9,280,815	2,796,535	12,077,350	23	16
2. Post-harvest climate resilient agri-business investment support	26,289,081	12,210,219	38,499,300	41,728,700	19,381,300	61,110,000	32	79
3. Project management and coordination	1,912,365	467,460	2,379,825	3,035,500	742,000	3,777,500	20	5
Total BASELINE COSTS	**34,048,359**	**14,439,496**	**48,487,856**	**54,045,015**	**22,919,835**	**76,964,850**	**30**	**100**
Physical Contingencies	2,561,782	1,122,931	3,684,713	4,066,320	1,782,430	5,848,750	30	8
Price Contingencies	4,143,890	1,693,439	5,837,328	2,163,577	885,145	3,048,722	29	4
Total PROJECT COSTS	**40,754,031**	**17,255,866**	**58,009,896**	**60,274,912**	**25,587,410**	**85,862,322**	**30**	**112**

Table 2. Expenditure accounts by year – Totals including contingencies (US$)

	Totals Including contingencies					
	2014	2015	2016	2017	2018	Total
I. Investment Costs						
A. Goods and Financial Incentives						
A.1 Financial incentives and transfers	12,562,945	20,166,622	16,186,439	10,139,843	7,511,653	66,567,502
A.2 Vehicles	303,710	64,616	43,809	-	-	412,135
A.3 Equipment	350,958	315,899	182,539	14,851	-	864,247
Subtotal	13,217,613	20,547,136	16,412,788	10,154,694	7,511,653	67,843,884
B. Services						
B.1 Contracts for service provision	1,974,643	2,626,676	2,128,406	1,499,989	153,736	8,383,449
B.2 Technical assistance	146,233	87,180	226,870	15,912	75,519	551,714
B.3 Studies	302,550	292,309	365,078	123,585	79,835	1,163,356
B.4 Training and Workshops	690,792	746,946	311,120	210,433	74,192	2,033,484
Subtotal	3,114,218	3,753,110	3,031,473	1,849,920	383,282	12,132,003
Total Investment Costs	16,331,831	24,300,246	19,444,261	12,004,614	7,894,935	79,975,887
II. Recurrent Costs						
A. Salaries and operating costs	1,207,880	1,261,543	1,209,556	1,127,962	1,079,494	5,886,436
Total Recurrent Costs	1,207,880	1,261,543	1,209,556	1,127,962	1,079,494	5,886,436
	17,539,711	25,561,789	20,653,817	13,132,576	8,974,429	85,862,322

Table 3. Expenditure accounts by component (US$)

	HUB capacity development programme	Post-harvest climate res. agribusiness investment Support	Project Management and Coordination	Total
I. Investment Costs				
A. Goods and Financial Incentives				
A.1 Financial incentives and transfers	-	66,567,502	-	66,567,502
A.2 Vehicles	238,673	-	173,462	412,135
A.3 Equipment	250,538	613,709	-	864,247
Subtotal	489,211	67,181,211	173,462	67,843,884
B. Services				
B.1 Contracts for service provision	6,427,522	1,851,589	104,338	8,383,449
B.2 Technical assistance	254,526	-	297,188	551,714
B.3 Studies	494,661	369,898	298,797	1,163,356
B.4 Training and Workshops	1,731,821	20,515	281,148	2,033,484
Subtotal	8,908,529	2,242,002	981,471	12,132,003
Total Investment Costs	9,397,740	69,423,213	1,154,933	79,975,887
II. Recurrent Costs				
A. Salaries and operating costs	3,119,292	-	2,767,143	5,886,436
Total Recurrent Costs	3,119,292	-	2,767,143	5,886,436
Total PROJECT COSTS	12,517,033	69,423,213	3,922,076	85,862,322
Taxes	1,028,912	10,396,683	928,600	12,354,195
Foreign Exchange	2,900,181	21,919,629	767,601	25,587,410

B. Project financing

2. Of the estimated US$85.862 million total project cost, IFAD will provide a loan and a grant - each amounting US$13.45 million (representing 31.4% of total project costs); the IFAD Adaptation for Smallholder Agriculture Programme (ASAP) will contribute a US$7 million (8.2%) grant, GoR counterpart funds will amount to US$12.35 million (14.4%); project beneficiaries and other value chain actors will contribute US$10.17 (12%); and US$29.4 million (34.3%) is expected to be leveraged in commercial lending from the financial sector to cofinance individual business plans. An estimated US$12.5 million (8.2%) will be used to finance component 1 – HUB capacity development programme and business coaching; US$69.42 million (81%) is allocated to component 2 – Post-harvest climate resilient agri-business investment support; and US$3.922 million (4.6%) will finance Project management and coordination.

3. The Government contribution (US$12.354 million, representing 14.4% of total project costs) will be in the form of foregone taxes and duties. Approximately US$10.17 million (12% of total project costs) will be provided by project clients/value chain actors, for both investment and recurrent costs. Table 4 and 5 below provide a cost summary by project component and cofinancier, as well as GoR cashflow, respectively. Other summary financing tables can be found in the PLF.

Table 4. Financing by component (US$)

	IFAD Loan		IFAD Grant		ASAP Grant		Other value chain actors & beneficiaries		HUB Commercial Loans		Government of Rwanda		Total				
	Amount USD (000)	%	Amount USD (000)	%	Amount USD (000)	%	Amount USD (000)	%	Amount USD (000)	%	Amount USD (000)	%	Amount USD (000)	%	For. Exch.	Local (Excl Taxes)	Duties & Taxes
1. HUB capacity development programme	3,145	25.1	3,145	25.1	2.508	20.0	2,690	21.5	-	-	1,029	8.2	12,517	14.6	2,900	8,588	1,029
2. Post-harvest climate resilience agri-business investment support	9,036	13.0	9,036	13.0	4,172	6.0	7,358	10.6	29,423	42.4	10,397	15.0	69,423	80.9	21,920	37,107	10,397
3. Project Management	1,302	33.2	1,302	33.2	260	6.6	129	3.3	-	-	929	23.7	3,922	4.6	768	2,226	929
Total PROJECT COSTS	13,483	15.7	13,483	15.7	6,940	8.1	10,178	11.9	29,423	34.3	12,355	14.4	85,862	100.0	25,587	47,921	12,354

Table 5. Disbursements by semesters and government cash flow (US$)

	Financing Available							Government of Rwanda	
	IFAD Loan	IFAD Grant	ASAP Grant	Other value chain actors & beneficiaries	HUB Commercial Loans		Costs to be Financed		Cumulative
	Amount	Amount	Amount	Amount	Amount	Total	Project Costs	Cash Flow	Cash Flow
1	1,317,107	1,317,149	1,268,815	1,108,450	3,326,663	8,338,184	12,277,798	-3,939,613	-3,939,613
2	1,317,107	1,317,149	1,268,815	1,108,450	3,326,663	8,338,184	12,277,798	-3,939,613	-7,879,227
3	2,312,271	2,312,274	1,246,832	1,460,559	4,890,786	12,222,721	17,893,252	-5,670,531	-13,549,758
4	2,312,271	2,312,274	1,246,832	1,460,559	4,890,786	12,222,721	17,893,252	-5,670,531	-19,220,289
5	1,932,694	1,932,697	950,352	1,240,503	3,815,067	9,871,312	14,457,672	-4,586,360	-23,806,649
6	1,932,694	1,932,697	950,352	1,240,503	3,815,067	9,871,312	14,457,672	-4,586,360	-28,393,009
7	1,228,084	1,228,087	265,240	1,137,394	2,549,664	6,408,468	9,192,803	-2,784,335	-31,177,345
8	1,228,084	1,228,087	265,240	1,137,394	2,549,664	6,408,468	9,192,803	-2,784,335	-33,961,680
9	763,459	763,459	205,842	786,960	1,860,201	4,379,922	6,282,100	-1,902,178	-35,863,858
10	763,459	763,459	205,842	786,960	1,860,201	4,379,922	6,282,100	-1,902,178	-37,766,036
Total	**15,107,229**	**15,107,332**	**7,874,161**	**11,467,731**	**32,884,762**	**82,441,216**	**120,207,251**	**-37,766,036**	**-37,766,036**

Appendix 10: Economic and financial analysis

I. INTRODUCTION

1. This Appendix assesses the financial and economic impact of project interventions. Given the demand-driven nature of the project, project-supported investments cannot be identified with certainty prior to implementation. For this reason, the analysis was carried out using representative farm/HUBs models based on information collected by the design team in the field, data from recent surveys/reports in the project areas and information provided by the Ministry of Agriculture and Animal Resources (MINAGRI).

2. PASP overall project goal is to alleviate poverty, reduce food insecurity and malnutrition, increase rural income, and contribute to the overall economic development of Rwanda. PASP development objective is to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from CIP crop and dairy businesses, especially those related to aggregating production for markets, supporting transformation, and creating value-added.

3. The project's primary focus will be the facilitation of business activities that can thrive on increased agricultural production from CIP crops and dairy. Investments in improved post-harvesting procedures, drying, processing, storage, distribution, logistics and capacity building of cooperatives and farmers organizations are expected to generate reductions in product losses that are just as important as improved crop yields in preserving food production and localized value addition in a changing and more uncertain climate.

4. PASP will work directly with groups of farmers, organized under product aggregation points (HUB), who work together aggregating and preparing their production for sale (grain drying and storage facilities, potato cleaning/packing, cassava preparation or milk collection centres, MCC) in the priority CIP and dairy development value chains. It will enhance their capacity to develop their post-harvest market chain business, link with other agro-dealers, MFIs and service providers who support the supplying farmers. Importantly for longer term sustainability, the project will support capacity development of the responsible government agencies, principally the Rwanda Agriculture Board (RAB), to manage implementation of core activities making use of support agencies such as RCA, farmers' federations, training and technical service providers and MFIs /SACCOs.

5. PASP will be strengthened through an ASAP US$7 million investment providing incremental support to reduce the vulnerability of post-harvest market chains to the impacts of climate change and ensure that appropriate mechanisms are established to safe guard food security. ASAP support will facilitate a better understanding of how current and future agro-meteorological conditions influence harvest and post-harvest activities, so as to ensure that rural infrastructure and related investments supported by the project are resilient to these changing climatic patterns. ASAP investments will be fully embedded in PASP components and results framework.

6. The project will be implemented over a five-year period and comprises the following three mutually reinforcing components: (i) HUB capacity development programme and business coaching; (ii) Post-harvest climate resilient agri-business investment support; and (iii) Project management and coordination.

II. PROJECT AREA AND BENEFICIARIES

7. **Project area**. The project will provide support to 200 HUBs across 10 identified districts. The geographical targeting will focus on three 'food-basket' areas where several agricultural value chains operate in parallel. The north west area includes the districts of Musanze, Nyabihu and Rubavu producing Irish potatoes, maize, beans and milk. The Eastern province area includes the districts of Gatsibo, Kayonza, Ngoma and Nyagatare producing maize (more than 90%), beans (94%) and cassava (50%), with also potential for dairy development. The Southern province area includes the districts of Muhunga, Kamonyi and Ruhango with predominantly two crops, with over 70% of households growing cassava, and more than 90% growing beans.

8. **Beneficiaries**. The initial target for PASP national beneficiaries will be 32,400 rural households in the 10 districts where the project will be intervening. These households will be associated with approximately 200 HUBs. Based on the national average of 4.8 people per household, the number of direct beneficiaries is estimated to be around 155,518 and the project cost per beneficiary will come to approximately US$494. For the planned 10 districts, this will include an average of 3,240 households or 15,552 beneficiaries per district.

9. There will also be a much larger number of indirect beneficiaries who will enjoy from access to financial services for smallholders, women, rural entrepreneurs and small and micro entrepreneurs; the increased capacity building of the different actors both at national and district levels through training, study tours, and enhanced effectiveness of technical services. The emergence of three to four businesses support initiatives at each HUB, including agro-dealers, agricultural support service providers such as machinery or transport contractors, traders, paravets would provide 4-5 people with employment opportunities for a total of 1,200-1,500 household members. Together with the HUBs, these support businesses will also create employment for landless poor households and the youth

III. BENEFITS

10. PASP will provide a range of benefits to its participants. These benefits will result from: (i) enhanced bargaining power for sale of outputs; (ii) increase in productivity and production; (iii) improved access to financial services; (iv) improved product quality, better margin on sales of produce; (v) reduced post-harvest losses, especially resulting from processing, drying and storage facilities; (vi) reduced transaction costs and improved linkages and contracts between producers and processors resulting in enhanced market opportunities; (vii) better access to domestic and export markets; and (viii) employment in rural areas resulting in increased demand for goods and services, expected to generate additional income and employment effects, and increasing the government's tax revenues, and reduced imports resulting in foreign exchange savings.

11. *Environmental and social benefits* are also expected from the programme because of its focus on rural poverty reduction, consideration of social factors in selection of commodities and focal areas, and the inclusive targeting mechanisms proposed. Promoting sustainable agro-based enterprises is expected to deliver positive environmental outcomes, e.g. in terms of energy-efficient production and safe disposal of agro-industrial waste products. Grants financed under the programme funds will require an explicit full compliance with environmental standards.

12. **Component 1 – HUB capacity development programme and business coaching** - Participating HUBs will develop the skills and knowledge, as well as access to specialized service providers, to deliver larger volumes of improved produce to the market chain and provide climate resilient and low carbon value adding and market linkage services to an expanding number of clients. This will contribute to higher and more sustainable agricultural production and productivity which should directly result in higher incomes for smallholder farmers, improved food security and new agricultural employment opportunities.

13. **Component 2 – Post-harvest climate resilient agri-business investment support** – PASP will facilitate business activities that can thrive on agricultural production from CIP crops and dairy by leveraging commercial loans-funded post-harvest investments that will contribute to improving market access and linkages, HUB operational and management efficiency, and sustainability based on climate resilience and adaptability and water and energy use efficiency. The beneficiaries will gain access to other financial services as commercial banking sector operates more actively in the targeted districts.

Institutional benefits

14. The service capacity of target agricultural extension and business development services (BDS) support at district level will be greatly enhanced. This will improve the effectiveness of technical services development and delivery, improving access for all HUB members and farmers, irrespective whether they are participating or not in the project. National and district project staff will have greater skills in monitoring and evaluation, management, accountability and technical skills.

15. The 200 HUBs working directly with the project will enhance their capacities in self-management, financial management, negotiation skills, development of remunerative markets and

value chain services, etc. It is expected through these strengthening exercise that more farmers will be attracted to join the HUBs.

16. Households will benefit from the SACCOs' additional saving and lending facilities. Access to financial services will lead to investment in production, post-harvest, processing and transport facilities for the selected crops and dairy/milk. The project will invest in small and medium agro-based and rural enterprises which will help to integrate the small producers into agriculture value chains. These activities will increase the income of all participating households as well as increase the capacity of the private sector to process and export a higher volume of priority agriculture commodities.

17. Non-quantifiable benefits include the empowerment of small holders, the rural poor and women to take significant decisions affecting their livelihoods individually and collectively and lobby local governments and other institutions in favour of a supportive policy framework on their behalf.

IV. PRODUCTION, MARKETS AND PRICE

A. Production

18. The increase in crop yields due to the success of the Crop Intensification Project (CIP) implemented since 2007 has resulted in surpluses in key staple grains and cereals. Maize production is reported to have increased by more than 400%. This and the Government of Rwanda (GoR) objectives to maximize net profits for smallholder farmers and reduce food insecurity led to efforts to better address the issues of post-harvest losses from the limited capacity in post-harvest handling, storage technologies and management.

