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Report No: 89984-RW

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROGRAM APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 65.9 MILLION

(US$ 100 MILLION EQUIVALENT)

TO THE

REPUBLIC OF RWANDA

FOR THE

TRANSFORMATION OF AGRICULTURE SECTOR PROGRAM PHASE 3

PROGRAM-FOR-RESULTS

October 9, 2014

Agriculture Global Practice
Country Department AFCE2
Africa Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective August 31, 2014)

Currency Unit	=	Rwandan Franc
US$1.00	=	RwF 690
US$1.00	=	SDR 0.658

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ABCB	Agribusiness Consultative Body
ACG	Anti-Corruption Guidelines
AGF	Agricultural Guarantee Fund
AgGDP	Agricultural Gross Domestic Product
AGS	Agricultural Gender Strategy
ASIP	Agriculture Sector Investment Plan
ASWG	Agriculture Sector Working Group
BCC	Behavioral Change Communication
BRD	*Banque Rwandaise de Development* (Development Bank of Rwanda)
CAADP	Comprehensive Africa Agriculture Development Programme
CFSVA	Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey
CIP	Crop Intensification Program
$C + CO_2$	Carbon and Carbon Dioxide
CPS	Country Partnership Strategy
CSO	Civil Society Organization
DDP	District Development Plan
DFID	Department for International Development (United Kingdom)
DLI	Disbursement-linked Indicator
DP	Development Partner
DPL	Development Policy Lending
DRC	Democratic Republic of Congo
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
EFA	Economic and Financial Analysis
EIA	Environmental Impact Assessment
EICV	*Enquête Intégrale sur les Conditions de Vie des Ménages* (Integrated Household Living Conditions Survey)
ERR	Economic Rate of Return
ESSA	Environmental and Social Systems Assessment
ESW	Economic and Sector Work
EU	European Union
F&C	Fraud and Corruption
FAO	Food and Agriculture Organization (of the United Nations)
FDI	Foreign Direct Investment
FFS	Farmer Field School
FM	Financial Management
FRDP	Feeder Roads Development Project
FRR	Financial Rate of Return

GAC	Governance and Anti-corruption
GACU	Government Action Coordination Unit
GAFSP	Global Agriculture and Food Security Program
GDI	Gender Development Index
GDP	Gross Domestic Product
GoR	Government of Rwanda
ha	Hectares
HRDP	Human Resource Development Plan
ICPAR	Institute of Certified Public Accountants of Rwanda
ICT	Information, Communication and Technology
IFA	Integrated Fiduciary Systems Assessment
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
IFPRI	International Food Policy Research Institute
IPAR	Institute of Policy Analysis and Research - Rwanda
IPF	Investment Project Financing
IPSAS	International Public Sector Accounting Standards
IRA	Integrated Risk Assessment Summary
IWUO	Irrigation Water User Organization
LODA	Local Development Agency (Rwanda)
LUCP	Land Use Consolidation Policy
LWH	Land Husbandry, Water Harvesting and Hillside Irrigation Project
M&E	Monitoring and Evaluation
MCC	Milk Collection Center
MDA	Ministry-Districts-Agencies (RAB, NAEB and SPIUs)
MDTF	Multi-donor Trust Fund
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINISANTE	Ministry of Health
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINICOM	Ministry of Trade and Industry
MINIRENA	Ministry of Natural Resources
MIS	Management Information System
MMT	Mobile Money Transfer
MOU	Memorandum of Understanding
MT	Metric Ton
MTEF	Medium Term Expenditure Framework
MUV	Manufactures Unit Value Index
NAADS	National Agricultural Advisory Services Project (Uganda)
NAEB	National Agricultural Export Board
NAP	Nutrition Action Plan
NEPAD	New Partnership for Africa's Development
NISR	National Institute of Statistics of Rwanda
NPPA	National Public Prosecution Authority
NPV	Net Present Value
O&M	Operations and Maintenance
OAG	Office of Auditor General
OM	Office of the Ombudsman
OPRC	Operations Procurement Review Committee

