IFAD
Investing in rural people

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Main report and appendices

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Map of the Project Area

Map compiled by IFAD | 11-05-2021

Currency Equivalents

Currency Unit	=	Rwandan Franc (RwF)
US$1.0	=	RwF 963

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

Abbreviations and Acronyms

4P	Public private producer partnership
AA	Authorised Allocations
AIF	Africa Improved Foods
ASAP	Adaptation for Smallholder Agriculture Program
AWPB	Annual Work Plan and Budget
BDF	Business Development Fund
BDS	Business Development Service
BP	Business Plan
CA	Chief Accountant
CIAT	International Centre for Tropical Agriculture
CIP	Crop Intensification Programme
COSOP	County Strategic Opportunities Programme
COVID-19	Coronavirus Disease 2019
CRAB	Climate Resilient Agribusiness
CSO	Co-operative Support Officer
CSP	Cooperative Support Programme
DA	Designated Account
DF &FA	Director of Finance and Fiduciary Aspects
EAX	East Africa Exchange
EDPRS	Economic Development and Poverty Reduction Strategy
EFA	Economic and Financial Analysis
EICV3	Third Integrated Household Living Conditions Survey
ERR	Economic Rate of Return
FAO	Food and Agriculture Organization
FIPS	Faster Implementation Project Start-up
FMS	Financial Management System
GALS	Gender Action Learning System
GAP	Good Agriculture Practice
GDP	Gross Domestic Product
GoR	Government of Rwanda
HH	Household
HPI	Heifer Project International
IFAD	International Fund for Agricultural Development
IA	Internal Audit
IP	Implementing Partner
IPM	Integrated Pest Management
ISSAIs	International Standards of Supreme Audit Institutions
JV	Joint Venture
KII	Key Informant Interview
KM	Knowledge Management

MCC	Milk Collection Centre
M&E	Monitoring and Evaluation
MIS	Management Information System
MFI	Micro Finance Institution
MINAGRI	Ministry of Agriculture and Animal Resources
MOU	Memorandum of Understanding
MT	Metric Tonnes
MTR	Mid-Term Review
NAEB	National Agriculture Export Development Board
NCCR	National Confederation of Cooperatives of Rwanda
NGO	Non-Government Organization
NPV	Net Present Value
NRM	Natural Resource Management
PASP	Climate Resilient Post-harvest Agribusiness Support Project
PC	Project Coordinator
PHCRAB	Post Harvest Climate Resilient Agri-Business Grant
PHHS	Post-Harvest Handling and Storage
PHHTF	Post-Harvest and Handling Task Force
PHSCS	National Post-Harvest Staple Crop Strategy
PICSA	Participatory Integrated Climate Services for Agriculture
PIM	Project Implementation Manual
PP	Procurement Plan
PPP	Public Private Partnership
PRICE	Project for Rural Income Through Exports
PRISM	Partnership for Resilient and Inclusive Small Livestock Market Programme
PRODEV	Professional Development Groups
PSDAG	Private Sector Driven Agricultural Growth Project
PSTA	Strategic Plan for Transformation of Agriculture
RAB	Rwanda Agriculture and Animal Resources Development Board
RBS	Rwanda Bureau of Standards
RCA	Rwanda Cooperative Agency
RDDP	Rwanda Dairy Development Project
RDHS	Rwanda Demographic and Health Survey
RGCC	Rwanda Grains and Cereals Corporation
RICA	Rwanda Inspectorate and Competitiveness Agency
RIMS	Results and Impact Management System
RMA	Rwanda Meteorological Agency
RNRA	Rwanda National Resources Authority
RPPA	Rwanda Public Procurement Authority
RWEE	Accelerating Progress toward Economic Empowerment of Rural Women
RWF	Rwandan Francs

RYAF	Rwanda Youth in Agriculture Forum
SACCO	Savings and Credit Cooperative
SMEs	Small and Medium Enterprises
SMS	Short Message Service
SOE	Statement of Expenditure
SP	Service Provider
SPIU	Single Programme Implementation Unit
SWaP	Sector-wide Approach
ToC	Theory of Change
UN	United Nations
USAID	United States Agency for International Development
USD	United States Dollar
WA	Withdrawal Application
WFP	World Food Programme

Project at a glance

Region East and Southern Africa Division	**Project at Risk Status** Not at risk
Country Rwanda	**Environmental and Social Category** B
Project Name Climate-Resilient Post-Harvest and Agribusiness Support Project	**Climate Risk Classification** not available yet
Project ID 1100001497	
Project Sector Credit and Financial Services	
CPM Francesco Rispoli	
Project Area 12 districts (Rubavu, Nyabihu, Ngoma, Muhanga, Kamonyi, Nyanza Ruhango,Ngoma, Kirehe, Kayonza, Gatsibo, Nyagatare)	

Key Dates

IFAD Approval	**Signing**	**Entry into Force**	**Mid-Term Review**	**Original Completion**	**Actual Completion**
11/12/2013	01/04/2014	28/03/2014	not available yet	31/03/2019	30/09/2020
		Original Financial Closure	**Actual Financial Closure**		
		31/03/2021	not available yet		
Date of Last SIS Mission	**Number of SIS Missions**	**Number of extensions**	**Effectiveness lag**		
13/09/2019	6	2	3 months		

IFAD Financing
as at the time of PCR submission

Grant	**XDR Million**	13.3 Million	**% disbursed**	100.0
Loan	**XDR Million**	8.77 Million	**% disbursed**	100.0

Actual Costs and Financing (USD '000)
as at the time of PCR submission

Component	IFAD	Cofinancing	Domestic	Total
	Actual	Actual	Actual	Actual
Post-harvest clim. resil. agri-bus invest. su	15 848		11 754	27 603
HUB capacipty dev. prog & bus. coaching	12 728		948	13 677
Project Manag and coordination	5 102		1 077	6 179
Total	33 679	0	13 780	47 460
Remarks				

Outreach

Direct Beneficiaries	
Number of HH members	Number of persons receiving services

Estimated total: **303 932**	Total: **140 840**
	Males: **42 587**
	Females: **27 833**
	Young: **6 645**
	Not Young: **0**

Project Objectives

Inclusive Financial services

PASP development objective is to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from CIP crop and diary businesses, especially those related to aggregating production for markets, supporting transformation, and creating value-added to enable smallholder to capture a higher share of the value. The project''s primary focus will be the facilitation of inclusive business activities that can thrive on increased agricultural production form CIP crops and diary development . Investments in improved post-harvesting procedure, drying, processing, storage, distribution, logistics and capacity building of cooperatives 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.

Country Partners

Executing Institution	Rwanda Agriculture and Animal Resources Development Board
Implementing Institutions	Ministry of Agriculture and Animal Resources

Project Completion Ratings Matrix

COUNTRY: Rwanda	
PROJECT NAME: Climate-Resilient Post-Harvest and Agribusiness Support Project	
PROJECT ID: 1100001497	
BOARD APPROVAL DATE: 11/12/2013	
ENTRY INTO FORCE: 28/03/2014	
PROJECT COMPLETION DATE: 30/09/2020	
LOAN CLOSING DATE: 31/03/2021	
IFAD LOAN AND GRANT (USD MILLION): $33,861,279	
TOTAL PROJECT FINANCING: $83,350,440	
IMPLEMENTING AGENCY: Ministry of Agriculture and Animal Resources	
Criterion	**PCR Rating**
Project performance	
- Relevance	4
- Effectiveness	4
- Efficiency	5
- Sustainability	5
Rural poverty impact	**5**
- Households' incomes and assets	5
- Human and social capital	5
- Food security	5
- Agricultural productivity	5
- Institutions and policies	5
Additional evaluation criteria	
- Gender equality and women's empowerment	4
- Innovation	5
- Scaling up	5
- Environment and natural resource management	5
- Adaptation to climate change	5
- Targeting and outreach	4
- Access to markets	5
Partners performance	
- IFAD's performance	5
- Government performance	4
Overall project achievement	**5**

Executive Summary

The overall objective of the Project Completion Review (PCR) was to assess and document overall project implementation performance and the results achieved, for both accountability and learning purposes. This process reflected on the relevance, effectiveness, efficiency, impacts and sustainability of project interventions.

The overall goal of the Climate Resilience Post-harvest and Agribusiness Support Project (PASP) was to alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda. PASP development objective was to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from Crop Intensification Programme (CIP) crops and dairy businesses, especially those related to aggregating production for markets, supporting transformation, and creating value-added products to enable smallholders to capture a higher share of the market. The project's primary focus was the facilitation of inclusive business activities that promoted increased agricultural production from CIP crops and dairy development and reduction in losses in a changing and more uncertain climate. PASP's primary target group involved poor smallholder farmers engaged in production and primary processing in the priority value chains (maize, beans, cassava, Irish potatoes, horticulture and dairy). PASP goals, development objective and targeting strategy were found to be relevant and aligned to the Government of Rwanda Vision 2020, which focused on good governance, development of human resources, a private-sector-led economy, infrastructure development, market-led agriculture, and regional economic integration. Further, Vision 2020 set the objective to grow Gross Domestic Product (GDP) per capita from United States Dollar (USD) 250 to USD 900 and to also have less than 30% of the population living under the poverty line. PASP was also aligned to the IFAD County Strategic Opportunities Programme (COSOP), 2013-2018 for Rwanda whose focus was to contribute to achievement of Government of Rwanda (GoR) targets for reducing post-harvest losses and generating opportunities for youth employment and added value of agriculture produce through agro processing and agribusiness.

The PCR mission observed that PASP has contributed significantly to mitigating poverty levels through reduction of post-harvest losses and improved market linkages in the selected CIP crops and dairy value chains leading to increased productivity and household incomes. This was achieved by installing post-harvest infrastructure and facilities, training farmers in climate smart good agriculture practice (GAP) particularly in post-harvesting handling and selling stages, empowerment of cooperatives, improving market linkages and promotion of sustainable climate resilient technologies.

The Mission established that PASP development objective for contributing to increased smallholder and rural worker incomes from CIP crops and dairy post harvest handling and storage (PHHS) related businesses was achieved and that the project was able to achieve a 26.1% increase in net income for project beneficiaries. Furthermore, with improved incomes, project beneficiaries had increased household assets as noted in the final impact survey of the project, where it was observed that ownership of assets increased, including bicycles (14.9%), motor cycles (3.9%), mobile phones (38.7%), radio (12%) and television (2.2%). In addition, the project Economic Rate of Return (ERR) was computed and found to be 43% with a Net Present Value (NPV) of USD 126.9 million at an opportunity cost of capital of 12%. This was much higher than what was estimated at project design: the ERR at design was estimated at 15.7% at an NPV of USD 8.3 million. Accordingly, the higher ERR realized by PASP validated the conclusion that PASP had positive and widespread benefits to the Rwandan economy.

Some important lessons for future projects are noted: PASP targeted the cooperatives with a requirement that they contribute towards the cost of infrastructure facilities and in some instances training which provided assurance of sustainability of these investments. It is recommended that at the design stage of future projects, an assessment of the capacity of the cooperatives be made since this would provide information on the percentage of contribution these cooperatives would make based on their resource capabilities Finally, it was noted that the Adaptation for Smallholder Agriculture Programme (ASAP) grant investments in PASP, which focused on covering the incremental cost associated with climate resilient infrastructure, was a proactive strategy for improving the livelihoods of small-holder farmers. This strategy succeeded to embed climate change adaptation in the livelihoods of farmers and should be scaled up to similar projects in future.

A. Introduction

1. The overall objective of the Project Completion Review (PCR) was to assess and document overall project implementation performance and the results achieved, for both accountability and learning purposes. This process reflected on the relevance, effectiveness, efficiency, impacts and sustainability of project interventions.

2. Specifically, the completion process focused on:

   - An assessment of the relevance of the project interventions and activities both at the time of design and in the current context;
   - An assessment of the effectiveness of the project implementation (the extent to which the project objectives were

met) and documentation of the immediate results and impacts of the project intervention activities;
- A review of the project costs (including unit costs of the various infrastructure built), the benefits and the efficiency of the overall project implementation processes, including the performance of IFAD and of other project partners;
- An assessment of the sustainability (likelihood of survival) of the achieved benefits once the project is completed;
- Reporting on the lessons learned during the implementation phase, allowing both IFAD and the Borrower to use these lessons as a basis for future programming and designing;
- Identification of any potentiality for the replication or up-scaling of best project practices;
- An assessment of the overall project impact on the target beneficiaries (women, men and youth, if any) in terms of food security, household assets, empowerment etc.;
- An assessment of the overall financial management and other fiduciary related aspects of the project, in order to establish whether funds were used effectively and efficiently in line with the project goal and objectives.

3. The mission took place between November 9th to December 16th, 2020. The in-country work started with a online kick off meeting on November 10th, 2020, with the PASP Single Project Implementation Unit (SPIU) Team. In order to achieve the objectives of the PCR, the mission utilized a mix of both quantitative and qualitative approaches to collect information regarding the performance of the project including desk review of relevant project documents, briefing and debriefing with relevant PASP stakeholders, interviews with key informants, field visits to project areas[1], individual interviews and Focus Group Discussions (FGDs)[2] with beneficiaries together with the use of case studies, direct observation and use of informed judgment while in the field. The first draft of the PCR was submitted electronically to the SPIU Team on December 7th 2020, and the stakeholders validation workshop was held on February 22, 2021. Thereafter, the final PCR Report was prepared and submitted on March 6, 2021.

4. The rationale for Climate Resilience Post-harvest and Agribusiness Support Project (PASP) was to operationalize the Government of Rwanda's Strategic Plan for Agricultural Transformation in Rwanda – Phase III (PSTA III, 2013-2017) by seeking to increase smallholder and rural labourers incomes (including women, youth and vulnerable groups) from Crop Intensification Programme (CIP) crops - maize, beans, cassava, Irish potato and horticulture together with dairy businesses by promoting increased agricultural production, reduction in post-harvest losses, aggregating production for better market access and creating value-addition to enable smallholders to capture a higher share of market.

5. PASP became effective on 28th March 2014 and was initially due for completion in March 2019. Following a one year no-cost extension that was approved by IFAD in March 2019, the revised completion date was set for March 2020. The rationale for the extension was to allow the project to focus on a comprehensive linking of business plans and projects to all relevant actors and support services – input markets, financial services, capacity building efforts, local government services, weather information services, marketing opportunities, so that any outstanding gaps could be addressed and all linkages established effectively prior to project closure to assure sustainability of the project interventions.

6. In June 2020, IFAD approved a second no-cost extension of the project which was necessitated by the delays in implementation caused by the exceptional circumstances related to the effects of COVID-19 pandemic. The project experienced considerable delays in supply of some post-harvest equipment imported from China and Europe as a result of global and nationwide lockdowns. These equipment, including mobile dryers, refrigerated trucks and equipment for processing and value addition activities were to be delivered to beneficiaries under the matching grant facility. Accordingly, PASP's new completion and closing dates were set as 30th September 2020 and 31st March 2021 respectively.

7. PASP project coordination was under the responsibility of the SPIU for IFAD-funded projects mainstreamed in the Ministry of Agriculture and Animal Resources (MINAGRI). The Project was to be implemented over a five-year period and comprised three mutually-reinforcing components: (i) HUB capacity development programme and business coaching; (ii) Post-harvest climate resilient agribusiness investment support; and (iii) Project management and coordination. The project was co-financed by IFAD (Loan 427- RW, Grant DSF 445- RW and ASAP Grant 428- RW) and the Government of Rwanda (GoR). PASP total financing cost was USD 83,350,440.

8. PASP financing was complemented by an Adaptation for Smallholder Agriculture Programme (ASAP) US$ 7 million grant investment that covered the incremental costs associated with reducing the impact of climate change. This grant aimed at enhancing the productivity and profitability of smallholder farming systems while supporting the building of a low carbon and climate resilient post-harvest agribusiness sector in Rwanda. ASAP support also facilitated a better understanding of how current and future agro-meteorological conditions influence harvest and post-harvest activities to ensure that rural infrastructure and PASP's related investments were resilient to these changing climate patterns. ASAP investments were fully embedded in PASP components and results framework.

B. Project Description

B.1. Project context

9. At design, the long-term development goals of the GoR were embedded in the country's Vision 2020, which sought to transform the country from a low-income agriculture-based economy into a service-oriented economy by 2020. It prioritized rural economic transformation through the modernization of the agriculture sector through increased agricultural production, growth in exports and reduction in the population of persons dependent on primary agricultural production by 50%. The strategies for achieving these objectives were articulated in the Economic Development and Poverty Reduction Strategy II (EDPRS II: 2013-2018), which were 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.

10. PASP's primary target group comprised poor smallholder farmers 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 owned small land plots and smallholders who supplemented 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 resource poor) and corresponded to the Third Integrated Household Living Conditions Survey (EICV3) income group of small-scale farmers (61.8% of the population) and wage farm labourers (9.8% of the population). At inception, PASP targeted implementation in ten (10) districts which were selected based on three 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 original project intervention districts included: North West: (1) Musanze; (2) Nyabihu and (3) Rubavu; Southern: (4) Kamonyi; (5) Muhanga; (6) Ruhango and Eastern: (7) Gatsibo; (8) Kayonza; (9) Ngoma (10), Nyagatare. Later two more districts were added, Kirehe and Nyanza.

11. The initial target for PASP beneficiaries was 32,400 rural households in 10 districts where the project was intervening. Based on the national average of 4.8 people per household, the number of direct beneficiaries was estimated at around 155,518 and the project cost per beneficiary was approximately USD 536. For the planned 10 districts, this would include an average of 3,240 households or 15,552 beneficiaries per district. As PASP implementation progressed, the geographical area was scaled up to include two additional districts. However, the design target for number of beneficiaries remained the same.

12. PASP Project design was also to support strengthening of farmer cooperatives into HUBs with a target of reaching 200 HUBs. The Project aimed to replicate the HUB model, which was developed by Heifer Project International (HPI) for use in the dairy value chain for application to other value chains. A HUB is defined as a physical place where primary products are aggregated and where value addition also takes place. The HUB likewise facilitates agribusiness linkages between farmers and buyers and enables farmers to access inputs, financial services, extension services and post harvest facilities, in addition to facilitation of the necessary managerial and technical skills, technologies and equipment. The HUB model is also used by cooperatives to facilitate members to access different services. As such, a cooperative can be defined as a HUB if it offers a full range of services to members such as financial services, access to inputs, market linkages, agriculture advisory services, trainings, processing and extension services amongst others.

B.2. Project objectives

13. PASP overall project goal was to alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda. PASP development objective was to increase smallholder and rural labourer incomes (including women, youth and vulnerable groups) from CIP crops and dairy businesses, especially those related to aggregating production for markets, supporting transformation, and creating value-added products to enable smallholder farmers to capture a higher share of the market.

14. The project's primary focus was the facilitation of inclusive business activities that promoted increased agricultural production from CIP crops and dairy development and reduced post-harvest losses in a changing and more uncertain climate. PASP's primary target group involved poor smallholder farmers either engaged in production and primary processing in the priority value chains (maize, beans, cassava, Irish potatoes, horticulture and dairy).

15. At design, PASP was to be implemented through three components: (i) HUB capacity development programme and business coaching; (ii) Postharvest climate resilient agri-business investment support; and (iii) Project management and coordination.

16. The main expected outcomes under component 1 were: Cooperatives, farmers organizations or Micro and Small Enterprises (SMEs) associated with participating HUBs to 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 to provide climate resilient and low carbon value adding to an expanding number of clients.

17. The main expected outcomes from component 2 were: HUB business investments (in improved climate resilient and low-carbon post-harvesting procedures, drying, processing value addition, storage, logistics and distribution) generate reductions in product losses and increase smallholder and rural labourer incomes.

18. Components 1 and 2 were to be implemented in a synergetic manner to ensure integration of business enablers and off-takers and to ensure that the capacity and skills of the public and private support services were available to HUBs in order to improve and facilitate smallholders' linkages to national and regional markets. Based on viable business plans (BPs) generated in component 1, component 2 would facilitate business activities that could spur agricultural productivity from CIP crops and dairy development by leveraging commercial loans. These loans were for funding post-harvest investments that could contribute to improved market access and linkages, increase HUB operational and management efficiency and sustainability based on climate resilience and adaptability and water and energy use efficiency.

19. At design, the Project was to support HUBs through a matching grants scheme. In order to access the grant, HUBs were expected to obtain loans from financial institutions to fund post-harvest infrastructure. Successful loan applicant would obtain grants through the Business Development Fund (BDF) and the grant amount would be equivalent to 40% of the approved loan with a ceiling of US$160,000. However, due to the difficulties among HUBs meeting the 40% contribution, it was agreed during the PASP Joint implementation support mission dated of May – June 2015, to revise the matching grant scheme with grants amount ranging from 20% - 30% of approved loan with a maximum of US$ 50,000 for projects with no-climate resilience aspects. For projects with notable climate resilience aspects, the grant amounts were placed at between 30% and 40% of approved loan amounts subject to a maximum of US$ 80,000.

B.3. Implementation modalities

20. PASP implementation was through the SPIU mainstreamed in MINAGRI, which currently implements all IFAD-supported operations in Rwanda. To support implementation of project activities, PASP worked with implementation partners such as Rwanda Agriculture and Animal Resources Development Board (RAB), National Agriculture Export Development Board (NAEB), Rwanda Co-operative Agency (RCA), HPI, BDF and Rwanda Youth in Agriculture Forum (RYAF). As PASP implementation partners, these agencies and organisations were tasked to deliver specialised facilitation and technical services within their mandated roles in support of project implementation.

21. PASP had a total project budget of USD 83,350,440 over the six years implementation period, consisting of USD 26,937,414 IFAD Loan and Grants, USD 6,923,864 ASAP Grant, USD 11,469,370 from project beneficiaries, USD 34,618,599 of HUB commercial loans leveraged from the private sector and USD 3,401,193 as Government of Rwanda contribution.

22. As at project completion, project expenditure per component as a percentage of design allocations consisted of; Component 1 (HUB capacity development programme and business coaching) which achieved 148% (USD 12.09 of 8.1 million), Component 2 (Post-harvest climate resilient agri-business investment support) which achieved 38% (USD 26.7 of 71.2 million), and Component 3 (Project Management & Coordination) which achieved 80% (USD 3.9 of 4.9 million).

23. The underperformance of Component 2 was attributed to implementation challenges associated with the approach to co-financing HUB investments through commercial loans. At design, the estimated value of HUB commercial loans was USD 34,618,599. However, at Mid Term Review (MTR) only USD 3,530,707 or about 10% of these loans had been provided by financial institutions and this approach was therefore deemed unviable. It was noted that at design, the plan was that HUB investments in post-harvest infrastructures would be financed through loans from commercial banks and financial institutions. In essence, it was expected that groups would prepare BPs that were strong enough to receive financing from banks. On the basis of this, the Project would provide matching grants to these groups as a financial incentive to fund climate resilient post-harvest infrastructures. However, at MTR this approach was found to be ineffective, and it was recommended that the approach to financing post-harvest climate resilient agri-business investments be changed so as to focus on value chain financing using Public, Private Producer Partnerships (4Ps) model as opposed to reliance on commercial bank financing combined with matching grants incentives. The objective of Component 2 would also be restructured to make it more relevant to the project development objective.

B.4. Target groups

24. **Project beneficiaries**: PASP targeting strategy focused on smallholder farmers in the twelve districts, following the national poverty categories (Ubudehe) categories I (the very poor), II(the poor), and III (the resourceful poor) and no specific percentages were set for each of these categories. These three categories correspond to the EICV3 income group of small-scale farmers (61.8% of the population) and wage farm labourers (9.8% of the population).

25. The project directly targeted smallholder farmers organized into cooperatives and or individual entrepreneurs either engaged in production and primary processing of priority crops or in the dairy value chains. Individual entrepreneurs were selected if they included cooperatives in their BPs and addressed post-harvest issues. The engagement of individual farmers and entrepreneurs in co-financing post-harvest investments and capacity building was anticipated to drive the creation of new investments and employment opportunities for vulnerable groups, including the landless poor.

26. **Women and youth**: PASP gave specific attention to promoting women and youth participation in post-harvest processes and value chain development. Women and youth were targeted to gain access to agricultural support and financial services and play an active role in management and leadership of cooperatives and cooperative-owned businesses. The project logframe provided quantitative targets for participation of women and youth in project activities set at 40% and 20% respectively, while the monitoring and evaluation system was calibrated to track and analyse sex and age disaggregated data.

27. **Project area**: Geographical targeting was done on the basis of the identified value chains (maize, beans, cassava, Irish potato and dairy) as well as focusing on the specific smallholder farmer target groups. The project selected the districts 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.

28. **Priority crops**: At design, PASP was to focus on five priority value chains namely; maize, beans, cassava, Irish potato and dairy. The priority crops were identified based on a review of existing value chain studies and market information available on the CIP crops and dairy sector. 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.

29. It was noted that horticulture was not originally part of the value chains targeted by PASP. However, in June 2016, building on the horticulture investment needs already identified through the Project for Rural Income through Exports (PRICE) that was currently implemented via the NAEB, PASP decided to broaden its interventions in horticulture value chains. This was fully in line with the National Horticulture Policy and Strategic Implementation Plan (2014).

30. The rationale for including horticulture into PASP interventions was further strenghtned by (i) the type of producers involved in the value chains who are often also already growing CIP crops; (ii) the interest of business promoters in response to an increasing domestic, regional and/or international demand; and (iii) the need to curb large post-harvest losses observed among horticultural producers. It was agreed that PASP in close collaboration with NAEB would focus primarily on horticulture projects already identified by NAEB with high potential to comply with PASP eligibility criteria and receive grant approval. Value chains such as onions, garlic, fruits and hot peppers were viewed as particularly attractivce since they would also provide strong opportunities to promote climate-resilient post-harvest technologies.

31. At project completion, it was noted that 31 BPs in horticulture had received PASP grants, with 18 among these beneficiaries also receiving Post-Harvest Climate Resilient Agri-Business Grants (PHCRAB) grants.

C. Assessment of project relevance

32. The PCR Mission rated project relevance as moderately satisfactory (4). While the project was strongly aligned to both GoR's national priorities and IFAD policies with coherent internal logic, the initial design of some interventions in Component 2 contained unrealistic assumption regarding the capacity of cooperatives to access commercial financing, which led to slow implementation. It was observed that after MTR, necessary adaptations were implemented in order to address identified constrains faced by the cooperatives with notable positive results. However, the project had difficulties involving women and youth in the interventions and at completion, these groups' involvement were 38% (women) and 9.4% (youth) against the targets of 40% and 20%, respectively. These figures, especially the low percentage in youth, indicates the project design did not adequately meet the needs of the two groups and the adjustments made during the project implementation were not able to fully address the issue.