19. PASP will not directly address productivity improvements of agricultural production systems. However, there are some activities related to pre-production (seeds and mechanization), and so allowance has been made for productivity increases in existing crops. These productivity increases are likely to come from better HUBs organizations, better information and technology access, and the introduction of innovative technology and financial packages. Most benefits in incremental income increases for commercial oriented HUBs are expected to come from enhanced farming activities and the value adding facilities put in place for processing, marketing, storage of post-harvest productions.

20. To reduce double-counting project economic benefits have been valued at the production level and farm-gate prices, as the HUBs are a combination of different member farmers. The project HUBs will be handling products that are already available in the markets so project interventions are not expected to cause macro level price variations.

21. In Rwanda there are mostly two main production seasons (Season A and Season B) with a third season, C, available in the marshlands. Most crops have substantial B season harvests. Maize, beans and potatoes are produced during both seasons. With approximately six months between harvests and a spread of harvesting dates, the market works by traders and buyers moving from one harvesting area to the next; with relatively short storage periods – rather than making large purchases at a single harvest which then has to be stored for long periods of time until needed in the market. The National Post- harvest Strategy report indicates producers retain between 20 % - 40% of staple food production on-farm for home consumption with the rest sold.

B. Prices

22. Trade barriers with major trading partners (Uganda, Kenya, Burundi and Tanzania) are negligible for most goods following the accession of Rwanda to the East Africa Community customs unions, and exchange rate distortions are minimal. Therefore the financial and economic prices for tradable goods were assumed identical in the models. For the financial analysis, actual farm-gate prices are used for all traded inputs and outputs. Non-traded products such as crop residues and by-products were not valued for this analysis. With regards to the inputs NPK and urea have been converted to economic prices because of the fertilizer subsidy[1] (which however applies only to maize and wheat) and maize seeds (100% government subsidized for maize). Most farm inputs and outputs

[1] Subsidy on fertilizers presently stands at 50%. This percentage will however be reduced during the coming years as follows: during the course of this year – 35%; in 2013 – 25%; in 2014 – 20%; in 2015 – 15%; and as from 2016 – 10%.

have well documented market prices at the farm gate level reflecting the economic value of the respective product and additional factors including transportation and handling plus pricing of risks and profit margins for traders. Exceptions to this include seed prices and fertilizers which are subsidized through government programmes. For these inputs, the financial analysis uses the subsidized prices, while the economic analysis uses financial converted into economic using prices conversion factors based on the subsidy rates. Table 1 below provide the Economic and financial prices used for the analysis.

Table 1. Financial and Economic prices

Category	Unit	Financial Price (RFW)	Economic Price (RFW)
1. **Vegetable production**			
Beans	Kg	320	320
Cassava	Kg	100	100
Maize	Kg	225	225
Potatoes	Kg	150	150
2. **Livestock**			
Milk	L	250	250
Artifical Insemination	Unit	1500	1500
Calf	Head	40000	40000
Improved indigenous bull	Head	200000	200000
Improved heifer (imported)	Head	825000	825000
Local indigenous heifer	Head	80000	80000
Manure	Ton	5000	5000
Inputs			
1. Seed			
Bean Seed	Kg	400	400
Cassava Cuttings	Unit	8	8
Forage Cuttings	Unit	5	5
Lime	kg	35	35
Maize Seed	Kg	300	300
Sweet_Potato	Kg	125	125
2.Fertilizers			
NPK	Kg	350	175
Urea	Kg	350	175
Potash	Kg	350	350
Lime	Kg	35	35
Pesticides	Kg	3000	3000
Manure	Ton	5000	5000
3.**Labour**			
Family labour	Day	400	400
Labour	Day	800	600

C. Formal market

23. Additional products available for sale due to the project activities are assumed to be sold through the HUBs, for prices paid in the formal market channels. This reflects the economic value of locally produced farm outputs, but the values of direct sales to traders may be slightly different.

D. Labor

24. For unpaid family labor a daily rate of RwF 400 is used as the financial cost. For unskilled hired labour, a rate of RwF 800 per day is used. A high underemployment rate combined with a lack of employment opportunities and a surplus of labour[2] in rural areas suggest that the economic opportunity costs of labour may be below the financial costs and a rate of 600 RWF per day is used.

E. Crop and milk models

25. Based on the data collected and field observations, crop and dairy production models have been compiled for maize, beans, cassava, potatoes and dairy activities in the project area.

F. Market - Trade balance

26. Regional trade data for staple crops reveals that, in 2010, imports from regional partners far exceeded exports. Around 114,749 tonne of maize was imported from the region, with less than 2,500 tonne exported (Table 2). Generally, Rwanda has a positive trade balance with Burundi and the

2 This was not observed in all areas.

Democratic Republic of the Congo and a negative balance with Tanzania and Uganda. However, the magnitude of trade with the latter two far exceeds that of the countries on the western and southern borders.

Table 2. Rwanda, 2010 Imports and Export Trade for Agricultural commodities with neighbouring countries (tonnes)

Country/Crop		Maize	Cassava	Dried Beans	Irish potatoes
	Export	2,016	12	2022	4675
	Import	383	82	366	
Burundi	Balance	1,633	70	1656	4675
	Export	225		1,531	11
DRC	Import	22	45	359	135
	Balance	203	-45	1,172	-124
	Export	18		908	769
Tanzania	Import	1,839	271	448	19
	Balance	-1,821	-271	460	750
	Export			915	
Uganda	Import	112,505	7504	5,542	2651
	Balance	-112,505	-7504	-6,457	-2651

Source: NISR, 2010

V. FINANCIAL ANALYSIS

27. The objective of the analysis is to assess the financial viability of the crops/models supported by the project and to assess their potential for increased profitability and income as a result of the project intervention. PASP will be strengthening the agricultural support services, develop skills and processors of the GOR agencies involved directly in the major CIP crops intensification projects. The capacity building of the main value chain actors, specially the HUBs, is important but not easily quantifiable.

28. The design team has done an analysis of the gains to be obtained by the HUBs members with respect to the four selected crops and dairy/milk.[3] Table 3 below provides a summary of the expected gains by crops and at farm level taking as average farm size 0.5 ha. Attachment 3 provides the full details of the analysis.

29. All the models imply an expected increase in the man/days required. However whether this will imply job creation at family level or hiring people is very difficult to say.

[3] The mission made use of the four following documents, coupled/actualised with information gathered during the various field visits/interviews with value chain actors; (i) IFAD – Project for Rural Income through Exports (PRICE) design report – October 2011; (ii) IFAD-GOR Kirehe District – KWAMP Project – value chain analysis study report by Dr N J Chrysostome and Mr H Tibrichu, August 2011; (iii) USAID-GOR Draft Maize and Beans Transport and Logistics assessment – field report September 2011; and GOR – Strategies for sustainable crop intensification in Rwanda 2011.

Table 3. Summary of expected gains per crops and at farm level

	Crop/Production Budgets Summary					Farm budget summary: 0.5 ha Maize and Beans- 0.3 ha Cassava-0.2 ha Potatoes)				
Item	Beans - rainfed	Maize-rainfed	Cassava - rainfed	Potatoes	Milk	Beans -rainfed	Maize-rainfed	Cassava - rainfed	Potatoes	Milk
Gross Output,RWF										
WOP	192,000	180,000	804,000	696,000	56,250	96,000	90,000	268,000	139,200	28,125
WP	300,000	315,000	1,200,000	1,080,000	84,500	150,000	157,500	400,000	216,000	42,250
Incremental	108,000	135,000	396,000	384,000	28,250	54,000	67,500	132,000	76,800	14,125
Inputs, RWF										
WOP	24,000	12,000	80,000	82,500	6,210	12,000	6,000	26,667	16,500	3,105
WP	39,000	55,750	111,000	97,500	7,340	19,500	27,875	37,000	19,500	3,670
Incremental	15,000	43,750	31,000	15,000	1,130	7,500	21,875	10,333	3,000	565
Labour, RWF										
WOP	150,000	150,000	62,500	210,000	12,500	75,000	75,000	20,833	42,000	6,250
WP	162,000	162,000	67,500	222,000	18,500	81,000	81,000	22,500	44,400	9,250
Incremental	12,000	12,000	5,000	12,000	6,000	6,000	6,000	1,667	2,400	3,000
Total Inputs, RWF										
WOP	174,000	162,000	142,500	292,500	18,710	87,000	81,000	47,500	58,500	9,355
WP	201,000	217,750	178,500	319,500	25,840	100,500	108,875	59,500	63,900	12,920
Incremental	27,000	55,750	36,000	27,000	7,130	13,500	27,875	12,000	5,400	3,565
Gross Margin, RWF										
WOP	18,000	18,000	661,500	403,500	37,540	9,000	9,000	220,500	80,700	18,770
WP	99,000	97,250	1,021,500	760,500	58,660	49,500	48,625	340,500	152,100	29,330
Incremental	81,000	79,250	360,000	357,000	21,120	40,500	39,625	120,000	71,400	10,560
Gross Margin, US$										
WOP	28	28	1,018	621	58	14	14	339	124	29
WP	152	150	1,572	1,170	90	76	75	524	234	45
Incremental	125	122	554	549	32	62	61	185	110	16
Returns to Family Labour, RWF/pd										
WOP	72	72	2,646	917	751	72	72	2,646	917	751
WP	367	360	3,783	1,792	1,173	367	360	3,783	1,792	1,173
Incremental Returns to Incremental Labour, RWF/pd	295	288	1,137	875	422	295	288	1,137	875	422
Benefit/Costs Ratio \b	1.5	1.4	6.7	3.4	3.3	1.5	1.4	6.7	3.4	3.3
\a WOP-without project, WP-with project at full production										
\b With Project										

30. The expected increases in production and productivity have phased during the first four year of implementation. These increases are very conservative and based on rainfed crops. Table 4 below provides an overview of the assumption.

Table 4. Phasing of production and productivity increases

	Years						
Crops	**0**	**1**	**2**	**3**	**4**	**Incremental Kg**	**Incremental Kg %**
Rainfed Crops Kg increase per ha							
Beans	640	700	800	900	1000	360	56%
Maize	800	1100	1200	1300	1400	600	75%
Cassava	6700	7500	8300	9100	10000	3300	49%
Sweet Potato	5800	6500	7200	8000	9000	3200	55%
Livestock						**Incremental Lt.**	**Incremental Lt. %**
Milk local race	225	340	340	340	340	115	51%
Meat		0.16	0.16	0.16	0.16	0.16	0%
Calf		0.5	0.5	0.5	0.5	0.5	0%
Manure (tons)	3	3	3	3	3	3	0%

Maize

31. Maize generates an average gross income of about RwF 160000 per annum to farmers having an average holding of 0.5 ha[4] of cultivated land. The price of maize is low during harvest season and high during off-season, fluctuating between 100 RwF/kg to RwF 300 /kg.

32. On average, transport and logistics cost represent 30% of the end market price for maize. Given the relatively short distances between production centers and final retail markets in Rwanda, the transport and logistics are relatively high and limit Rwanda's potential supply the local market at a

[4] The average area of farmlands was 0.76 ha by household, with food and cash crop covering more than 70% of the farm area, hence the average of 0.5ha, as estimated in the National Agricultural Survey of 2008.

competitive price and to allow export of these commodities competitively to neighboring countries. Inadequate on-farm logistics and market logistics infrastructure and processes as well as inefficient transport services are the main drivers of these costs.

33. Current on-farm storage losses are estimated at 2.9 %. Post-harvest specialists estimate an acceptable farm level loss[5] with proper facilities (ventilation, dry, fumigation, etc.) and handling techniques should be closer to 1%. It is assumed there will be an improvement of 1.5 percentage points, through application of improved storage and handling techniques recommended to and applied by target groups.

34. PASP will be addressing these points and it is expected the main benefits derived will be more stable and improved prices for the HUB members /farmer during season. These gains coupled with the expected availability of improved seeds are expected to increase the income and the on farm investment leading to an overall increase in production.

35. PASP will be targeting 60 HUBs handling maize and beans out of the 200 participating in the project, and in 6 out of the 9 selected districts.

Beans

36. Beans generates an average gross income of about RwF 150000 per annum to farmers having an average holding of 0.5 ha[6] of cultivated land. The price of beans is low during harvest season and high during off-season, fluctuating between 250 RwF/kg to RwF 350 /kg.

37. On average, transport and logistics cost represent 26% of the market price for beans. Actual transport and logistics costs are similar to those for maize but transport and logistics costs represent a smaller percentage of final market prices for beans compared to maize, as beans have recently had a higher selling price per tonne than maize.

38. Current on-farm storage losses are estimated at 2.9 %. Post-harvest specialists estimate an acceptable farm level loss[7] with proper facilities (ventilation, dry, fumigation, etc.) and handling techniques should be closer to 1%. It is assumed there will be an improvement of 1.5 percentage points, through improved storage and handling methods recommended to and applied by target groups. These are the same losses assumed for maize.

39. Beans are planted during season B, after maize harvest, and 60% of the production will be sold in the market due to the better prices obtained.

40. The yield of beans can be trebled with certified/quality declared seeds. However in this present scenario an increase of 640kg/ha to 1000kg/ha has been conservatively assumed. The farm gate price has been assumed to be RwF 320 /kg[8]

Cassava

41. Cassava is a staple food commodity. Most households in the south plants cassava, so this commodity chain is included because of the large number of poor people engaged in the production and its high productivity per hectare, coupled with high market demand. Although only harvested once per year, cassava has the advantage of being able to be stored in place in the soil without harvesting and also provides additional food through the leaves.

42. The average farm gate price fluctuates between RwF 80 /kg to RwF 120 /kg. The price assumed in this analysis is RWF 100/kg. The improvements in storing and drying will generate an expected increase of gross income per ha of about 576,000 RWF, generating as well more investment on the field.

[5] 2010 PHHP post-harvest losses report.
[6] The average area of farmlands was 0.76 ha by household, with food and cash crop covering more than 70% of the farm area, hence the average of 0.5ha, as estimated in the National Agricultural Survey of 2008.
[7] 2010 PHHP post-harvest losses report.
[8] Private processors were purchasing red beans at RwF 300 /kg, while yellow beans (RwF 400 /kg° and white beans (RwF 500 /kg° fetched higher prices).

Potato

43. CIP support and inputs have increased total potato production by 30% in the past three years with the area under cultivation increasing from 251,148 ha to 277,145 ha. Technical specialists believe this area cannot be increased further and additional production will need to come from better production techniques. Also prices could be improved through improvements in marketing chain activities. A recent strategy document estimated that yield could increase from 10 tonnes/ha to 25 tonnes/ha with improved growing techniques, storage capacities and transport, and improved varieties of seeds. The mission has used the more conservative World Bank yield estimate of 19 tonnes/ha[9].

44. Potato growers usually receive 42% - 45% of the retail price. The initial consolidation, transport, wholesale and retail margins are quite high. With the marketing innovations and streamlining introduced under PASP, the margin for the grower should be increased by RwF 25 /kg (10 %- 20%) in farm-gate prices[10]. It is assumed that farmers supplying the project HUBs will be growing potatoes in both seasons (two harvests in a year).

Milk

45. Milk is a developing value chain as there is a high demand for fresh milk from local households. It is sold at a price ranging from RwF 250 /liter when sold to households/traders to RwF 300/liter when sold to institutions. However, supply varies through the year with prices falling during the wet season as there is a surplus of milk and, with the perishable nature of the commodity which cannot be stored for any length of time, the price falls closer to 100 RwF/litre.