PAC	Public Accounts Committee
PAD	Program Appraisal Document
PAP	Program Action Plan
PBB	Performance-Based Budgeting
PDO	Program Development Objective
PFM	Public Financial Management
PforR	Program-for-Results
PHHS	Post-Harvest Handling and Storage
PMO	Prime Minister's Office
PPP	Public-Private Partnership
PRICE	Project for Rural Income Through Exports (IFAD)
PSF	Private Sector Federation
PSTA	*Plan Stratégique pour la Transformation Agricole* (Strategic Plan for the Transformation of Agriculture)
RAB	Rwanda Agriculture Board
RAP	Resettlement Action Plan
RCA	Rwanda Cooperative Agency
RDB	Rwanda Development Board
REMA	Rwanda Environmental Management Authority
RF	Results Framework
RIF	Rural Investment Facility
RNRA	Rwanda Natural Resource Authority
RPPA	Rwanda Public Procurement Authority
RSSP	Rural Sector Support Project
RwF	Rwandan Francs
SACCO	Savings and Credit Cooperative
SLM	Sustainable Land Management
SME	Small and Medium Enterprise
SP	Subprogram
SPIU	Single Project Implementation Unit
SPS	Sanitary, Phytosanitary and Safety
SWAp	Sector Wide Approach
t	Tonne (metric)
TA	Technical Assistance
US$	United States Dollar
USAID	United States Agency for International Development
WAAPP	West Africa Agricultural Productivity Program
W/P	With-Program Situation
WO/P	Without-Program Situation
WUA	Water Users Association
WUO	Water Users Organization

Country Director:	Diarietou Gaye
Country Manager:	Carolyn Turk
Senior Global Practice Director:	Juergen Voegele
Practice Manager:	Severin Kodderitzsch
Task Team Leader:	Mark Austin

REPUBLIC OF RWANDA
TRANSFORMATION OF AGRICULTURE SECTOR PROGRAM PHASE 3
PROGRAM FOR RESULTS

Table of Contents

PAD DATA SHEET

Republic of Rwanda

Transformation of Agriculture Sector Program Phase 3

PROGRAM APPRAISAL DOCUMENT

Africa Region
GFADR

Basic Information

Date:	October 9, 2014	Sectors:	Crops (30%), Irrigation and drainage (15%), Agro-industry, marketing, and trade (30%), Microfinance (15%), Animal production (10%)
Country Director:	Diarietou Gaye		
Practice Manager:	Severin Kodderitzsch		
Senior Global Practice Director:	Juergen Voegele		
Program ID:	P148927	Themes:	Rural services and infrastructure (20%), Rural markets (20%), Rural nonfarm income generation (20%), Other financial sector development (20%), Export development and competitiveness (20%). Gender is mainstreamed in all of these themes.
Team Leader	Mark Austin		

Program Implementation Period: 3 years	Start Date: October 31, 2014	End Date: March 31, 2017

Expected Financing Effectiveness Date:
January 31, 2015

Expected Financing Closing Date:
March 31, 2017

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Program Financing Data

[ ] Loan	[ ] Grant	[X] Other Co-financing
[X] Credit		

For Loans/Credits/Others (US$M):

Total Program Cost: 1,200	Total Bank Financing : 100
Total Cofinancing: 800	Financing Gap: 0

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Financing Source	Amount US$M
BORROWER/RECIPIENT	300
IDA: Existing (LWH, RSSP, RFDP)	194
IDA: New (PforR)	100
Others: EU	160
USAID	138
IFAD	120
DFID	90
Netherlands	10
Swiss	6
Japan/JICA	32
AfDB	20
FAO	30
Financing Gap	0
Total	1,200

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Borrower: Ministry of Finance and Economic Planning (MINECOFIN)

Responsible Agency: Ministry of Agriculture and Animal Resources (MINAGRI)

Contact: Mr. Innocent Musabyimana Title: Permanent Secretary

Telephone No. +250 78 830 9703 Email:innocent.musabyimana@gmail.com

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Expected Disbursements (in US$ Million)									
Fiscal Year	FY15	FY16	FY17						
Annual	30.0	32.5	37.5						
Cumulative	30.0	62.5	100.0						

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Program Development Objective(s)

The proposed program development objective (PDO) is to increase and intensify the productivity of the Rwandan agricultural and livestock sectors and expand the development of value chains.