C.1. Relevance vis-à-vis the external context

33. The relevance of the project to the external context was based on alignment of PASP to the GoR and IFAD's COSOP priorities. The PCR Mission established that PASP objectives were in line with the GoR objectives of reducing rural poverty, as illustrated in Vision 2020, which focuses on good governance, development of human resources, a private-sector-led economy, infrastructure development, market-led agriculture, and regional economic integration. Furthermore, the project final impact assessment established a 26.1% increase in net income for project beneficiaries. In addition, financial analysis carried out at project completion established incremental benefits of RwF 4,359,233 among project beneficiaries per season from all targeted value chains against RwF 2,465,237 obtained at inception. Given the institutional capacity building as well as investment in infrastructure provided by the project, it is expected that the financial benefits realized by participating households would be upheld for the foreseeable future.

34. The GoR priorities to address rural poverty were also reflected in PSTA III (2013-2016), which aimed 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. Additionally, the National Post-harvest Staple Crop Strategy (PHSCS) aimed to develop an efficient postharvest system driven by the private sector to reduce post-harvest losses and ensure food security of staple crops through increased competitiveness by decreasing marketing costs along the value and supply chains, and enhancing farmers 'access to and strengthening their linkages with markets.

35. The mission found that PASP was aligned to the IFAD COSOP (2013-2018) for Rwanda, which includes a focus on reducing post-harvest losses and generating opportunities for youth employment and added value of agriculture produce through agro-processing and agribusiness. The PCR Mission established that the project had contributed significantly to reduction of post-harvest food losses by supporting the identified commodity value chains through construction/rehabilitation and equipping post-harvest infrastructure including drying, collection, and warehouse and storage facilities. The final project impact survey (2020) confirmed that post-harvest losses had reduced significantly for the targeted crop and dairy value chains. For example, quantitative losses in the Irish Potato (IP) value chain reduced from33% to 10.3% and qualitative losses from 30% to 10%; in cassava food losses reduced from 34.58% to 12.9%; and dairy value chain post-harvest losses were reduced from 18% to 3.5%. These findings validated the relevance and significance of project support towards construction and equipping of post-harvest infrastructure.

36. The National Strategy on Climate Change and Low-Carbon Development for Rwanda underlines the need to deal with climate variability in the pursuit of the social, environmental and economic development of the country. The mission observed that PASP made contribution towards Rwanda's climate change adaptation through financing of project initiatives under the ASAP grant. Under ASAP, the PHCRAB grant financed incremental costs associated with investments in climate resilient infrastructure and with a focus on facilitating introduction of climate-smart post-harvest technologies and infrastructures. These investments had positive impacts as observed in rainwater harvesting and management facilities improving access to water for agricultural and domestic use for project beneficiaries. Indeed, Rwanda's National Food and Nutrition Policy reaffirms the country's strong commitment to achieving food security, eliminating malnutrition and preventing stunting in children under 2 years of age. The PASP final impact survey found an improvement in household food security and this was assessed through changes in eating habits of beneficiary households. This survey found that 75.6% of beneficiary households reported an improvement in food availability and eating habits.

C.2. Internal Logic

37. PASP Theory of Change (ToC) was to focus on increasing rural smallholder farmer incomes (including women, youth and vulnerable groups) from CIP crops - maize, beans, cassava, Irish potato and dairy businesses by promoting increased agricultural production, reduction in post-harvest losses, aggregating production for better market access and creating value-addition to enable smallholders to capture a higher share of market and enabling access to finance. In addition, the project used the PHCRAB grant which was instrumental towards covering the incremental cost

associated with climate resilient infrastructure and related investments.

38. At design, poverty in Rwanda was widespread with an average of 44.9% of people living below the poverty line and 24% of people living in extreme poverty. Agricultural production systems were based on small family farms that cultivated an average of 0.76 ha, with 26% having less than 0.2 ha, which severely restricted the ability of the rural population to escape poverty. It was also noted that majority of smallholders were organized into cooperatives, with about 40% of cooperatives being product-specific agricultural cooperative societies based at the Umurenge (sector) or village level or having formed commodity-specific unions, mostly at district level. This large number of cooperatives provided a range of entry points for support to the rural smallholder's farmers. However, most of these local cooperatives had very weak financial management and poor control over their limited resources, and private-sector involvement remained limited or informal. The PCR Mission confirmed the relevance and coherence of the project ToC since primary focus of PASP was the facilitation of inclusive business activities that promoted increased agricultural production from CIP crops and dairy development and reduction of post-harvest losses in a changing and more uncertain climate.

39. In addition, at design, it was acknowledged that post-harvest losses were recognized in Rwanda as one of the greatest sources of inefficiency in agricultural production with losses being estimated at about 30% of harvested products across all value chains and this was further compounded by the heavy reliance on rainfed agriculture and vulnerability to climate change. PASP interventions on climate smart post-harvest infrastructure and investments were therefore considered an opportunity for improving crop productivity and resilience in more uncertain climatic and economic conditions.

C.3. Adequacy of design changes

40. A number of design changes were made during the life of the PASP project and these mainly affected Components 1 and 2 as follows.

Component 1: HUB capacity development programme and business coaching

41. **Support HUB development**: PASP's main pillar for reaching its development objective and outreach were the cooperatives. At design, PASP implementation was based on the idea that the HUB model as promoted by HPI could be replicated to other value chains. At inception, a baseline survey of cooperatives was carried out and the cooperative selection criteria was developed which gave preference to strong cooperatives that showed capacity to prepare and submit bankable business plans, sign contracts with private partners and that were able to build post-harvest infrastructure.

42. During the first half of the project life, the project lacked practical means and understanding of how to implement the selection activities, and at the MTR, it was found that the selection criteria did not identify cooperatives' capacity while the gradual step by step approach to support cooperatives' capacity building in business plan development was mostly omitted. In addition, the access to the matching grant scheme was supposed to start with a simple BP before graduating to larger or more challenging HUB investments but this approach was not being taken. It was also observed that the capacity building of the identified CIP cooperatives by RCA on cooperative management and by BDS SPs on additional management and organization was mainly done after BP financing had already been approved. It was also noted that the BP development process was mostly driven by technical SPs and BDS SPs rather than building the capacity of HUB members to drive and own this process.

43. After MTR, the design of capacity building for HUBs focused on gradual capacity building, support and strengthening of HUBs which included support for weaker HUBs. PASP adopted the RCA Cooperative Performance Assessment methodology that assessed HUBs on the basis of (1) governance and leadership; (2) operational management; (3) financial management; and (4) accountability and categorized them based on their performance. All CIP cooperatives in PASP Districts were assessed in May 2019, which showed that out of 411 operating cooperatives, 10.9% were in Category C (model cooperative), 41.4% were in B (medium performing), 38.4% were in A (low performing) and 9.2% (underperforming). Based on these assessments, PASP and RCA focused on addressing the gaps through training and coaching of cooperative executive committees. Additionally, the MTR mission recommended that to ensure sustainability, capacity building and HUB development, District and Sector level staff and local leaders should be trained to support the HUBs and that more exchange visits would be organized to facilitate HUB members to learn from each other. At project completion, it was noted that 239 HUBs (108 in maize & beans, 46 in Irish Potatoes, 28 in

cassava, 52 in dairy and 5 in horticulture) had been supported by the project on HUB development and capacity building.

44. **Technical capacity building of farmers**: At design, PASP was to recruit and contract technical SPs to support cooperatives in the prioritized project value chains on post-harvest management. The project contracted four technical SPs to support the selected value chains namely; WAKALA (Maize and beans), IRONA (Irish Potato), SORWAFFA (Cassava) and HPI (Dairy). The SPs also conducted several value chain specific studies including market analysis, post-harvest infrastructures needs assessment and training needs assessment.

45. In 2018, PASP sought and obtained a No Objection to employ Cooperative Support officers (CSOs) through the Rwanda Youth in Agribusiness Forum (RYAF) to help cooperatives implement best practices shared by technical SPs. The CSOs were young graduates with a background in agriculture, intended to provide day to day support to cooperatives on identified technical and managerial issues as a complement to technical SPs. However, at the same time, the contracts for WAKALA, IRONA and SORWAFFA were not renewed. This in effect meant that the technical support as foreseen in PASP design was not available to farmers in the maize, beans, Irish Potato and cassava value chains. Although the services provided by RYAF young graduates was valuable since these CSOs provided full time services and were based at the cooperatives, it was discernible that graduates lacked sufficient experience and in-depth knowledge. In addition, not all cooperatives (Only 5 out of 68 cooperatives) received grants to support the work of the CSOs and the sustainability of this initiative was therefore doubtful.

46. The training opportunities offered by the project did not adequately involve women and youth, despite the outreach target set at 40% and 20%. The MTR made several recommendations including: (i) developing a gender and youth strategy, (ii) establishing specific minimum participant's quotas for women and youth, (iii) prioritize young people for training related development of skills, in leadership and capacities in post-harvest and income generating activities, and (iv) developing additional qualitative indicators to capture women/youth participation. While the gender and youth strategy was developed for the period of 2017-2019, the project's attempt was not sufficient to involve women and youth to meet the targets of 40% (women) and 20% (youth). Out of 70,420 project beneficiaries, 38% were women whereas 9.4% were youth. The involvement of youth was particularly difficult, partially due to the fact that young people often lacked sufficient resources to join cooperatives while the project focused on the cooperatives as the main pillar of providing support.

47. **Climate risk mapping and vulnerability training:** At design PASP, through ASAP financing, planned to incorporate climate risk management in the planning and implementation of the investments undertaken by HUBs through the promotion and demonstration of climate resilient practices, structures and innovations. As part of the ASAP grant, climate risk and risk management training wasconducted by Imanzi (before MTR) and the International Centre for Tropical Agriculture (CIAT) (after MTR) in the 12 target districts.

48. To provide a better understanding of risks involved in potential investments, the MTR mission recommended that PASP undertake a climate risk mapping and vulnerability assessment for all commodities value chains in the 12 districts of implementation. This assessment was carried out by The International Centre for Tropical Agriculture (CIAT) and the working paper titled "*Climate Risk Assessment for Selected Value Chain Commodities in Rwanda*" was published in June 2019. As a follow up to this assessment, adaptation plans were developed and implemented for all PASP supported cooperatives in the 12 Districts and in the prioritized value chains. While this was assessment report was made available during the final year of project implementation, it still served to provide vital information on the climate risk profiles for priority commodities which could be used to making decisions to enable access to financial products and services by farmers.

Component 2: Post-harvest climate resilient agri-business investment support

49. **Rural finance**: At design, the objective of Component 2 was to have HUB business investments that enabled improved climate resilient and low carbon post-harvest investments that would generate reductions in product losses, while increasing smallholder and rural labourers incomes. This was to be achieved by having HUBs generate viable BPs with Component 1 support and these BPs would leverage on commercial loans to finance post-harvest investments. In addition, ASAP funds were to provide support to the HUBs for the incremental costs associated with climate proofing of these post-harvest investments.

50. At MTR, it was established that the approach to financing HUB investments using commercial loans was not working. Indeed, it was noted that only US$ 3.5 million of loans representing 10% of the appraisal target had been disbursed by the mid-term. The Mission noted that the main reasons for low take up of loans were that lack of capacity by HUBs to comply with banks requirements including; need for security guarantees, inadequate capacity to pay loans due to lack of quick cash, low bank account operations and other inadequacy of loans related requirements.

51. Based on the above, the MTR mission recommended that value chain financing could be provided from a variety of sources including input suppliers, MFIs and even SACCOs. Thus, the component was restructured to make it more relevant to the project development objective. The revised development objective for the component was amended to read: *'to facilitate access to a range of appropriate and timely financial services to value chain actors (private business promotors, producer cooperatives and primary producers) from a variety of financial service providers using innovative delivery mechanisms to increase their outreach to HUB investments in climate resilient technologies and productive post-harvest infrastructure'.*

52. The MTR mission also recommended the adoption of the Public Private Producer Partnership (4Ps) financing model. This model involved cooperation between a government agency, business agents and small-scale producers, who agreed to work together to reach a common goal or carry out a specific task while jointly assuming risks and responsibilities, and sharing benefits, resources and competencies. This model proved to be particularly successful to ease the burden faced by value chain actors to access post-harvest financing. This was a critical shift of focus in the project design that helped a significant progress in the number of BP approvals. The project enabled smallholder farmers to access matching grants of up to 80% of invested amount or a maximum of US$ 80,000 to co-finance investments with private investors through private sector led business plans and joint venture business plans. Under private sector led business plans, smallholder farmers made small contributions in order to benefit from post-harvest infrastructure and equipment and capacity building with PASP support. Through joint venture (JV) BPs, smallholder farmers (cooperatives) were supported by PASP through increasing their share in co-financed businesses by up to 40% for cooperatives and 20% for private individuals.

53. Through the 4Ps financing model, PASP supported the JV business between SPF Company and COIMU Cooperative in Nyabihu District, Bigogwe Sector. As a result, an Irish potato storage facility worth Rwf 175,107,359 was constructed. PASP support also enabled the JV to engage with other development partners in horticulture value chains such as United States Agency for International Development (USAID) in partnership with Rwanda Private Sector Driven Agricultural Growth Project (PSDAG) and AGRITERA among others. Furthermore, this enterprise expanded its activities to Irish potato seed multiplication and the JV acquired its own greenhouse that produced mini-tubes that made other varieties of Irish potato seeds. A significant benefit of this initiative was that farmers were now able to easily access Irish potato and Irish potato seeds from the SPF and KOIMU warehouse and could supply IP seeds to nearby markets. As a result of these activities, shareholders of the JV witnessed growth in the value of their shares from Rwf 65,902,200 to Rwf 760,246,042 while COIMU's share increased from Rwf 7,100,000 to Rwf 81,629,481.

54. While the restructuring of Component 2 was appropriate and resulted in commendable impacts on improving the smallholder farmers' access to finance, the initial design's unrealistic assessment of cooperative's capacity still heavily affected the project, as indicated by the low disbursement rate of 38% for this component at completion (an increase from 10% at MTR). Combined with the challenges the project faced with involving women and youth, that are two important groups for both GoR and IFAD strategies and policies, the relevance of the project is rated 4 (moderately satisfactory).

D. Assessment of project effectiveness

55. The overall assessment of PASP Project effectiveness was rated as moderately satisfactory (4). The project objective(s) was somewhat met, but some components were lagging behind. Not all physical targets were met. Some important outcomes were not achieved and there were some delays in implementation. It was noted that the Project achieved significant milestones through its outreach activities such as reaching 70,420 households against the target of 32,400 households, 217% achievement in addition to reaching 407 groups against a target of 325 groups, 125% achievement. However, it was noted that the large outreach number includes households that benefitted only from one project activity (distribution of hermetic bags) that did not relate directly to the project development objective or outcomes. The Project Annual Work Plan and Budget (AWPB) execution rate stood at an average of 86% over the seven years which was considered satisfactory. However, under Component 2, the project achieved only 38% of the expected target which was mainly attributable to low levels of performance of the HUB commercial loans and this contributed to an overall project disbursement rate of 56%. The project's main outcomes and outputs are summarized below.

	Outcomes	Outputs
1	Participating HUBs have 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 linakge services to an expanding number of clients.	Increased production of bankable business plans, which incorporate climate adaptation and food security measures
		Increased access to markets, reduces post-harvest losses and increased value added services
2	HUB business investments (in improved climate resilient and low-carbon post-harvesting procedures, drying, processing value addition, storage, logistics and distribution) generate reductions in product losses and increase smallholder and rural labourer incomes	Increased investments in post-harvest assets

D.1. Physical targets and output delivery

56. **Project outreach**: at inception, the project targeted a total of 32,400 households and 155,518 individuals. It was found that the project support had reached a total of 70,420 households and 303,932 individuals, which was a 217% achievement. The project also targeted 325 groups and a total of 407 groups were reached, an achievement of 125% against end target. Among the total number of households reached, approximately 46% was targeted through the distribution of hermetic bags. While this activity introduced and promoted the importance of proper post-harvest handling, it was an unsustainable activity that did not directly relate to the project objective or outcomes, as also observed by past supervision missions.

57. **Achievement of development objective** : The project development objective was to have increased smallholder and rural workers incomes (including women, youth and vulnerable groups) from CIP crops and dairy PHHS-related businesses. At inception, the target was to have at least a 15% increase in income for 50% of the project's direct beneficiaries. It was established that at end line the income for direct beneficiaries had risen by 26.1% for 82.5% of Project beneficiaries.

58. The overall project achievement of physical outputs as per targets set out in the logframe was assessed to be satisfactory.

59. **Assessment of quality of processes followed to achieve outputs:**The mission found that the project followed participatory processes to achieving its outputs through consultations with key stakeholders and partners and the staff in the 12 targeted districts were at the centre of project implementation providing information, programming, organising, monitoring and reporting project activities. PASP implementation was based on yearly work plans and budgets which when approved allowed for smooth implementation of activities. The periodic review of performance made it easy to identify risky areas that required additional support.

60. **Project compliance with schedules and timetables:** As at MTR the project performance and compliance with schedules as shown in AWPB was rated as moderately satisfactory. After MTR, the mission found that PASP had complied with implementation schedules as reflected in AWPB execution rates but had missed on planned delivery of 57 BPs by 31st September 2020 as earlier targeted. These delays were attributed to COVID-19 Pandemic nationwide lockdown and travel restrictions that constrained importation of machinery. On average the project AWPB execution rate for the seven years was 86% as per table 1, below, which was considered satisfactory.

Table 1: **PASP budget execution rate**

PASP average budget execution rate			
Financial year	**Budget (RWF)**	**Actual (RWF)**	**%ge**
2020/21	1,469,627,665	1,330,557,762	91%

2019/20	5,108,972,135	4,201,778,746	82%
2018/19	8,585,871,097	8,147,440,835	95%
2017/18	10,471,206,931	8,322,284,863	79%
2016/17	10,467,464,449	7,357,094,421	70%
2015/16	4,303,014,134	6,003,688,430	140%
2014/15	2,770,130,253	1,792,825,974	65%
Total/average	**43,176,286,664**	**37,155,671,031**	**86%**

Factors that contributed to project achievement:

61. PASP's focus on post-harvest support accompanied with capacity building was also relevant to the agricultural sector in Rwanda and was in line with MINAGRI priorities that sought to reduce post-harvest losses and to create job opportunities. Notably the construction of processing plants and warehouses had created jobs in local areas and provided permanent markets for the produce. Additionally, the availability of the infrastructure and capacity building on post-harvest management changed mind-sets of farmers towards adopting agriculture as a business venture.

62. Government commitment to transform and modernise the agricultural sector was consistent throughout the project. The project received unconditional support from political and technical staff members of different government ministries, agencies and institutions, while districts provided technical supervision, monitoring and reporting.

63. The introduction of the 4Ps model, with its different matching grant modalities, after MTR helped speeding up project progress to attain project objectives. This financing model enabled implementation of many BPs, PHCRAB grants and enhanced capacity building activities to smallholder farmers. The co-financing aspect of the model also ensured that beneficiary contribution was provided by farmers and this assured sustainability of investments. '*The 4Ps model turned around the moderately satisfactory rated project at MTR to a satisfactory rated project by end of October 2019 with improved ratings on all indicators'* (Project Coordinator, PASP).

64. Despite overall project achievements, the PCR Mission noted that under Component 2, the Project achieved only 38% of the expected target which was mainly attributable to low levels of performance of the HUB commercial loans under Component 2 and this contributed to an overall Project disbursement which stood at 56%. The PCR mission also noted that the estimated cost of value chain financing by HUBs was yet to be analysed, quantified and presented in the project books of account.

D.2. Rural Poverty impact

65. The PCR Mission rated overall rural poverty impact of PASP as satisfactory (5). The project had a good contribution to reducing rural poverty in the project target area by effectively reaching out to large numbers of poor rural women and men to meet targets. The rural poor, and their communities, have largely benefited from project implementation and their incomes, livelihood means or food security have improved as a result of their participation in project activities. The project target was to have an average income increase by 15% for 50% of the project's direct beneficiaries by end line. It was noted that average income increased by 26.1% for 2% of beneficiary households. This was combined with increased ownership of assets such as bicycles (14.9%), motorcycles (3.9%), mobile phones (38.7%), radio (12%) and television (2.2%), as reported in the final impact assessment survey of the project. These improvements were

supported by increased productivity for the targeted crop value chains together with reduced post harvest losses. PASP also contributed to increased recognition at policy level for the importance of post-harvest investments.

i) Household income and assets

66. The rating for household incomes and assets was assessed as satisfactory (5). The project has generated an increase in the incomes and physical and financial assets owned by the project beneficiaries and most targets were met. It was noted that the project development objective of contributing to increased smallholder and rural worker incomes, including women, youth and vulnerable groups from CIP crop and dairy PHHS-related businesses was achieved. Farmers reported increased income due to improved sales from the CIP value chain crops and milk and reduction in post-harvest losses. In addition, it was also found that ownership of assets by targeted beneficiaries had improved as reported in the final impact assessment report.

67. At inception, PASP's target was to have an average increase in income of 15% for 50% of the project's direct beneficiaries. The final impact assessment survey (IAS) revealed an average increase in net income of 26.1% per beneficiary household against an average of 17.5% per household achieved by the control group (Non-beneficiaries) as per table 2, below. In addition, data from the IAS revealed that 2% of project beneficiary households had an increase in net income greater than 15% while only 44.6% of non-beneficiary households had achieved net income greater than 15%.

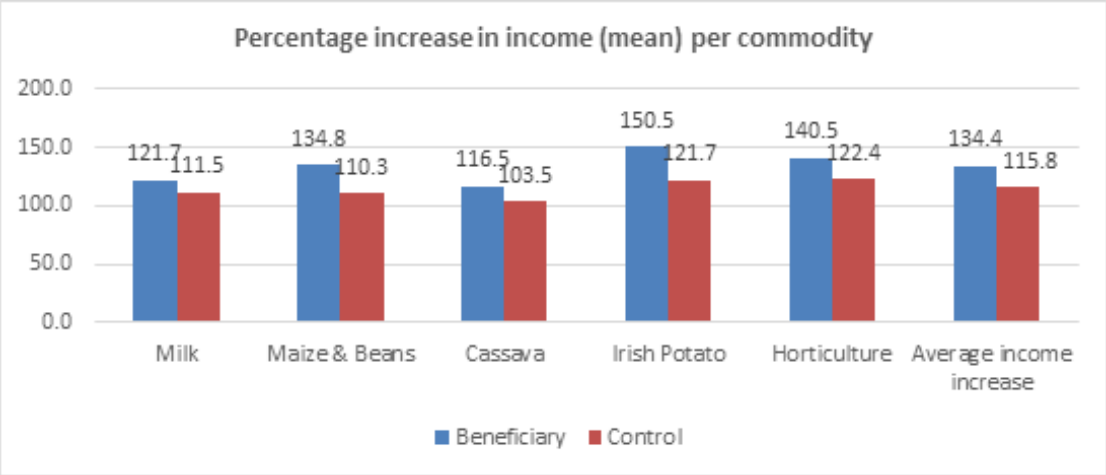
Table 2: Net increase in net income for Project beneficiaries and non-beneficiaries

Particulars	**Mean**	
	Beneficiary	**Control**
Total income before PASP (2014)	1,432,124	1,345,313
Total income last year 2019	1,471,676	1,479,844
Total expenses before PASP	602,764	837,524
Total expenses last year 2019	425,793	883,244
Net income before PASP	829,359	507,789
Net income last year (2019)	1,045,883	596,600
Net income increase	**26.1%**	**17.5%**

Source: PASP Final Impact Assessment Survey, 2020

68. The IAS also revealed that CIP crop value chains and dairy contributed 34.4% of overall net income increased for project beneficiaries with the highest income coming from Irish potato (50.5%) and horticulture (40.5%) while maize and beans, milk and cassava had 34.8%, 21.7% and 16.5% increase respectively.

Figure 1:Percentage increase in income per commodity



Source: PASP IAS, 2020

69. Regarding household assets, the ownership of assets by project beneficiaries had increased in terms of purchase of livestock, cementing the walls and floor of mud houses, use of iron sheet roofing, use of mobile phones and ownership of radios and TVs amongst others, while in some instances project beneficiaries had either purchased or constructed water harvesting structures or piped water to their houses. The IAS reported the proportion of beneficiaries with houses roofed with iron sheets increased from 60.9% (baseline) to 78.5% (endline).

70. Further, the proportion of beneficiaries owning mobile phones increased from 50.1% at baseline to 88.8% at end line, while the percentage of households with radios, television, computers and internet access increased by 12%, 2%, 1.3% and 5.1% respectively as per table 3, below. Although no analysis was carried out to establish attribution of these benefits and improvement of assets ownership to PASP, it was noted that benefits from project beneficiaries were significantly higher than those of the non-beneficiary groups and therefore the differences could be used as proxy indicators of project performance and impacts.

Table 3: Percentage of household asset ownership

Item	In 2011 (%)	In 2019 (%)	Change (%)	
Telecommunication networks				
Radio	62.0	74.0	▲	12.0
Television	15.0	17.2	▲	2.2
Mobile phone	50.1	88.8	▲	38.7
Computer	5.0	6.3	▲	1.3
Internet	16.0	21.1	▲	5.1
Household equipment				
Benches only	40.0	31.8	▼	8.2
Chairs	51.0	67.1	▲	16.1
Sofa	28.0	21.0	▼	7.0
Beds	74.0	78.2	▲	4.2
Mattress	72.2	87.7	▲	5.2
Means of transport				
Bike	21.1	36.0	▲	14.9
Motorcycle	2.3	6.2	▲	3.9
Car	0.5	1.1	▲	0.6

Source: PASP IAS, 2020

ii) Human and social capital

71. The assessment for human and social capital was rated as satisfactory (5). Poor rural women and men have been

supported to develop through strengthening the cooperatives and training and capacity building of cooperative members and farmers. They have gained some control over economic relations – notably through the linkages to private sector off-takers through 4P arrangements - and institutions and actively participated in local decision-making processes. Although the project had some challenges in availing the capacity development funds as part of the matching grant scheme, the grant beneficiaries were able to utilize the funds based on their needs by the completion of the project by completion.

72. Capacity building was done by various organizations like RCA (governance, auditing, financial management); RYAF (long-term coaching); RAB (good agricultural technologies); and technical SPs among others.