46. PASP intervention will be on both technical/management side with an emphasis on improving milk handling and quality between the cow and the milk collection centres. It is expected that the increase in quality leading to reduced losses and improved demand by processors such as Savannah Milk at Nyagatare and the new milk processing plant at Mukamira near Musanze will contribute to increased prices, an additional RwF 20 /litre is projected.

Storing and drying facilities.

47. The project will support storing and drying facilities among other infrastructure. A financial model has been developed (see Attachment 3 for full details) based on real figures of similar project supported by other donors (WB and USAID). The analysis shows very interesting results and a financial cash flow able to repay a loan in six years. The assumption is that 25% of the cost of the infrastructure (warehouse of 350 MT. capacity) will be a grant from the project to the proposing cooperative, and 75% a loan at commercial interest rate level (currently 16% per year).

Financial services

48. The MFIs/SACCOs presently do not have a good loan exposure towards agriculture. An analysis of the loan portfolios of the SACCOs visited indicates a high level of delinquent/impaired accounts, close to 7.5% of loans outstanding. The project will be addressing some crucial issues in terms of capacity building and procedures that will assist the SACCOs in operating as well establishment institutions.

49. The aim is to reduce the impairment ratio close to 5%, representing a gain of 2.5% in the portfolio. This will help the MFIs/SACCOs not only to lend additional amounts and satisfy loan demands but will also prevent them from making provisions for loan losses.

VI. ECONOMIC ANALYSIS

Economic project costs

50. The financial costs were converted to economic costs within COSTAB. Taxes and duties as well as price contingencies have been excluded. The overall programme economic cash flow and corresponding economic rate of return (ERR) have been calculated by aggregating the net incremental benefits that will be obtained by the beneficiaries both as a result of additional production and better prices obtained at farm-gate levels (see appendix 1 for full details). The number and

[9] Progress report on status of RSSP 2 as of December 2011.
[10] Prices fluctuate from a low RwF 150 /kg to RwF 260/kg.

phasing of productive activities is indicative, as the actual mix of farm and agro-enterprise investments to be supported under the programme will be demand-driven. For the purposee of the analysis, the following assumptions have been made:

- The analysis is based on a 20-year period during which PASP activities will bring benefits;
- PASP has a five year implementation period;
- The adoption rate is estimated at 80% of participating HUBs and their members/owners;
- Membership per HUB will slowly increase from 150 to 400 up to years 8-9;
- There are no changes in crop production patterns;
- Measures undertaken by the project will reinforce the actions HUBs take consolidating/increasing membership;
- The yields increases accrue from the first year after implementation of the project initiatives;
- Two agriculture season are taken into account: major and minor;
- An additional increase of 10% in benefits has been estimated for post-harvest loss reduction;
- The costs of beneficiaries contribution have been included as it appears in the COSTAB;
- The project costs related to credit given by commercial banks have been excluded as they do not represent a cost for the economy;
- An opportunity cost of capital of 12% is taken for the calculation of NPV, based on the decreasing interest rate in the financial market (currently 16% for commercial annual loans) and the current annual interest level of the 10 years government bonds (7%).

Economic Rate of Return (ERR)

51. The ERR of the project is estimated at 15.7%, with a NPV of US$8.3 million on a capital investment of US$46.4 million. These results indicate that, on the basis of an opportunity cost of capital of 12%, the project shows a satisfactory ERR and NPV, and is justified on economic grounds. Table 5 sets out the base ERR and shows the sensitivity of the ERR to changes in base assumption.

Table 5. Sensitivity analysis

Base Case	Change of Benefits					Change of Costs		Delay of Benefits	
	-30%	-20%	-10%	+10%	+20%	+10%	+20%	1 year	2 years
15.7%	9.8%	11.8%	13.8%	17.4%	19.2%	14.0%	12.5%	13.2%	11.2%
						Total Costs		Total Benefits	
Switching Values /a						+ 24.0%		- 21%	

* The switching values show percentage by which the costs would need to rise or benefits decrease before the NPV reached zero,

52. The results show that the economic viability is robust to adverse changes in programme costs, and the programme still remains viable with increases in capital and recurrent costs or in delay of benefits (Table 5). The switching value analysis shows that the project is robust against changes in prices and benefits.

53. Additional to the usual benefits/costs increases/decreases, the analysis has considered one of the parameters that have direct and important effects on the final ERR. A major factor is the adoption rate of project initiatives by HUB members (Table 6). The switching values analysis shows that the project remains viable even with a lower adoption rate (80% is the base case scenario) the critical adoption rate level is 58%.

Table 6. Sensitivity analysis on adoption rate

		ERR
Adoption Rate	70%	14.00%
	80%	15.70%
	90%	17.30%
Switching Values	58%	12.00%

54. More detailed results are presented in the Attachments (1 to 3). Here again, the degree at which the HUBs will be well organized in order to satisfy their members and also the willingness to attract new members will be crucial. It is assumed that small changes in prices will not have major impacts on project returns. Indications are that demand for these CIP commodities will remain high given population growth in Rwanda and from demand in the regional markets.

Fiscal Impact

55. It is expected that in the medium- to long-term, PASP will have a substantial positive fiscal impact, mainly due to: (a) increased output, income, and employment, resulting in increased tax revenues, and (b) multiplier effects due to increased economic activities in the targeted districts, resulting in increased demand for goods and services, which is expected to generate additional income and employment effects. Furthermore, substantial foreign exchange earnings/savings can be expected, resulting from a reduction in imports.

Attachment 1: Projected Economic Costs and Benefits (USD)

Cost-Benefit Analysis - Economic Rate of Return of the Programme (USD) Base Case

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20
Main season	71,649	629,640	2,140,111	3,953,600	3,953,600	4,744,320	4,744,320	6,234,782	6,234,782	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166	5,590,166
Minor season (40% of the main one)	28,660	251,856	856,044	1,581,440	1,581,440	1,897,728	1,897,728	2,493,913	2,493,913	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066	2,236,066
Incremental benefits from PHLR (10% of additional gains)	10,031	88,150	299,616	553,504	553,504	664,205	664,205	872,869	872,869	782,623	782,623	782,623	782,623	782,623	782,623	782,623	782,623	782,623	782,623	782,623
TOTAL INCREMENTAL BENEFITS	110,340	969,646	3,295,771	6,088,544	6,088,544	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856
Programme Costs																				
Investment Costs	9,580,504	12,975,704	9,932,292	5,696,315	3,373,870															
Recurrent Costs	998,565	1,030,865	991,265	935,925	873,575															
TOTAL COSTS	10,579,069	14,006,569	10,923,557	6,632,240	4,247,445															
NET INCREMENTAL PROGRAMME BENEFITS (CASH FLOW)	- 10,468,729	- 13,036,923	- 7,627,786	- 543,696	1,841,099	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856
ECONOMIC RATE OF RETURN	15.7%																			
NET PRESENT VALUE (NPV at 12%)	8,309,930																			

Sensitivity Analysis

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	EIRR	NPV
Base case scenario	-10,468,729	-13,036,923	-7,627,786	-543,696	1,841,099	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	15.7%	14,887,704
Costs +10%	-11,526,636	-14,437,580	-8,720,142	-1,206,919	1,416,355	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	14.0%	11,230,976
Costs +20%	-12,584,543	-15,838,237	-9,812,498	-1,870,143	991,610	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	12.50%	7,574,248
Costs +50%	-15,758,264	-20,040,208	-13,089,565	-3,859,815	-282,624	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	9.1%	-3,395,936
Benefits +10%	-10,457,695	-12,939,959	-7,298,209	65,159	2,449,953	8,036,878	8,036,878	10,561,720	10,561,720	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	9,469,741	17.4%	20,033,202
Benefits +20%	-10,446,661	-12,842,994	-6,968,632	674,013	3,058,808	8,767,503	8,767,503	11,521,876	11,521,876	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	10,330,627	19.2%	25,178,701
Benefits -10%	-10,479,763	-13,133,888	-7,957,363	-1,152,550	1,232,245	6,575,628	6,575,628	8,641,407	8,641,407	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	7,747,970	13.8%	9,742,205
Benefits -20%	-10,489,694	-13,230,853	-8,286,941	-1,761,404	623,390	5,845,002	5,845,002	7,681,251	7,681,251	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	6,887,085	11.8%	4,597,710
Benefits -50%	-10,523,899	-13,521,746	-9,275,672	-3,587,968	-1,203,173	3,653,126	3,653,126	4,800,782	4,800,782	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	4,304,428	5.2%	-10,839,788
Benefits lagged 1 year	-10,579,069	-13,896,229	-9,953,911	-3,336,469	1,841,099	6,088,544	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	13.2%	9,046,658
Benefits lagged 1 year	-10,579,069	-14,006,569	-10,813,217	-5,662,594	-951,674	6,088,544	6,088,544	7,306,253	7,306,253	9,601,564	9,601,564	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	8,608,856	11.2%	3,736,617

Attachment 2: Benefits Aggregation

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	HUBs	15	55	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
	Members	150	150	200	250	250	300	300	400	400	400	400	400	400	400	400	400	400	400	400	400
	Total members	2,250	8,250	12,000	15,000	15,000	18,000	18,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
MAIZE	Adoption rate= 80%	1,800	6,600	9,600	12,000	12,000	14,400	14,400	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200
	Area= ha (average 0.5ha)	900	3,300	4,800	6,000	6,000	7,200	7,200	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600	9,600
	Yield/ha (ton)	0.9	1.1	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	Total yield (ton)	1,620	7,260	12,000	16,800	16,800	20,160	20,160	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880	26,880
	Additional Benefits US$	- 69,231	- 25,385	212,308	576,923	576,923	692,308	692,308	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077	923,077
	HUBs	15	55	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
	Members	150	150	200	250	250	300	300	400	400	350	350	350	350	350	350	350	350	350	350	350
	Total members	2,250	8,250	12,000	15,000	15,000	18,000	18,000	24,000	24,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
BEANS	Adoption rate= 80%	1,800	6,600	9,600	12,000	12,000	14,400	14,400	19,200	19,200	16,800	16,800	16,800	16,800	16,800	16,800	16,800	16,800	16,800	16,800	16,800
	Area= ha (average 0.5ha)	900	3,300	4,800	6,000	6,000	7,200	7,200	9,600	9,600	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400
	Yield/ha (ton)	0.7	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Total yield (ton)	648	2,640	4,320	6,000	6,000	7,200	7,200	9,600	9,600	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400
	Additional Benefits US$	35,446	183,785	503,631	924,923	924,923	1,109,908	1,109,908	1,479,877	1,479,877	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892	1,294,892
	HUBs	5	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Members	150	150	200	250	250	300	300	400	400	350	350	350	350	350	350	350	350	350	350	350
	Total members	750	2,250	5,000	6,250	6,250	7,500	7,500	10,000	10,000	8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750
	Adoption rate= 80%	600	1,800	4,000	5,000	5,000	6,000	6,000	8,000	8,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
POTATO	Area= ha (average 0.5ha)	300	900	2,000	2,500	2,500	3,000	3,000	4,000	4,000	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
	Yield/ha (ton)	6.5	7.3	8.2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
	Total yield (ton)	1,950	6,570	16,400	25,000	25,000	30,000	30,000	40,000	40,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
	Additional Benefits US$	30,923	258,923	990,769	2,276,923	2,276,923	2,732,308	2,732,308	3,643,077	3,643,077	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692	3,187,692
	HUBs	5	15	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Members	150	150	200	250	250	300	300	400	400	350	350	350	350	350	350	350	350	350	350	350
	Total members	750	2,250	4,000	5,000	5,000	6,000	6,000	8,000	8,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
CASSAVA	Adoption rate= 80%	600	1,800	3,200	4,000	4,000	4,800	4,800	6,400	6,400	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600	5,600
	Area= ha (average 0.5ha)	300	900	1,600	2,000	2,000	2,400	2,400	3,200	3,200	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800
	Yield/ha (ton)	7.7	8.8	9.8	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	Total yield (ton)	2,310	7,875	15,680	23,000	23,000	27,600	27,600	36,800	36,800	32,200	32,200	32,200	32,200	32,200	32,200	32,200	32,200	32,200	32,200	32,200
	Additional Benefits US$	48,462	297,692	839,385	1,676,923	1,676,923	2,012,308	2,012,308	2,683,077	2,683,077	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692	2,347,692
	HUBs	5	15	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
	Members	150	150	200	250	250	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
	Total members	750	2,250	7,000	8,750	8,750	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500
DAIRY/MILK	Adoption rate= 80%	600	1,800	5,600	7,000	7,000	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400
	Number of cows	600	1,800	5,600	7,000	7,000	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400
	Additional Benefits US$	25,034	75,102	233,649	292,062	292,062	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474	350,474

Attachment 3: Crops and Enterprise Budgets

Maize

APPENDIX I							
REBUBLIC OF RWANDA							
POST-HARVEST AND AGRIBUSINESS SUPPORT PROJECT (PASP)							
Maize Crop Model in dryland without water management							
			Without Project	With Project			
YIELDS AND INPUTS (Per ha)	Unit	Prices	1 to 30	1	2	3	4 to 30
Main Production	kg	225	800	1,100	1,200	1,300	1,400
Operating							
Inputs							
Seeds	Kg	300	40	40	40	40	40
NPK	Kg	175		100	100	100	100
Urea	Kg	225		50	50	50	50
Manure	Tons	5,000	-	3	3	3	3
Labour							
labour	day	600	250	270	270	270	270
FINANCIAL BUDGET (In RWF Per ha)			**1 to 30**	**1**	**2**	**3**	**4 to 30**
Revenue			180,000	247,500	270,000	292,500	315,000
Input costs							
Seeds			12,000	12,000	12,000	12,000	12,000
NPK			-	17,500	17,500	17,500	17,500
Urea			-	11,250	11,250	11,250	11,250
Manure			-	15,000	15,000	15,000	15,000
Sub-total Input costs			12,000	55,750	55,750	55,750	55,750
Income (Before Labour Costs)			168,000	191,750	214,250	236,750	259,250
Labour costs							
labour			150,000	162,000	162,000	162,000	162,000
Total Production costs			162,000	217,750	217,750	217,750	217,750
Income (After Labour Costs)			18,000	29,750	52,250	74,750	97,250
Incremental Gross Income (after labour)				11,750	34,250	56,750	79,250
Return on Family labour			72	110	194	277	360
Incremental Return on Family labour				38	122	205	288
NPV @12% (RWF)	335,624						
Benefit/Cost Ratio			1.1	1.1	1.2	1.3	1.4

Beans

REBUBLIC OF RWANDA							
POST-HARVEST AND AGRIBUSINESS SUPPORT PROJECT (PASP)							
Bean Crop Model							
			WOP	With Project			
Yields and inputs (per ha)	Unit	Price	1 to 30	1	2	3	4 to 30
Main Production	kg	300	640	700	800	900	1,000
Operating							
Inputs							
Seeds	Kg	400	60	60	60	60	60
Manure	tonne	5000	-	-	3	3	3
Labour							
Labour	day	600	250	270	270	270	270
FINANCIAL BUDGET (In RWF Per ha)			1 to 30	1	2	3	4 to 30
Revenue			192,000	210,000	240,000	270,000	300,000
Input costs							
Seeds			24,000	24,000	24,000	24,000	24,000
Manure			-	-	15,000	15,000	15,000
Sub-total Input costs			24,000	24,000	39,000	39,000	39,000
Income (Before Labour Costs)			168,000	186,000	201,000	231,000	261,000
Labour costs							
Labour			150,000	162,000	162,000	162,000	162,000
Total Production costs			174,000	186,000	201,000	201,000	201,000
Income (After Labour Costs)			18,000	24,000	39,000	69,000	99,000
Incremental Gross Income (after labour)				6,000	21,000	51,000	81,000
Return on Family labour			72	89	144	256	367
Incremental Return on Family labour				17	72	184	295
NPV @12% (RWF)	321,519						
Benefit/Cost Ratio			1.1	1.1	3.1	1.3	1.5