The proposed operation supports the Government of Rwanda's strategic objectives of the Transformation of Agriculture Sector Program Phase 3 with aims to enhance food security and nutrition contributing to a reduction in poverty and inclusive economic growth. The operation supports four broad program areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues.

Compliance

Policy

Does the program depart from the CPS in content or in other significant respects?	Yes [ ] No [X]

Does the program require any waivers of Bank policies applicable to Program-for-Results operations?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the program meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Overall Risk Rating: Moderate

Conditions: There are no conditions of Effectiveness.

Name	Recurrent	Due Date	Frequency

Team Composition			
Bank Staff			
Name	**Title**	**Specialization**	**Unit**
Mark Austin	Program Leader	TTL	AFCS2
Valens Mwumvaneza	Rural Development Specialist	Extension & Mechanization	GFADR
Meena M. Munshi	Senior Agriculture Economist & Social Development Specialist	Farmers' Organizations and Coops	GFADR
Andrew Mwihia Karanja	Senior Agriculture Economist	Land Husbandry/ Intensification	GFADR
Willem Douw	Senior Operations Officer, IFC Investment Climate	Value Chains	GTCDR
Augustine Langyintuo	Senior Operations Officer, IFC Investment Climate	Input Markets	GTCDR
Tugba Gurcanlar	Rural Finance & Trade Specialist	Finance, Trade and Competitiveness	GTCDR
Stephane Foreman	Senior Livestock Specialist	Livestock	GFADR
Pauline McPherson	Senior Operations Officer	M&E	GFADR
Alice Usanase	Private Sector Development, JPA	Private Sector	AFMRW
Mulugeta Dinka	Procurement Specialist	Procurement	GGODR
Antoinette Kamanzi	Procurement Assistant	Procurement	GGODR
Joseph Byamugisha	Financial Management Specialist	FM	GGODR
Winston Cole	Senior Financial Management Specialist	FM	GGODR

Maiada Mahmoud Abdel Fattah Kassem	Financial Officer	Disbursements	CTRLA
George Larbi	Lead Governance Specialist	GAC	GGODR
Pascal Tegwa	Senior Procurement Specialist	Procurement	GGODR
Stephen Mugendi Mukaindo	Counsel	Legal	LEGAM
Svetlana Khvostova	Environmental Specialist	Environmental Assessment	GENDR
Yasmin Tayyab	Senior Social Development Specialist	Social Assessment	GURDR
Lillian Brenda Namutebi	Senior Financial Management Specialist	FM	GGODR
Hilda Emeruwa	Operations Analyst	Operations Support	GPSOS
Belinda Mutesi	Team Assistant	Admin. and Logistics	AFMRW
Non-Bank Staff			
Richard Anson	Lead Agriculture Economist	Ag. Strategy, Inst. Development, M&E	GFADR
Hild Rygnestad	Economist/Financial Specialist	Econ/Fin. Assessment	GFADR

I. STRATEGIC CONTEXT

A. Country Context

1. **Rwanda is a small (26,000 km^2) landlocked country with few natural resources, a population of 10.7 million (2012), and a projected population of 13 million by 2020.** Its hilly terrain covers 85 percent of the land mass and the country has the highest population density in Africa, with 416 people per square kilometer, 53 percent of them female. Rwanda has made a remarkable transition from genocide to peace and development. Between 2000 and 2012, GDP growth averaged 8.1 percent per year. Development efforts and results have been significant. Rwanda experienced a 14 percentage point reduction in the poverty headcount, from 59 percent in 2001 to 45 percent in 2011, with the remaining poor much closer to the poverty line on average in 2011 than in 2001.[1] Developments in agriculture were key drivers of this poverty reduction, accounting for more than 45 percent of the total due to increased agriculture production (35 percent) and increased agriculture commercialization (10 percent). Self-employment in small, off-farm nonagricultural business accounted for an additional 13 percent of the poverty reduction. Part of this self-employment was associated with agriculture value chain employment.