73. PASP contributed to development of human capital of beneficiaries through training and capacity building of smallholder farmers. For example, at baseline, the cassava crop was suffering from the lack of disease-resistant planting material and cassava growing was practiced by very few farmers. PASP through RAB conducted training of farmers using a cassava training curriculum and manual which was used to train farmers from 24 cooperatives. The topics covered included: 1) Cassava cultural practices; 2) Pests and diseases control and management; 3) Cassava tissue culture and macro propagation and 4) Cassava seed system. The farmers were also supported to access clean and disease free cassava planting material and planted over 3 million cassava material. As a result of these interventions, cassava yields stood at 11.1 tons/ha at project completion from almost zero at baseline. However, it was noted that yields were still low compared to potential yield of cassava which could attain 30-tons/ha of roots using varieties under RAB dissemination.

74. The collaboration between PASP and CIAT provided an avenue for training and demonstrations to farmers on the use of Participatory Integrated Climate Services for Agriculture (PICSA) approach, which provided knowledge and skills to smallholder farmers to enable them make climate informed decisions based on accurate, location specific, climate and weather information; locally relevant crop, livestock and livelihood options during the process of planning their agricultural season and other livelihood activities. Thanks to the knowledge gained on climate risk and risk management, smallholder farmers continue to utilize weather and climate information.

75. PASP supported the building of social capital for beneficiaries and this was achieved through strenghtening rural institutions like the cooperatives through: 1) Trainings on how to adhere to the Rwanda Cooperatives Act, 2) Supporting mergers of small cooperatives for better management, 3) Supporting cooperatives to form joint ventures with private companies for market linkages and 4) Training of management on various skills. As a result of these interventions, the cooperatives were strengthened and the capacity of the members to participate in the decision making and in electing leaders was enhanced and was in line with the Rwanda Cooperatives Act.

76. The project had challenges guiding the utilization of the capacity building funds among the matching grant recipients, as the initial design was for the recipients to identify their capacity needs, prepare a proposal and make 20% contribution upon receiving the grant. The slow access to the funds hindered the completion of BPs' implementation, which was the main reason for this category to be consistently rated as moderately satisfactory (4) in the supervision missions. The mission in October 2019 made several recommendations including waiving the 20% beneficiary contribution and organizing joint capacity building activities on various topics in a district, rather than adhering to the original design. These recommendations were well taken and the project was able to quickly provide training sessions on relevant topics such as warehouse management, infrastructure management, financial management, financial management and marketing skills while leveraging existing technical SPs who helped identify the recipients' needs. The training activities were completed before the end of the project.

iii) Food security

77. The rating on food security was assessed as satisfactory (5) and this was based on the elements of improved food availability, access and stability of food access.

78. PASP interventions were critical in achieving an increase in the food security of rural poor men and women; most targets were met. The final impact survey established an improvement in household food security and this was assessed through changes in eating habits of beneficiary households. It was found that 75.6% of beneficiary households reported an improvement in food availability and eating habits. For example, there was a reduction in the number of households that had only one meal a day from 37.3% at baseline to 21.1% at Projection completion. Further, the percentage of beneficiary households that had at least two meals and three meals a day increased by 12.7% and 3.2% respectively as presented in table 4, below.

Table 4: Number of meals taken per day

Meals taken		At baseline (%)	Currently (%)	Change	%
Once a day or less		37.3	21.1	▼	16.2
Twice a day		57.0	69.7	▲	12.7
Three times and more		6.0	9.2	▲	3.2
Most important meal of the day					
Morning		6.0	0.7	▼	5.3
Noon		40.0	42.9	▲	2.9
Evening		54.0	56.4	▲	2.4

Source: PASP IAS, 2020

79. Improvement in food security was also noted through improved child nutritional status. At baseline, the reference data from the Rwanda Demographic and Health Survey (RDHS 2014-2015) showed that at national level, 38% of children under age 5 were stunted, and 14% were severely stunted. The final impact survey reported that the percentage of children under age 5 classified as stunted has reduced by an average of 2.8% in the PASP's target districts. However, it was noted that the level of stunting remained 'serious' according to the WHO threshold (30-39%), except for Ruhango and Nyagatare districts. It was also noted that improved incomes by project beneficiaries translated into better food access since farmers could buy food with additional incomes realised.

iv) Agricultural productivity

80. Agricultural productivity was rated as satisfactory (5). It was noted that PASP activities led to a good increase in agricultural productivity and food production in the Project area. PASP project contributed to increased agricultural productivity through reduced post-harvest loses, adoption of high yielding drought tolerant (climate smart) crop varieties, and increased acreage of land under production. During the implementation, agricultural productivity was consistently reported as moderately satisfactory (4) by supervision missions mainly due to the fact that the data to verify the result of various training and research activities were not ready, shared or submitted on time, which made it difficult to rate this category higher. During the completion review mission, however the sufficient data was availed and it was found that investments in post-harvest infrastructure led to a reduction in post-harvest losses and hence improved quality and quantity of the crop produce in the Project area. For example, the final impact assessment report noted that on average, maize losses at cooperative aggregator level reduced by 71.8% compared to baseline level, while for Irish potato, there was reduction in quantitative losses from 37.33% at baseline to 10.3% at end line and qualitative losses reduced from 30% at baseline to 10% at end line. For beans, qualitative losses reduced from 22.67% at baseline to 8.8% at end line.

81. The RAB team undertook adaptive research and disseminated various improved crop varieties (Maize, cassava and Irish potatoes) to farmers that contributed to improved productivity and production levels. For instance, in the maize value chain, RAB promoted early maturing high yielding and drought tolerant maize hybrid varieties. RAB also worked with RICA, to support seed multiplication, certification and dissemination. These initiatives contributed to significant increase in maize cop productivity and the reduction in the amount of maize seed imported into the country. The final impact survey noted that maize productivity in the Project area had increased from 2.8 tons/ha at baseline to 3.7 tons/ha as shown in table 5. The Mission noted that in some cases, the acreage of land under maize farming increased. Some cooperatives such as *Abajyanan'igihe* in Musanze District reported that they had leased more land (15Ha) in Nyagatare area to grow maize as a result of training by PASP and RAB.

Table 5: Yield (tons/ha) for crop commodities at baseline and currently

	Baseline	**Currently**
Commodity		

	2016 A	2019 B	2020 A
Maize	2.8	3.5	3.7
Irish Potato	12.4	14.7	16.8
Cassava		8.3	11.1

Source: PASP Final Impact Assessment, 2020

82. RAB also tested and promoted a traditional maize drying technology which was scaled up to the national level. The Government promoted the scaling up of the technology by allocating a budget of RwF 11 billion. Farmers who had adopted this drying approach reported reduced levels of aflatoxin and reduced post-harvest losses; which contributed to improved quality, productivity and marketability of maize produce.

83. In the Irish Potato value chain, RAB in collaboration with RICA promoted the multiplication and adoption of high yielding Irish potato seeds. Initially it was reported that farmers imported the seeds from Uganda. But as a result of this initiative, access to clean high yielding seeds improved thereby contributing to increased agricultural productivity. The final impact survey noted that Irish Potato productivity in the Project area increased from 12.4 tons/ha 16.8 tons/ha.

84. For cassava, at the project inception, there was lack of clean cassava planting material due to Cassava Mosaic disease and other viral diseases that ravaged the country. Very few cooperatives were involved in cassava planting and cultivation. PASP project financed and supported RAB to establish a sustainable seed system that increased farmers' access to clean disease resistant cassava material. RAB set up infrastructure like screen houses (10), established multiplication centres and built capacity among the farmers. RAB also worked with cooperatives in promoting these new cassava varieties and several cooperatives are currently active in cassava cultivation and marketing. Additionally, PASP also funded 21 cooperatives to improve post-harvest handling and processing of cassava. It was noted that many farmers had adopted the new cassava varieties and crop productivity had increased.

85. In the dairy value chain, PASP project interventions and investments resulted in improved milk productivity. In dairy, a total of 57 BPs were funded and financial support to cooperatives was used to buy motor vehicles to transport milk from milk aggregation points, expand capacity of Milk Collection Centres (MCCs) and acquire milk quality testing equipment. As a result of this funding, milk cooperatives reported increased quality and quantity of milk sold. The final impact survey report noted that from an analysis of a sample of 21 MCCs, profitability kept rising with an average net income of Rwf 2,425,658 per MCC implying farmers incomes from dairy had improved.

v) Institutions and policies

86. The assessment for institutions and policies was rated as satisfactory (5). The institutions/organizations supported under the project are self-managed, transparent and without political interference, and services to clients/members are likely to continue after project completion. The project has also managed to have influence at policy level, especially an increased recognition at policy level for the importance of post-harvest investments; with participation from farmers, GoR, and its agencies. There was general recognition and appreciation of the importance of post-harvest activities among farmers, district leaders and staff, and now a focus on post-harvest was part of the district plans and agendas. Further, it was noted that PASP had made a significant contribution in influencing policy at national level.

87. PASP collaborated with other institutions such as RAB to enhance the climate and environmental aspects of the project and ensure adoption of the same by farmers. RAB conducted research activities and the results were useful for policy makers. For example, the mycotoxin survey was completed and published to inform policy; and the GoR financed the adoption and scaling up nationally of the maize drying approach.

88. PASP introduction of distinctive designs and structures for drying and storage facilities for maize and beans contributed to development of policies for building codes for drying facilities which were adopted by the Rwanda Bureau of Standards (RBS) and MINAGRI.

89. Specifically, the Project contributed to the following national and international policy processes on climate issues.

a) Rwanda National Environment & Climate change policy (2018): More specifically, the Project contributed to the implementation of the following policy actions:

- Promote and support local industries and SMEto adopt environmentally sound technologies through provisions of appropriate incentives and disincentives,
- Identify and implement incentives for the private sector and research institutions to undertake research and development and create affordable and appropriate adaptation and mitigation technologies,
- Enforce Rwanda's building code implementation including green construction practices for buildings and other structures for resource efficiency, sustainability and affordability,
- Enhance and develop early warning systems for better planning in all sectors (e.g. agriculture, environment and natural resources, energy, health, transport, urbanisation, water and sanitation, etc.) and incorporate systematic feedback from users.
- Involve and empower local communities in disaster risk reduction.
- Promote and encourage water storage at different levels (institutional, households, etc.) and improve stored water management, such as capturing and using stored water for localised irrigation to support agriculture and green space vegetation.
- Promote resource efficiency technologies to reduce energy consumption in processing industries
- Promote renewable energy to achieve universal access to electricity.
- Promote waste recovery options as a high value resource stream especially in urban areas.
- Promote the use of economic incentives to manage waste.

b) Nationally Determined Contributions (2015): More specifically, the Project contributed to the following adaptation & mitigation interventions:
Adaptation interventions

- Develop climate resilient crops and promote climate resilient livestock
- Develop climate resilient post harvest and value addition facilities and technologies

Mitigation interventions

- Off-grid and rooftop solar electrification
- Solar water heater (SWH) programme

c) Rwanda's Green growth and Climate Resilience Strategy(2011): More specifically, the Project contributed to implementation of the following areas:

- Agricultural diversity for local and export markets
- Climate data and projections

d) National Energy Policy (2014): the Project contributed to implementation of the following areas:

- Recognises the need to shift consumption from biomass-based energies to clean energies like electricity and Liquefied Petroleum Gas (LPG) to reduce pressure on forest resources.
- Renewable energy infrastructure as one strategy to fight global warming through reductions in greenhouse gas emissions Rwanda.

vi) Access to markets

90. Access to markets was rated as satisfactory (5).The project has increased farmers' physical access to markets or their

access to market prices and information. Farmers have improved their bargaining power over traders. The project has also enhanced the capacities of rural producers' groups, especially in relation to management of post-harvest infrastructure notably storage facilities.. The mission found that PASP interventions had contributed to establishment of consistent market linkages, especially through 4P arrangements, which were critical to obtaining higher prices and larger markets.

91. **Improved market access**: One of the main challenges faced by cooperatives was to find a good market for their produce. Through capacity building, PASP provided cooperative members with a number of trainings on topics including on post-harvest best practices for quality improvement, crop and animal insurance, calculation of costs of production, marketing amongst others. Through skills gained from these trainings, cooperatives were able to negotiate with potential buyers and sign competitive contracts at the beginning of each agricultural season. For example, according to the final impact survey, in the maize and beans value chain, 85% of cooperatives had established contracts with reliable buyers. Producers had established links with SARURA, Rwanda Grains and Cereals Corporation Ltd (RGCC), East Africa Exchange (EAX), RAB, Africa Improved Foods (AIF), MINIMEX, Professional Development Groups (PRODEV), World Food Programme (WFP) and local schools. As a result of these farming contracts, cooperative members were able to secure loans from Financial Institutions (FIs) to buy agricultural/ livestock inputs such as seeds, fertilizers, chemical products and animal feeds. In addition, the quantity of products sold to the middle men was reduced because most of cooperatives aggregated produce from their members and were able to secure markets at better prices due to better quality produce and economies of scale.

92. PASP also contributed to improved access to markets for other CIP crop value chains such as cassava. For example, KOMINYA Cooperative based in Kamonyi District, which has 42 members (14 men and 28 women) and is engaged in cassava processing was a beneficiary of PASP support. Prior to project support, the cooperative used to incur huge losses due to limited fermentation capacity and having inadequate drying grounds. The cooperative previously sold only five (5) tons of processed flour locally, earning an income of Rwf. 4,000,000. As a result of PASP support, the cooperative improved post-harvest handling processes through construction of additional drying areas and establishment of fermentation troughs. The capacities of cooperative members were also built through training on post-harvest handling of cassava and on effective management of cooperatives. The cooperative was also supported by NAEB through facilitation of accessing export markets in Europe where they obtained better prices. The cooperative volume of production increased from five to 10 tonnes and incomes improved from Rwf. 4,000,000 to Rwf. 10,000,000. In addition, direct engagement with buyers in Europe increased the confidence of cooperative members. *"Through the PASP support, we have gained practical experience on how to process high quality cassava produce that competes in the international market. We aspire to expand to other international markets and get even better prices"*- Uwurukundo Zacharie, Chairman, KOMINYA Co-operative.

93. The mission also established that PASP support to cooperatives for acquisition of post-harvest equipment contributed to the post-harvest loss reduction and allowed cooperatives to have a good market of their produce with improve incomes. For instance, in the milk value chain, cooperatives were supported with milk equipment and infrastructure such as milk cooler tanks, milk cans, transport facilities, water tanks, and cans washing points, installation of solar systems and construction of milk collection points. As a result of these investments, cooperatives were able to collect and sell milk to processors. In the Eastern region, MCCs were selling milk to Inyange Industries, in the North-Western Zone MCCs sold to Mukamira Dairy, and while in the Southern Zone MCCs were selling to Nyanza Milk Industry. Additionally, many MCCs across the project intervention area had established market linkages with hotels, guest houses, supermarkets, and restaurants.

D.3. Gender equality and women's empowerment

94. The gender equality and women's empowerment was rated as moderately satisfactory (4). It was noted that the Project made a partial contribution to addressing gender needs. Efforts were made to facilitate the participation of women and they accounted for 38% of beneficiaries against the target of 40% at design. Operational measures and procedures were adequate, including monitoring systems, as were resource allocations, and gender-related impacts are likely to be sustainable. Project made some contribution to addressing their needs and promoting gender equality and women empowerment.

95. At inception, PASP set out to promote women's participation in post-harvest processes and value chain development and to assist women 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. These objectives were in line with IFAD's gender equality and women's empowerment strategy aimed at ensuring more women's participation, equitable balance in workload for men and women and increased influence of men and women in decision making. The project developed a gender and youth strategy (2017-2019) and attempted to achieve gender

equality objectives through activities implemented by technical service providers and by implementing the GALS methodology in 2019 in eight (8) cooperatives.

96. The mission observed that the project focused on promoting gender equality and women's empowerment in terms of resource allocation and activities and there were noticeable changes in the post-harvest processes and value chain development with improved women involvement compared to baseline. It was found that gender composition in the cooperative membership and commodity value chains had improved. For instance, the Gender and Targeting Report (2020) indicated that women membership in dairy cooperatives has increased from 23% in 2015 to 34% in 2018. Women also participated in the commodity value chains: out of 53,002 members in 155 maize and beans cooperatives, 25,167 (47%) were female, 27,835 (53%) were male and 3,221 (7%) were youth. Cooperatives also made an effort to include women in leadership positions with the impact survey report indicating that out of the 229 cooperatives supported, 69.5% had women in leadership positions. The total households reached by the project were women headed households against the target of 40%. In addition, anecdotal evidence from the field visits confirmed that for most cooperatives one out of five positions in the executive committee was held by a woman, most often as the treasurer.

97. Further, it was noted that the matching grants model had also encouraged women entrepreneurs to access finance through BPs. Of the 395 BP financed by PASP, 35 were women owned (8.8%) with a total cost 2,302,052,708 Rwf financed while 107 were owned by men (27%) with a total cost of 9,550,730,907 Rwf, while other BPs were owned by cooperatives (64.2%).

98. PASP also introduced the The Gender Action Learning System (GALS) - one of the household gender methodologies and trained 207 GALS champions (107 female and 100 male). These champions were able to train another 330 beneficiaries. Women and youth also benefited from the technical trainings provided by service providers. For instance, out of the 8,553 farmers trained in post-harvest handling, marketing and cost of production calculation, infrastructure management and value addition and quality control, 3,336 were female (39%) and 642 were youth (7.5%). It was also noted that some technical service providers had also included modules related to gender in their training programmes.

99. The project gathered gender disaggregated data linked to the main project components and the M&E system captured participation of women in capacity building activities within the PASP cooperatives. However, it was observed that although the project had mainstreamed gender equality and women empowerment in its programming, no commodity gender analysis of the CIP and dairy value chains had been carried out, which was a missed opportunity. It was also noted that the full implementation of the gender and youth strategy required sufficient human and financial resources which were not fully made available in the project budgets.

D.4. Adaptation to climate change

100. The adaptation to climate change by the Project was rated satisfactory (5). The project managed to strengthen the resilience of most local communities vi-à-vis climate-related shocks and stresses. Community members and cooperatives were empowered to mitigate the most prevalent negative effects of climate change. Indeed, the Project focus on adaptation to climate change using the ASAP grant was successful and 83% of project beneficiaries had acquired the capacity to implement climate risk management strategies against the target of 80%. For example, using PISCA approach, the project trained farmers on climate risk management and adaptation and the adoption levels for these trainings were 85%. In addition, through the partnership with RMA, the project supported the dissemination of different types of climate information including early warning phone messages, on a daily, weekly, monthly basis and seasonal forecasts. These instruments were very successful because they were built on the needs of farmers, who were severely affected by the negative effects of climate change.

101. The National Risk Atlas of Rwanda reported in 2015 that in Rwanda, incidences of drought increased from 3% to 4% during the planting season A and from 7% to 17% during planting season B. Further, the report indicates that the Districts of Kayonza, Gatsibo, Kirehe, and Nyagatare – PASP implementation Districts – have a high susceptibility to severe drought. For instance, in the period between September 2015 and June 2016 when exteme drought was reported in Rwanda, the drought affected crops on 16,119 hectares of land in Kayonza District, 11,012 hectares in Nyagatare District and 750 hectares in Kirehe District, affected an estimated 47,300 households (MIDIMAR, et al., 2016). The MIDIMAR report mapped five flood plain areas, two of which affected the project’s target districts. In May 2016, severe flooding occred in areas in Muhanga, Rubavu and Gakenke and in March 2018, extreme flooding events affected areas in Rubavu.

102. Against this background, the Project focused on adaption to extreme climatic events. PASP contributed towards Rwanda's climate change adaptation through financing of Project initiatives under the ASAP grant with a total of USD 6.93million, distributed as USD 2.5 million under Project Component 1, USD 4.17million under Component 2 and USD 0.26million under Component 3. As part of the ASAP grant, the PHCRAB grant was 100% financed to cover the incremental cost associated with climate resilient infrastructure and related investments.

103. As per the Project updated logframe, 83% of HUBs had acquired required capacities to implement climate risk management strategies against an end target of 80% of HUBs. It was further established that PASP had financed 222 BPs with PHCRAB grants worth approximately 3.76 billion RWF representing 26% of the total PASP project's cost. It was noted that maize and beans value chain had the highest number of BPs (90) absorbing 39% of the total PHCRAB funding equivalent to Rwf 1,480,417,903. This was followed by Irish potato value chain with 74 BPs, equivalent to 26% of PHCRAB total funding worth Rwf 969,216,381, while about 35% of PHCRAB funding supported projects in dairy/milk value chain (21 BPs with Rwf 786,953,587), in horticulture (16 BPs with Rwf 363,823,118), and cassava (15 BPs with Rwf 163,304,719). The management of PHCRAB grants was carried out by BDF under a Memorandum of Understanding (MOU) established with RAB and SPIU.

104. **Climate risk and risk management training:** As part of the ASAP grant, climate risk and risk management training was conducted by Imanzi (before MTR) and by CIAT (after MTR) in the 12 target districts. A total of 3,060 farmers in addition to BDF and RYAF staff were trained.

105. To support adaptation to climate change, PASP conducted PICSA training through collaboration with CIAT and 2,397 (45% female and 24.6% youth) farmers, 73 RYAF members and 9 PASP staff were reached. Under the training, farmers learned to read and interpret climate data based on past trends and to interpret data on future weather and rain availability patterns. The PICSA training manual included material on: crop water requirements', crop characteristics and climate historical graphs (onset, cessation, length of season, seasonal rainfall and dry spell). The PICSA training aimed at facilitating farmers to make informed decisions based on accurate, location specific, climate and weather information, locally relevant crop, livestock and livelihood options during the process of planning their agricultural season and other livelihood activities. This PICSA training reached approximately 75,000 farmers and the IAS (2020) reported an 85% adoption rate by farmers.

106. Based on the recommendation from the MTR, CIAT conducted an assessment on the project's priority commodities and the working paper titled *"Climate Risk Assessment for Selected Value Chain Commodities in Rwanda"* was published in June 2019. The purpose of this assessment was to prepare project staff, BDF and financial institutions to understand climate risks for priority commodities. While this was completed rather late, 9 months to project completion, it was still seen as information essential to projects and financial institutions in taking decisions on how to support farmers in accessing financial products such as loans and insurance.

107. **Provision of climate information services.** Under a collaboration between RMA and PASP, the total number of 5,833 cooperative members, 12 PASP field staffs, agronomists, officers and directors from the 12 Districts under PASP intervention were trained on basics of weather and climate information and variability and weather forecasting. It was observed that 85% of households were accessing and using weather and climate information compared to 65.8% of households in 2018 when the intermediate impact assessment of the project was carried out. At baseline, very few households (83 households) used weather and climate information. It was also reported that at endline, more than 6,000 farmers received daily SMS on weather information, which included forecasts at 6-hour intervals updated three times a day as well as long-term forecasts, compared to 446 farmers, extensionists and local authority recipients at baseline in 2016. These farmers would also actively share these forecasts with neighbours and fellow cooperative members, especially in the event of a storm or heavy rainfall forecasted. The IAS reported that adaptation of the cropping calendar based on climate information received was at a rate of 90.5% by PASP beneficiaries, with higher rate adoption among female headed households (92.3%) than male headed households (89.1%). The PCR mission observed that RMA continues to provide climate information under its budget allocation using platforms such as social media, SMS, MTN toll free calls and using radio and television bulletins. In addition, PASP supported the calibration and maintenance of 121 weather stations located in the 12 districts. Data on weather pattern changes was collected and disseminated to farmers in these districts by RMA in collaboration with PASP.

108. **Climate change adaptability.** PASP supported RAB to carry out adaptive research studies for different commodity value chains with a purpose of addressing farmer's climate change adaptation in crop production. For instance, based

on research and experimentation done by RAB, farmers were able to select the maize varieties ISARM103, ISARM081 and SC403 as early maturing and drought tolerant preferable for the season B (February to June) when there were short rains, and maize varieties PAN 53 and DHO4 as being preferable for season A (September to Mid-January) when there were long rains. Early maturing varieties have the advantage of being harvested and dried before the onset of rains. It was also found that new maize varieties such as RHM 111 were preferred for both being high yielding and also being moderately early maturing and for an acceptable grain yield potential (10 t/ha) in addition to being suitable for both season A & B.

109. **Climate smart infrastructure and coping technologies**. PASP also supported farmers through cooperatives to acquire post-harvest drying infrastructure and equipment as a means of minimising losses during post-harvest. Maize and beans cooperatives were supplied with tarpaulins to achieve required level of drying while protecting grains from soil humidity and possible microbial contamination. A total of 8,551 tarpaulins were distributed to 97 cooperatives in 10 districts targeting areas with high potential for maize and beans production. In addition, 79 solar bubble dryers were provided, out which 52 were to cooperatives. Further, 93,841 hermetic bags were provided and 1,997 silage bags for forage storage were issued to 39 dairy cooperatives. Farmers reported that the hermetic bags were capable of storing dried maize grain in good condition, unaffected by aflatoxin for over one year, compared to other sacks that were used previously by farmers to store maize for a maximum period of three months before it was attacked by the cancerous aflatoxin. The use of hermitic bags therefore contributed to improved food security for farmer households through safe storage of grain but also was a remedy to health effects that could arise from the cancerous aflatoxin in maize grains.

D.5. Environment and natural resource management

110. The environment and natural resources management was assessed as satisfactory (5). The environment or the natural resource base have improved in the project target area. The pressure on the natural resource base has been reduced and the natural resource base is now used in a more sustainable manner. High-standard environmental norms were followed for most project activities and there was no negative impact on the environment. PASP activities contributed to improvement in the environment and natural resource base through financing of activities that reduced pressure on the environment such as adoption of rain water harvesting, use of solar and biogas energy and management of waste water.

111. PASP, through business plans financing supported project beneficiaries to access and use different natural resources such as rain water, solar and biogas energy for their benefit and also to manage by-products emerging from beneficiaries' activities in an environmentally friendly manner. Under the PHCRAB support from the ASAP grant funding, various climate smart technologies were adopted by individual households and cooperatives. The most adopted included: rainwater management and harvesting technologies, metallic/plastic silos, renewable solar energy systems, solar powered cold room systems and solar water heaters. As per the updated Project logframe, 422 community groups had been reached against as target of 325 at baseline.