Cassava

REBUBLIC OF RWANDA							
POST-HARVEST AND AGRIBUSINESS SUPPORT PROJECT (PASP)							
Cassava Crop Model							
			Without	With			
			Project	Project			
YIELDS AND INPUTS (per ha)	Unit	Price	1 to 30	1	2	3	4 to 30
Main Production	kg	120	6,700	7,500	8,300	9,100	10,000
Operating							
Inputs							
Cutting	cutting	8	10,000	10,000	12,000	12,000	12,000
Manure	TONNE	5,000	-	3	3	3	3
Labour	day	250	250	270	270	270	270
FINANCIAL BUDGET (In RWF Per ha)			1 to 30	1	2	3	4 to 30
Revenue			804,000	900,000	996,000	1,092,000	1,200,000
Input costs							
Cutting			80,000	80,000	96,000	96,000	96,000
Manure			-	15,000	15,000	15,000	15,000
Sub-total Input costs			80,000	95,000	111,000	111,000	111,000
Income (Before Labour Costs)			724,000	805,000	885,000	981,000	1,089,000
Labour costs							
Labour			62,500	67,500	67,500	67,500	67,500
Total Production costs			142,500	162,500	178,500	178,500	178,500
Income (After Labour Costs)			661,500	737,500	817,500	913,500	1,021,500
Incremental Gross Income (after labour)			-	76,000	156,000	252,000	360,000
Return on Family labour			2,646	2,731	3,028	3,383	3,783
Incremental Return on Family labour				85	382	737	1,137
NPV @12% (RWF)	1,375,901						
Benefit/Cost Ratio			5.6	5.5	5.6	6.1	6.7

Potato

REBUBLIC OF RWANDA							
POST-HARVEST AND AGRIBUSINESS SUPPORT PROJECT (PASP)							
Sweet Potato Crop Model							
			Without	With			
			Project	Project			
YIELDS AND INPUTS (per ha)	Unit	Price	1 to 30	1	2	3	4 to 30
Main Production	kg	120	5,800	6,500	7,200	8,000	9,000
Operating							
Inputs							
Seed	Kg	125	100	100	100	100	100
NPK	kg	350	200	200	200	200	200
Manure	TONNE	5,000	-	3	3	3	3
Labour	day	600	350	370	370	370	370
FINANCIAL BUDGET (In RWF Per ha)			1 to 30	1	2	3	4 to 30
Revenue			696,000	780,000	864,000	960,000	1,080,000
Input costs							
Seed			12,500	12,500	12,500	12,500	12,500
NPK			70,000	70,000	70,000	70,000	70,000
Manure			-	15,000	15,000	15,000	15,000
Sub-total Input costs			82,500	97,500	97,500	97,500	97,500
Income (Before Labour Costs)			613,500	682,500	766,500	862,500	982,500
Labour costs							
Labour			210,000	222,000	222,000	222,000	222,000
Total Production costs			292,500	319,500	319,500	319,500	319,500
Income (After Labour Costs)			321,000	363,000	447,000	543,000	663,000
Incremental Gross Income (after labour)				42,000	126,000	222,000	342,000
Return on Family labour			917	981	1,208	1,468	1,792
Incremental Return on Family labour				64	291	550	875
NPV @12% (RWF)	1,803,851						
Benefit/Cost Ratio			2.4	2.4	2.7	3.0	3.4

Milk

REBUBLIC OF RWANDA						
POST-HARVEST AND AGRIBUSINESS SUPPORT PROJECT (PASP)						
Milk Production model						
Cow Model (1 local breed cow improved summer feeding)						
			PRODUCTION		***FINANCIAL (RWF)***	
		Unit	**Without Project**	**With Project**	**Without Project**	**With Project**
Main Production						
	Milk a/	litre	225	338	56,250	84,500
	Sub-total Production				56,250	84,500
Operating Costs						
	Other Costs					
	O&M water points	per annum			3,960	3,960
	Transportation	value			2,250	3,380
	Sub-total Other Costs				6,210	7,340
	Sub-total Inputs				6,210	7,340
	Labor					
	Family labour	day	50	50	12,500	12,500
	Hired labour	day	10	10	6,000	6,000
	Sub-total Labour				18,500	18,500
Sub-total Operating					24,710	25,840
Net Revenue					31,540	58,660
Incremental revenue						27,120
Benefit/cost Ratio					2.3	3.3
Returns per family labour day					631	1,173
a/ Summer Production based on 150 days		**NPV @12% (RWF)**		24,214		

Warehouse

Republic of Rwanda													
Rural Financial Services and Marketing Programme													
Storage Facility (capacity to keep 350 of Maize ton)													
Total capacity	350,000												
$1=	**650**	**RWF**											
Item	Unit	Unit Price,		Without	With Project								
		RWF		Project	1	2	3	3	5	6	7	8	9	10
Main Service														
Storing purchased maize season A	kg	270			120,000	120,000	120,000	144,000	144,000	144,000	144,000	172,800	172,800	172,800
Storing purchased maize season B	kg	200			120,000	120,000	120,000	144,000	144,000	144,000	144,000	172,800	172,800	172,800
Storing produced maize season A	kg	270			30,000	30,000	30,000	36,000	36,000	36,000	36,000	43,200	43,200	43,200
Storing produced maize season B	kg	200			30,000	30,000	30,000	36,000	36,000	36,000	36,000	43,200	43,200	43,200
Total					300,000	300,000	300,000	360,000	360,000	360,000	360,000	432,000	432,000	432,000
Inputs														
Investments														
Warehouse Facility	building	12,040,000			1									
Technological equipment (pallets, boxes, containers)	set	4,816,000			1									
Drying	infrastructure	4,448,780			1									
Operating														
Maize purchase season A	kg	185			120,000	120,000	120,000	144,000	144,000	144,000	144,000	172,800	172,800	172,800
Maize purchase season B	kg	120			120,000	120,000	120,000	144,000	144,000	144,000	144,000	172,800	172,800	172,800
Maize produced season A	kg	180			30,000	30,000	30,000	36,000	36,000	36,000	36,000	43,200	43,200	43,200
Maize produced season B	kg	180			30,000	30,000	30,000	36,000	36,000	36,000	36,000	43,200	43,200	43,200
Cost of storage a/	lump sum	200,000		-	1	1	1	1	1	1	1	1	1	1
Maintenance building b/	lump sum	5%			824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439
Maintenance equipment c/	lump sum	10%			481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600
Labour														
Hired Labour d/	person/year	144,000		-	2	2	2	2	2	2	2	2	2	2
a/ includes all storage costs (electricity, water, cleaning, etc)														
b/ 5 percent of the investment costs														
c/ 10 percent of the investment costs														
d/ 6 months of operation														
Financial Budget (thousand RWF)														
				Without	With Project									
				Project	1	2	3	4	5	6	7	8	9	10
Main Production														
Storing purchased maize season A					32,400,000	32,400,000	32,400,000	38,880,000	38,880,000	38,880,000	38,880,000	46,656,000	46,656,000	46,656,000
Storing purchased maize season B					24,000,000	24,000,000	24,000,000	28,800,000	28,800,000	28,800,000	28,800,000	34,560,000	34,560,000	34,560,000
Sub-total Revenues					56,400,000	56,400,000	56,400,000	67,680,000	67,680,000	67,680,000	67,680,000	81,216,000	81,216,000	81,216,000
Inputs														
Investments														
Warehouse Facility					12,040,000									
Technological equipment (pallets, boxes, containers)					4,816,000									
Drying					4,448,780									
Sub-total					21,304,780	-	-	-						
Operating														
raw material season A					27,600,000	27,600,000	27,600,000	33,120,000	33,120,000	33,120,000	33,120,000	39,744,000	39,744,000	39,744,000
raw material peak B					19,800,000	19,800,000	19,800,000	23,760,000	23,760,000	23,760,000	23,760,000	28,512,000	28,512,000	28,512,000
Storage					200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Maintenance building					824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439	824,439
Maintenance equipment					481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600	481,600
Hired Labour					288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000
Sub-total Operating Costs					49,194,039	49,194,039	49,194,039	58,674,039	58,674,039	58,674,039	58,674,039	70,050,039	70,050,039	70,050,039
Total Production Costs					70,498,819	49,194,039	49,194,039	58,674,039	58,674,039	58,674,039	58,674,039	70,050,039	70,050,039	70,050,039
Gross Income					- 14,098,819	7,205,961	7,205,961	9,005,961	9,005,961	9,005,961	9,005,961	11,165,961	11,165,961	11,165,961
Incremental Net Income (before financing)					- 14,098,819	7,205,961	7,205,961	9,005,961	9,005,961	9,005,961	9,005,961	11,165,961	11,165,961	11,165,961
	NPV @10% (RWF)	34,249,897												
	IRR	56%												
Financing Analysis														
Investmens	RWF	21,304,780												
Repayment Period	years	6												
Grace Period	years	1												
Interest Rate	%	16												
Grant	%	25												
Loan	RWF	15,978,585												
				Without	With Project									
				Project	1	2	3	4	5	6	7	8	9	10-20
Principal Repayments		15,978,585			-	3,195,717	3,195,717	3,195,717	3,195,717	3,195,717				
Interest Repayments		8,436,693			1,278,287	2,556,574	2,045,259	1,533,944	1,022,629	511,315	-			
Total Loan Repayments		21,219,561			1,278,287	5,752,291	5,240,976	4,729,661	4,218,346	3,707,032	-			
Loan Outstanding					15,978,585	12,782,868	9,587,151	6,391,434	3,195,717	-				
Cash Flow Analysis														
Items				Without	With Project									
				Project	1	2	3	4	5	6	7	8	9	10-20
Inflow														
Production Revenues				-	56,400,000	56,400,000	56,400,000	67,680,000	67,680,000	67,680,000	67,680,000	81,216,000	81,216,000	81,216,000
Long-term Loan				-	15,978,585									
Grant				-	5,326,195									
Total Inflow				-	77,704,780	56,400,000	56,400,000	67,680,000	67,680,000	67,680,000	67,680,000	81,216,000	81,216,000	81,216,000
Outflow														
Production Costs				-	70,498,819	49,194,039	49,194,039	58,674,039	58,674,039	58,674,039	58,674,039	70,050,039	70,050,039	70,050,039
Repayment of Loans														
Long-term Loan					-	3,195,717	3,195,717	3,195,717	3,195,717	3,195,717	-	-	-	-
Repayment of Interest on Loans														
Long-term Loan					1,278,287	2,556,574	2,045,259	1,533,944	1,022,629	511,315	-	-	-	-
Total Outflow				-	71,777,106	54,946,330	54,435,015	63,403,700	62,892,385	62,381,071	58,674,039	70,050,039	70,050,039	70,050,039
Net Income after Financing				-	5,927,674	1,453,670	1,964,985	4,276,300	4,787,615	5,298,929	9,005,961	11,165,961	11,165,961	11,165,961
Taxes		%			-	-	-	-	-	-	-	-	-	-
Net Income after Tax				-	5,927,674	1,453,670	1,964,985	4,276,300	4,787,615	5,298,929	9,005,961	11,165,961	11,165,961	11,165,961
Incremental Production Revenues					56,400,000	56,400,000	56,400,000	67,680,000	67,680,000	67,680,000	67,680,000	81,216,000	81,216,000	81,216,000
	NPV @12% (thousand RWF)	370,020,848												
Incremental Total Inflow					77,704,780	56,400,000	56,400,000	67,680,000	67,680,000	67,680,000	67,680,000	81,216,000	81,216,000	81,216,000
	NPV @12% (thousand RWF)	389,042,973												
Incremental Production Costs					70,498,819	49,194,039	49,194,039	58,674,039	58,674,039	58,674,039	58,674,039	70,050,039	70,050,039	70,050,039
	NPV @12% (thousand RWF)	340,133,814												
Incremental Investments					21,304,780	-	-							
	NPV @12% (thousand RWF)	19,022,125												
Incremental Outflow					71,777,106	54,946,330	54,435,015	63,403,700	62,892,385	62,381,071	58,674,039	70,050,039	70,050,039	70,050,039
	NPV @12% (thousand RWF)	356,868,741												
Incremental Net Income					5,927,674	1,453,670	1,964,985	4,276,300	4,787,615	5,298,929	9,005,961	11,165,961	11,165,961	11,165,961

Appendix 11: Outline of the project implementation manual

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Appendix 12: Compliance with IFAD policies

1. PASP design is aligned to IFAD Strategic Framework 2011-2015 and IFAD policies on Targeting, Gender, Rural Finance, Private-Sector, Environment and Natural Resource Management, and IFAD's Climate Change strategy:

2. **Targeting.** PASP's primary target group comprises poor smallholder farmers either engaged in production and primary processing in the priority CIP crops and dairy development, including poor farmers with some production potential and members of cooperatives who own small land plots), and smallholders who supplement their income through agricultural wage work. The target group was selected among the *Ubudehe* categories II (the very poor), III (the poor), and IV (the resourceful poor) and corresponds to the EICV3 income group of small-scale farmers (61.8% of the population) and wage farm labourers (9.8% of the population). The project will address the post-harvest sector of the CIP crops and dairy to demonstrate pro-poor approaches benefitting these target groups in post-harvest activities. PASP will also engage individual farmers and entrepreneurs who can potentially become drivers for creating new investment and employment opportunities for vulnerable groups, including the landless poor.

3. **Gender.** PASP promotes women's participation in post-harvest processes and value chain development equally with men, assisting them to move out of low input-low output activities with equal access to agricultural support and financial services, and to play an active role in cooperatives and cooperative-owned businesses. PASP will finance specific measures to ensure gender equitable participation and benefits from project activities, including: (i) establishing and monitoring minimum participant quotas for women and youth in capacity building activities within the participating cooperatives, both at management level and among the overall membership to ensure that women knowledge about access to finance is improved; (ii) developing women's capacities to become service providers, and where appropriate, organising special training sessions targeted to them; (iii) ensuring that both male and female family members have access to visits, exchange programmes, farmer field schools and other technical training, with a target of at least 50% women; (iv) incorporating gender audits in cooperative capacity assessments and supporting cooperatives to increase the number of women members and in leadership positions, and to ensure that they have equal access to cooperative services; and (v) designing a competition on a yearly basis to recognize the most entrepreneurial women in every district.

4. **Rural finance.** PASP will facilitate access to rural financial services from existing financial institutions, so HUBs and their farmer associates develop a long-term business relationship with the financial sector beyond the project timeframe. With this arrangement, PASP seeks to generate short- and long-term benefits for HUBs and financial institutions. Project resources will help participating groups establish or strengthen their track record with the financial institution of their choice enabling these groups to graduate into viable enterprises that are competitive and effectively linked to local, national or regional markets, and capable of attracting private sector commercial financing. This will allow financial institutions to enhance their client base at a slightly reduced risk exposure and gain knowledge and experience to respond to farmers' financing needs at both HUB and farm level, which in the long-term is likely to improve the quality of their products and services.