112. On rainwater harvesting, the Project investments included masonry, plastic and aluminium tanks, underground water harvesting systems and water treatment systems which were meant to increase cleanliness of harvested rainwater. Most of these investments were channelled to MCCs and post harvest storage facilities which were supported in building rainwater harvesting tanks. It was noted that adoption of rainwater harvesting was high among project beneficiaries. For example, the IAS revealed that 94.6% of MCCs had established appropriate water drainage systems and had rainwater harvesting structures established on their infrastructure. The rainwater collecting capacity for MCCs varied from 3,000 to 20,000 L. In addition, many MCCs had constructed washing points for cleaning milk cans and equipment. Collected water was mostly used for cleaning of equipment, cans, and for the washrooms. An average of 16 households per MCC (totalling about 380 households in the project area) were able to access collected and rainwater and this had contributed to a 5% increase in access to water by HHs and a 17.1% reduction in time spent collecting water. In addition, it was reported that rainwater harvesting and proper drainage channeling to water tanks helped preventing soil erosion or flooding effects rom run-off emerging from post-harvest structure.

113. The project supported 1569 individual households with plastic water tanks through cooperatives, with the majority (85%) of beneficiaries being in the dairy value chain. Water collected and harvested in the tanks was used to provide drinking water for domestic use and for the dairy cows, especially during the dry season and it was also used for cleaning of milk cans. As a result, milk handling hygiene had improved and the quantities of milk rejected by buyers had gone down. The water tanks also contributed to improved access to water by project beneficiaries and reduced time taken to fetch water.

114. **Waste water management**. A total number of 63 liquid waste water treatment systems were established using septic

tank primary treatment system for all beneficiary dairy cooperatives owning MCCs, under co-financing between PASP and beneficiary dairy cooperatives. In addition, all MCCs were supported to establish composting holes used in converting organic solid waste into composite manure. It was observed that while the septic tank primary treatment system may have been suitable for MCCs, the same was not appropriate for other facilities which discharged waste water from processing such as beer and wine processing facilities, where secondary treatment and possibly tertiary treatment was required. For more complex BPs, where value addition was included, more appropriate liquid waste management facilities should have been proposed.

115. **Renewable energy use**. PASP supported establishment of renewable energy units under the ASAP grant, especially solar systems. These systems were used for lighting and running various post-harvest operations. Out of the 55 MCCs supported with climate proofed infrastructure, six were supported to establish solar energy systems to supplement electricity used to run the milk coolers. During interviews with Rwimbogo Dairy Cooperative, it was noted that as a result of installation of solar system, the MCC was able to save Rwf 450,000 per month during the dry season since the solar unit was able to supply power sufficient to run two milk coolers (with a capacity of 3,000 litres each) and to provide hot water for cleaning cans and the MCC equipment. The mission also noted that solar powered cold room systems had been constructed for use in the horticulture value chain and for other perishable commodities including yoghurt and cheese such as observed in ZIRAKAMWA MEZA Dairy in Nyanza district and MUHE farm in Nyabihu District.

116. Further, the ASAP grant provided support to maize and beans cooperatives for acquisition of solar bubble dryers for drying maize and beans to acceptable moisture levels suitable for storage. A total of 79 solar bubble dryers were distributed to 52 cooperatives in 10 districts of project intervention. These investments contributed to reduction in post harvest losses for maize and beans. For example, in the beans value chain, post harvest losses reduced from 22.67% at baseline to 8.8% at Project completion (IAS 2020).

117. The project's collaboration with RMA, together with the PICSA training helped better decision making among farmers, which in turn, also benefitted the environment. For example, farmers in COOPCUMA Cooperative in Eastern Province explained that based on the weather information received, they were able to make decisions such as which variety of maize to plant, which days to hire labour, when to spray pesticides, and which days were suitable for harvesting and drying and how long during the day to dry their harvest. Appropriate decisions on the day to prepare land, apply pesticide and/or fertilizer and harvest helped preventing soil erosion and run-off. Although increased use of agrochemicals was anticipated at design, the final IAS reported that use of fertilizers remain low in all crops.

D.6. Targeting and outreach

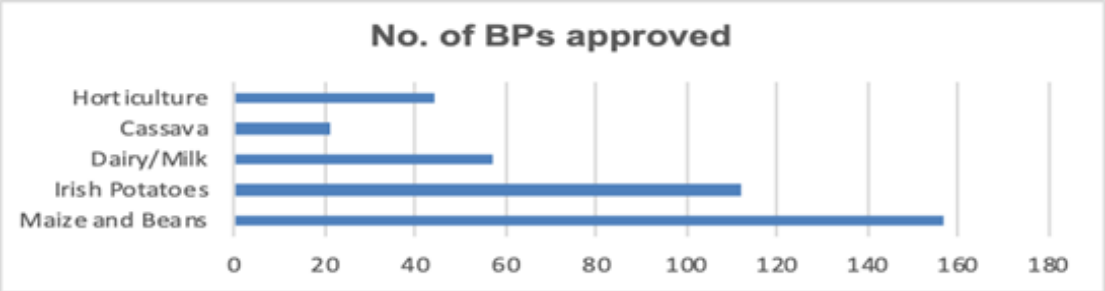
118. The targeting and outreach strategy for the Project was rated as moderately satisfactory (4). The Project has reached out to the intended target group(s), but not for all components and quantitative outreach targets were not fully met, especially in relation to women and youth. Targeting performance was monitored and reliable information on outreach and beneficiaries is available. PASP including the blended ASAP grant utilised three types of targeting mechanisms which included; a) geographical targeting, by targeting different value chains according to geographical and agricultural zones, b) direct targeting measures, which involved channelling services or resources to specific farmer groups and business entrepreneurs and c) empowering measures, through encouraging participation of disadvantaged groups in Project activities such as women and youth. PASP targeting strategy focused on smallholder farmers in the twelve districts, following the national poverty categories (Ubudehe) categories I (the very poor), II (the poor), and III (the resourceful poor).

119. PASP reached 70,420 smallholder farmers out of which 38% were women against the target of 40% and 9.4% youth against the target of 20%. The limited involvement of the youth was explained by the reason that young people were not able to raise resources needed to join cooperatives. PASP supported a total of 277 cooperatives in the CIP value chains and dairy, with a total membership of 56,690 members out of which 21,204 (37.4%) were women. Depending on the commodity, cooperatives were supported with post-harvest collection centres, storage facilities such as warehouses, drying facilities, transportation vehicles, equipment and packaging materials and different equipment in post-harvest handling such as the maize shellers, scales, moisture meters and palettes. PASP built farmers capacity in post-harvest handling, value chain development and cooperative management with an aim of upgrading farmer groups to HUBs. As part of the ASAP grant a total of 3,060 smallholder farmers were trained in climate risk and risk management.

120. PASP focused on availing access to finance, through its matching grants and PHCRAB grant. At completion, the project had financed 395 BPs including 59 BPs financed before MTR and 336 BPs after MTR representing 196%

achievement on project target of 200 BPs. The BPs focused on provision of post-harvest infrastructure, machinery and transportation. Maize and beans had the highest number of BPs (157), followed by Irish potatoes (112), dairy/milk (57), horticulture (44) and cassava (21) as highlighted in chart below. Under the ASAP grant, 220 BPs received PHCRAB grant worth approximately USD 4.1 million.

Figure 2: Number of BPs approved



D.7. Innovation

121. Innovation was rated as satisfactory (5). The project has tested some new innovative approaches for rural poverty reduction. Learning systems were satisfactory, but lessons learned were not often brought to higher levels. Project experience with these innovations was documented and there is some interest to adopt these in other areas. It was noted that PASP fostered a culture of appreciation of new ideas and seeking and embracing new opportunities. This led to innovation at farmers and implementers level. Among the noteworthy innovations included the following.

122. **4Ps financing model:** The 4Ps financing model adopted after the MTR entailed three types of investments: the Private sector led investments in partnership with a cooperative, cooperative led investment in partnership with private sector, and a joint venture between a cooperative and the private sector. The 4Ps financing model provided a win-win arrangement for the participating partners since there was sharing of risks, responsibilities and benefits. For the smallholder farmers and cooperatives this arrangement enabled them to access matching grants to co-finance investments with private investors; for the private sector, involving producers in the arrangement ensured a more reliable and consistent supply of produce and it also limited the risk of side-selling, which sometimes occured in contract-based relationships.

123. **The introduction of the solar bubble dryers and the collapsible dryer-case** A significant challenge that faced grain farmers was aflatoxins, which are highly carcinogenic toxins formed by fungi present in many agricultural crops. These toxins contaminated maize and other grains in the field as well as upon harvest, and the level of aflatoxins rose rapidly during the processing and storage phase. The introduction of mobile solar bubble dryers and collapsible dryer-cases by PASP was considered an innovation since they had not been used in the target districts and were able to dry grain up to the required moisture content in variable climate conditions. Additionally, with these mobile dryers, the quality of cereal preservation was improved and the drying time was cut to a few hours instead of several days of sun drying. As a consequence, the whole drying process was safer, faster and less labour intensive.

124. **The design of post-harvest infrastructures**: PASP introduction of unique architectural designs and structures for drying and storage facilities, especially in the maize and beans value chain was considered an innovation. This led to the construction of high-standard warehouses and drying facilities. Prior to project support, the design adopted for the construction of post-harvest infrastructures was characterized by a limited consideration for (i) green-technology / climate-start equipment; (ii) the ventilation of the infrastructures (both on the roof and the walls); (iii) water-harvesting facilities; and (iv) high quality materials.

125. **Climate change adaptability techniques:** PASP's identification and promotion of climate risk management training used PICSA, a method developed by the University of Reading. Its implementation in Rwanda was considered innovative as the farmers were taught to read and interpret climate information from the past years and to predict the current weather and rain availability in their respective districts. Through this approach farmers were able to interpret weather information and to use it in planning their agricultural season and other livelihood activities adaptive to climate change.

D.8. Scaling up

126. Project scaling up was rated as satisfactory (5). It was noted that some of the approaches used under PASP such as requirement for co-financing by beneficiaries had been adopted for other projects such as the World Bank funded Sustainable Agricultural Intensification and Food Security Project (SAIP) in Rwanda. This was quite an important change that PASP triggered in other development partners and GoR projects. Beneficiaries' co-financing especially for productive investments is essential for ownership and sustainability. A number of other models introduced by PASP have shown opportunities for scaling up such as the 4Ps model, which was for example adopted in Rwanda Dairy Development Project (RDDP), research activities carried out by RAB, use of weather and climate information and innovative designs for post-harvest infrastructures and introduction of GALS methodology for mainstreaming of gender equity and equality at household and group level.

127. Through the 4Ps model PASP promoted the creation of partnerships among the different value chain actors. This approach distinguished three models of 4Ps - cooperative-led BPs; private sector-led BPs and joint ventures that ensured that all the BPs supported by the project were based on the creation of a partnerships between the private sector players and producer groups, with the support of PASP as public sector actor. The construction of the BPs around the idea of partnerships therefore allowed the up-scaling of support currently offered by the project and would also ensure both sustainability and scalability of the created partnerships. The success of the 4P model was included for scaling up in subsequent IFAD projects such as Partnership for Resilient and Inclusive Small Livestock Markets (PRISM), and Kayonza Irrigation and Integrated Watershed Management Project in Rwanda.

128. PASP through the RAB research team conducted a variety of research activities and their results were documented and disseminated to farmers and other stakeholders. For example, RAB carried out a mycotoxin survey, which informed the testing and promotion of maize drying approach as a measure to address mycotoxin and aflatoxin in maize. This maize drying and storage approach was adopted and scaled up by the Government with a budget of Rwf 11 billion. As a result of adoption of this approach, farmers reported improved quality and marketability of their produce. RAB also carried out on-farm trials for different maize varieties to assess their adaptability to different agro-ecological zones. These maize varieties have been multiplied by different seed multipliers and also distributed to farmers.

129. PASP in collaboration with RMA trained farmers and other key stakeholders on use of weather and climate information and this was adapted by most farmers (85%) when making decisions on the cropping calendar. RMA provided weather and climate information and farmers who received these reports shared these forecasts with neighbours and other members of their respective cooperatives. The sharing of weather and climate information to smallholder farmers was scaled up with support of development partners such as the Rwanda Green Fund (FONERWA) as part of their support to RMA.

130. The successful implementation of PHCRAB led to the inclusion of a Climate Smart grant for a total amount of US$ 2.377 Million within the IFAD- funded RDDP (2017-2022). The project provides incentives for eligible beneficiaries to facilitate the demonstration and adoption of climate-smart and strategic investments along the dairy value chain. Eligible investments include improved dairy sheds with improved water access and waste management, biogas plants, rainwater-harvesting tanks, solar-powered milk cooling tanks, small-scale forage choppers, community investments addressing water shortages in drought-prone areas (boreholes, watering points) - by supporting both working and investment capital based on a 60-40% ratio contribution between the project and the beneficiaries. In addition, in the recently launched IFAD-funded PRISM, the GoR also adopted the mainstreaming of climate-smart upgrading of processing/slaughtering facilities (such as bio-digesters, solar energy) as a type of investments to be financed through the matching grant facility.

131. PASP introduced unique designs for post-harvest infrastructure for drying and storage facilities and adoption of these designs by RBS would provide an opportunity for replication of these designs by the private sector. The development of new building codes informed by this new design would also stimulate interest by the private sector to adopt the design for new projects.

132. The mission also noted that some simple technologies such as dry cards, hermetic storage bags, tarpaulins which had were introduced or promoted by PASP were now being acquired and used by farmers using their own resources as reported by suppliers such as Agro-tech. In addition, certain technologies introduced and promoted in the dairy value chain such as simple milk collection points, forage conservation and storage units (hay making, silage making) had been adapted for use under the RDDP and also by HPI.

133. **Gender Action Learning System (GALS)** GALS training is an activity currently implemented across the IFAD portfolio in Rwanda in collaboration with OXFAM. After MTR, PASP integrated the GALS methodology in eight PASP

supported cooperatives in four districts (Musanze, Kamonyi, Ngoma and Kirehe). This initiative was linked to the Accelerating Progress toward Economic Empowerment of Rural Women (RWEE) jointly implemented by UN agencies, World Food Programme (WFP), FAO, United Nations (UN WOMEN) and IFAD. This initiative facilitated an integration of GALS methodologies in climate change mitigation practices and helped introduce the GALS methodology to at least 207 champions (107 women and 100 men) from eight PASP supported cooperatives. These champions were able to train another 330 beneficiaries and through the network of cooperatives supported by the Project, GALS training would reach additional beneficiaries.

E. Assessment of project efficiency

134. The project efficiency was rated as satisfactory (5). Project implementation was efficient and the project investments represented good value for money. Most project activities were implemented within the schedule and within budget. Project implementation arrangements and procedures were efficient and output delivery was largely problem-free. On cost efficiency, at design, the total cost of reaching 155,518 individual beneficiaries was computed at USD 83.35 million, which translated to an estimated cost per beneficiary of USD 536. At Project completion, the cost per beneficiary was USD 152.54 which meant that the project was able to efficiently reach more beneficiaries with less funds. In addition, it was noted that the overall quality of project management was effective and the coordination of the project activities was complimented by use of technical SPs and district staff who monitored the implementation of activities.

135. The rating of project efficiency was further validated by the Economic Rate of Return (ERR) for PASP investments which stood at 43% compared to 15.7% computed at design. The higher ERR realized by the project was as a result of the fact that project reached 117% more households than envisaged at project design, while investing only 56% of the resources allocated. It was noted that a higher ERR of 43% was achieved by the project mainly because at design, the capital investment needed to realize the 15.7% ERR was based measured at US$ 46.4 million, to benefit 32,400 households. However, at PCR, the same US$ 46.4 million was invested but for a larger number of beneficiaries. In addition, it was also noted that there were substantial variations between the prices used in computing crop models during project design, during the baseline survey and the prices at the time of PCR. At the time of PCR, the prices were significantly higher and this meant higher benefits to farmers. This coupled with the increased number of beneficiary households reached contributed to the high ERR.

E.1. Project costs and financing

136. As of 31st October 2020, project cumulative disbursement was USD 47.46 million representing 57% of the appraisal target of USD 83.35 million. During implementation, and effectively at MTR, the approach to co-financing by HUB commercial loans estimated at USD 35.6 million was not to be effective and was stalling the implementation of Component 2. Significantly, Component 2 had an allocation of USD 71.2 million, which represented 85% of the project budget. It was therefore recommended that the approach be changed to focus on value chain financing to be provided from a variety of sources including input suppliers, MFIs and SACCOs. In order to cover their own contribution, some BP promoters would access bank or SACCO loans. The MTR also recommended to introduce the 4P financing model, which helped boosting the number of BPs approved. Ultimately, PASP implemented this component by financing 325 BPs through matching grants.

137. Additionally, the SPIU was to restructure the component objective to make it more relevant to the project development objective. This would involve facilitating HUBs to access a range of appropriate and timely financial services for value chain actors (private business promotors, producer cooperatives and primary producers) from a variety of financial service providers, using innovative delivery mechanisms to increase their outreach to HUB investments in climate resilient technologies and productive post-harvest infrastructure'. This approach was adopted and in effect the component took off. However, the estimated value chain financing by HUBs was yet to be analysed, quantified and presented in the project books of account.

138. At Project completion, it was noted that actual value chain financing by HUB commercial loans was estimated at USD 3.5 million representing 10% of the estimated financing at appraisal. Other financiers had been disbursed as follows; IFAD Loan/Grant – 98 % (or USD 26.4 of 26.9 million), ASAP Grant – 100% (USD 6.9 million), GoR – 79% (USD 2.67 of 3.4 million), and beneficiaries – 66% (or USD 7.5 of 11.4 million).

Table 6: Disbursement rate by financier

Disbursement per financier			
Financier	**Allocation**	**Disbursed**	**%ge**
IFAD	26,937,414	26,755,896	99%
ASAP	6,923,864	6,923,864	100%
GoR	3,401,193	2,672,236	79%
HUB	34,618,599	3,530,707	10%
Beneficiaries	11,469,370	7,577,994	66%
Total	**83,350,441**	**47,460,698**	**57%**

139. **Government contribution**. As per PASP design, Government was to allocate USD 3,401,193 as counterpart contribution, representing 8% of total project costs, to cover taxes and duties. As of 30th October, 2020, an equivalent of USD 2,672,236 representing 79% of appraisal target had been disbursed. This contribution included cash transfers, tax exemptions and in-kind contribution in form of office space provided. However, there was in-kind contribution in form of manhours provided by government staff, such as RAB post harvest staff and researchers in different value chains, agronomists in the 12 districts who carried out various post-harvest trainings, district co-operative managers who supported in capacity building of cooperatives amongst others which was yet to be assessed and costed. In future, it would be important for the SPIU to prepare time sheets for such contribution by staff which would translate into in-kind counterpart contribution.

140. **Project expenditure per component/per year**. At appraisal, PASP was designed to be a five year project, but due to implementation challenges of Component 2, there was a delay in activities in the first two years. As a result, the project implementation period was extended to six years, and additional extension of six months being granted due to disruptions caused by the COVID-19 Pandemic. In terms of project expenditure per component expressed as a percentage of actual versus design allocations; component 1 (HUB capacity development programme and business coaching) achieved 148% (USD 12.09 of 8.1 million), component 2 (Post-harvest climate resilient agri-business investment support) achieved 38% (USD 26.7 of 71.2 million), and component 3 (Project Management & Coordination) achieved 80% (USD 3.9 of 4.9 million). Component 2 underperformed because of challenges of co-financing HUB loans based on assumptions made at design regarding access to commercial financing, but the component started performing after the MTR mission recommended changes to implementation modalities of the component.

141. **Cost efficiency**. At project design, PASP was designed to cover 200 HUBs in 10 districts. Based on actual outreach during project implementation, the project worked with farmers organized around 277 cooperatives in 12 districts and directly reached 72,420 household translating to 303,932 individual beneficiaries against at target of 32,400 households and 155,518 individuals at appraisal. Similarly, at project design, the total cost of reaching 155,518 individual beneficiaries was computed at USD 83.35 million, which translated to an estimate of USD 536 per beneficiary. At Project completion, it was noted that the cost per beneficiary was USD 152.54 which meant that the project was able to reach more beneficiaries with less funds and hence the project was cost efficient. The mission noted that in addition to the direct beneficiaries, the project benefits also reached to non-beneficiaries.

E.2. Quality of project management

142. IFAD funded projects in Rwanda are managed under SPIU. Through this arrangement, there are staff who provide cross-cutting services across all the IFAD funded projects such as the SPIU Co-ordinator, Head of M&E and Management Information Systems (MIS), Head of Procurement, Knowledge Management (KM) and Communication

Specialist, Gender Specialist, Head of Finance and Fiduciary Aspects and the Chief Accountant, the Head of Information Technology (IT) Department, the Internal Auditor and the Logistics Officer. All other staff are specific to the respective project, in this case PASP Project and upon completion of the project, the staff are exited with their final benefits. The mission noted that the use of SPIU was an efficient and cost-effective approach that avoided duplication roles and also provided an opportunity to use staff who are experienced in various fields of expertise and also well versed with procedures and processes for management of IFAD funded projects.

143. PASP recruited 12 field staff and they were affected to Districts of project intervention zones. Generally, their role was to facilitate, follow up and monitor the implementation of project activities in their respective Districts. Their responsibilities included (i) ensuring project beneficiaries' engagement in all project activities and the project target groups benefitted from the interventions; (ii) coordinating project activities implemented by different service providers and partners; (iii) supporting HUB capacity building and organization; and (iv) supporting the business plan development through identification of business, assessment of rational and completion of the application forms through collaboration with BDF staff.

144. Overall, PASP field officers assisted the project to ensure that the financed BPs are in line with the project objectives as well as benefiting the intended project beneficiaries. Having noted the important roles of field officers and their impact in helping the project to achieve its intended objectives, future IFAD projects within the SPIU with similar objectives should also consider employing such staff.

145. **Project management tools**. It was observed that the AWPB and the Procurement Plan were prepared annually and executed. Further, information management systems (Financial Management (FM) - TOMPRO for FM and an excel based database for the Project MIS for M&E were used to to facilitate project management activities.

146. The mission also noted that RAB, in implementation of its supervisory role, undertook regular monitoring and evaluation of the project to ensure coordinated implementation of activities and the Project Steering Committee (PSC) provided oversight and overall guidance of the project and met twice a year to approve the AWPBs and to review project progress and performance. The SPIU Coordinator who served as secretary to the PSC ensured that minutes of PSC meetings were properly captured and followed up to ensure implementation of action plans.

i) Procurement

147. **Procurement planning process**. Procurement Plans (PPs) were done using an effective format (with planned and actual rows across three different categories) and it was observed that the PP were aligned to AWPBs. The project procurement staff were involved in preparation of the annual work plans and budgets and the staff provided costings for various budgeted items during AWPB preparation workshops. As per procedure, the AWPB and the PP once prepared were supposed to be provided with an IFAD No Objection before the start of the relevant financial year. However, it was observed that this was not done in most cases. Delays were mainly attributed to the project not submitting the draft AWPB & PP on time (two months prior to the start of the financial year) and back and forth comments with IFAD which resulted in delayed IFAD No Objections on the PP. It was noted that after the PP was approved by IFAD, it (PP) had to be submitted to Rwanda Public Procurement Authority (RPPA) and the due date was July 31st every year. However, in some instances where the PP had not received a NO objection from IFAD, there would be a delay in submitting the PP to RPPA. In future, to avoid delays in approval of requests for No objection on AWPB and PPs, projects should endeavour to submit the AWPB and PP for No objection two months prior to the start of the relevant financial year.

148. Implementation of the PP was monitored on a monthly basis and by 15th of the ensuing month a progress report on implementation of the PP was to be submitted to RPPA in the provided format. It was noted that this was effectively done by the project.

149. **Processes and procedures from prequalification to bidding** It was observed that upon approval of the PP, the plan would be shared with the user departments. Accordingly, at the start of each procurement activity the user departments would prepare a memo for approval by the Project Coordinator (PC). The PC would in turn forward it to the procurement department for preparation of a bid document. After preparation of the bid document, it would be submitted to the tender committee for approval and depending on the prior review thresholds, it would be published or if above prior review threshold, a No Objection Request would be sought from IFAD. The mission noted that there were

delays by the user departments to initiate the procurement processes which resulted in delays in implementation of the PPs. To mitigate this risk, all user departments were required to submit the information necessary for preparation of bid documents as soon as the action plan was approved.

150. **Processes and procedures for evaluation and contract award** The project had a standing evaluation committee appointed by the Chief Budget Manager (Chief Finance Officer for RAB). This committee had a validity period of three years, and its term could be renewed only once, with an exception of the Secretary to the tender committee, the Procurement Officer. The procurement department received all the tender documents and submitted to the tender committee for bid opening on the bid submission date. Bid evaluation commenced thereafter, and when completed the procurement department would proceed with, notifications and the contract award processes. The mission observed that the entire procedure from bid opening to end of bid evaluation was effectively done within the required timeframes (Within 21 days as provided in the Procurement Laws).

151. **Contract management and administration**. The mission noted that PASP implemented a total of 179 contracts and MoUs. By the time of project completion, all contracts had been successfully implemented and closed save for the contracts related to the PCR mission and this was attributed to an effective contract management system. From the review, most contracts were executed within the stipulated time, and for contracts whose completion period was extended there were valid reasons. It was also noted that the penalty clause for non-completion of contracts within the stipulated time frames had been appropriately applied.

152. **Record retention**. This mission noted that filing of procurement documents was properly done in one file, right from the initiation memo to acknowledgment of receipt of goods/services/works. At the end of the project, procurement files related to all closed projects would be archived at MINAGRI upon conclusion of the final audit. These records would be kept in both hard and soft copy.

ii) M&E and KM

153. The project maintained an updated logical/ results framework showing physical targets and outputs during the implementation period (2014-2020). Key M&E events such as the baseline survey, MTR, and IAS (intermediate and final) were undertaken and the MTR in particular was significant in the life of PASP as it unlocked the efficiency of the project. A review of PASP database revealed that routine consolidated data on project input-output indicators were updated.

154. The project MIS simplified data entry, analysis, storage and report production capacity that disaggregated data by district, commodity, season and related PASP activities. This is all done in Excel. The district level field officers had access rights to the database and were expected to collect data and enter it into the system on a weekly and monthly basis for production of weekly and monthly reports often shared at district and national level. Quarterly review meetings were organized to assess progress, share information and take decisions. However, due to existence of different data bases and sources of information at district level and the fact that data was not linked to the project database, data available sometimes lacked consistency.

155. The mission established that data was collected and shared using the template prepared by the SPIU, an example was the tool used to monitor progress of the BPs. SPIU routinely conducted support visits to district staff and IFAD support supervision missions were useful in assessing the effectiveness and efficiency and identifying challenges in implementation. SPIU generated annual performance reports which were discussed at sector review meetings. In preparation for exit, the project produced detailed district specific handover reports which documented PASP investments and activities. However, the project M&E function required a clear plan for tracking progress, demonstrating results and innovations within the M&E domain.

156. The PCR Mission established that PASP had an active communication and KM strategy that aimed at enhancing visibility and learning. The project had regular awareness creation activities to expose PASP opportunities to the communities and this resulted in increased numbers of BP applications. In addition, the project had produced documentaries (4 commodity based and 12 district specific) together with picture albums of PASP activities that showed how PASP had improved rural livelihoods. These videos were uploaded on YouTube. Further, media tours for journalists to document project successes were held resulting to good media outreach. It is recommended that these knowledge products be curated for future reference.

E.3. Quality of financial management

157. **Staff qualifications and selection**: IFAD funded projects in Rwanda are managed by the SPIU. Under this arrangement, there are staff that provide cross-cutting services to various IFAD projects and those that provide specific services to one project. For PASP, three staff were involved in running the financial management department, the Director of Finance and Fiduciary Aspects (DF&FA), the Chief Accountant (CA) and the Accountant. The DF&FA and CA were cross-cutting positions, while the Accountant position was specific to PASP. It was noted that the selection of finance staff for the project was done competitively and the staff were well qualified and experienced for the positions. Staff evaluation was also done on an annual basis and on the basis of this evaluation, staff contracts were renewed for a period not exceeding two years.

158. **Implementation readiness:**PASP was not provided with a 'Faster Implementation of Project Start-up (FIPS) nor a start-up advance since the SPIU was already in place and therefore core staff such as DF&DA, CA, and the Accountant did not have to be recruited. The Financial Management System (TOMPRO) was also in place. The existing staff were also well versed with IFAD processes and procedures and did not require induction.

159. **Disbursement:**The project used two disbursement procedures during its lifetime, namely the special account replenishment and direct payment procedures. To facilitate smooth flow of funds, thresholds for Statements of Expenditures (SoE) were removed for all projects within the SPIU. It was found that on average, the project had been preparing a replenishment Withdrawal Application (WA) on a monthly basis and this had ensured adequate liquidity at all times.

160. **Budget monitoring:** The project used a participatory approach in preparation of its budgets with three main sources of information namely; the project design, the findings of needs assessment and the findings of annual strategic review and performance evaluation (done through review workshops, supervision missions, and reports from consultants, etc.).The mission established that the budgets for PASP were generally realistic with an average of 85% achievement over a period of 7 seven years. Budget monitoring was also effectively done through the Financial Management System (FMS) and analytical reports were generated on a regular basis – monthly and quarterly basis- for review by the project management team.

161. **Flow of funds:** The project operated three bank accounts, namely; the Designated Account (DA) denominated in United States Dollars (USD), and two operations bank accounts, one for IFAD and another of Government of Rwanda (GOR), opened at the National Bank of Rwanda. In addition, all partners and districts that benefitted from PASP financing were required to open separate bank accounts. This was to facilitate monitoring of funds utilisation and to enable financial reporting by partners. This mission observed that all project bank accounts were well maintained and by project completion, apart from the project DA and operations account, the other partners had fully utilized the funds provided.

162. It was noted that PASP had been provided with an Authorised Allocation (AA) of USD 4.7 million by IFAD – broken down as; USD 2.0 for IFAD loan, USD 2.0 IFAD grant, and USD 0.7 million for ASAP grant. Given the regularity (mostly monthly) of replenishment WA, it was found that the liquidity levels of the project remained in good shape throughout the project life and it was therefore not deemed necessary to request for an increase of the AA. Further, recovery of the AA was completed at 84% (USD 3.95 of 4.7 million) and the balance (USD 0.748 million) was properly justified in the special account reconciliation.

163. **Financial accounting and reporting**: It was observed that the Financial Management System (FMS) allowed for proper recording of project financial transactions and the classification of expenditures was in accordance with the respective components, disbursement categories and sources of funds. The project utilised the GOR recommended chart of accounts (CoAs), which was adequate for proper accounting and reporting of project activities. The FMS used was TOMPRO, and since it has the ability to accommodate dual charts of accounts, this allowed for the development of analytical charts which in turn facilitated adherence to IFAD reporting requirements and automatic generation of SoEs.

164. **Internal audit:** This mission noted that PASP had a functional Internal Audit (IA) department and that it was aligned to the Government Internal Audit (IA) Charter. A risk based internal audit plan was prepared and approved by the Chairman of the MINAGRI Audit Committee and executed for all IFAD funded projects within the SPIU. An assessment of the matters raised in IA reports revealed that the weaknesses observed carried a modest risk on the operations of PASP. Currently, the IA department is manned by one staff, and as more projects continue to be designed within the SPIU, the department could be overwhelmed with work and risk not performing IAs for some of the projects. The

implementing agency should consider revising the staffing of the IA department.

165. **External audit:** PASP financial statements were audited by The Office of the Auditor General during the life of the project. The external audits of PASP followed the International Standards of Supreme Audit Institutions (ISSAIs) and the performance of the external auditor was rated 'highly satisfactory' and acceptable by IFAD. The external auditor's reports included audited financial statements with all the mandatory audit opinions and disclosures and the management letter. Notably, all audit reports had an unqualified opinion and were submitted to IFAD on a timely basis. At project completion, two audit reports were outstanding; the 2019/20 audit report, for which the the auditor had submitted a draft report to SPIU and the nine months' final audit report for the period ending 31st March 2021.

166. **Filing of project records**. The mission found that the filing system for project records was adequate. Documents filed included payment vouchers, WAs, financial reports made to GOR, audit reports and financial reports from project stake holders.

167. **Project assets.** PASP maintained a register for all assets including; computers and accessories, office furniture, and motorcycles & motor vehicles. It was also noted that since PASP was managed under the SPIU, upon projection closure, all the assets would remain the property of the SPIU until these were fully depreciated and written off. Further, these assets if functional and in good working order could be utilised by any newly designed IFAD project.

168. **Closing activities**: The mission observed that the project had prepared a nine month AWPB, inclusive of three months up to the project completion date, 30th September 2020 and nine months to project closure date, March 31st The main closure activities budgeted for included; compilation of knowledge management reports, preparation for exit, PCR, planning & oversight, personnel costs, office operations & maintenance.

E.4. Project internal rate of return

169. A financial analysis was carried out to assess the financial viability of the value chain crops whose hubs were supported by PASP. It was also meant to assess the actual outturn of profitability and increase in income to participating households. The financial results of capacity building interventions at the level of cooperatives has not been included in this analysis because it was not easily quantifiable. The analysis aggregated the incremental earnings of the 70,420 PASP beneficiaries, assuming that each beneficiary dedicated 0.2 hectares to a crop in a season and earned from no other. The financial analysis shows that participating households were able to generate more than RwF8.4 billion in each season. The financial earnings by participating households is shown the table 7 below.

Table 7: Financial incremental benefit to farmers from supported crop value chains

	At appraisal	Actual at PCR	Increment	Households	Hectares	Incremental value
	RwF	RwF	RwF	supported	per hh	RwF
Maize	(2,603)	494,900	497,503	22,534	0.20	2,242,186,621
Beans	105,660	404,000	298,340	22,534	0.20	1,344,582,579
Potatoes	1,351,840	3,433,200	2,081,360	9,155	0.20	3,810,803,651
Cassava	143,550	890,700	747,150	2,817	0.20	420,914,424
Horticulture	844,800	1,574,800	730,000	4,225	0.20	616,879,200
Milk	21,990	26,870	4,880	9,155	0.20	8,934,890
TOTAL	**2,465,237**	**6,824,470**	**4,359,233**	**70,420**		**8,444,301,365**

170. The increase in earnings among project beneficiaries per season, leaving the hectares dedicated to each value chain commodity constant, indicate that PASP has been able to immediately improve the livelihood of beneficiaries. Given the institutional capacity building as well as investment in infrastructure, it is expected that the financial benefits realized by participating households will be upheld for the foreseeable future.

Economic analysis

171. PASP ERR were calculated by aggregating the net incremental benefits obtained by beneficiaries both as a result of

additional production and better prices obtained at farm gate. The following assumptions were made.

- PASP benefits would accrue to beneficiaries over a 20 year period.
- The adoption rate was equal to the proportion of products not lost in post-harvest handling.
- Crop production patterns and inputs remained the same between baseline and endline since PASP did not implement activities that directly controlled crop productivity.
- Financial benefits to cooperatives were an aggregate of the benefits received by all members of the respective cooperatives(beneficiary households).
- Costs related to loans from banks to cooperatives were excluded because they did not represent a cost to the economy.
- The opportunity cost of capital was 12%.

Economic rate of return

172. The ERR for investment in PASP has been calculated at 43% with a Net Present Value (NPV) of USD 126.9 million at an opportunity cost of capital of 12%. At project design, the ERR had been estimated at 15.7% at an NPV of USD 8.3 million. However, the higher ERR realized by PASP is a result of the fact that project reached 117% more households than envisaged at project design, while investing only 56% of the resources allocated.

Table 8: Computation of project economic rate of return

	2014	2015	2016	2017	2018	2019	2020
Incremental Income from value chain crops	-	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771
Adoption rate	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%
Overall Increase on Beneficiary income (26%)	-	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730
Increase in Beneficiary Income from value chain crops (34%)	-	2,785,528.29	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528
Programme Costs							
Investment Costs	1,772,741	7,035,831	7,167,835	9,824,760	9,456,222	4,528,806	730,586
Recurrent Costs	573,567	716,865	595,547	921,992	1,062,751	897,044	1,076,238
Total Costs	2,346,308	7,752,697	7,763,382	10,746,752	10,518,973	5,425,851	1,806,824
Net Incremental Programme Benefits	(2,346,308)	(1,966,275)	(1,476,827)	(4,030,949)	(6,359,191)	(5,590,311)	2,791,595
Net Present Value (NPV)	$126,894,114						
ERR	43%						

	2021	2022	2023	2024	2025	2026	2027
Incremental Income from value chain crops	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771
Adoption rate	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%
Overall Increase on Beneficiary income (26%)	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730
Increase in Beneficiary Income from value chain crops (34%)	2,785,528.29	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528
Programme Costs							
Investment Costs							
Recurrent Costs							
Total Costs							
Net Incremental Programme Benefits	10,984,325	19,177,056	27,369,786	35,562,516	43,755,247	51,947,977	60,140,707
Net Present Value (NPV)							
ERR							

	2028	2029	2030	2031	2032	2033
Incremental Income from value chain crops	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771
Adoption rate	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%
Overall Increase on Beneficiary income (26%)	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730
Increase in Beneficiary Income from value chain crops (34%)	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528
Programme Costs						
Investment Costs						
Recurrent Costs						
Total Costs						
Net Incremental Programme Benefits	68,333,437	76,526,168	84,718,898	92,911,628	101,104,358	109,297,089
Net Present Value (NPV)						
ERR						

173. **Sensitivity Analysis**

174. The sensitivity analysis was computed to confirm and test if project benefits were lowered by 30%, the project would still have a positive economic rate of return. At the same time, total costs of the project would have to increase by 59% in order for the project to have a positive economic rate of return. As such, the above computations indicate that investment in PASP has had a positive effect on the economy.

F. Partners' performance

F.1. IFAD's performance (Quality of supervision and implementation support)

IFAD's performance (Quality of supervision and implementation support)

175. IFAD’s performance was rated as satisfactory (5). IFAD has provided a strong support during design and implementation, as recognized by most partners. The quality and timeliness of supervision mission was satisfactory and their recommendations were relevant. Adequate implementation support was provided when required, including in the area of policy dialogue. At design, IFAD was the second main financier for PASP and provided 32.31% of project financing. At project completion, IFAD was the main project financier having contributed 57.97% of project financing after the expected HUB commercial loans failed to materialise. The mission teams were properly constituted with key experts in rural finance, post-harvest management, M&E, gender and targeting, FM, value chain development and community empowerment. The various mission recommendations were relevant in addressing challenges faced in project implementation. The IFAD Country Office also led the missions and followed up to ensure agreed actions were duly implemented. In March 2017, IFAD also conducted an MTR Mission which was instrumental in unlocking implementation bottlenecks faced by the project. Loan administration and procurement reviews were managed swiftly and funds’ transfers were mostly timely. IFAD was proactive in solving most implementation issues while providing timely implementation support including processing of WA, No Objection and constant consultations and communication with the project management and government.

176. In addition to IFAD loans and grant, the project was also financed through the US 6.9 million ASAP grant. The mission found that ASAP Grant had achieved its mandate towards covering the incremental cost associated to climate resilient infrastructure and related investments that focused on facilitating introduction of climate smart post-harvest infrastructure and technologies. The ASAP Grant disbursement stood at ASAP 91% and was satisfactory.

F.2. Government's performance

177. The GoR performance was rated as moderately satisfactory (4). The GoR participated in the project design, negotiation of the Loan Agreement, implementation, supervision and offering implementation support, carrying out annual performance reviews, auditing, and reporting. The GoR adhered to most of the Loan agreements and covenants. However, the performance of the GoR in provision of counterpart funding was not satisfactory. At design, the Government planned to contribute the equivalent of USD 3.4 million as counterpart financing. At Project completion, it was noted that Government contribution stood at 73% which was rated as moderately satisfactory.

178. Although GOR contribution was rated as moderately satisfactory, the PCR Mission noted that the Government supported project implementation through setting up project implementation structures such as the SPIU mainstreamed in MINAGRI, which currently implements all IFAD-supported operations in Rwanda. To mainstream project implementation, the GoR also set up the Post-harvest and Handling Task Force (PHHTF) which was mandated to lead implementation of post-harvest and handling activities for the main staple and food crops in Rwanda. In addition, project implementation was support by RAB which provided specialized facilitation and technical services for successful implementation of PASP and RCA to support training, capacity building and coaching for cooperative HUBs.

F.3. Other partners' performance (including co-financiers)

179. The other partners and co-financiers of PASP included, Beneficiaries and Commercial Banks.

180. At design, the project anticipated HUB commercial banks contribution of USD 34.6 million towards project financing. However, at MTR the disbursement of loans from commercial banks towards post-harvest infrastructure investments stood at only 10%. This low disbursement rate necessitated the restructuring of this component in the post MTR period.

181. The other co-financiers for the project were project beneficiaries. Project beneficiaries' contributions supported implementation of PASP activities and were essential to sustain achievements in the long term. The beneficiaries' contribution was both cash and also in-kind contributions. The disbursement rate for beneficiaries stood at 65% which was moderately satisfactory. The mission noted that in line with observations made in IFAD supervision mission reports some beneficiary contributions were not regularly tabulated; for example contributions by cooperatives to post-harvest infrastructure investments such as MCCs.

G. Assessment of sustainability

182. Project sustainability was rated as satisfactory (5). The continuation of most project benefits is most likely ensured beyond project completion, with most important dimensions of sustainability being positively assessed. There is full beneficiaries' ownership of project interventions and full government support and commitment. A realistic exit strategy outlining post-project sustainability measures had been defined in the course of implementation. The strategy details most institutional arrangements, legal aspects, ownership and post-project funding.. Assessment of sustainability was carried out based on a review of economic and financial sustainability, institutional and technical sustainability, social sustainability and the review of the project's exit strategy.

183. **Economic and financial sustainability**: the PCR Mission established that PASP supported cooperatives, companies/SMEs and individuals were building up their capacity for economic and financial sustainability beyond the project implementation phase.

184. PASP contracted HPI in June 2020 to carry out a profiling of all cooperatives, companies and individual business promoters that benefited from PASP with a view of establishing achievements, constraints faced, lessons learnt and impacts. This report highlighted a number of benefits which had a bearing on the economic and financial sustainability of PASP investments. For example, it was found that establishment of post-harvest infrastructure had resulted in

reduction in post-harvest losses of crops in addition to contributing to reduced overheads costs since the cooperatives and individual beneficiaries did not incur costs in renting and hiring facilities. Project sponsored trainings had also contributed to strengthening of relationships with value chain actors thereby enabling actors to get better prices and also to increase sales which assured economic viability of their businesses.

185. The PCR mission also notes that complementarities exists between PASP and the IFAD-funded RDDP and it would enhance economic sustainability of cooperatives especially in the dairy value chain. RDDP, which became effective in January 2019 and has a focus on the dairy value chain, seeks to improve milk quantity and quality, enhance farmers' processing capacity through promotion of climate smart technologies and practices and supporting the development of dairy cooperatives to benefit from market driven production, processing and trading of dairy products and to strengthen an inclusive policy and institutional framework for the dairy sector.

186. RDDP is currently implemented in 12 Districts with seven of these Districts being PASP implementation areas namely; Rubavu, Nyagatare, Kayonza, Nyanza, Runhango, Nyabihu and Musanze Districts. It was observed that synergies between PASP and RDDP existed in the dairy sector that provided opportunities for sustainability of PASP supported HUBs. For example, PASP support for IWACU ZIRAKAMWA KOPIZI cooperative facilitated farmers to transport milk from far fringed areas to the established milk collection points. The cooperative also received additional support of Rwf 44,414,171 from RDDP to rehabilitate the MCC and to purchase aluminium milk cans for distribution to farmers.

187. **Institutional and technical sustainability**: PASP through RCA conducted training and capacity building for cooperatives. The final impact survey of the Project established that all supported cooperatives had established board and supervisory committees and members had benefited from project capacity building including training and coaching in cooperative management. It was also found that 79% of management committee members had been trained and this was critical to assuring institutional sustainability of these institutions. With regards to post-harvest infrastructure, all supported cooperatives were trained on infrastructure management and had established infrastructure committees as part of their management structure and these committees were critical in ensuring operations and maintenance of infrastructure investments thereby providing technical and institutional sustainability of these investments. However, some key challenges and gaps were also observed such as insufficient working capital in some cooperatives hindering them to generate sufficient income for sustainability. In addition, the RCA Annual Report, 2019/2020 noted lack of knowledge on bookkeeping and accounting in some cooperatives which contributed to these cooperatives not complying with accounting principles when recording business transactions.

188. **Social sustainability and empowerment:** Through PASP supported project initiatives, farmers had been empowered with capacity building, introduction to technologies and dissemination of knowledge which had contributed to creation of social empowerment. The mission noted that some farmers visited in the field had adopted *'farming as a business approach'* they used Integrated Farm Management (IFM) approaches that combined modern technology and traditional methods. Some farmers had also adopted high yielding crop varieties, fed livestock with crop residues and used farmyard manure on crops and as source of biogas for fuel and these aspects validated social sustainability of PASP investments.

189. **Environmental sustainability**: PASP interventions encouraged the adoption of climate risk management by project beneficiaries through adoption of *PICSA and trainings conducted by CIAT. The PCR Mission found that*RAB had access to PICSA and could use it to train, coach and scale up support to farmers. In addition, trained cooperatives under CIAT were able to prepare their own climate adaptation plans for sustainability. It was also observed that sustained access to climate information services to farmers from RMA was available through platforms such as social media, SMS at *845#, MTN toll free calls to RMA, TV and Radio. There are also other climate information services farmers can now be accessed by farmers such as: i) USAID daily SMS and audio services; and ii) CICA calling centre.

190. The project initiated successful collaboration with government agencies and strengthened the capacity of the project SPs and national researcher bodies in a wide and diverse range of areas to ensure dissemination of climate information and environment resilient innovations and technologies. For instance, the project successfully advocated for the integration of water collection and waste management facilities into rural infrastructures building codes (warehouses, storage, cowsheds, milk collections points, etc.). In addition, the building codes for the climate resilient drying grounds were adopted by RBS.

191. The project contributed to development of five policies/ strategies namely: Rwanda Green Growth and Climate Resilient Strategy (2013); National Energy Policy (2014); Updated Environmental Law (2018); National and

Environment and Climate Policy (2018) and Nationally Determined Contributions (NDCs, 2015).

192. The successful implementation of PHCRAB led to the inclusion of a Climate Smart grant for a total amount of 2.38 million USD within the IFAD- funded RDDP (2017-2022). The project provided incentives for eligible beneficiaries to facilitate the demonstration and adoption of climate-smart and strategic investments along the dairy value chain. Eligible investments included improved dairy sheds with improved water access and waste management, biogas plants, rainwater-harvesting tanks, solar-powered milk cooling tanks, small-scale forage choppers, community investments addressing water shortages in drought-prone areas (boreholes, watering points) - by supporting both working and investment capital based on a 60-40% ratio contribution between the project and the beneficiaries.

193. Within the recently launched IFAD-funded PRISM, the GoR had adopted the mainstreaming of climate-smart upgrading of processing/slaughtering facilities (such as bio-digesters, solar energy) as a type of investments to be financed through the matching grant facility. The climate information services supported by the project stopped at project completion.

194. **Exit strategy**: The project had developed an exit strategy that was premised on an a Memorandum and Association (MOU) signed between the Districts, project beneficiaries and RAB which spelt out activities for phasing out, phasing over and phasing down and how; to whom and by when this would be done. This MOU consisted of a tripartite agreement with clear roles of each party to ensure support and follow-up at grass root. All the parties in the tripartite agreement were committed to undertake their roles and ensure sustainability of the PASP project interventions.

195. PASP developed a detailed exit strategy document, that included a clear exit action plan, which was used to regularly review progress of the exit strategy and contributed to timely implementation of all acticvites leading up to project completion. The completion of the profiling by HI of all cooperatives and private businesses that benefitted from PASP grants, including GIS mapping and assessment of cooperatives and businesses wound enhance easier follow up. This exercise served to present the real picture of where the projects stood and provided a basis for hand-over and follow-up support. In addition, during implementation, the Project had made provisions for exit through ensuring cost sharing of project activities to encourage beneficiaries groups to graduate to self-reliance. For example, the cooperatives and private sector businesses that benefited from PASP grants contributed to the infrastructure facilities and this ensured a solid foundation for the sustainability of the project.

H. Lessons learned and knowledge generated

196. PASP has clearly demonstrated the importance of post-harvest activities to reduce waste and add value to products in the value chains. In parallel, improved market linkages, and climate smart investments served to enhance the improvements brought about by better post-harvest management.

197. The ASAP grant investment in PASP, focused on covering the incremental cost associated to climate resilient infrastructure and related investments to facilitate introduction of climate smart post-harvest infrastructure and technologies. This was a proactive strategy for improving livelihoods of small holder farmers and at the same time embedding climate change adaptation in their life style. Therefore this strategy may be extended to other projects.

198. Although PASP was not able to successfully collaborate with REMA as originally expected for reducing climate vulnerability, the project established strong collaborations with other institutions such as RMA and RAB for enhancing the climate and environmental aspects of the project activities. One of the instruments that had a significant impact on the beneficiaries was the timely dissemination of information on climate change and weather variability. RMA distributed different types of information including: (i) early warning messages (on a daily basis and using mobile phones), which provided information on temperatures and rainfall patterns; (ii) weekly and monthly forecast, which provided (in addition to the daily information) also maps showing through differentiated colours the climate events that would happen in the country. These instruments were very successful because they were built on an actual need of farmers, who were severely affected by the negative effects of climate change.

199. The project distributed different types of equipment to small-holder farmers, with the aim of reducing post-harvest

losses (e.g. hermetic bags, tarpaulins, milk cans etc.). This initiative had a strong impact on the awareness of the beneficiaries on the percentage of post-harvest losses that they were facing and led to a positive impact in terms both of improved quality and quantity of produce obtained by farmers, and a reduction in the percentage of post-harvest losses. The success of this initiative was connected with the network built with the support of the project, which included: (i) project technical staff; (ii) technical service providers; (iii) sector and district agronomists and (iv) sector and district cooperative development officers.

200. The assumptions made at design on the financial capacity of the supported small-holder farmers, who were considered to be capable of accessing autonomously the required financial services, slowed down the implementation of PASP in the first years. Farmers were affected by several limitations to access loans from commercial banks due to their lack of financial capacity/literacy, including: (i) lack of collaterals; (ii) lack of skills; (iii) lack of network and (iv) lack of stability in organizational structures. In addition, financial institutions were also found to lack readiness to finance small-holder farmers due to perceived risks. Based on this lesson, the project after MTR introduced a system of matching grants and re-defined the percentages of own contribution offered through the matching grants. All beneficiaries were required to contribute – but percentages would range from 30% for the weaker cooperatives to 70% for private agri-businesses.

201. After MTR the connection between business promoters (including small-holder farmers/cooperatives) and financial institutions gradually emerged as a result of requests to commercial banks to finance the required own contribution to access the matching grants. This led not only to an improved access of farmers/cooperatives to the financial services that they needed but also building the trust of the banks on the ability of farmers to respect their financial obligations while at the same time, increasing the level of financial literacy of the beneficiaries.

202. The 4P approach advocated through the matching grants programme, bringing together smallholders, their cooperatives and private sector off-takers and agribusiness proved to be successful, especially as there is a shared interest in a steady supply of good quality agricultural produce.

203. PASP direct and immediate consequence of its agricultural development activities has been an increase in smallholder's income. Going forward, it is expected that beneficiaries will continue to access financial services tailored to their requirements.

204. PASP introduced the aspect of beneficiary contributions as a requirement to obtain Project support. The beneficiary contributions were crucial to build a sense of ownership of the infrastructure and equipment introduced by PASP and this also engendered responsibility for operations and maintenance after Project completion. As a result of the success of this approach, all Projects supported by IFAD and the GoR have embedded beneficiary contribution as part of the Project financing requirement.

205. The project worked with experienced implementing partners such as RAB, NAEB, RCA, HPI, and BDF in addition to RYAF and it was very effective. These implementing partners offered valuable technical support to the project. Notably, '*BDF has presence in all the 12 Project implementation Districts and this made the elaboration of the business plans much faster, in addition BDF staff provided businesses with capacity building support after funding while information sharing with PASP staff at District level was very effective'* (PASP, Coordinator).

206. In order to involve target groups (youth and women), the project developed the gender and youth strategy (2017-2019), which was rather late in the implementation. The project struggled to involve youth with 7.9% against the 20% target. This was partially due to the financial constraint young people often have on joining cooperatives, which are the main pillar of support by the project. It is recommended in the future that the targeting strategy to be developed at the early stage of the project and it should include specific and feasible targeting strategy such as developing qualitative indicators to capture women/youth participation, prioritizing young people for training related to skill development with minimum participant's quota, and strengthening M&E reporting system to produce gender and age disaggregated data.