5. **Private sector**. Private sector partnerships will be identified and assessed on their commitment and capacity of providing stronger market linkages to PASP target groups. The selection criteria will follow the relevant principles of engagement in the IFAD Private Sector Strategy: (i) Support or partnership should be driven first and foremost by the interests and needs of smallholder farmers; more specifically, poor rural men and women should benefit from this engagement as producers, suppliers, customers, distributors or employees; (ii) If large and international companies are involved, these must comply with social and environmental standards; (iii) Impact of the engagement should be sustainable after project contribution has ended; and (iv) partnerships should ensure transparency and clear and agreed responsibilities and accountability by all partners.

6. **Environment and natural resource management.** The goal of IFAD ENRM policy is to enable poor rural people to escape from and remain out of poverty through more-productive and resilient livelihoods and ecosystems. The ten core principles of the ENRM policy have helped focus PASP

design to ensure that the projects investments contribute directly to Rwanda's Vision 2020 and its Green Growth Strategy outlined in EDPRS II. Through its two key components, PASP will promote climate resilient and low carbon harvest and post-harvesting procedures, drying/cooling, processing and value addition, storage, logistics and distribution to generate reductions in product losses and increase smallholder and rural labourer incomes. PASP will raise awareness of the need to manage available rainwater efficiently and promote alternative low carbon energy sources such as solar power and biogas as appropriate for drying and cooling of produce. At the same time it will contribute to the government goal of improving overall productivity and moving agriculture from a subsistence base to a sustainable market led agriculture.

7. **Climate Change.** The goal of IFAD's climate change strategy is to ensure a systematic focus on the implications of climate change for its activities at the country level. PASP will contribute to achieving this goal and the significant amount of climate finance mobilised as co-financing (ASAP) is a clear demonstration that the project's overall concept and approach is one well aligned with climate concerns in Rwanda as outlined in EDPRSII. PASP design identified a general lack of proper guidance in the harvesting and post-harvest processing and construction of post-harvest rural infrastructure in face of projected climate change scenarios. Climate change is projected to have a significant negative impact on the efforts to reduce poverty and improve food security for the rural population. All planned activities address these issues through their focus on capacity building on climate smart harvesting, processing, handling and storage techniques/infrastructure.

Attachment 1: Checklist questions

Table 1: Targeting

	ISSUES
1) Does the **main target group** - those expected to benefit most- correspond to IFAD's target group as defined by the Targeting Policy (the extremely poor and food insecure)?	Yes, see Appendix 2 on Poverty, Targeting and Gender. The target group was identified based on cross-referencing three main sources: the *Ubudehe* self-assessed poverty ranking, the Integrated Household Living Survey and the WFP Food Security and Vulnerability Survey. It is in line with IFAD's targeting criteria, corresponding to the "productive poor" and "extremely poor" including vulnerable and women- headed households.
2) Have **target sub-groups** been identified and described according to their different socio-economic characteristics, assets and livelihoods - with due attention to gender differences?	Yes, see Appendix 2. Specific activities have also been designed for women-headed households and youth .
3) Is evidence provided of **interest in and likely uptake of the proposed activities** by the identified target sub-groups?	The targeting strategy has been designed to correspond to the target group's interest and needs, particularly in response to the recent surpluses in production of staple food crops. In consultations, the target group clearly expressed problems linked to the lack of suitable post-harvest facilities and distribution which hinder adequate income generation. PASP strategy includes operational measures that directly address these needs. Under the project, SMEs/cooperatives will benefit from capacity building interventions. Cooperative groups will be chosen using an established set of criteria which includes evidence of cohesiveness as a group, and their interest in participating in the project.
4) Does the design document describe a feasible and operational **targeting strategy** in line with the Targeting Policy? *The targeting strategy will involve either all or some of the following measures and methods*	Yes. See Appendix 2 which outlines the targeting strategy.
4.1) Geographic targeting *– based on poverty* data *or proxy indicators to identify, for area-based projects or programmes, geographic areas (and within these, communities) with high concentrations of poor people*	Geographical targeting was defined according to three main criteria, supported by evidence: (i) Land areas dedicated to individual crops; (ii) poverty assessed by cross-referencing the *Ubudehe* Self Assessments and EICV3 data; and (iii) potential for value chain development and growth based on current and planned processing facilities. See attachment tables of Appendix 2 for details.
4.2) Enabling measures – These *include 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, and appropriate project/programme management arrangements (references in ToR, PCU composition); language in describing staff positions (s/he; masculine/feminine).*	GoR has a strong commitment to poverty and gender issues. In support of these objectives, PASP foresees a targeting and gender officer at the SPIU level (specific TORs have been drafted) to plan, monitor and supervise effective pro-poor and gender sensitive implementation.
4.3) Empowerment and capacity-building measures including *information and communication, focused capacity- and confidence-building measures, organisational support, in order to empower and encourage the more active participation and inclusion in planning and decision making of people who*	As part of the sensitization process on good governance, principles of accountability, transparency and participation are to be streamlined and disseminated to the target group. Participation in decision-making is given particular attention, and will be promoted at the level of the cooperative/farmer group at the district level through forums such as the JADF and at the national level through representation in the

traditionally have less voice and power.	Steering Committee. Proposed activities also include initial dissemination of information on the project and specific gender and youth capacity building activities for not only management, but other members of the cooperative at large. Some activities include: administrative and financial training to management groups, basic training in literacy, and specific training for young women and men to facilitate their access to future management roles.
4.4) Direct targeting *when services or resources* are *to be channelled to specific individuals or* households*. Such measures may include eligibility criteria, to be developed and applied with community participation; quotas (e.g for women), earmarked funds*	Specific criteria have been established to target suitable cooperatives and their members. Within these cooperatives, the project identifies specific needs of women and youth, as well as differentiates between the needs of management and other members of the cooperative.
4.5)Attention to procedural measures *that could militate against participation by the intended* target *groups (such as, excessive beneficiary contributions; cumbersome legal requirements, etc**)***	
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?	Yes, see Appendices 2 and 6. The M&E principles outline that the system will be participatory and focused on people and beneficiaries, and that it will be well targeted. Furthermore, the process of defining the AWPB will be carried out in a participatory manner, and it is also noted that periodic participatory impact assessments will be undertaken by the SPIU.

Table 2: Gender

	Yes	No	Partial	Issues
1. *Project design document contains – and project implementation is based on - gender-disaggregated poverty data and analysis.*	√			Yes, see Appendix 2 based on sex-disaggregated data available in the EICV3 and WFP Food Security and Vulnerability Survey. Youth sex-disaggregated data is also included.
2.The project articulates – or the project implement – actions with aim to:				The design document addresses the issue of women's empowerment through better control of their resources by helping them identify marketable options; it strongly focuses on capacity building to strengthen their decision making role within cooperative structures and aims at improving their knowledge (literacy, access to credit and administrative capacity) and ease their workload by giving them access to improved post-harvest processing facilities.
• Expand women's economic empowerment through access to and control over fundamental assets.	√			
• Strengthen women's decision-making role in community affairs and representation in local institutions.	√			
• Improve women's knowledge and well-being and ease their workloads by facilitating their access to basic rural services and infrastructure.	√			
3. *The project identifies **operational measures** to ensure gender- equitable participation in, and benefit from, project activities, including:*				
• Allocating adequate resources to implement the gender strategy.	√			Gender ratios and specific activities (including their costing) have been included in the design. See section 3.3 of the PDR.
• Ensuring and supporting women's active participation in decision-making.	√			As a national policy and mandatory measure, women must have a minimum 30% representation in all decision-making bodies. The project adopts this policy, and proposes additional measures and activities that will not only supports representation, but also women's empowerment – i.e. their ability to *actively* participate in decision-making processes.
• Ensuring management arrangements reflect attention to gender equality and women's empowerment concerns.	√			A Targeting and Gender officer is incorporated as a core staff in the SPIU to implement and monitor PASP targeting and gender strategy.
• Ensuring direct project outreach to women.	√			Direct outreach and targeting of women is included.
4. The project's logical framework and M&E system specify gender-disaggregated performance and impact data.				Yes. Gender-disaggregated data will be collected and monitored, with support of the M&E unit in the SPIU and the Targeting and Gender officer.

Attachment 2: Environmental and Social Review Note

I. Introduction

1. This Environmental and Social Review Note (ESRN) has been prepared in line with IFAD's Procedures for Environmental Assessment in the Project Cycle (EB 2009/96/R.7) using information gathered on site during the design process in July 2012 and May 2013. The environmental classification for the project is "B". No further information is deemed necessary to complete the ESRN and no formal Environmental Impact Assessment (EIA) is considered necessary for the whole project.

II. Project description

2. PASP has been designed to address long-term GoR development objectives in Vision 2020[1]. The strategies to achieve these objectives are outlined in the 2013-2018 Economic Development and Poverty Reduction Strategy II (EDPRS II). The EDPRS II is structured around five thematic priorities: (i) economic transformation for rapid growth, including diversifying the economic base for exports; (ii) private sector development, competitiveness and service delivery; (iii) rural development, including agriculture modernization, environment and climate change; (iv) productivity and youth employment creation, including education and skills development and job creation; and (v) accountable governance. The overall project goal is: "To alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda'. The project development objective is: 'Increased smallholder and rural worker incomes (including women and vulnerable groups) from CIP crop and dairy businesses'.

3. PASP will support the development of the post-harvest (*non-primary production)* parts of five priority value chains: Maize, Beans, Potatoes, Cassava and Milk. The project will be implemented in 10 districts of the country. A detailed description of the project is given in the PDR main report with further details provided in the Appendices and two Working Papers.

4. To ensure earmarked climate and environmental finance is channelled to smallholders through IFAD-supported programmes, the 'Adaptation for Smallholder Agriculture Programme' (ASAP) was established in 2012. A US$7 million grant from this programme has been earmarked to contribute to the financing of PASP with a view to increase the climate resilience and environmental sustainability of the targeted value chains.

III. Major site characteristics

5. Rwanda is a landlocked country which lies within latitudes 1° -3° S and longitudes 28°-31°E and bordered by Uganda in the north and Tanzania in the east while in the south and west are Burundi and the Democratic Republic of Congo, respectively. The country spans an area of about 26,388 km^2, of which 52%, 13,850 km^2, is suitable for arable production. However, in recent years the actual areas cultivated has exceeded 1.6 million ha, with another 0.47 million ha under permanent pasture, so well over 70% of the country's total land surface is exploited for agriculture[2] (see Figure 1[3]). Currently the majority of households cultivate less than 0.5 hectares of land, and with a population growth rate of 2.6%, land owned and cultivated is expected to decrease further.

[1] ROR 2000. Rwanda Vision 2020. Ministry of Finance and Economic Planning, Republic of Rwanda (ROR), Kigali.
[2] REMA 2009. Rwanda: State of the Environment and Outlook: Our Environment for Economic Development. Rwanda Environment Management Authority (REMA), Government of Rwanda.
[3] FEWSNET, 2011. Livelihoods zoning "plus" activity in Rwanda. A special report by the Famine Early Warning Systems Network (FEWS NET). August 2011. FEWSNET USAID.

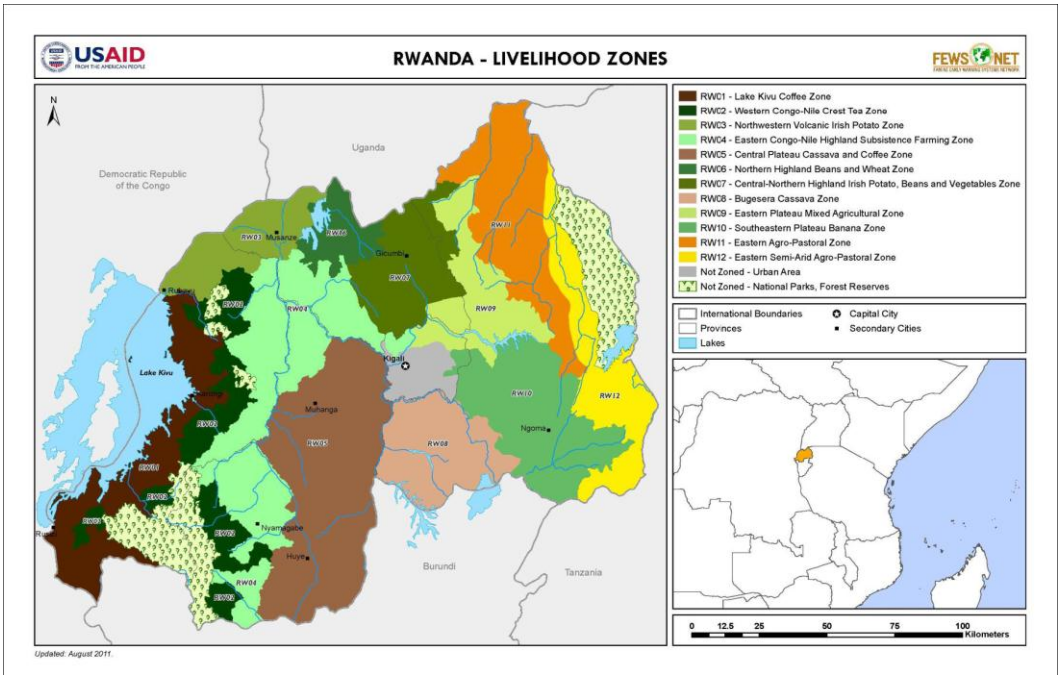

Figure 1 National Livelihoods Zone Map for Rwanda – 2001

6. Rwanda is ecologically diverse for its size with highland mountain forests to savannah grasslands and low altitude marshes. Rwanda's geography in the western part of the country is characterized by highland mountain landscapes and gentle slopes leading toward the lowland areas in the east. Most of the country benefits from two agriculture seasons that are supported by two rainy seasons. In the lowland marshland areas some households achieve a third season. To date some 52% of the country's 165,000 ha of marshlands are under cultivation. Regional climate research on changes and increases in extremes show a consistency in the warming of minimum and maximum temperatures by the middle of this century but with quite a wide range up to 3^{o}C. For precipitation, the balance across the models is for wetter conditions in all months, and also more very wet days may be expected particularly in July, August and September (See Working Paper 1 - Emerging Climate And Environmental Issues In Rwanda).

IV. Issues in natural resource management

7. The major issue in environmental protection in Rwanda is the imbalance between the population and the natural resources (land, water, flora, fauna and non-renewable resources) which have been degrading for decades. This degradation is observed through massive deforestation, the depletion of bio-diversity, erosion and landslides, pollution of waterways and the degradation of fragile ecosystems, such as swamps and wetlands. These environmental problems are exacerbated by the poor location of industries and the direct disposal of their untreated wastes into waterways and lakes. To ensure sustainable development, The Government of Rwanda (GoR) is focusing on implementation of appropriate land and water management techniques, coupled with a sound biodiversity policy as summarised in EDPRSII.

8. To protect and manage natural resources, GoR's objective is by 2020 to reduce from 90% to 50% the number of households that are mainly dependent on traditional agriculture. To achieve this objective, the government seeks to integrate environmental aspects in all policies, education and development, and in all decision-making and promotion of community involvement (including women and youth) as a basis for environmental protection and management.