207. RAB conducted a variety of research activities and some of their results could be useful for policy makers. For example, the mycotoxin survey being conducted would provide baseline data for the Mycotoxin Prevention and Control Strategy. In addition, RAB also piloted research and tested affordable and locally available bio-pesticides (pyrethrum, palm oil) to counter the unsafe use of chemical pesticides in household storage practices. This has triggered the

interest of private sector, which is exploring opportunities to produce pyrethrum-based bio-pesticide. In addition, there is a continued need to build capacity of farmers to better understand the rationale and potential benefits of using new technologies and practices that are available. For example the advantages of using 'clean' cassava planting material to counter risks of commonly occurring virus diseases.

208. The mission noted that although the performance of the procurement department was assessed to be satisfactory, some delays were observed by the user departments to initiate the procurement processes which resulted in delays in implementation of the PPs and implementation of AWPB. A key lesson from this and to mitigate this risk for future projects, user departments would be required to submit the information necessary to initiate procurement activities and in preparation of bid documents.

I. Conclusions and recommendations

209. The ASAP grant for PASP achieved most of its mandate towards covering the incremental cost associated to climate resilient infrastructure and related investments that focused on facilitating introduction of climate smart post-harvest infrastructure and technologies. With the 100% disbursement rate for ASAP, PASP contributed to reduction in food and milk losses at post-harvest, increment in production yields both by quantity and quality, improved food security for beneficiary households and adaptation by its beneficiary farmers to the cropping calendar based on climate information.

210. PASP has contributed significantly to mitigating poverty levels through reduction of post-harvest losses in all the selected CIP value chain leading to increased productivity and household incomes. This was achieved by installing post-harvest infrastructure and facilities, training farmers in climate smart GAP particularly in post-harvesting handling and selling stages, and promotion of sustainable climate resilient technologies. PASP project targeted the cooperatives with a requirement that they contribute towards the cost of infrastructure facilities and in some instances training. However, the amount of resources expected from some of the cooperatives were higher than their ability. It is recommended that at design stage of another project, there should be a realistic assessment of the capacity of the cooperatives.

211. The project has successfully contributed to the mainstreaming of investments in climate-proof agricultural infrastructures in IFAD-funded projects in Rwanda such as RDDP and PRISM. These projects adopted and replicated the PASP's climate smart matching grant model.

212. Project design recognized that reductions in product losses were as important as improved crop yields in enhancing food production, especially in the context of a changing and more uncertain climate. Hence, the project promoted the adoption of improved and climate-adapted post-harvest practices by providing training, piloting equipment and infrastructure and funding HUB investments. The recent impact assessment reports that the project was effective in reducing food losses, improving quality, bulking and marketing of the produce. However, only modest project resources have gone to support key post-harvest activities required for effectively reducing losses, especially drying and post-harvest handling equipment for grains. Most project resources were allocated to post-harvest infrastructures rather than small size equipment and adequate training to the cooperatives' members.

213. During project implementation, the project oversight and overall guidance at the national level was provided by PSC, chaired by the led by the PS MINAGRI. This PSC comprised of PASP stakeholders, including MINAGRI, value chain cooperative federations, the National Confederation of Cooperatives of Rwanda (NCCR), the PHHTF, RAB and District Governments. The mission established that PSC provided effective project oversight and guidance and met at least twice per year to review project progress, to assess management effectiveness, to approve AWPBs and review progress reports. At design, it was planned that this PSC would evolve to an on-going advisory group for agricultural value chain development activities. However, the mission noted that the process for establishing value chain platforms which would be supported by the proposed sector wide advisory group was not completed. It is recommended that value chain platforms be established for interaction of actors operating within the same value chain and sub-sectors and to include representatives from cooperatives, private sector enterprises, PFIs and public sector institutions (RAB, NAEB, RSB, local government). As a start-up activity, PASP could present officially the value chain analysis done by the Technical SPs on each sub-sector and ask the participants to discuss and validate key findings as well as agree on priority follow-up actions.

214. At design, the project planned to use technical service providers to support farmers in the CIP crops and dairy. After MTR, the contracts with technical service providers were withdrawn. PASP entered into an MoU with RYAF where RYAF provided young graduates in the domain of agriculture to work closely with different cooperatives engaged in crops and livestock sector. This activity enabled the farmers' cooperatives to benefit from capacity building and coaching services from the young graduates who were full time staff seconded to the organizations. On the other hand, the young graduates also benefitted from experience gained working with farmer cooperatives. In future, a similar approach could be applied that also entailed using technical service providers combined with young graduates where the latter would provide technical backstopping to farmer groups.

215. PASP integrated the GALS methodology in some cooperatives in four districts. This initiative facilitated an integration of GALS methodologies in climate change mitigation practices in the project area. However, it is recommended that gender and women's empowerment in such projects would require adoption of household gender methodologies right from the start of the project. The adoption of household gender methodologies would also require capacity building of the implementers. For PASP, gender analysis of the specific value chains would have enhanced implementers understanding of the gender issues in every commodity. Tracking and documenting outcomes in the lives of men, women and youth on an annual basis would have been a good results based management practice.

Footnotes

[1] Field visits took place from November 17th to 20th, 2020

[2] The list of persons met and places visited is provided in Appendix 8

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Appendix 1: Project logical framework

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Climate-Resilient Post-Harvest and Agribusiness Support Project

Logical Framework

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
Outreach Total Outreach	1.b Estimated corresponding total number of households members										Cooperative remain the focus for GOR support to development of SMEs and agricultural value addition Government agriculture and SME policies remain in place over the project life
	Household members	155 518	159 998	159 998	**64 952**	**303 932**	**189.96**				
	1.a Corresponding number of households reached							1) Baseline and completion surveys 2) Impact assessment report 3) Project report		SPIU	
	Households	32 400	33 333	33 333	**14 120**	**70 420**	**211.3**				
	1 Persons receiving services promoted or supported by the project							1) Baseline and completion surveys 2) Impact assessment report 3) Project report		SPIU	
	Females	9 720	9 999.9	9 999.1	**9 420**	**27 833**	**278.4**				
	Males	22 680	23 333.1	23 333.1	**4 700**	**42 587**	**182.5**				
	Young			31 000	**1 412**	**6 645**	**21.4**				
	Not Young					**0**					
	Total number of persons receiving services	32 400	33 333	33 333	**14 120**	**140 840**	**422.5**				
	Groups receiving project services							1) Impact assessment reports 2) Project reports		SPIU	
	Groups	0	288	325	**0**	**407**	**125.2**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
Project Goal To alleviate poverty, increase rural income and contribute to the overall economic development of Rwanda	Increased ownership in household assets (household asset index)							1) National Statistics (EICV) 2) Baseline and completion surveys 3) Impact assessment report; 4) Project reports;		SPIU	Government agriculture and SME policies remain in place over the project life
	Own house	0	91.2		**97.2**	**97.2**					
	House pavement cemented	0	21.9		**47.3**	**47.3**					
	House roof in metal sheets	0	71.5		**78.5**	**78.5**					
	House roof in tiles	0	28.5		**21.4**	**21.4**					
	Ownership of radio	0	61.6		**74**	**74**					
	Ownership of mobile phone	0	49.1		**88.8**	**88.8**					
	Ownership of TV	0	16		**17.2**	**17.2**					
	Ownership of chair	0	50.9		**67.1**	**67.1**					
	Ownership of beds	0	73.2		**78.2**	**78.2**					
	Ownership of mattress	0	63.7		**87.7**	**87.7**					
	Ownership of bike	0	18.8		**36**	**36**					
	Prevalence of child malnutrition amongsts the 15,000 Households reduced by 5% by the end of the project							"1) National Statistics (EICV) 2) Baseline and completion surveys 3) Impact assessment report; 4) Project reports;		SPIU	
	Reduction in child malnutrition			5	**33**	**5**	**100**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
Development Objective Increased smallholder and rural worked incomes (including women, youth and vulnerable groups) from CIP crop and dairy PHHS-related businesses	Average income (in constant 2012 prices) increased by 15% for 50% of the project's direct beneficiaries by end of project(in constant 2012 prices) increased by 15% for 50% of the project's direct beneficiaries by end of project							Annual participatory studies		SPIU	1) Favourabe Economic Environment/export prices. 2) Continued GoR commitment to promoing PASP value chains 3) Cooperatives remain the focus for GoR support to development of SMEs and agricultural value addition (A)
	Average income increase			15	**26.1**	**26.1**	**174**				
	USD value of new and existing post-harvest facilities and infrastructure made climate resilient.							Project reports		SPIU	
	Value		1 814 808 000		**11 406**	**19 231**					
	At least 5% points of increased farm income derived from value chains supported by the project by MTR and 10% points by end of project.										
	Points of increased farm income -			10							
Outcome 1.0 Participating HUBs have 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 linakge services to an expanding number of clients.	80% of participating HUBs in each selected value chain identify and address their business management and financial skills gaps							1) Baseline and completion surveys 2) Case studies 3) project reports		SPIU	1) Cooperatives remain the focus for GoR support to development of SMEs and agricultural value addition 2) 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 risk in their services.
	participating HUBs			80	**89**	**89**	**111.25**				
	80% of participats HUBs in each selected value chain identify and develop value adding services, leading to improved access to markets and stronger competitve positions							PASP monitoring system		SPIU	
	participats HUBs			80	**15**	**38**	**47.5**				
	2.2.3 Rural producers' organizations engaged in formal partnerships/agreements or contracts with public or private entities										
	Number of POs			200	**63**	**263**	**131.5**				
	Percentage of POs										
	Women in leadership position			200	**63**	**263**	**131.5**				
	Number of POs - crop			170	**35**	**211**	**124.1**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Number of POs - livestock			30	**0**	**52**	**173.3**				
	Number of POs - forestry										
	2.2.4 Supported rural producers' organizations members reporting new or improved services provided by their organization										
	Percentage of POs members										
	Number of POs			5 000		**335**	**6.7**				
	Total size of POs					**62 471**					
	Males					**34 709**					
	Females					**27 762**					
	Women in leadership position					**1 005**					
	Agricultural/livestock production groups formed/strengthened										
	Groups	325	137		**0**	**501**					
Output 1.1 Increased production of bankable business plans, which incorporate climate adaptation and food security measures	1.1.5 Persons in rural areas accessing financial services							PASP monitoring system		SPIU	
	Men in rural areas accessing financial services - credit		664	9 000	**55**	**8 985**	**99.833**				
	Women in rural areas accessing financial services - credit		1 376	7 000	**14**	**5 629**	**80.414**				
	Total persons accessing financial services - credit				**69**	**29 228**					

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	80% of participating HUBs produce bankable business plans							PASP monitoring system		SPIU	
	HUBs	0	37	80	**89**						
	100 % of HUB business plans incorporate climate change adaptation and food security measures including capacity building on climate resilient processing,handling and storage techniques							Post-training capacity assessment and targeted impact studies of HUB capacity changes		SPIU	
	HUBs business plans	0		100	**81**	**79**	**79**				
	80% of participating HUBs acquire required capacities to implement climate risk management strategies and approached to benefit their client and members, through the provision of trainings							Case studies on HUBs monitoring planned and actual outcomes of business plans		SPIU	
	HUBs		75	80	**86**	**83**	**103.8**				
Output 1.2 Increased access to markets, reduces post-harvest losses and increased value added services	80% of participating HUBs implementing new marketing contract with buyers (traders, WFP, linkages with agro-processors etc.)							District database on activities and outcome		SPIU	Continued good collaboration between RCA and the Apex Cooperative federations
	HUBs	0		80							
	Community groups engaged in NRM and climate risk management activities							RIMS			
	Groups	200	300	325	**0**	**422**	**129.8**				
	Individuals engaged in NRM and climate risk management activities									SPIU	
	Males	11 592	4 332	84 000	**0**	**51 153**	**60.9**				
	Total	16 560	6 189	120 000	**0**	**73 076**	**60.9**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Females	4 968	1 857	36 000	**0**	**21 923**	**60.9**				
	People in agricultural/livestock production groups (RIMS)									SPIU	
	Males		9 031		**0**	**36 967**					
	Females		2 951		**0**	**18 509**					
	People trained in infrastructure management (RIMS)									SPIU	
	Males		453	2 128	**0**	**2 162**	**101.6**				
	Females		381	912	**0**	**1 182**	**129.6**				
	1.1.4 Persons trained in production practices and/or technologies									SPIU	
	Men trained in crop	12 600	7 113		**0**	**13 325**					
	Women trained in crop	5 400	2 115		**0**	**7 059**					
	Total persons trained in crop				**0**	**40 768**					
	People trained in community management topics									SPIU	
	Men trained in other		501	3 250	**0**	**5 679**	**174.7**				
	Women trained in other		215	1 750	**0**	**2 354**	**134.5**				
	2.1.2 Persons trained in income-generating activities or business management									SPIU	
	Females		68	1 260	**40**	**1 219**	**96.7**				
	Males		240	2 940	**92**	**2 945**	**100.2**				
	Persons trained in IGAs or BM (total)				**132**	**8 328**					

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	People trained in post-production, processing and marketing							Client satisfaction survey Impact assessment report project reports		SPIU	
	Males	16 250	16 928	16 250	**0**	**28 006**	**172.3**				
	Females	8 750	6 078	8 750	**0**	**13 795**	**157.7**				
	Households receiving facilitated animals health services (RIMS)							PASP monitoring system		SPIU	
	Households	4 500	2 307		**892**	**8 324**					
	2.1.3 Rural producers' organizations supported							PASP monitoring system		SPIU	
	Rural POs supported	48	315	325	**0**	**501**	**154.2**				
	Women in leadership position		200	315		**0**	**0**				
	Poor smallholder household members supported in coping with the effects of climate change										
	Females	30 000	41 312	46 500	**7 934**	**50 101**	**107.7**				
	Males	70 000	96 396	108 500	**3 943**	**102 347**	**94.3**				
	Total household members	100 000	137 708	155 000	**11 877**	**152 448**	**98.4**				
	2.1.4 Supported rural producers that are members of a rural producers' organization										
	Total number of persons				**0**	**0**					
	Males				**0**	**0**					
	Females				**0**	**0**					
	Young				**0**	**0**					
	Not Young				**0**	**0**					

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Women in leadership position				**0**	**0**					
	New or existing rural infrastructure protected from climate events (US$' 000/Km)							Project Report		SPIU	
	Value		4 467	22 240	**11 406**	**19 231**	**86.5**				
	Length of roads										
Outcome 2.0 HUB business investmenrts (in improved climate resilient and low-carbon post-harvesting procedures, drying, processing value addition, storage, logistics and distribution) generate reductions in product losses and increase smallholder and rural labourer incomes	Participating HUBs able to access development funds under commercial conditions at the end of the project							Project baselines Completion surveys Case studies	Project completion	SPIU	Cooperatives remain the focus for GoR support to development of SMEs and agricultural value addition Adoption of technologies by HUBs
	Participating HUBs	0	37	80		**52**	**65**				
	Participating HUBs introducing relevant water-harvesting and management technology and/or showing significantly reduced water usage							Monthly and annual BDF reports to SPIU Impact assessment report Project reports		SPIU	
	HUBs		14	80	**93**	**93**	**116.3**				
	2.2.2 Supported rural enterprises reporting an increase in profit										
	Number of enterprises										
	Percentage of enterprises			5	**0**	**65**	**1 300**				
	Farm										
	Non-farm										
	1.2.2 Households reporting adoption of new/improved inputs, technologies or practices										
	Households			20							

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Total number of household members										
	Males					**35 122**					
	Females					**26 311**					
	Young					**5 088**					
	Not Young					**56 345**					
	Women-headed households					**18 430**					
	Non-women-headed households					**43 003**					
	Households					**61 433**					
Output 2.1 Increased investments in post-harvest assets	20% of participating HUBs make significant (>Frw 90 million) new capital investment							AFR review and sutdies Impact assessment report Project reports		SPIU	Cooperative remain the focus for GOR support to development of SMEs and agricultural value addition
	Participating HUBs	0		20	**22**	**19**	**95**				
	At least 25,000 small-farm households that are engaged with participating HUBs gain access to new and relevant climate smart harvest and post-harvest techologies							"Impact assessment report Project report"		SPIU	
	Households		33.33	25 000	**0**	**44 710**	**178.8**				
	People accessing development funds							RIMS		SPIU	
	Males	35 750	7 744		**9 420**	**32 872**					
	Females	19 250	13 802		**4 700**	**20 654**					
	Financial institutions participating in project							RIMS		SPIU	

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Financial institutions participating in project	15	18	38	**0**	**25**	**65.8**				
	Rainwater harvesting systems constructed/rehabilitated							RIMS		SPIU	
	Rainwater harvesting systems	48	22	150	**197**	**366**	**244**				
	1.1.5 Persons in rural areas accessing financial services										
	Women in rural areas accessing financial services - savings				**4 700**	**9 014**					
	Young people in rural areas accessing financial services - savings				**1 410**	**1 890**					
	Not young people in rural areas accessing financial services - savings				**8 010**	**17 294**					
	Men in rural areas accessing financial services - savings				**9 420**	**16 661**					
	Men in rural areas accessing financial services - credit				**55**	**2 710**					
	Women in rural areas accessing financial services - credit				**14**	**2 359**					
	Young people in rural areas accessing financial services - credit				**7**	**226**					

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
	Not young people in rural areas accessing financial services - credit				**62**	**3 052**					
	Total persons accessing financial services - savings				**14 120**	**51 350**					
	Total persons accessing financial services - credit				**69**	**10 138**					
	1.1.7 Persons in rural areas trained in financial literacy and/or use of financial products and services										
	Females			12 000	**4 700**	**6 352**	**52.9**				
	Males			28 000	**9 420**	**13 275**	**47.4**				
	Young					**0**					
	Not Young					**0**					
	Persons in rural areas trained in FL and/or use of FProd and Services (total)			40 000	**14 120**	**39 254**	**98.1**				
	1.1.6 Financial service providers supported in delivering outreach strategies, financial products and services to rural areas										
	Service providers			38	**0**	**24**	**63.2**				
	2.1.6 Market, processing or storage facilities constructed or rehabilitated							RIMS		SPIU	
	Total number of facilities				**1**	**346**					
	Market facilities constructed/rehabilitated	10	10	48	**0**	**47**	**97.9**				
	Storage facilities constructed/rehabilitated	48	17	100	**1**	**126**	**126**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2020)	Cumulative Result (2020)	Cumulative Result % (2020)	Source	Frequency	Responsibility	
Output OTHER RIMS INDICATORS	Enterprises accessing facilitated financial services							RIMS		SPIU	n/a
	Enterprises accessing facilitated financial services		3	6	**29**	**60**	**1 000**				
	Number of households in vulnerable areas with increased water availability for agricultural production and processing							RIMS		SPIU	
	Households				**1 336**	**1 577**					
	Production and processing facilities supported with increased water availability and efficiency									SPIU	
	Facilities	325	0	160	**262**	**366**	**228.8**				
	International and country dialogues on climate supported							RIMS		SPIU	
	Dialogues	5	0	5	**1**	**5**	**100**				

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Appendix 2: Summary of amendments to the financing agreement

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Appendix 2: Summary of amendments to the financing agreement

During the project implementation period, there was no amendment made the financing agreement.

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Appendix 3: Actual project costs

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
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East and Southern Africa Division
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to IFAD or no later than the project closing date.

Appendix 3: Actual project costs

Cumulative Expenditures by Components and by Financiers as at 31 December 2020 (in USD)																				
Components	IFAD LOAN			IFAD GRANT			ASAP			GoR			HUB			Beneficiaries			Total		
	Allocation	Actual	%	Allocation	Actual	%	Allocation	Actual	%	Allocation	Actual	%	Allocation	Actual	%	Allocation	Actual	%	Allocation	Actual	%
HUB capacity development programme and business coaching	1,841,358	5,247,681	285%	1,841,358	5,247,681	285%	2,499,579	2,233,079	89%	405,795	852,645	210%	0			1,609,393	96,005		8,197,484	13,677,091	167%
Post-harvest climate resilient agri-business investment supp	10,338,500	5,771,786	56%	10,338,500	5,771,786	56%	4,172,435	4,305,371	103%	2,032,106	742,272	37%	34,618,599	3,530,707	10%	9,730,741	7,481,989	77%	71,230,880	27,603,911	39%
Project Management	1,288,849	2,358,481	183%	1,288,849	2,358,481	183%	251,851	385,415	153%	963,292	1,077,319	112%	0			129,235	0		3,922,076	6,179,696	158%
Total	**13,468,707**	**13,377,948**	**99%**	**13,468,707**	**13,377,948**	**99%**	**6,923,864**	**6,923,865**	**100%**	**3,401,193**	**2,672,236**	**79%**	**34,618,599**	**3,530,707**	**10%**	**11,469,370**	**7,577,994**	**66%**	**83,350,441**	**47,460,698**	**57%**

Cumulative Disbursment by Categories and by Financiers as at 31 December 2020 (in SDR'000)

Categories	IFAD			ASAP		
	Allocation SDR	Actual in SDR	%	Allocation SDR	Actual in SDR	%
Initial Allocation		383,653			130,280	
Grants and subsidies	8,000,000	6,977,401	87.218	2,700,000	3,367,676	124.73
Goods services & inputs	6,440,000	7,759,920	120.496	1,590,000	829,379	52.16
Operating costs	920,000	452,812	49.219			
Salaries & allowances	2,080,000	1,965,649	94.502	190,000	182,067	95.82
Unllocated	100,000		-	30,000		-
Total	**17,540,000**	**17,539,435**	**99.997**	**4,510,000**	**4,509,401**	**100%**

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Appendix 4: Project internal rate of return (detailed analysis)

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
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to IFAD or no later than the project closing date.

Appendix 4: Economic and Financial Analysis

I. Introduction

The Climate Resilience Post-harvest and Agribusiness Support Project (PASP) was implemented from March 2014 up to March 2020, following a one year no-cost extension. The project was able to effectively establish linkages. Project interventions focused on input markets, financial services, capacity building, local government services, weather information services and marketing opportunities. The project was designed to tackle the issues of postharvest losses in maize, beans, cassava, Irish potatoes, horticulture and dairy value chains.

The project was implemented under the responsibility of the Single Project Implementation Unit (SPIU) for IFAD-funded projects in Rwanda. It was financed by IFAD Loan 427-RW, DSF Grant 445-RW, ASAP Grant 428 RW and the Government of Rwanda (GoR). The total cost of the project at design was USD 83,350,440, however only USD 46,364,786 was availed and utilized by the project.

Investment in improved post-harvesting procedures, drying, processing, storage, distribution, logistics and capacity building of cooperatives generated reductions in product losses to ensure food production and value addition in a changing climate.

The Economic and Financial Analysis assessed the financial and economic impact of PASP interventions. PASP was designed and implemented as a demand driven project, with beneficiaries organized around cooperatives/hubs. Representative models were developed to represent the various value chain crops financed by PASP. The value chain crops were then aggregated into cooperatives level models that represent value added during the various value addition activities undertaken. The results of project interventions were gauged by the final output and price received by project beneficiaries aggregated.

II. Project Area and Beneficiaries

Project Area. At project design, PASP was designed to cover 200 hubs in 11 districts. Based on actual outturn during project implementation, the project worked with farmers organized around 277 cooperatives in 12 districts. The regional distribution of districts is as per the table below.

Table 1: Distribution of districts in regions

Region	District
North West	Musanze
	Nyabihu
	Rubavu
Southern	Kamonyi
	Muhanga
	Ruhango
	Nyanza
Eastern	Gatsibo
	Kayonza
	Ngoma
	Nyagatare
	Kirehe

Within the above geographical areas, the project's value chain crops (maize, beans, cassava, potatoes, horticulture and milk) are produced.

Project Beneficiaries. PASP was designed to directly reach 32,400 beneficiaries in 200 hubs. By project completion, the project had reached 70,420 beneficiaries in 277 cooperatives. The computed distribution of beneficiaries in the various project value chain crops is as per table below.

Table 2: Distribution of cooperatives and beneficiary households per value chain commodity

Commodity	Number	Households
Maize	54	22,534
Beans	54	22,534
Potatoes	74	9,155
Cassava	34	2,817
Horticulture	10	4,225
Milk	52	9,155
Total	**277**	**70,420**

As per the final logical framework, project interventions benefited a total of 303,932 individuals directly. There were also benefits to the participating 277 hubs as well as benefits to local governments. Institutional benefits to cooperatives and local governments have not been quantified and are excluded from this analysis.

Table 3: Unit cost per beneficiary

	PDR	Final	%
Outreach	32,400	70,420	217%
Beneficiaries	155,518	303,932	195%
Costs	83,350,441	46,364,786	56%
Cost per beneficiary	536	153	

At project design, the unit cost of the USD 83.35 million investment in PASP was expected to be USD 536 per beneficiary. However, the project was able to reach more beneficiaries with only 56% of the funds allocated. The final project cost per beneficiary is USD 153.

In addition to the direct beneficiaries, there are indirect beneficiaries who continue to utilize financial services, capacity building at local government level among others. There are also agro input dealers and agricultural support services providers who have got opportunities for business expansion through project interventions.

III. Benefits

The project provided a wide range of benefits to beneficiaries. These benefits resulted from various project interventions in Hub capacity development activities, post-harvest climate resilient agri-business investment support as well as investment in building the capacity of existing institutions. Environmental and social benefits were also recorded.

PASP constructed post-harvest handling infrastructure thereby reducing post harvest losses. Project beneficiaries were trained in product handling, value addition and marketing. There was also emphasis on the use of climate information to plan agricultural activities as a means of preventing food losses.

Beneficiaries were trained in efficient and effective management of infrastructure as well as in capacity building and access to weather and climate information and its inclusion in planning agriculture activities and decision making process by PASP beneficiaries. The project carried out technical trainings and technologies transfers were conducted to increase the quantity and quality of produce in the value chain. Farmers were supported to develop and submit bankable climate-resilient business plans on post-harvest technologies and infrastructures. Different banks/FIs such as BDF, SACCO, BPR, BK, UOB, UNGUKA, BRD, DUTERIMBERE IMF, KCB, BRD, and CSS participated in project activities.

IV. Production, Markets and Prices

a. Production

PASP did not directly handle the production side of the value chain crops selected. However, significant investment was made in the adoption of climate smart strategies to reduce post-harvest losses. This investment in climate-smart decision making has led to increase productivity in the value chain crops. Better organization of cooperatives, information and access to technology and financing have also increased productivity.

Two main production seasons were considered in this analysis. It was assumed that the average value chain crop size per individual household was 0.2 hectares. It was also assumed that the beneficiary grew one crop in any given season and another crop in the next season for example if a farmer grew maize in season A, then the same farmer grew beans on the same plot in the subsequent season B.

b. Prices

For purposes of this analysis, project economic benefits have been valued at farm gate prices at production level and eventually aggregated at cooperatives level. The 277 cooperatives in which project investments were made were dealing in value chain commodities produced by individuals. As such, the organization and investment in cooperatives is not considered to cause macro level price variations.

The existence of trade barriers as well as distortions caused by exchange rate were considered minimal for purposes of this analysis. During the financial analysis, actual farm gate prices were used for all traded inputs and outputs. The documented farm gate prices were used to reflect the financial value of the value chain products, transportation, handling, risks and profit margins of traders. The financial analysis utilized the subsidized prices for any subsidized inputs, while the economic analysis converted the financial prices into economic prices using price conversion factors. Non traded products were not valued in this analysis.

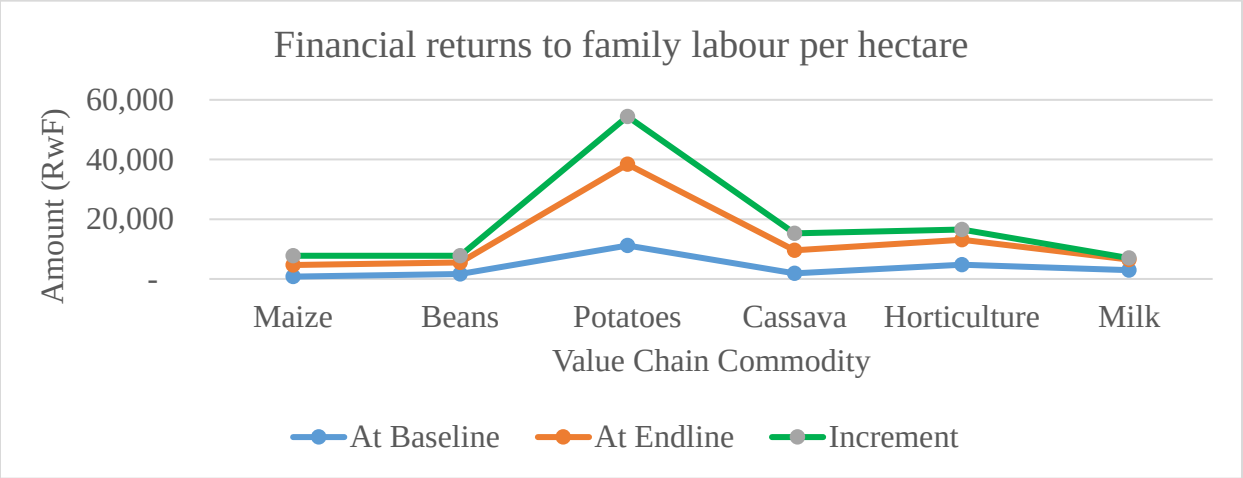
c. Markets

PASP interventions were intermediated through cooperatives. Each value chain was supported through their respective cooperatives as shown in table 2. For purposes of this analysis, all additional productivity arising from the interventions of PASP are assumed to have been sold through these existing cooperatives. It is also assumed that these cooperatives have established formal marketing structures through which beneficiaries were able to sell their products while

buyers were also able to place their demands. Prices used in this analysis are the average prices reported in the impact assessment as having been used by the cooperatives.

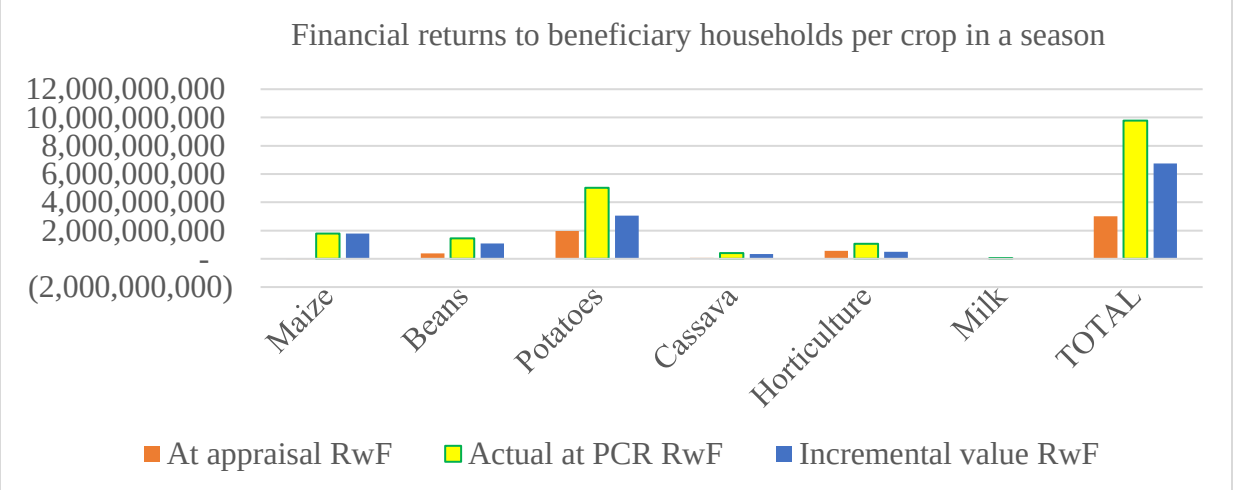
d. Labour

Labour has been categorized into two; family labour and hired labour. Hired labour is further split into skilled labour and unskilled labour. PASP interventions in capacity building of government officials improved the ability of these individuals to provide skilled labour to project beneficiaries in the various value chain crops. Family labour and hired labour have been valued at RwF 800 per day in this analysis. The effects of lack of employment opportunities and surplus of labour have not been considered in this analysis.



e. Crop and milk models

Crop and milk models have been developed based on data collected and documented in the impact assessment report. Models have been developed for maize, beans, cassava, potatoes, pineapple (horticulture) and milk.



Models developed for the end line were compared to those developed using baseline data for the 70,420 participating households. The results show that participating households were able to realize increased returns as a result of project interventions in any given season.

V. Financial Analysis

A financial analysis was carried out to assess the financial viability of the value chain crops whose hubs were supported by PASP. It was also meant to assess the actual outturn of profitability and increase in income to participating households. The financial results of capacity building interventions at the level of cooperatives has not been included in this analysis because it was not easily quantifiable. The analysis aggregated the incremental earnings of the 70,420 PASP beneficiaries, assuming that each beneficiary dedicated 0.2 hectares to a crop in a season and earned from no other. The financial analysis shows that participating households were able to generate more than RwF8.4 billion in each season. The financial earnings by participating households is shown the table 4 below.

Table 4: Financial Incremental Benefit to farmers from supported value chain crops

	At appraisal	Actual at PCR	Increment	Households	Hectares	Incremental value
	RwF	RwF	RwF	supported	per hh	RwF
Maize	(2,603)	494,900	497,503	22,534	0.20	2,242,186,621
Beans	105,660	404,000	298,340	22,534	0.20	1,344,582,579
Potatoes	1,351,840	3,433,200	2,081,360	9,155	0.20	3,810,803,651
Cassava	143,550	890,700	747,150	2,817	0.20	420,914,424
Horticulture	844,800	1,574,800	730,000	4,225	0.20	616,879,200
Milk	21,990	26,870	4,880	9,155	0.20	8,934,890
TOTAL	**2,465,237**	**6,824,470**	**4,359,233**	**70,420**		**8,444,301,365**

The increase in earnings among project beneficiaries per season, leaving the hectares dedicated to each value chain commodity constant, indicate that PASP has been able to immediately improve the livelihood of beneficiaries. Given the institutional capacity building as well as investment in infrastructure, it is expected that the financial benefits realized by participating households will be upheld for the foreseeable future.

VI. Economic Analysis

PASP economic cash flow and economic rate of return (ERR) were calculated by aggregating the next incremental benefits that were obtained by beneficiaries both as a result of additional production and better prices obtained at farm gate. The following assumptions have been made.

- PASP benefits will accrue to beneficiaries over a 20 year period
- The adoption rate is equal to the proportion of products not lost in post-harvest handling.
- Crop production patterns and inputs remained the same between baseline and endline since PASP did not implement activities that directly control crop productivity
- Financial benefits to cooperatives are an aggregate of the benefits received by all its members (beneficiary households)
- Costs related to loans from banks to cooperatives have been excluded because they do not represent a cost to the economy
- The opportunity cost of capital is 12%.

Economic rate of return

The Economic Rate of Return (ERR) for investment in PASP has been calculated at 43% with a Net Present Value (NPV) of USD 126.9 million at an opportunity cost of capital of 12%. At project

design, the ERR had been estimated at 15.7% at an NPV of USD8.3 million. However, the higher ERR realized by PASP is a result of the fact that project reached 117% more households than envisaged at project design, while investing only 56% of the resources allocated.

Table 5: Sensitivity Analysis

Base Case	**Change of Benefits**					**Change of Costs**	
	-40%	**-30%**	**-20%**	**+10%**	**+20%**	**+10%**	**+20%**
0%	8%	16%	24%	60%	82%	34%	27%
						Total Costs	
						98%	

The above sensitivity analysis indicates that even if project benefits were lowered by 40%, the project would still have a positive economic rate of return at 8%. At the same time, total costs of the project would have to increase by 98% in order for the project to have a negative economic rate of return. As such, the above computations indicate that investment in PASP has had a positive effect on the economy. Detailed computations are attached.

Attachment 1: Project Economic Costs and Benefits

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Incremental Income from value chain crops	-	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771	31,389,771
Adoption rate	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%
Overall Increase on Beneficiary income (26%)	-	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730	8,192,730
Increase in Beneficiary Income from value chain crops (34%)	-	2,785,528.29	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528.29	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528	2,785,528
Programme Costs																				
Investment Costs	1,772,741	7,035,811	7,167,835	9,824,760	9,458,222	4,528,806	730,586													
Recurrent Costs	573,567	716,885	595,547	921,992	1,062,751	897,044	1,078,238													
Total Costs	**2,346,308**	**7,752,697**	**7,763,382**	**10,746,752**	**10,520,972**	**5,425,851**	**1,808,824**													
Net Incremental Programme Benefits	(2,346,308)	(1,906,275)	(1,476,927)	(4,030,949)	(6,359,191)	(3,592,311)	2,791,595	10,984,325	19,177,056	27,369,786	35,562,516	43,755,247	51,947,977	60,140,707	68,333,437	76,526,168	84,718,898	92,911,628	101,104,358	109,297,089
Net Present Value (NPV)	$126,894,114																			
ERR	43%																			

Attachment 2: Benefits Aggregation

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Maize	Cooperatives	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	Members	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421
	Total members	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4
	Utilization of Cooperatives	0.5	0.5	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/ha (tonne)	2753	2767	2781	2798	2817	2840	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700	3700
	Total yield (Ton)	12,408,943	12,470,988	12,533,343	12,608,543	12,696,802	12,798,377	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456	16,675,456
	Additional benefits (USD$)		8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819	8,334,819
	Additional benefits per household (26%)		2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053	2,167,053
Beans	Cooperatives	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
	Members	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421	421
	Total members	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4	22534.4
	Utilization of Cooperatives	0.77	0.77	0.77	0.85	0.85	0.85	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/ha (tonne)	2000	2015	2031	2048	2066	2083	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
	Total yield (Ton)	9,013,760	9,083,166	9,153,106	9,230,908	9,309,370	9,388,500	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136	9,915,136
	Additional benefits (USD$)		4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180	4,998,180
	Additional benefits per household (26%)		1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527	1,299,527
Potatoes	Cooperatives	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
	Members	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124
	Total members	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6
	Utilization of Cooperatives	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/ha (tonne)	12400	12487	12574	12675	12776	12878	16800	16800	16800	16800	16800	16800	16800	16800	16800	16800	16800	16800	16800	16800
	Total yield (Ton)	22,703,408	22,862,332	23,022,368	23,206,547	23,392,200	23,579,337	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456	30,759,456
	Additional benefits (USD$)		14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796	14,165,796
	Additional benefits per household (26%)		3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107	3,683,107
Cassava	Cooperatives	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
	Members	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
	Total members	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8	2816.8
	Utilization of Cooperatives	0.65	0.65	0.65	0.75	0.75	0.75	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/ha (tonne)	8300	8354	8408	8471	8535	8599	11100	11100	11100	11100	11100	11100	11100	11100	11100	11100	11100	11100	11100	11100
	Total yield (Ton)	4,675,888	4,706,281	4,736,872	4,772,399	4,808,192	4,844,253	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296	6,253,296
	Additional benefits (USD$)		1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654	1,564,654
	Additional benefits per household (26%)		406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810	406,810
Horticulture	Cooperatives	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Members	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423	423
	Total members	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2	4225.2
	Utilization of Cooperatives	0.55	0.55	0.55	0.75	0.75	0.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/ha (tonne)	20000	20110	20221	20372	20525	20679	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000	21000
	Total yield (Ton)	16,900,800	16,993,754	17,087,220	17,215,374	17,344,490	17,474,573	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840	17,745,840
	Additional benefits (USD$)		2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108	2,293,108
	Additional benefits per household (26%)		596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208	596,208
Milk	Cooperatives	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
	Members	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
	Total members	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6	9154.6
	Utilization of Cooperatives	0.82	0.82	0.82	0.9	0.9	0.9	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
	Area (ha)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Yield/pa (litres)	225	227	229	231	233	235	232	232	232	232	232	232	232	232	232	232	232	232	232	232
	Total yield (litres)	411,957	415,335	418,741	422,509	426,312	430,149	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773	424,773
	Additional benefits (USD$)		33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213
	Additional benefits per household (26%)		8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635	8,635

Attachment 3: Crop and Enterprise Budgets

Crop:	**Maize**						
Area:	**1 hectare**						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Grain	Kg	2,753	196	538,497	3700	280	1,036,000
Total Output		**2,753**		**538,497**	**3,700**		**1,036,000**
Variable Costs							
i. Inputs							
Land renting	Hectare	1	300,000	150,000	1	300,000	150,000
Organic manure	Kg	5,000	10	50,000	5,000	10	50,000
Seeds	Kg	20	120	2,400	20	120	2,400
Fertilizer - DAP	Kg	100	465	46,500	100	465	46,500
Fertilizer - Urea	Kg	50	390	19,500	50	390	19,500
Maize shelling	Man days	70	800	56,000	70	800	56,000
Drying tent	Pieces	2	7,000	14,000	2	7,000	14,000
Empty bags	Pieces	35	300	10,500	35	300	10,500
Bag sewing	Rolls	3	1,500	4,500	3	1,500	4,500
Pest control	Kg	2	3,500	7,700	2	3,500	7,700
				361,100			**361,100**
ii. Family Labour							
First ploughing	Person Day	50	800	40,000	50	800	40,000
Seeding	Person Day	40	800	32,000	40	800	32,000
Harvesting+Drying	Person Day	70	800	56,000	70	800	56,000
		160		**128,000**	160		**128,000**
iii. Hired Labour	Person Day						
Weeding		25	800	20,000	25	800	20,000
Second ploughing	Person Day	40	800	32,000	40	800	32,000
				52,000			**52,000**
Total variable costs				**541,100**			**541,100**
Gross margin exc family labour				125,397			622,900
Value added per Ha				125,397			622,900
Value added per Kg of output				45.54			168.35
Gross margin incl family labour				(2,603)			494,900
Taxes							
Net Income (Excl family labour)				125,397			622,900
Net Income (Incl family labour)				**(2,603)**			**494,900**
Return to family labour (per person day)				784			3,893

Crop:	**Beans**						
Area:	**1 hectare**						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Grain	Kg	2,000	313	625,660	2200	420	924,000
Total Output		**2,000**		**625,660**	**2,200**		**924,000**
Variable Costs							
i. Inputs							
Land renting	Hectare	1	300,000	150,000	1	300,000	150,000
Organic manure	Kg	5,000	10	50,000	5,000	10	50,000
Seeds	Kg	40	370	14,800	40	370	14,800
Fertilizer - DAP	Kg	100	465	46,500	100	465	46,500
Fertilizer - KCl	Kg	50	480	24,000	50	480	24,000
Staking	Stakes	1,000	20	20,000	1,000	20	20,000
Drying tent	Pieces	2	7,000	14,000	2	7,000	14,000
Empty bags	Pieces	20	300	6,000	20	300	6,000
Bag sewing	Rolls	2	1,500	3,000	2	1,500	3,000
Pest control	Kg	2	3,500	7,700	2	3,500	7,700
				336,000			**336,000**
ii. Family Labour							
First ploughing	Person Day	50	800	40,000	50	800	40,000
Seeding	Person Day	40	800	32,000	40	800	32,000
Harvesting+Drying	Person Day	40	800	32,000	40	800	32,000
		130		**104,000**	130		**104,000**
iii. Hired Labour	Person Day						
Weeding		60	800	48,000	60	800	48,000
Second ploughing	Person Day	40	800	32,000	40	800	32,000
				80,000			**80,000**
Total variable costs				**520,000**			**520,000**
Gross margin exc family labour				209,660			508,000
Value added per Ha				209,660			508,000
Value added per Kg of output				104.83			230.91
Gross margin incl family labour				105,660			404,000
Taxes							
Net Income (Excl family labour)				209,660			508,000
Net Income (Incl family labour)				**105,660**			**404,000**
Return to family labour (per person day)				1,613			3,908

Crop:	Potatoes						
Area:	1 hectare						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Potatoes	Kg	12,400	155	1,917,040	16800	238	3,998,400
Total Output		**12,400**		**1,917,040**	**16,800**		**3,998,400**
Variable Costs							
i. Inputs							
Land renting	Hectare	1	300,000	150,000	1	300,000	150,000
Organic manure	Kg	10,000	10	100,000	10,000	10	100,000
Seeds	Kg	100	200	20,000	100	200	20,000
Fertilizer - DAP	Kg	100	465	46,500	100	465	46,500
Fertilizer - UREA, NPK	Kg	100	480	48,000	100	480	48,000
Empty bags	Pieces	20	300	6,000	20	300	6,000
Bag sewing	Rolls	2	1,500	3,000	2	1,500	3,000
Pest control	Kg	2	3,500	7,700	2	3,500	7,700
				381,200			**381,200**
ii. Family Labour							
First ploughing	Person Day	50	800	40,000	50	800	40,000
Seeding	Person Day	40	800	32,000	40	800	32,000
Harvesting+Grading	Person Day	40	800	32,000	40	800	32,000
		130		**104,000**	130		**104,000**
iii. Hired Labour	Person Day						
Weeding		60	800	48,000	60	800	48,000
Second ploughing	Person Day	40	800	32,000	40	800	32,000
				80,000			**80,000**
Total variable costs				**565,200**			**565,200**
Gross margin exc family labour				1,455,840			3,537,200
Value added per Ha				1,455,840			3,537,200
Value added per Kg of output				117.41			210.55
Gross margin incl family labour				1,351,840			3,433,200
Taxes							
Net Income (Excl family labour)				1,455,840			3,537,200
Net Income (Incl family labour)				**1,351,840**			**3,433,200**
Return to family labour (per person day)				11,199			27,209

Crop:	**Cassava**						
Area:	**1 hectare**						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Cassava	Kg	8,300	83	684,750	11,100	129	1,431,900
Total Output		**8,300**		**684,750**	**11,100**		**1,431,900**
Variable Costs							
i. Inputs							
Land renting	Hectare	1	300,000	150,000	1	300,000	150,000
Organic manure	Kg	10,000	10	100,000	10,000	10	100,000
Seeds	Kg	100	200	20,000	100	200	20,000
Fertilizer - DAP	Kg	100	465	46,500	100	465	46,500
Fertilizer - UREA, NPK	Kg	50	480	24,000	50	480	24,000
Empty bags	Pieces	20	300	6,000	20	300	6,000
Bag sewing	Rolls	2	1,500	3,000	2	1,500	3,000
Pest control	Kg	2	3,500	7,700	2	3,500	7,700
				357,200			**357,200**
ii. Family Labour							
First ploughing	Person Day	50	800	40,000	50	800	40,000
Seeding	Person Day	40	800	32,000	40	800	32,000
Harvesting+Grading	Person Day	40	800	32,000	40	800	32,000
		130		**104,000**	130		**104,000**
iii. Hired Labour	Person Day						
Weeding		60	800	48,000	60	800	48,000
Second ploughing	Person Day	40	800	32,000	40	800	32,000
				80,000			**80,000**
Total variable costs				**541,200**			**541,200**
Gross margin exc family labour				247,550			994,700
Value added per Ha				247,550			994,700
Value added per Kg of output				29.83			89.61
Gross margin incl family labour				143,550			890,700
Taxes							
Net Income (Excl family labour)				247,550			994,700
Net Income (Incl family labour)				**143,550**			**890,700**
Return to family labour (per person day)				1,904			7,652

Crop:	Horticulture (Pineapple Model)						
Area:	1 hectare						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Pineapple	Kg	20,000	100	2,000,000	21000	130	2,730,000
Total Output		**20,000**		**2,000,000**	**21,000**		**2,730,000**
Variable Costs							
i. Inputs							
Land renting	Hectare	1	300,000	300,000	1	300,000	300,000
Organic manure	Kg	20,000	10	200,000	20,000	10	200,000
Seedlings	Kg	20,000	10	200,000	20,000	10	200,000
Fertilizer - DAP	Kg	100	465	46,500	100	465	46,500
Fertilizer - UREA, NPK	Kg	100	480	48,000	100	480	48,000
Empty bags	Pieces	20	300	6,000	20	300	6,000
Bag sewing	Rolls	2	1,500	3,000	2	1,500	3,000
Pest control	Kg	2	3,500	7,700	2	3,500	7,700
				811,200			**811,200**
ii. Family Labour							
First ploughing	Person Day	50	800	40,000	50	800	40,000
Seeding	Person Day	80	800	64,000	80	800	64,000
Harvesting+Grading	Person Day	80	800	64,000	80	800	64,000
		210		**168,000**	210		**168,000**
iii. Hired Labour	Person Day						
Weeding		180	800	144,000	180	800	144,000
Second ploughing	Person Day	40	800	32,000	40	800	32,000
				176,000			**176,000**
Total variable costs				**1,155,200**			**1,155,200**
Gross margin exc family labour				1,012,800			1,742,800
Value added per Ha				1,012,800			1,742,800
Value added per Kg of output				50.64			82.99
Gross margin incl family labour				844,800			1,574,800
Taxes							
Net Income (Excl family labour)				1,012,800			1,742,800
Net Income (Incl family labour)				**844,800**			**1,574,800**
Return to family labour (per person day)				4,823			8,299

Product:	**Milk**						
Area:	**1 local breed cow with improved feeding**						
Item	**Unit**	**Situation at Appraisal (Baseline)**			**Situation at PCR**		
		No of Units	**Unit Cost**	**Value (RwF)**	**No of Units**	**Unit Cost**	**Value (RwF)**
Output							
Milk	Litres	225	200	45,000	232	215	49,880
Total Output		**225**		**45,000**	**232**		**49,880**
Variable Costs							
i. Inputs							
Water points	Per annum	1	10	10	1	10	10
Pasture hire costs	Per annum	1	2,000	2,000	1	2,000	2,000
Veterinary costs	Per annum	1	5,000	5,000	1	5,000	5,000
				7,010			**7,010**
ii. Family Labour							
Animal feeding tasks	Person Day	10	800	8,000	10	800	8,000
		10		**8,000**	10		**8,000**
iii. Hired Labour							
Animal feeding tasks	Person Day	10	800	8,000	10	800	8,000
				8,000			**8,000**
Total variable costs				**23,010**			**23,010**
Gross margin exc family labour				29,990			34,870
Value added per Ha				29,990			34,870
Value added per Kg of output				133.29			150.30
Gross margin incl family labour				21,990			26,870
Taxes							
Net Income (Excl family labour)				29,990			34,870
Net Income (Incl family labour)				**21,990**			**26,870**
Return to family labour (per person day)				2,999			3,487

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Appendix 5: Environmental social and climate impact assessment (detailed analysis)

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Appendix 5: Environmental social and climate impact assessment (detailed analysis)

Rwanda is increasingly experiencing the impacts of climate change. According to the first National Determined Contributions (NDCs) of Rwanda (2015), rainfall has become increasingly intense and the variability is predicted to increase by 5% to 10%. Temperature increases have also been experienced, with records from 1971 to 2016 showing rises in mean temperature of between 1.4°C and 2. 56°C in the south-west and eastern regions of Rwanda, as per the third National communication report to the UNFCCC.

Changes in temperature and precipitation and their distributions are the key drivers of climate and weather-related disasters that negatively affect Rwandans and the overall economy.The main risks/impacts that adversely affect the population include droughts, floods, landslides and storms. These are associated with damages to infrastructure, loss of lives and property including crops, soil erosion, water pollution, among others.

According to the 2015 National Risk Atlas of Rwanda, country wide, the total area exposed to severe drought increases from 3% and 4% in the planting season A to 7 and 17% in season B. Kayonza, Gatsibo, Kirehe, Nyagatare, all districts of PASP climate change adaptation intervention, were observed to have high susceptibility to severe drought. For instance extreme drought that occurred during the project span was, between September 2015 and June 2016, where drought affected crops on 16,119 hectares of land in Kayonza District, 11,012 hectares in Nyagatare District and 750 hectares in Kirehe District, more than 47,300 households as reported by (MIDIMAR, et al., 2016).

In regard to flooding, five flood plain areas were mapped across the country. One of them being the Mukungwa flood plain affecting areas in Musanze, Nyabihu, Muhanga and Gakenke Districts and another being the Sebeya flood plain affecting areas in Rubavu, Ngororero and Rutsiro Districts. Previous history of severe floods in Rwanda that affected homes, crops and even lead to deaths include; floods that occurred in May 2016 affecting areas of Muhanga, Rubavu and Gakenke Districts and in March 2018 affecting areas in Rubavu Districts.

Among the intervention priorities for climate change adaptation and resilience under the agriculture sector set by the 2020 updated Nationally Determined Contribution, relevant to PASP's initiatives are; developing climate resilient crops and promotion of climate resilient livestock, developing climate resilient postharvest and value addition facilities and technologies.