9. **Climate.** The climate of Rwanda is dominated by the ITCZ which passes over the country twice a year and determines two rainy periods: from mid-September to mid-December and from March to

May. The ITCZ is in its turn controlled by the position and intensity of subtropical anticyclones. The equatorial climate is further modified by a widely varying altitude across the country (900 m in south-west, 1500 to 2000 m in the south and the centre of the country, 1800 to 3000 m in the highlands of the north and the west and 3000 to 4507 m in the regions of Congo-Nile Crest and the chain of volcanoes), and by the presence of large water bodies near the country. The impact of floods and droughts associated with El Niño and La Niña events of recent years are thought to have been exacerbated by climate change and the poor environmental conditions suffered in the country identified in the NAPA (NAPA, 2005). See Working Paper 1 for further details.

10. **Agricultural production.** Agriculture is considered the backbone of Rwanda's economy and the majority of households in Rwanda are engaged in crop or livestock production activity. Agriculture is a major component of Rwanda's national economy and contributes about 32% to the country's GDP. Due to the mountainous nature of Rwanda's geography, only about 60% of the total land area is currently under cultivation. The favourable climatic conditions and the generally fertile soils allow cultivation of a wide range of crops. Unfortunately, productivity is low in most areas due to the low use of inputs and a limited agricultural skills set. To increase yield per cultivated land, the GoR developed and applied different strategies through the Crop Intensification Program (CIP), addressed soil degradation and erosion, land-use consolidation, mechanization, irrigation and post-harvest losses. As most inputs have to be imported, the cost of transportation to remote areas combined with the inherent poor demand for inputs keep their prices high. The government with support of development partners continues to address this issue through bulk procurement of improved seeds and fertilizers from neighbouring countries and input distribution to farmers through a network of public and private networks.

11. **Institutional framework for land rights.** The Government of Rwanda has established a national land policy to guarantee safe and stable forms of land tenure, and bring about a rational and planned use of land while ensuring sound land management and efficient land administration. The main obstacles to efficient land management include:

- Strong pressure on the already spatially limited land resources by a rapidly growing population;
- The size and importance of the agricultural sector which lacks specialization in terms of human resources and equipment, and alternative realistic options to reduce the pressure on land resources;
- A land tenure system that was managed under customary law leading to land fragmentation, which further reduced the size of the family farms already too small to be economically viable;
- Many landless persons who have to be resettled as a high priority;
- Fragmented and scattered farming plots that are difficult to manage and farm economically.

12. The above constraints has required a coherent policy that directs and harmonizes land management and administration, and reduces land related conflicts by quickly addressing and resolving them.

13. For harmonious and sustainable development of the country, the overall objective of the national land policy is to establish a land tenure system that guarantees secure tenure for all Rwandans and provides guidance for necessary land reforms to improve management and rational use of national land resources. The land policy is important for the management of the agriculture, environment and natural resources sectors. This is part of its specific objectives that are related to: (i) putting in place mechanisms which guarantee land tenure security to land users for the promotion of investments in land; (ii) promoting good allocation of land in order to enhance rational use of land resources according to their capacity; (iii) avoiding the splitting up of plots and promote their consolidation in order to bring about economically viable production; (iv) establishing mechanisms which facilitate giving land its productive value in order to promote the country's socio-economic development; (v) developing actions that protect land resources from the various effects of land degradation; (vi) promoting research and continuous education of the public in all aspects of duties and obligations with regard to land tenure, land management, and land transactions; and (vii) promoting conservation and sustainable use of wetlands.

V. PASP potential social and environmental impacts and risk

14. **Increased use of fertilizers and pesticides.** While PASP will focus on post-harvest and production support activities, the project will also address issues brought about by increased use of agricultural inputs by farmers. These inputs should lead to increased agricultural production by poor farmers increasing production for subsistence and also to be marketed.

15. A major activity for agricultural support services and service providers will be to build on the agro-dealer development activities implemented by the IFDC to build agro-dealer knowledge of the issues from the use of agricultural chemicals and fertilizers and, more importantly, build the capacity of their staff to provide practical advice to the farmers and PASP members buying the agro-chemicals and fertilizers on how to use the chemicals safely and to minimize negative impacts on the environment and their own health in the long term. Farmers and agro-dealers will be supported to acquire knowledge and practices related to the proper use and handling of these inputs through participatory, adult learning approaches modelled on the farmer field school (FFS) approach. This will make use of the experience of other development partner and GoR programmes for implementing FFS and similar activities in agriculture.

16. An important use of chemicals in the post-harvest area is for the prevention of damage by pests and insects to stored crop production. The ADD programme will be revised to place a higher priority on this area, particularly to ensure the training of operators in the safe use and disposal of the chemicals and also to ensure that the chemicals are used correctly so that insect and pest resistance to the chemicals does not develop quickly.

17. **Waste management.** Agro-processing adds value to crops and generates additional income. However, the solid wastes from processing can be a source of environmental pollution and a health hazard to local communities. Large-scale industrial processors have the capital to invest in waste processing that can add further value to the residue or to manage waste materials that cannot be further processed into useable products. However, very small-scale processors can generate too much waste to be absorbed, but cannot justify the capital investment needed for residue processing or waste management. In such cases the project will explore various options to improve waste management through the promotion of micro biogas plants.

VI. Environmental category

18. Pursuant to IFAD's environmental assessment procedures, PASP has been classified as a Category B in that the potential negative environmental impact of the project is expected to be of low significance and sensitivity. In fact, in view of the strong focus on climate-smart investments funded by ASAP, the project is expected to have many positive impacts on the environment and beneficiaries' ability to cope with climate change and contribute to GoR's Vision 2020 and the EDPRSII.

VII. Further Information required to complete screening and scoping

No further information is required.

VIII. Features of project design and implementation to improve natural resource management and mitigate environmental concerns

19. Since the expected environmental impact of PASP will be positive, the following paragraphs concentrate both on how the project will explore the opportunities to contribute to improve natural resource management in the development of the priority value chains, and on measures for the mitigation of negative impacts.

20. **Waste management.** The project will assist the responsible GoR institutions including, RAB, REMA and RBS, to develop, create awareness and provide small processors with guidelines for waste management and use of by-products. These guidelines will focus on cost-effective ways to manage waste products, particularly where by-products from agro-processing can be used to produce animal feed. Ideally, if managed and prepared correctly, many of these by-products can be fed directly to livestock eliminating the costs of additional processing and complications of storing the by-products

for later use. Waste and by-products that will be available for use will include maize bran, bean residue, potato wastes, cassava leaves and waste milk.

21. Dust management and cleaning will be addressed through simple protective equipment and using techniques such as placing maize grain being dried on relatively cheap fiberglass fly-wire mesh so that when the grain is being collected for bagging after is dry or is being consolidated for storage overnight or to protect it from rain, dust can fall through the mesh leaving a much cleaner product without dust being disturbed to create potential health issues for the workers. The use of fly-wire mesh also makes the collection and spreading activities much more efficient.

22. A major advantage of the project and its work in improving the value chain is that environmental issues created through introducing value adding and processing activities can be proactively addressed as part of the project support package (including financing) rather than treated as an unnecessary additional cost that is ignored or only partially addressed, exacerbating ongoing environmental issues. Environmental issues will be highlighted during initial investigations and planning so that cost-effective solutions can be built into the preferred solutions, rather than being added as a less effective after-thought.

23. **Waste water management.** An important area where the project will provide valuable support is in the management of wastewater from handling and processing across the 5 value chains. This will mostly apply in the cassava and milk processing activities and also where potatoes are being cleaned and/or processed.

24. **Milk.** For milk processing, wastewater management will focus on minimizing the amount of milk that is actually allowed to go to waste. This process will start through upgrading milk handling activities at the farm level so that milk quality through better milk handling, storage and transport conditions is improved, reducing the quantities of milk that are not suitable for storage and handling by the milk collection centres (MCC). The proposed small-scale cooling units to be demonstrated will contribute to this activity.

25. At MCCs, the priority is to ensure that the cooling facilities can cool milk to 4^{o}C as soon as possible so that the milk is suitable for either direct sales to local consumers or collection or delivery to milk processors such as Savannah Milk or Inyange. Milk handling procedures will focus on minimizing the amount of waste milk in wash water. MCCs will be encouraged to develop working relationships with pig farmers or cattle farmers to take non-saleable milk (due to cooling problems caused by electricity failures) for use as animal feed rather than having to allow the milk to enter the environment where it can cause significant pollution.

26. When waste reduction measures fail, discharges generated from MCCs or milk processing plants will be collected in closed on-site drainage systems after separating out the more difficult to manage milk solids and discharged to simple on-site receiving ponds to ensure protection of surface and ground waters from potential contamination. Environmental officers at district level will monitor the quality of effluents discharged to ensure that it meets the wastewater discharge standard. REMA and RBS will assist farmers by providing guidelines for the wastewater management and treatment.

27. **Cassava processing.** Waste water generated by cassava processing even in areas of intensive starch is considered to generate minimal contamination of ground and surface water. Solid waste might create a negative environmental impact if not properly managed[4].The project will proactively address the issue through raising awareness of the risks from the wastes created, supporting development and implementation of training packages for small-scale processors to ensure that risks to the workers and community members are reduced, and developing stronger market linkages between cassava producers and the new large-scale cassava processing plants that are being developed in some of the project target districts. Resources such as KIST, the RAB research institutes and regional research institutes will be used to ensure that processing techniques promoted and supported by the project adopt best-practice for reducing the risks from pollution from cassava processing wastes and also to minimize exposure of workers to risk.

28. **Irish potato**. As potato production and marketing develops, an early innovation will be the introduction of potato washing and grading facilities to add-value to potatoes as they are taken from

[4] See http://www.fao.org/docrep/007/y2413e/y2413e0d.htm.

storage and sol. This will lead to firstly soil laden waste water that has the potential to pollute and block streams and reduce water quality for downstream users. PASP will work with the participating cooperatives/hubs to build simple water settling and recycling systems so that most of the soil washed from the potatoes is captured and recycled back to the fields where potatoes were harvested, also returning some of the fertility. The primary cleaned water after the soil has been allowed to settle out can then be used in the first stages of cleaning, reducing the amount of waste water that needs to be discharged back into the water streams.

29. The small and misshapen potatoes that are taken out of the sorted and graded potatoes will initially be used for animal feed. If potato production grows strongly, there may be potential to use these waste potatoes as the feedstock for making potato starch which has a high value for industrial uses. If market demand justifies further processing of potatoes, the peelings and unusable parts of potatoes can also be used for animal feed or as feedstock for starch production.

30. **Land tenure.** The post-harvest focus of PASP will have little impact on the current Land Tenure system being promoted in Rwanda. However, where new infrastructure is to be developed the project will consult with the relevant authorities to ensure legal title is granted to the HUBs and MCCs.

31. **Policy support.** PASP will provide institutional support to MINAGRI for mainstreaming climate change adaptation in policy instruments to promote climate-proof PHHS business enterprises. This should include training in and exposure to issues related to the broader national and regional climate change agenda, as well as the building of strong institutional linkages with relevant institutions.

IX. Monitoring

32. Participatory environmental monitoring is part of the monitoring and evaluation (M&E) component of the project. See Appendix 6.

X. Components requiring ESIA and scope of assessment needed

No further information required.

XI. Record of consultations

33. This note was prepared after consulting GoR staff and relevant publications from (i) the Ministry of Agriculture and Animal Resources (MINAGRI); (ii) Rwanda Agricultural Board (RAB); (iii) the Ministry of Commerce and Industry (MINICOM); (iv) Access to Finance Rwanda (AFR); (v) Rwanda Cooperative Agency (RCA); (vi) Rwanda Development Board (RDB); (vii) the AfDB funded Livestock Infrastructure Improvement Project (LISP); (viii) the IFAD-supported Kirehe Community-Based Watershed Management Project (KWAMP); (ix) Rwanda Environmental Management Authority (REMA); (x) representatives of financial institutions and their umbrella and support organisations, including BRD Development Fund (BDF); (xi) representatives of bi- and multilateral donor institutions (DFID, SNV, USAID, IFDC); and (xii) a range of other non-governmental organisations (NGOs) and service providers (Technoserve, Heifer International), and some cooperative and private-sector federations and their member unions. Several private sector stakeholders (Nestle, ENAS, and Crystal Ventures Pty Ltd.) were included in discussions.

Appendix 13: Rural financial services

I. CONTEXT

A. Background

1. Access to finance has been perceived as a significant constraint to equitable economic and social development in Rwanda. Less than 3% of farmers have access to adequate rural financial services. In addition, according to the 2008-2012 Finscope survey on financial inclusion in Rwanda, 28.1% of Rwandan adults (18 years and above) did not have access to any financial services[1] or products while only 42% of them were formally served[2]. Important investments have been made to remove these constraints, and the Government of Rwanda (GoR) has made substantial efforts to improve the situation, with some visible results already being achieved.

2. The GoR discourages the use of subsidized interest rates so lending to rural clients, however scarce, is largely undertaken on a commercial basis, albeit generally for 1-2 year periods, thus discouraging longer term investment. These short-term loan periods, combined with high real interest rates, make loan repayment challenging. Rural networks of commercial banks have improved for the past years but most of these banks still charge higher interest rates (up to 18%).

3. The Rwanda Crop Intensification Programme (CIP) offered the opportunity to analyze the financing constraints along the priority value chains, and to define a comprehensive strategy to meet the specific needs of stakeholders operating in production and post-harvest. Among the bottlenecks to agricultural sector financing, the major ones identified included: (i) insufficient skills for risk assessment; (ii) lack of products to serve rural smallholders; (iii) insufficient trust among the actors across the value chain; (iv) inadequate rural banking infrastructure; and (v) poor incentive structure for large off-takers for contract farming, etc.

4. A number of IFAD projects have had major finance components with varying degrees or success. According to the last Rwanda Country Program Evaluation (CPE), IFAD support for rural finance has not effectively contributed to sustainable access to rural finance. This was partly due to a use of credit lines on subsidized end-user terms, rather than the development of sustainable financial intermediaries.

5. According to IFAD Rural Finance Policy, six guiding principles are at the core of IFAD's approach and support to rural finance. Throughout its intervention in rural finance, IFAD works to:

- Support access to a variety of financial services, including savings, credit, remittances and insurance, recognizing that rural poor people require a wide range of financial services;
- Promote a wide range of financial institutions, models and delivery channels, tailoring each intervention to the given location and target group;
- Support demand-driven and innovative approaches with the potential to expand the frontiers of rural finance;
- Encourage – in collaboration with private-sector partners – market-based approaches that strengthen rural financial markets, avoid distortions in the financial sector and leverage IFAD's resources;
- Develop and support long-term strategies focusing on sustainability and poverty outreach, given that rural finance institutions need to be competitive and cost-effective to reach scale and responsibly serve their clients; and
- Participate in policy dialogues that promote an enabling environment for rural finance, recognizing the role of governments in promoting a conducive environment for pro-poor rural finance.

6. Building on the CPE recommendations and IFAD Rural Finance Policy, the 2013-2018 Rwanda Result-Based Country Strategic Opportunities Programme (RB-COSOSP) seeks to refine IFAD interventions in rural finance towards a more sustainable approach. More specifically, IFAD is placing

[1] This includes adults who are neither formally served nor informally served. For credit purposes, they rely on family and friends and savings are kept at home or with family members. Transactions are cash-based.
[2] This includes adults who are either banked or who are served by formal non-bank financial institutions or both.

greater emphasis on supporting development of a more harmonized approach to rural finance by partnering with Access to Finance Rwanda (AFR) and other development donors working in agriculture and rural finance. Elements of future IFAD's contribution to overcoming the structural constraints facing rural finance sector in Rwanda include: policy dialogue and support to the implementation of sector strategies; development of partnerships with key rural financing institutions (e.g. AFR); and support to MFIs[3] and SACCOs which are the entities mainly targeting IFAD beneficiaries.