PASP contributed towards these challenges mentioned above through financing by the ASAP grant of project initiatives that focused on adaptation to climate change. According to the logical framework in the PASP PDR, 6.93million USD ASAP grant funds were directed to supporting achievement of the following verifiable indicator outcomes: At least 155,000 poor smallholder household members with increased food security and climate resilience and at least 25,000 small-farm households engaged with participating HUBs to gain access to additional harvest and post-harvest technology options which help them reduce climate risks.

Under project component 1 of PASP, 2.5million USD ASAP grant was to finance 80% of participating HUBs to acquire required capacities to implement climate risk management strategies with clients and members and 100% of HUB business plans to incorporate climate change adaptation and food security measures including capacity building on climate resilient processing, handling and storage techniques.
The following activities were eligible for ASAP financing under this component 1; establishment and analysis of agro-meteorological data, dissemination of early warning messages through climate information services, estimation of losses that occur at various stages of harvest and post-harvest processes of the 6 value chain commodities, identification

and promotion of crop and forage varieties that mature earlier and are more tolerant to floods and droughts, identification and adaptation of appropriate climate resilient post-harvest crop drying and storage techniques, solar and biogas powered dryers and coolers, support to rural infrastructure building services through survey of existing post-harvest and MCC structures and development of building codes and standards for siting and construction of climate-smart-positive harvest structures and MCCs, development of biophysical vulnerability maps to assist in modifying designs of storage structures and MCC for risks associated in different locations.

Under project component 2 of PASP, 4.17million USD ASAP grant was to finance 80% of participating farmers (disaggregated by sex) to adopt best practices for post-harvest, crop drying/milk cooling and storage and 80% of participating HUBs to introduce relevant water-harvesting and management technology and/or show significantly reduced water usage.

ASAP funds would 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. Examples of climate risk management activities that could be financed by ASAP grants as part of BPs under component 2 included; 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, use of timely climatic information services to improve HUB BP implementation and decision making, adoption of best practices, including low-carbon technologies (mitigation) for drying and cooling, climate smart rural infrastructure, including rainwater management and harvesting, diversification of crop, pasture and forage varieties that are more tolerant to flood damage and droughts.

Under project component 3, 0.26million USD ASAP grant financed the Project management and coordination.

The ASAP grant for these project components was implemented under the PHCRAB grant to cover the incremental cost associated to climate resilient infrastructure and related investments that focused on facilitating introduction of climate smart post-harvest infrastructure and technologies.

A MoU between RAB/SPIU of IFAD projects and BDF was established to manage PASP grants, among which was the PHCRAB grant. Under this MoU, a list of high priority investments eligible for PHCRAB funding was established, which included:

- Rainwater harvesting and management facilities including masonry, plastic tanks, aluminium tanks and underground water harvesting systems with its associated water treatment systems to increase cleanness of harvested rainwater.
- Wastewater management and treatment systems at commodities' aggregation centres.
- Solar powered boreholes to increase access to water resources at both the commodities' aggregation points and household level.
- Biogas systems at both commodities' collection centres level and household level in order to provide energy for cooking as alternative to firewood.
- Simple equipment washing facilities associated with solar water heater and soak pit to ensure more efficient use of water resources and proper management of wastewater.
- Solar powered water pump where the collection centres are located closer to sources of water to increase access to water resources at collection centre level.
- Renewable (solar and/or biogas) at both household level and cooperative's aggregation points for lighting and/or running other office and post-harvest operations at commodities collection centres;

- Hermetically sealed metallic/plastic silos at both household and commodity aggregation centres;
- Solar powered cold room systems for horticulture and other perishable commodities.
- Solar drying tunnels.
- Biogas fuelled grain driers.
- Solid waste management and value addition system from post-harvest process such transforming cassava peels and maize cobs into charcoal as an alternative source of energy for cooking.
- Cyclones fans for proper ventilation in storage facilities.
- Metallic tubes including roofing tubes for drying facilities.
- Pallets in warehouses.
- Plastic/metallic silos for grain storage.
- Moisture meters to keep monitoring of moisture content of grains and pulses.
- And any other climate smart technologies and equipment as might be identified and justified by business promoters.

As of March 31, 2020, a cumulative total of 391 Business Plans had been financed by PASP for Rwf 24.73 Billion, and 222 of them (57%) received PHCRAB grant worth approximately RWF 3.76 Billion. Maize/beans value chain ~~has~~ had the highest number of BPs (90) absorbing 39% of the total PHCRAB funding equivalent to Rwf 1,480,417,903. It ~~is~~ was followed by Irish potato value chain with 74 BPs and 26% of PHCRAB total funding worth Rwf 969,216,381 and about 35% of PHCRAB funding supported projects in dairy/milk value chain (21 BPs with Rwf 786,953,587), in horticulture (16 BPs with Rwf 363,823,118), and cassava (15 BPs with Rwf 163,304,719).

According to the latest PASP logical frame of November 2020 in relation to ASAP funded activities, the following targets had been cumulatively achieved by the project as of 31st October 2020.

Under component 1,

- with a project end target of 100%, 79 % of HUB business plans incorporated climate change adaptation and food security measures including capacity building on climate resilient processing, handling and storage techniques.
- With an end target of 80%, 83% of participating HUBs acquired required capacities to implement climate risk management strategies and were approached to benefit their client and members, through the provision of trainings.
- With an end target of 325 Community groups engaged in NRM and climate risk management activities, 422 were cumulatively engaged.
- With an end target of 120,000 individuals (disaggregated as 36,000 females and 84,000 males) engaged in Natural Resource Management (NRM) and climate risk management activities, 73,076 individuals (disaggregated as 21,923 females and 51,153 males was cumulatively engaged in NRM and climate risk management activities.
- With an end target of 155,000 poor smallholder household members (disaggregated as 108,500 males and 46,500 females) supported in coping with the effects of climate change, 152,395 members (106,309 males and 46139females) were supported.

Under component 2:

- With an end target of 80 participating HUBs introducing relevant water-harvesting and management technology and/or showing significantly reduced water usage, 93 introduced these technologies.

- With an end target of at least 25,000 small-farm households members (disaggregated as 35750 males and 19,250 females) engaged with participating HUBs to gain access to new and relevant climate smart harvest and post-harvest technologies, 44,710 members (disaggregated as 32,872 males and 20,654 females) were reached.
- With an end target of 150 rainwater harvesting systems constructed or rehabilitated, 48 were in place at baseline and by project completion 366 water tank systems were in place;
- With an end target of number of households in vulnerable areas with increased water availability for agricultural production and processing, 1,577 households had cumulatively benefitted.
- With an end target of 160 number of production and processing facilities supported with increased water availability and efficiency, 366 facilities have benefitted.

Climate smart technologies introduced to Post-harvest facilities comprised of and contributed in the following manner:

- Under the PHCRAB grant funded by the ASAP grant, PASP introduced to post-harvest infrastructure designs the used of the combination of brick ventilators on the walls and cyclones fans on the roofs to ensure proper ventilation and temperature control as a climate smart technique for pest control especially during hot days. This has contributed to reduction in food losses, for instance as indicated in the PASP final impact assessment (2020), on average, maize food losses at cooperative aggregator level have been reduced by 71.8% as compared to FAO baseline study (2016) which were reported at 13.6 and 30.9 % respectively in Musanze and Nyagatare. Transparent roof sheets were also introduced to post-harvest storage structures to allow natural lighting during day, hence minimizing the use of electricity and reducing expenses on power.
- Rainwater harvesting and proper drainage channelling to water tanks were also introduced to these facilities to prevent soil erosion or flooding effects from run-off emerging from post-harvest structure. The benefits from it, were availability of water in places that had inadequate water supply, which water was used for purposes of cleaning the facilities and equipment like milk cans after solar heating and also for domestic use by neighbouring communities. This has made a contribution towards reduction of milk losses to an extent. An example is given of losses in the milk value chain currently at 1.5% quantitative and 2% qualitative, a total of 3.5% milk losses in Gishwati area while they were 18% (15% qualitative and 3% quantitative) at the baseline, according to the PASP final impact assessment study.
- Wastewater management systems of the septic tank primary treatment were established at MCCs and value addition processing facilities to treat wastewater before effluent was discharged to the environment. While this serves as a formidable contribution to protecting the environment from pollution, during the PCR mission field visit, it was observed for some value-addition processing facilities supported under ASAP, such a primary treatment system might not be sufficient to ensure treatment of wastewater to a level acceptable for discharge to the environment with minimal levels of pollution. For example, Rugali beer/ wine processing facility, only has a septic tank for primary wastewater treatment, where secondary treatment and possibly tertiary treatment could be required. It was also observed that no effluent quality monitoring discharged from such a system was done by the beneficiaries and therefore unable to determine whether the final discharged effluent was suitable for the environment or above tolerable limits to the environment. This could be a lesson to learn for future funded projects to pay more attention to more complex BPs such as value addition processing facilities on the extent to which liquid waste would be managed.
- Solar systems were included to provide power to run milk coolers in MCCs and cold rooms, for purposes of lighting in post-harvest storage facilities and solar bubble dryers

for maize grain drying at post-harvest. To appreciate the extent to which solar systems have contributed to some of the beneficiary facilities, an example is picked from FGDs during the PCR mission field visit where Rwimbogo Dairy Cooperative informed the mission that their MCC spends up to 450,000Rwf per month on power, however in the dry season, the solar system is able save them this expense by sufficiently supplying all the power required to run the 2 milk coolers of each 3,000l capacity, provide hot water for the washing facility for cleaning of cans and MCC equipment. Furthermore, according to the PASP final impact assessment 2020, comparative to the 2016 baseline, a reduction was observed mainly in beans qualitative losses (from 22.67% to 8.8%) attributed partly to the ASAP contribution of solar bubble dryers at cooperatives' aggregations points.

- Climate change coping techniques were identified and promoted such as use of hermetic bags and small metallic silos for storage of harvested maize grain or beans, use of tarpaulins in drying maize at post-harvest, use of moisture meters to keep monitoring the moisture content of grains at post-harvest in order to preserve quality and minimize harvest losses to aflatoxin, silage bags for forage storage for dairy farmers. This has improved the quality of maize and beans at post-harvest thereby increasing the price of maize sold by farmer cooperatives, protected the stored food at home from pest attack keeping it long enough to improve household food security for beneficiaries. It also has minimized the possibilities of exposure to health hazards that could emanate from cancerous aflatoxin that previously attacked stored maize grain in homes. As for silage bags, dairy farmers have learnt to store livestock fodder for longer periods especially through the dry season ensuring continued fodder and therefore sustaining milk production. From FGDs during the PCR mission field visit, maize farmers indicated that hermetic bags were capable of storing dried maize grain in good condition, unaffected by aflatoxin for over a year while previously storing maize grain in sacks at home did not last 3months before being attacked by the cancerous aflatoxin. This to an extent has contributed to improved household food security. For instance, as per the PASP final impact assessment study, 75.6% of the beneficiaries acknowledged improved eating habit. It was also reported that there is an increase in number of meals taken per day at beneficiaries' households from 57% at baseline to 69.7% currently for meals taken twice a day, an increase from 6% at baseline to 9.2% currently for meals taken three times and more and a reduction for meals taken once a day or less from 37.3% at baseline to 21.1% currently.

With regards to climate change adaptability by small holder farmers, the project contributed to:

- Climate risk and risk management Training conducted by Imanzi (before MTR) and CIAT (after MTR) in the 12 target districts, where a total of 3,060 farmers, BDF and RYAF staff were been trained on PICSA which helped farmers to read, ~~and~~ interpret climate information from the past years and predict the current weather and rain availability in their respective districts. Farmers were able to make informed decisions based on accurate, location specific, climate and weather information; locally relevant crop, livestock and livelihood options during the process of planning their agricultural season and other livelihood activities. Based on PICSA principals, 16 PASP cooperatives in 4 districts were supported to develop their own climate adaptation plans which comprised of; the crop type, critical stages of its value chain, risks or vulnerabilities at these stages and risk management options or possible response strategies.
- Climate information services- As per the 2020 Final impact assessment for PASP, under the collaboration between RMA and PASP, a total number of 5833 cooperative members, 12 PASP field staffs, agronomists, Officers and Directors from the 12 Districts under PASP intervention were trained on basics of weather and climate

information and variability and weather forecasting, more than 6,000 farmers received daily SMS on weather information, which include forecast at 6-hour interval updated three times a day as well as long-term forecast and 90.5% by PASP beneficiaries adapted the cropping calendar based on climate information received, with higher rate adoption among female headed households (92.3%) than male headed households (89.1%). To put in context, during the FGDs of the PCR mission field visit in Eastern province, a maize farmer from the cooperative COOPCUMA informed the PCR team explained that from weather forecasts sent by SMS, they were able to decide which variety of maize crop to plant depending on whether the season would have long or short rains, which days to hire labour for planting, weeding, harvesting in order to maximise working hours and avoid losses when it rains, when to spray pesticides to avoid losses to rain, which days were suitable for harvesting and drying and how long during the day to dry their harvest before it rained.

This combination of PICSA training and access to weather and climate information has improved the farmers' ability to plan their agricultural activities in order to minimise losses right from production, through harvest and post-harvest handling and to the market and also in decision making of the whole agribusiness activities and therefore contributed to reduction in food losses such as maize as mentioned earlier.

- Climate change adaptability- RAB adaptive research studies financed under PASP in the different commodity value chains with a purpose of addressing farmer's climate change adaptation in crop production presented:
    - early maturing and drought resistant maize varieties to address climate change effects in drought prone areas and high yielding varieties for the long rain season,
    - access to clean, disease resistant and drought tolerant cassava planting materials among smallholder farmers in PASP intervention area,
    - improved agronomic performance of new Irish potato cultivars in different sites.

In essence, the support in climate change adaptability had a contribution to the small holder farmers' ability to sustain and improve their productivity under conditions of changing weather and climate patterns by raising productivity of maize from 2.8tons/ha at baseline to 3.7tons/ha currently, beans from 1.4ton/ha at baseline to 2.2ton/ha currently, Irish potato from 12.4ton/ha at baseline to 16.8ton/ha currently, as reported in the PASP Final impact assessment.

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Appendix 6: Dates of supervision mission and follow-up missions

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Mission	Dates
Supervision Mission 1	25 May 2015 - 05 June 2015
Impl. Sup/Follow Up Mission 1	06 December 2015 - 21 December 2015
Supervision Mission 2	20 June 2016 - 01 July 2016
Supervision Mission 3	04 June 2018 - 15 June 2018
Impl. Sup/Follow Up Mission 2	20 May 2019 - 24 May 2019
Supervision Mission 4	02 September 2019 - 13 September 2019

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Appendix 7: Terms of Reference of the completions review mission

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
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to IFAD or no later than the project closing date.

Appendix 7: Terms of Reference of the completions review mission

Terms of Reference for the Project Completion Review (PCR) for PASP

The objective of Project Completion Review (PCR) is to assess and document overall project implementation performance and the results achieved. The process calls for assessing the relevance, effectiveness, efficiency and sustainability of project interventions.

Specifically the completion process includes:

i) To assess the relevance of project interventions at the time of project design and at present;
ii) To assess the effectiveness of project implementation, or the extent to which project objectives were met, and to document the immediate results and impacts of project interventions;
iii) To review the project costs and benefits and the efficiency of the overall project implementation process, including IFAD's and partners' performance;
iv) To assess the prospects of sustainability of project benefits beyond project completion;
v) To generate and document useful lessons from implementation that could assist improve IFAD's or Borrower's future programming and designs;
vi) To identify potential for the replication or scaling up best project practices.

1) Scope of the review

i) Review overall project performance and measure achievement of its development goal;
ii) Determine the level of achievement of each project purposes;
iii) Review and analyze project strategy, approach and implementation of institutional arrangements;
iv) Assess project relevance, efficiency and effectiveness;
v) Examine the project cost and financing;
vi) Assess the project output against the targets;
vii) Assess targeting approach used by the project;
viii) Assess the extent of the project contribution to its purpose and goal;
ix) Determine the likelihood of sustainability of the project interventions;
x) Assess the extent to which project interventions have introduced and tested innovative approaches to rural poverty reduction;
xi) Identify any potentiality for the replication or up scaling of best project practices;
xii) Review performance of partners and implementing institutions;
xiii) Assess the overall project impact/benefits on the target beneficiaries (women, men and youth, if any);
xiv) Undertake a financial and economic analysis of the projects in terms of the cost, time, inputs and even facilitation and management provided by PASP;
xv) Assess the extent of implementation of policy supported by the project;
xvi) Identify lessons learnt during project implementation;
xvii) Assess the quality of project Implementation;
xviii) Assess the quality of IFAD supervision and implementation support - Assess effectiveness of M&E and Knowledge management (KM) system as a key project management tool as well as its adequacy in capturing the project outcomes;

xix) Assess overall financial management and other fiduciary related aspects of the project in order to establish whether funds were used effectively and efficiently in line with the project goal and objective.

2) Timeframe and deliverables

The total duration of the review will be up 30 days and will be completed by December 16, 2020.

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Appendix 8: List of person met and mission's programme

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Appendix 8: List of person met and mission's programme

List of persons met with the PASP PCR Mission

S/No.	Name	Contact
	IFAD Country Office	
1)	Aimable Ntukanyagwe-IFAD Country Program Officer	a.ntukanyagwe@ifad.org
2)	Marie Clarisse Chanoine Dusingize- IFAD Environment and Climate Portfolio, Consultant	m.chanoine@ifad.org
	Ministry of Agriculture and Animal Resources (MINAGRI)	
3)	Musabyimana Jean Claude /Permanent Secretary of MINAGRI	claude.musabyimana@minagri.gov.rw
4)	Dr. Octave Semwaga /Director General of Planning -MINAGRI	osemwaga@yahoo.com
	Rwanda Agriculture and Animal Resources Development Board (RAB)	
5)	Patrick Karangwa (PhD) /Director General of RAB	patrick.karangwa@rab,gov.rw
6)	Bucagu Charles (PhD) / Deputy Director General of Agriculture Research and Technology Transfer.	bucagucharles@gmail.com or charles.bucagu@rab.gov.rw
7)	Illiminee Kamaraba / Head of Post-Harvest Division	illuminee.kamaraba@rab.gov.rw
	RAB Research Team	
8)	Fabrice Niyonsenga /Head of Department Animal Resource Research and Technology Transfer	fabriciosenga@yahoo.fr
9)	Marguerite Niyibituronsa (PhD)/ Head of Food Quality and Nutrition program	niyibituronsam@gmail.com
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List of People met during PASP Physical verification of achievements and interview conducted in Southern, Northern and Western Provinces- Rwanda.

S/No.	Name	Function	Contact
	Kamonyi District		
1)	Tuyizere Thadee	Mayor of the District	0788436029
	Muhanga District		

2)	Goreth Mukamana Mupenzi	Director of Agriculture and Natural Resources Unit	0788550945
3)	Iyakaremye Jean Bosco	Agronomist of the District	0782559882
	Musanze District		
4)	Andrew Mpuhwe Rucyahana	Vice-Mayor of Economic Affairs	0783 768 500
5)	Ngendahayo Jean	Director of Agriculture and Natural Resources Unit	0787 209 263
	Rubavu District		
6)	Habimana Martin	**Advisor of the Mayor of Rubavu District**	**0781012943**
	Uruhimbi Rwizihiwe Cooperative-Kamonyi District		
7)	Uzaribara Emmanuel	President of Cooperative	0788879147
8)	Mukajayo Immaculee	Vice President of Cooperative	0788636832
9)	Kamaliza Vestine	Accountant of Cooperative	0782381866
10)	Tuyisingize Mediatrice	Veterinary of Cooperative	0785447322
11)	Bakundukize Jean Damascene	Sector Agronomist Officer	0788481235
12)	Mpatabuvanzo Emmanuel	Advisor of Cooperative	0783086614
13)	Mukandinda Ancila	Member of Cooperative	0785322217
14)	Mukabideri Adeline	President of Infrastructure commission	0783070741
15)	Uwiragiye Daniel	Milk Seller	0784661159
16)	Hatangimana Philbert	Milk Seller	0783623840
17)	Harerimana Innocent	Livestock Farmer assistant	0783248785
18)	Nsengimana Jean Claude	Livestock Farmer assistant	0788922986
19)	Bizimana Ernest	Livestock Farmer assistant	07860779962
20)	Karekezi Jean Bosco	Livestock farmer	0783627685
21)	Nisingize Gisele	Former PASP Field Staff	0788468877
	CEFAPEK –Kamonyi District		
22)	Soeur Uwarurema Marie Crescence	Representative of CEFAPEK Coordinator	0783279374
23)	Tuzahirwa Vincent	Agronomist	0783461006
24)	Uwamahoro Jacqueline	Staff of CEFAPEK	0788874703
25)	Mukanzayire Marie Rose	President of members of CEFAPEK	0782339448
26)	Mukarupalirwa Azella	Vice President of CEFAPEK	0782912325
27)	Mukagatare Speciose	President of Advisory Committee of Cooperative	0783119030
28)	Gahongayire Beatrice	Vice President of Cooperative of	0785648206
	ZIRAKAMWA MEZA NYANZA Dairy/ Nyanza District		
29)	Izerimana Jean Baptiste	Production Manager	0782593585
30)	Munyeshyaka Felicien	Quality Control	0781681149
31)	Murere Etienne	Human Resource Manager	0788351393
	TWITEKUBUZIMA MUGINA-Cassava Collection Point / Nyanza District		
32)	Simbayobewe Thadee	President of cooperative	0788927340
33)	Mukantibazi Gloriose	Secretary of Cooperative	0786823223
34)	Uwimana Laurence	Secretary of market commission	0781322912
35)	Nirere Jerturde	Member of market commission	0782912568

	Abajyana n'Igihe Kabere Cooperative/ Musanze District		
36)	Wibabara Fidele	President of Cooperative	0788332795
37)	Tuyisenge Etienne	Vice President	0783338353
38)	Ndayambaje Jean Pierre	Secretary of Cooperative	0788780586
39)	Mukashefu Tacienne	Advisor of cooperative	0783170530
40)	Nyiraguhirwa Vestine	Vice President –Advisory Committee of Cooperative	0789132215
41)	Nyiramategeko Daphrose	Member of Cooperative	0785320161
42)	Mukandayisenga Donatha	Member of Cooperative	0781106629
	SPF –Ikigega / Musanze District		
43)	Mbarushimana Salomo	Manager	0788309215
44)	Mukanoheri Venantie	Vice President /Tuzamurane Coop	0785687894
	KOKIKA Cooperative in Rubavu District		
45)	Ntawiha Emmanuel	President of Cooperative	0785439203
46)	Zaninka Alice	Accountant of Cooperative	07884469842
47)	Mutezinka Jacqueline	Member of Cooperative	0784397706
48)	Nirere Olive	Member of Cooperative	0788293273
49)	Muhayimana Christine	Member of Cooperative	0785467594
	Visit of Seed Potato Facility in Nyabihu District		
50)	Mukamurara Alphonsine	Manager of the facility	
	Joint venture-Seed Potato		
51)	Ntakazarimara Faustin	Advisor of Joint Venture	0788430362
52)	Nyiransengiyumva Scholastique	RICA Inspector for Seed Potato	0788603268
	CEZONYI Cooperative Nyabihu District		
53)	Ruhetesha Donat	Vice-President of Cooperative	0788754721
54)	Karangwa Janvier	Manager of Cooperative	0788481241

Republic of Rwanda

Rwanda

Climate-Resilient Post-Harvest and Agribusiness Support Project

Project Completion Report

Appendix 9: Final wrap-up/stakeholder workshop findings

Mission Dates:	9 November-16 December 2020
Document Date:	14/05/2021
Project No.	1100001497
Report No.	5742-RW
Loan ID	2000000427
DSF Grant ID	2000000445

East and Southern Africa Division
Programme Management Department

to IFAD or no later than the project closing date.

Appendix 9: Final wrap-up/stakeholder workshop findings

The stakeholders validation workshop was held virtually on Monday 22nd February 2021, from 2:00 - 4:00 pm.

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31)	Elizabeth Nambiro / Agricultural Expert	enambiro@yahoo.com
32)	Assoc. Prof. Rose Namara/ M&E and Gender Targeting Expert	rosenamara@gmail.com
33)	Kagaba Freddy/ Financial Management Expert	kagucridp@yahoo.com
34)	David Radcliffe / DFID Consultant/ Observer to the PCR Mission	davidradcliffe874@btinternet.com

Min 1/2/2021 Preliminaries

The meeting started at 2pm and kicked off with introduction of participants which was led by Mr. Stephen Rwamulangwa/SPIU-Coordinator.

Min 2/2/2021 Opening remarks

The SPIU Coordinator invited Dr Bucagu Charles/ DDG RAB to make opening remarks. The DDG noted that the PCR report had been circulated to stakeholders for comments and feedback. He reiterated that the purpose of the workshop was to provide an additional forum to share feedback to the PCR Mission team on the report.

Min 3/2/2021 Presentation of the PCR Report

Dr. Charles Bucagu invited the PCR Mission Team Leader, Pius Ng'ang'a to make a presentation of the PCR Report. The presentation highlighted the objectives of the PCR, methodology used, key findings of the mission and lessons learnt and recommendations.

Min 4/2/2021 Feedback on the PCR Report

Dr. Bucagu opened the forum for sharing of feedback on the report. The following comments were made.

- It was noted that the report was well written and the key findings were validated by the stakeholders.
- There was need to include a recommendation that in future similar projects should carry out commodity gender analysis to inform programmes for gender mainstreaming and women empowerment.
- It was noted that some of the Project innovations such as PISCA had been adopted in other coutries such as Mozambique and Malawi.
- It was noted that the ERR for investment in PASP was 43% with an NPV of USD 126.9 million at an opportunity cost of capital of 12%.
- It was clarified that at design the Project planned to work in 10 districts but this target was expanded to 12 districts.
- There is need to capture RYAF as one of the institutions that contributed to overall Project achievements.
- Clarification was sought on the explanation regarding economic sustainability of cooperatives. It was noted that a tripartite agreement had been signed between RAB, MINAGRI and beneficiaries with roles clarified for all parties after project completion.
- An issue was raised on the rating of effectiveness as moderately satisfactory. There was need to note that at design the contribution of HUB commercial loans had been overestimated. At MTR this was highlighted and in the supervision mission of 2020 this fact was also brought up.
- There was a comment that the rating for environment and natural resources needed to be highly satisfactory in line with that for innovations. It was clarified that although the project had achieved much under environment and natural resources the outreach for this sub-component was below target.

Min 5/2/2021 Adjournement

There being no other business, the meeting closed at 4pm.