B. National strategies and facilities for rural finance

Policies and strategies.

7. The *Rwanda Economic Development and Poverty Reduction Strategy (EDPRS II)* states that the agricultural sector remains the sector with the greatest potential to reduce poverty in Rwanda and ensure that growth is inclusive in EDPRS**.** More importantly, access to finance and financial education are recognized as key interventions to help people graduate out of poverty. Under its thematic priority on Rural Development, rural finance is among the strategies for achieving one of the priority areas in rural Development which is to "enable graduation from extreme poverty". A key outcome under the thematic priority on Rural Development is

> "***Increased and sustained graduation from core social protection programmes by connecting economic opportunities and financial services"***

8. Key interventions to be considered for the attainment of the above outcome include, among other things, the following:

- Supporting effective informal financial services that are useful for the poorest to increase inclusion;
- Supporting financial products for the rural poor;
- National Financial Education and Literacy Strategy;
- Strengthening *Umurenge* SACCOs.

9. The thematic priorities on Economic Transformation and Productivity and Youth employment also make reference to financial services as a key intervention for the attainment of their respective outcomes.

10. The *Rural and Agricultural Financial Services Strategy* is based on five operational components: (i) linkage banking and other product innovations; (ii) collateral management; (iii) dealing with the information gaps; (iv) remote access banking; and (v) longer term finance. This strategy is coupled with an implementation plan requiring joint support of donors and government, and synergy within the agricultural financing interventions.

11. The *Rwanda National Microfinance Policy Implementation Strategy* recognised the lack of MFI capacity to support product development, diversification and outreach services. This weakness is coupled also with their need to acquire skills in market research. It is therefore paramount that the development and diversification of products and the expansion of outreach services be addressed and facilitated. Activities to strengthen savings, develop new forms of collateral, develop and diversify financial products, as well as to use the microfinance investment fund and warehouse model should be promoted in addressing the constraints.

SME development.

12. The 2010 Rwanda SME Development Policy paved the way for the establishment of an autonomous entity that is in charge of consolidating and managing all SME development funds under one SME Development Fund. The policy objective guiding the establishment of this new entity was to "Put in place mechanisms for SMEs to access appropriate business financing". Business Development Fund (BDF), a subsidiary of the Banque Rwandaise de Développement (BRD), was established and mandated to spearhead that policy objective and to work with financial institutions to

[3] The main constraints of Rwandan MFIs and SACCOs in the rural financing sector include lack of capacity and poor governance, isolation from financial markets, and capital lending resource structure not shaped for medium to long term financing.

simplify lending procedures to SMEs while also encouraging them to lend to this segment. A rapid assessment of BDF is provided in Attachment 1.

13. BDF currently manages the following facilities that facilitate SMEs access to finance:

- The Agriculture Guarantee Fund (AGF)
- The SME Guarantee Fund (SMEGF)
- And the Rural Investment Facility (RIF 2)

14. **Agricultural Guarantee Fund (AGF)**.This is a facility established to boost private investments in the agriculture sector. It aims to encourage participating financial institutions (PFIs) that have signed a participation agreement with BDF, to grant promoters with viable agricultural projects the highly needed credit they would not easily access under the current collateral requirements of commercial banks, MFIs and SACCOs. Under the AGF, PFIs can seek a guarantee cover of 30% of working capital loans and 50% of investment loans for agriculture, provided the projects are economically cost-effective, financially viable and do not have a negative impact on the environment.

15. **SME Guarantee Fund (SMEGF).** The SME Guarantee Fund was established in 1982 by BRD and until its transfer to BDF, was implemented and managed by BRD. It aims at providing PFI guarantees for off-farm non-agricultural projects that would otherwise not be eligible for credit in the normal financial sector because of their collateral deficiency. The facility is open to eligible investment projects in all sectors except agriculture. The key differing feature of the SMGF compared to the AGF is that it provides RWF 150 Million as the maximum guaranteed amount for a single project and does not provide cover for working capital.

16. **Rural Investment Facility (RIF 2).** RIF 2[4] is part of a follow-up World Bank (WB) programme supporting investment in rural areas that has recently been implemented. It is a US$10 million grant programme funded by the MINAGRI and administered by the BRD Development Fund (BDF). Its objective is to stimulate financial institutions to finance productive investments in the agriculture sector through the provision of a grant covering part of the investment costs (working capital is not eligible for the grant). Individual farmers and entrepreneurs, farmers and producers associations, production and commercialization cooperatives as well as any other commercial entity are eligible to the RIF 2. Beneficiaries from a RIF grant can also benefit from a guarantee extended by the Agriculture Guarantee Fund, also administered by BNR. Three types of investments are supported in RIF 2:

- **Category 1 - Agriculture production**. This category includes the purchase of equipment, land; the construction of agricultural buildings including warehouse and storage facilities. Such investments range from RWF 1 to 50 million. Investments up to RWF 10 million benefit from a grant equal to 25% of the total investment cost while investments above RWF 10 million benefit from a 20% grant. At least 45% of RIF resources are allocated to this category.
- **Category 2 - Processing**. This category includes the construction of processing units as well as the procurement of necessary equipment. Total investment costs can range from RWF 2 million to 150 million. Investments up to RWF 50 million benefit from a 25% grant while investments above RWF 50 million benefit from a 20% grant. A maximum of 35% of RIF resources are allocated to this category.
- **Category 3** - Extension services. This category includes the production of seeds, the provision of extension services, of technical assistance and the capacity building. Eligible projects range from RWF 2 to 150 million and benefit from a 15% grant. A maximum of 20% of RIF resources are allocated to this category.

17. **Access to Finance Rwanda (AFR).** Established by the GoR and several development partners led by the UK Department for International Development (DfID), AFR is expected to address systemic issues with a view to increasing access to finance, particularly for the large numbers of people who have no, or only limited, access to financial services. To date, AFR has supported Government in developing a Rural and Agricultural Finance Strategy and a sustainability strategy for Savings and Credit Cooperatives (SACCOs).

C. Financial sector overview

[4] Attachment 2 of this appendix provides more information on the performance of RIF 2.

18. Based on the Central Bank's 2012 economic update of May 2012, Rwanda's banking sector is composed of nine (9) commercial banks: one development bank which merged with the mortgage financing bank during the year 2011, three microfinance banks (Urwego Opportunity Bank, UNGUKA Bank Ltd and AGASEKE Bank Ltd), and one cooperative bank (Zigama CSS); all supervised under the banking law.

19. Results from the macro-prudential assessments and stress testing indicate that the banking sector is well capitalized, profitable, has improved its asset quality and possesses strong liquidity. The NPL ratio reduced to 8% in December 2011 compared to 10.8% in December 2010.

20. The **MFI sector.** Financial soundness indicators of the microfinance sector indicated a slight deterioration measured in terms of capital adequacy and NPLs ratios, while a slight improvement is observed in liquidity ratio. The capital adequacy ratio decreased from 34.5 to 31.7% while NPLs ratio increased from 11 to 11.3% from 2010 to 2011.

21. ***Umurenge* SACCOs.** The recently concluded SACCO Sustainability Study has shown that the 416 primary societies need substantial support to be able to adequately serve their members without risk of becoming insolvent. At this point of time, and for the foreseeable future, many *Umurenge* SACCOs lack the capacity to undertake financial intermediation of the deposits entrusted to them, have weak governance, are not horizontally or vertically integrated, and lack access to (high-quality) support services.

D. IFAD experience in Rwanda

22. **PDRCIU.** The first experiences of IFAD in rural finance were implemented through PDRCIU in 2000 and then PDCRE in 2003. The support mainly provided credit lines with subsidized interest rates to facilitate access to financial services in the rural areas where savings mobilization was weak or limited. These practices, which ran against markets conditions, were neither viable nor sustainable, and are no longer in line with IFAD Rural Finance Policy.

23. **PPPMER.** The rural finance activities under PPPMER have been implemented through credit lines facilities in partnership with BPR and MFIs, to provide rural SMEs with adapted financial services. The BDF, in accordance with its mandate and the transfer agreement reached at with PPPMER II that is closing in December 2013, has signed an agreement to manage the credit lines. BDF and MINICOM are in the process of completing the recovery of the credit lines provided to MFIs participating in the facility. The major part of the credit facility is implemented through BPR and BDF and BPR have signed the agreement to resume the lending on the credit line by BPR.

24. **Kirehe Community-based Watershed Management Project (KWAMP).** Within this IFAD-supported project focusing on the district of Kirehe, a financing facility 'Value Chain Development Fund' (funds allocated US$2 million) managed by the project is in place and close to disbursing the first grants. The facility provides a grant (50%) that reduces the total investment loan provided by commercial banks to the project target group investing in the project-supported value chains. Business plan are developed with the support of a service provider and then submitted to the Value Chain Development officer in the district who will ensure that the project is effectively in the agricultural sector and will also assess the credibility and morality of the potential beneficiary. The business plans are then submitted to the project's technical team[5] and the commercial banks for financing of a grant and loan respectively. Commercial banks will review the business plan, the project's viability, profitability and financial/cash projections, assess the beneficiary's contribution and determine the amount of the credit. They will approve the project subject to the approval of the KWAMP technical team that reviews the bank's documents, visit the project in the field, evaluate the effective number of direct and indirect beneficiaries of the project and ensure that the project has effectively started. The Fund is already operational and agreements have been signed with some financial institutions. To date around seven projects have already received their financing.

25. In **PRICE**, a performance-based grant facility and guarantee fund managed by BDF were included to facilitate value chain stakeholders' access to loans from financial institutions . Under the performance-based grant facility, the grant element consists in 33% of the cost of productive investments (50% for horticulture investments) made accessible primarily to farmer cooperatives

[5] The KWAMP technical team is composed of a representative of the MINAGRI, of the Local Committees for Management and Supervision (CLGSs), of the Cooperatives' Union, of the private sector, as well as the Field Coordinator and project staff.

operating in the supported value chains. Eligible investments include production, processing, storage, transportation, packaging and marketing equipment. The mechanism of this grant facility is built on the RIF 2 procedures, with the exception that 1/3 of the grant element is disbursed upfront to the equipment supplier, thus reducing the investment loan by the same amount. The remaining portion of the grant (2/3) is held with the participating financial institutions and it will be used to offset the outstanding loan amount once loan repayments by the borrower have reached 67% (for grants of 33% in coffee and tea value chains) or 50% (for grants in horticulture) of the total investment cost. PRICE is also supplementing the Agriculture Guarantee Fund (AGF), also managed by BDF, in order to support its target group to access a guarantee facility that will cover their investment loans in the respective value chains.

26. The coffee and tea plantation expansion in PRICE is also being implemented under a credit scheme financed by the *Banque Rwandaise de Developpement* (BRD). Initially this activity had been planned to be financed on a grant basis using PRICE funds but the GoR and IFAD have reviewed such approach that was considered not sustainable and contributing to market distortions. To reduce the debt burden on tea and coffee farmers taking up loans, the GoR is planning to use the RIF 2 funds to reduce part of the long-term investment cost incurred by farmers.

27. Under the financial services component, capacity building of financial institutions is also foreseen in PRICE. More specifically, the project aims to provide technical assistance to commercial banks and MFIs so that they gain a better knowledge of the cooperative sector, of value chain analysis and of financing requirements in the selected value chains, and to improve their procedures for disbursing working capital loans and for monitoring their repayment. SACCOs will also be strengthened with technical assistance focusing on the financing of farmer-based activities related to project-supported value chains.

E. Lessons learnt

28. Lessons can be summarized as follows:

- There does not appear to be lack of capital for lending, but instead access to finance would depend more on collateral, cash-flow, the viability of the business plan and implementation of the business plan and repayment of the loans. Thus credit lines are not required to stimulate rural lending in new projects.
- IFAD rural finance policies discourage financial support proposals that distort or disadvantage development of the local finance sector. For this reason subsidized interest rates are unsuitable.
- The grant processes used in KWAMP and PPPMER could be justified if the grant funds are stimulating innovation or demonstration of new technologies. This particularly applies when the financial and economic viability of the innovation needs to be demonstrated or tested.
- The RIF 2 grant scheme minimizes the moral hazard risks of providing grants at the start of an activity and rewards full payment of the loan, thus building a good track record of target groups with commercial banks.

II. APPROACH FOR PROJECT SUPPORT

A. Rationale

29. The current low levels of agricultural lending suggest that a significant low-income bracket of the population is not catered for with adapted financial products. Most importantly it suggests that banks and MFIs still perceive the agriculture sector to be risky and therefore there is a need to increase the capacity and appetite of financial institutions for agriculture lending and at the same reduce their risk exposure in the financing of that sector.

30. IFAD past interventions in rural finance have not been effective in building a sustainable approach to rural finance. As the new 2013-2018 RB-COSOP is planning to refine IFAD interventions in rural finance towards a more sustainable approach, PASP provides a strategic entry point for delivering on that objective while at the same time building on lessons learnt and successful

interventions emerging from the country program portfolio, and from the interventions of other development partners.

31. The 2013-2018 RB-COSOP will pursue a more harmonized approach to rural finance. This provides additional justification for PASP to fully capitalize and build on collaboration and investments already made with BDF under PRICE.

32. IFAD CPMT highlighted that supporting SACCOs under PASP, would not be cost-effective as it would add complexity to the project design and implementation. A small rural finance component under a project managed by MINAGRI would probably fail to mobilize the required technical expertise. As such, PASP will not have a rural finance component per say, but instead it will foster linkages with the commercial lending sector that will cofinance bankable rural business investments in the post-harvest, processing and marketing of value chains facilitated by the project.

B. Strategy

33. The project financial services strategy will be based around three streams: (i) a focus on partnership with BDF, GoR-mandated institution for facilitating SMEs and cooperative access to finance; (ii) focused use of matching grants scheme to stimulate innovation, address market weaknesses and build resilience to climate change; and (iii) focus on fostering the commercial lending sector by not subsiding interest rates, but instead by linking focused project investment resources to leverage borrowing from the commercial banking system once project viability and sustainability prospects have been independently verified by participating financial institutions.

III. ACTIVITY DESCRIPTION

34. **Partnership**. To deliver on its strategy, the project plans to partner with the Rwanda Rural Investment Facility II (RIF 2) managed by BDF to provide incentives for financial institutions and entrepreneurs to finance climate resilient investments in post-harvest, processing, marketing, value addition technologies and structures.

35. **Modalities.** PASP plans to maintain the same principles currently in use under RIF 2. To participate in the scheme, interested financial institutions will be subject to a number of conditions: (i) to be financially and operationally sound and have outlets in reasonable proximity to PASP target groups; (ii) have some experience in lending to PASP target groups and in appraising the technical and financial viability of eligible investment purposes; and (iii) bear all or most of the risk of the loan and provide working capital finance if needed.

36. Component 2 will provide a financial incentive or grant for a certain portion of an investment loan approved to a participating HUB which has obtained a loan from a licensed financial institution to cofinance a business plan investment prepared by a HUB with PASP support. Working capital and operating costs will not qualify. Participating farmer associations, cooperatives and SMEs owning or associated with a HUB borrowing from a licensed financial institution are eligible for support under RIF 2. Beneficiaries from RIF will also benefit from a guarantee extended by the Agriculture Guarantee Fund (AGF), also administered by BDF.

37. In accordance with RIF 2 modalities, only financial institutions will be eligible to apply for the financial incentives provided by PASP, on behalf of their HUB clients, and they will bear the full credit risk. Applications will consist of a solid business plan including a project description; an assessment of the social and economic impact on women, youth, landless and other vulnerable groups; a realistic assessment of the marketing prospects and the risks and post-loan sustainability; and a complete financing plan, also including working capital. The grant will be paid into the loan account through which the respective bank receives instalments from the HUB borrower. Upon signature of the loan and grant agreements by all parties, PASP will disburse the grant to the bank by the fund manager. When the principal and interest are paid off minus the grant amount, the debt is offset. If the principal borrower fails to make the required periodical loan repayments for more than six months, the bank will inform the principal borrower that the grant arrangement has been cancelled and returned to PASP. In that case the borrower must then repay the entire loan amount without grants, but including any other penalties imposed by the financial institution.

A challenge for the PASP management team reviewing each proposal is building credibility of the business plan development process generated with PASP facilitation. This will be achieved by focusing primarily on the quality of the business plans, support for their implementation, and managing participatory M&E as the basis for improving the business plan development, review and implementation processes. To ensure that only bankable business proposals are generated, PASP will reward with bonuses service providers whose assistance to participating HUBs systematically obtain loans from MFIs. As a performance incentive, 50% of the voucher value would be retained pending approval of the BP proposal by a financial institution. Similarly, private sector and/or BDS providers contracted by the HUB to support implementation of their business plans will be also competitively rewarded on a performance basis – both for meeting the targets set in the BPs and for assisting HUBs with a demonstrated loan repayment track record to become more sustainable, growing businesses.

38. **Financial literacy**. Interest earned by the credit account linked to the HUB bank loans will be used by the lending institution for continued financial education of HUB members, as well as SACCOs or MFIs or development of new financial services targeted to PASP target groups. This will allow to build the capacity of PFIs in agriculture lending.

IV. IMPLEMENTATION ARRANGEMENTS

39. To implement its rural finance interventions, PASP will partner with BDF and sign a memorandum of understanding guiding the partnership arrangement between BDF and the SPIU.

40. An important aspect of PASP rural finance intervention is that it fully capitalizes and builds on collaboration initiated under other IFAD-supported projects. In this regard, PASP will build on the ongoing collaboration with BDF under PRICE and on the lessons learnt from this initial partnership. As PRICE is already planning to carry out an institutional assessment of BDF(including portfolio quality, range of products, management systems) to assess capacities and possibly support needs, PASP will not carry out another assessment of BDF. Instead, IFAD country team will revise the proposed scope of BDF assessment to ensure that it covers the information needs of PASP, such as the performance of RIF 2 and the quality of the loan portfolio matched with it. This will be particularly important to avoid duplication and ensure complementarity between the two operations.

41. PASP success depends on its ability to leverage the commercial lending resources that are needed to cofinance the viable BPs facilitated together with PASP target groups. As this commercial lending will depend on the risk appetite of financial institutions and their interest/experience in financing PHHS investments, there will be a need to provide technical assistance to the financial institutions that are partnering with BDF under RIF 2 and will be reviewing BPs submitted by PASP target groups. MINAGRI is fully aware that the possibility to meet its development objective might be undermined if this support is not envisaged. As PRICE is already contemplating capacity building investments with SACCOs, MFIs and commercial banks, PASP will concentrate its efforts on financial literacy that is also critical and not fully addressed by PRICE. AFR is already intervening in this area and collaboration with PASP is envisaged to avoid duplication of interventions.

42. Services providers will be selected to support participating hubs to develop bankable business plans. A SPIU Rural Finance specialist will be available to ensure that, together with BDS providers, business plans developed comply with project technical, environmental, financial analysis and PASP guidelines before final approval and submission to the participating financial institution.

Attachment 1: Rapid Assessment on BDF

Financial situation and performance

1. As at the end of December 2012, the financial position of BDF has improved substantially. Its profit before tax for the year increased by 685%, moving from RWF 62 million in 2011 to RWF 492 million in 2012. Gross income for the year increased by 159% reaching a total of RWF 1.1 billion in 2012, from RWF 452 million in 2011. This impressive financial performance is mainly due to advisory income and other income that increased by 459 and 157%, respectively. BDF income streams come mainly from the following sources:

- 1% commission on guarantees approved and 1% on outstanding balance for subsequent years;
- Advisory income where income is recognized when invoice is raised and it is net of VAT;
- Interest income from short term deposits; and
- Other income composed of basically commitment fee of 20,000 Rwf per application.

2. Operating expenses for the year also increased by 75%, to reach RWF 680 million in 2012.

3. With an increased profitability, profitability ratios of BDF have also been positively impacted. ROE stands at 4.69% in 2012 compared to 0.67% in 2011. ROA also is 4.37% in 2012 compared to 0.66% in 2011. More importantly the BDF is becoming more efficient as its efficiency ratio improved, moving from 86.1% in 2011 to 58% in 2012.

4. As the provision of credit guarantees is the principal mandate of BDF, it is important to mention the performance of its capital fund. The BDF capital fund is comprised of the financial resources required for BDF to maintain its public trust, to provide credit guarantees, to make payments under guarantees, and to earn revenues from managing the funds. The main source of capital funds for BDF is the contributions from the GoR and the Development Bank of Rwanda. The most important aspect of the capital fund is that it dictates the total guarantee provision through the leverage effect. The amount of Credit Guarantees that BDF can provide is limited to a maximum multiple of five times the capital fund. To assure the sound management of the fund, BDF intends to maintain the multiple at three times for the next 2-3 years until BDF capital fund is strengthened. As of end December 2012, BDF had a 2.4 leverage ratio. In addition, its capital adequacy ratio for the year stood at 10%.

Operational performance

5. In terms of operational performance, BDF's achievements for 2012 have been very impressive. More specifically, BDF has managed to grow its guarantee portfolio successfully by 97% in 2012, stimulating therefore cumulative loan disbursements worth over Rwf 40 billion that small businesses needed to fuel their growth and create jobs. Credit guarantees provided in 2012 are worth Rwf 6.8 billion to 458 loans with cumulative credit guarantee approvals totaling Rwf 13.7 billion to 584 loans at year-end channeled largely in support of agriculture.

6. Similarly, RIF Grant disbursements for the year were Rwf 621 million for 530 loans reaching a cumulative high of Rwf 802 million to 712 loans.

7. **Efficiency in approval process.** BDF has recently revised its guarantee processes to enhance their competitiveness and broaden its role in realizing a fair guarantee market share. In this regard, it overhauled the credit guarantee approval process, features and operating model in order to improve efficiencies and streamline activities while enhancing its attractiveness to the lending institutions. The changes introduced included:

- The paradigm shift to provide guarantee risk coverage for both investment assets and working capital loans;
- Introduction of delegated authority and loan portfolio coverage for participating financial institutions;
- The move from a uniform guarantee risk coverage percentage to a wider range that considers loan risk profiles and caters for special groups; and
- The revision in the trigger point for claims to when a loan becomes non performing with a limited recovery period.

8. **Credit risk**. The company's exposure to credit risk is influenced mainly by individual characteristics of each customer's projects guaranteed. To safeguard itself against this risk, BDF has established a guarantee fund department with highly skilled analysts who appraise, evaluate and thoroughly vet any projects individually for creditworthiness using the company's evaluation procedures before any projects are approved to be guaranteed.

9. **Independence from political interference**. BDF is committed to ensure adherence to good governance practices, including independence from political interference. In an effort to execute its mission while delivering transparency, accountability and robust reporting to various stakeholders on its programs, the National Bank of Rwanda initiated and conducted an on-site examination and review of BDF to evaluate the current managerial structure aiming to put in place regulatory guidelines on the conduct of its activities. This audit recommended, among other things, the strengthening of its corporate governance structure and the introduction of dedicated risk management function. BDF management reported that these recommendations and other ones are being addressed in this current fiscal year. In addition, for facilities such as RIF 2, grant requests include a disclosure by the beneficiary that he/she has no family ties with any official in MINAGRI, BDF or any other party directly involved in the operation of the facility.

10. **Administrative costs and loan recovery**. BDF has managed to efficiently manage its administrative costs as they just increased by 13.7% between 2011 and 2012. Though staff costs almost doubled, BDF has managed to improve its efficiency ratio which stood at 58% in 2012, thanks to a growing portfolio that increased and diversified BDF revenues. Loan recoveries remain the responsibility of PFIs that provide loans partially guaranteed by BDF. However, BDF is aware of the credit risk involved in its business and as a result, the bank is planning to strengthen its risk management function in order to safeguard the "going concern" ability of the bank.

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Attachment 2: RIF 2 performance

1. **Participating Financial Institutions (PFIs)**. In 2013 a total of 32 financial institutions have signed participation agreements with BDF for using the RIF 2 facility. Out of these 32 institutions, there are 18 SACCOs, 8 MFIs and 6 commercial banks. Commercial banks currently accessing the RIF 2 are the *Banque Rwandaise de Développement* (BRD), Bank of Kigali (BK), *Banque Populaire du Rwanda* (BPR), COGEBANQUE, Kenya Commercial Bank (KCB) and Zigama CSS. The total amount of grants provided under RIF 2 amounts to RWF 906 million with loan of RWF 4.6 billion provided by PFIs. Tables below provides the distribution of RIF 2 grants per kind of PFIs, by gender and by sub-sector

Table 1. RIF II portfolio per kind of PFIs

PFIs	Sum of RIF II grant	Sum of loan from PFIs
SACCO	94,738,149	442,840,400
MFIs	230,373,520	977,132,700
Commercial banks	581,023,695	3,255,166,196
Total	**906,135,364**	**4,675,139,296**

2. **Non-performing loans.** BDF reports of end June 2013 indicate that, out of a RIF portfolio totaling RWF 964 Million for 1024 loans, a total of 1,005 loans are classified in class 1, 8 are in class 2, 7 in class 3, 3 in class 4, and 1 in class 5. The Central Bank's classification of loans corresponds to the following: class 1 (good loans with no arrears); class 2 (loans to monitor having 30-90 days arrears); class 3 (sub-standard loan having 90-180 days in arrears); class 4 (doubtful loans having 180-360 days in arrears); and class 5 (loan having more than 360 days in arrears). The operational modalities of RIF 2 do not allow participating banks to maintain in the RIF portfolio non-performing loans with more than 180 days in arrears. When loans deteriorate beyond that limit, the grant matched to it is called back and the beneficiary is required to repay the total loan amount received from the participating bank. Consequently, the RIF 2 portfolio will have only loans up to class 1, 2 and 3 while class 4 and 5 loans will not be considered as their grants will be called back by BDF. As such, the grants matched with the three loans in class 4 and the one in class 5 as at end June 2013 have been cancelled and called back by BDF and future reports will just mention them as cancelled grants.

3. Based on the above data and the special mechanisms of the facility, it is concluded that RIF 2 portfolio is very healthy with 98% of its loans classified as well performing loans.

4. **RIF performance and impact.** A recent survey on RIF II was carried out in March 2012 to 1,122 respondents out of around 2,000 beneficiaries in the whole country. This survey covered the whole country on 30 districts. It took into account the projects that obtained a RIF 2 grant since it has been introduced in 2009 up to 31 December 2011. Survey results indicate that the majority of respondents (96%) are in Category I which includes investments in primary production of agriculture, 3% of the respondents invested in projects of the Category II, while 1% falls into category III. Key findings from the survey are presented below:

- 95% of respondents reported that they had started repaying the loan (28% claiming to have covered its totality) while 5% reported that they had not yet started repaying the loan;
- 90% of all respondents reported that their production had increased compared to the time before RIF 2 implementation;
- 92% of the respondents reported that their projects had created additional employment for the rural population, while 8% did not;

- The majority of respondents (55%) reported that they received advice from rural consultants and/or Business Development Services (BDS) to prepare business plan for their projects;
- 78% of the respondents were male while the rest were women;
- 18% of all respondents reported that the main constraint faced in repaying the loan was the grace period, 9% reported that the problem they faced was loss of expected harvest and 3% indicated marketing of their products;
- Only 41% of all respondents reported that they had financial statements of their projects, while 59 % of them did not keep financial statement.

5. **Key recommendations coming from the survey are:**

- Grace period must be extended in both MFI and banks;
- Processing of project analysis by Financial Institutions has to be done in appropriate period of time that is favorable to the beneficiary;
- Financial Institutions need to revise their loan approval process so as to minimize requirements; and
- Financial Institutions need to be more open to reduce interest rate on loans backed with RIF grants.

Appendix 14: Contents of the Project Life File

Rwanda portfolio:

- Report of the Strategic Design Mission (PASP Identification Report), including its working papers, January 4, 2012
- IFAD/Republic of Rwanda: Kirehe Community-Based Watershed Management Project; Mid-Term Review Report and Annexes (KWAMP), January 2013
- IFAD/Republic of Rwanda: Kirehe Community-Based Watershed Management Project; Implementation Support Report and Annexes (KWAMP), September 2011
- IFAD/Republic of Rwanda: Project for Rural Income through Exports (PRICE) Implementation Support Report and Annexes (PRICE), August 2012
- IFAD/Republic of Rwanda: Project for Rural Income through Exports (PRICE) Implementation Support Report and Annexes (PRICE), June 2013
- IFAD/Republic of Rwanda: Project for Rural Income through Exports (PRICE): President's Report, Design Report, Annexes (Implementation Arrangements, Planning, M&E and Knowledge Management; Financial Management and Disbursement Arrangements), October 2011
- IFAD: Republic of Rwanda – Result-Based Country Strategic Opportunities Programme (RB-COSOP), September 2013
- IFAD: Republic of Rwanda: Country Programme Evaluation (CPE), August 2011
- FAO (Danilo Mejia): Rwanda Maize Post-Harvest Mission Report. October 2011
- IFAD (Joy Selasi Afenyo): Report of the Post-Harvest Support Mission, (IFAD-Financed Kirehe Community–Based Watersheds Management Project). December 2011
- IFAD (Gerald Hendriksen): Mechanisation Support Mission Report, November 2011
- Republic of Rwanda: The Commodity Chains Selection, Mapping And Analysis Study (IFAD-Financed Kirehe Community–Based Watersheds Management Project). October 2011

GoR policy documents:

- MINAGRI, Rwanda: Strategic Plan for the Transformation of Agriculture in Rwanda – Phase III. January 2013
- MINECOFIN, Rwanda: Economic Development and Poverty Reduction Strategy II. February 2013
- National Institute of Statistics of Rwanda: Integrated Household Living Conditions Survey (EICV 3) report, February 2012
- MINAGRI, Rwanda: Farm Land Use Consolidation Strategy, June 2012
- MINICOM, Rwanda: Strategic Document
- MINAGRI, Rwanda: Mechanization Strategy, June 2010
- MINICOM, Rwanda: National Export Strategy, April 2011
- MINAGRI, Rwanda: Knowledge Management and Communications Strategy for the Agriculture Sector, September 2012

- MINICOM, Rwanda: Private Sector Development Strategy (draft), November, 2012
- MINAGRI, Rwanda: Strategy for Developing Fertilizer Distribution Systems in Rwanda. April 2007
- MINAGRI, Rwanda: National Post-Harvest Stable Crops Strategy. March 2011
- MINAGRI, Rwanda: Agricultural Mechanisation Strategies for Rwanda. July 2010
- Republic of Rwanda, Ministry of Trade and Industry: Small and Medium Enterprises (SME) Development Policy. Kigali, June 2010.