2. **Despite this impressive performance in the last decade and particularly in the last five years, significant challenges remain.** While improving, Rwanda remains a low-income country, with annual per capita income of US$644 in 2012 (with more than 45 percent below the national poverty line).[2] About one in four rural households lives in extreme poverty. Poverty is still mostly a rural phenomenon: 49 percent of the poor live in rural areas compared to 22 percent in urban areas. Poverty is highest (76.6 percent) among households (often landless) who obtain more than half of their income working on other people's farms. The land distribution is skewed – 36 percent of households own 6 percent of the farm land, with an average of 0.1 hectares (ha) per household (compared to the national average of 0.33 ha per household). Women are more likely to fall into this limited landholding category. In addition, women provide the bulk of labor in the crop sector, but function mainly at subsistence level with insufficient skills, access to markets, and control over land and other agricultural services. If Rwanda is to achieve its targets to reduce the number of people living below the national poverty line to less than 20 percent and to eliminate extreme poverty by the year 2020, continuation of its past strong growth performance will not be sufficient. Further acceleration of inclusive growth is needed, on top of further reductions in inequality.

[1] In 2001, the median distance from the poverty line amounted to 41 percent (of the poverty line's value). In 2011, the median distance had decreased to 30 percent. *Rwanda Economic Update, Maintaining Momentum with a special focus on Rwanda's pathway out of poverty*, World Bank, May 2013, Edition No. 4.

[2] Sixty-three percent of the world's population lives on less than US$1.25 per day using the international poverty line. The World Bank sets the international poverty line at US$1.25 per day in 2005 prices. This corresponds to the average poverty line of the 15 poorest countries among the 75 developing countries surveyed in Ravallion et al. (2009). The international poverty line provides a standardized benchmark for cross-country comparisons of poverty. Within any given country, however, there can be considerable differences between the national and the international poverty line. In Rwanda, the national poverty line amounts to US$0.99 per day in 2005 purchasing power parity prices which is lower than the international poverty line of US$1.25. This explains the higher poverty headcount when using the international poverty line.

3. **The strategy for stimulating rapid and sustainable economic growth and reducing poverty is articulated in Rwanda's *Vision 2020.*** *Vision 2020,* the national vision and policy framework, articulates key priorities for the country's development by the year 2020. This vision is further laid out in the Second Economic Development and Poverty Reduction Strategy Paper (EDPRS 2),[3] which delineates agriculture as a key sector and a significant engine of inclusive growth for the country. Likewise, the recent report *Rwanda Economic Update, Maintaining Momentum* [4] states that increasing agricultural productivity is the main driver of poverty reduction in Rwanda. Agricultural transformation, especially through competitive value chain development, is expected to boost growth in both the formal and informal sectors, with the effect of reducing the proportion of the population dependent on agriculture from the present 73 percent (2009) to less than 50 percent in 2020. In addition, while agricultural productivity is increasing, there is considerable potential to accelerate and continue to raise productivity, increase commercialization of agriculture production, increase self-employment in small on- and off-farm businesses, and achieve significant poverty reduction, income gains, and increased prosperity. Gender equity and equality has also been highlighted as a foundational and cross-cutting issue under EDPRS 2 and the Third Phase of the Transformation of Agriculture Sector Program (known by its French acronym, PSTA 3), building on Rwanda's solid foundation in this area: Rwanda has the highest percent of women in Parliament in the world (64 percent) and a 32 percent rate of women's participation in all decision-making local government bodies. Accordingly, the Government of Rwanda (GoR) has made a strong commitment to continue to increase gender equity and equality, particularly at the local level, and is determined to see it well integrated in government policies and programs at all levels.

B. Sectoral and Institutional Context of the Government Program

Sectoral Context

4. **A significant contributor to the Rwandan economy, agriculture accounted for 33.3 percent of GDP in 2013.** Overall, agriculture sector growth was 5.5 percent per annum (p.a.) between 2000 and 2012. During the five-year period 2008-2012, Rwanda recorded average annual GDP growth exceeding 8.1 percent, with a peak of 11.2 percent in 2008, attributable to exceptionally favorable weather. Rwanda's agriculture sector performance has significantly improved in recent years, but continued food and high-value commodity production and productivity increases are essential to secure further reductions in rural poverty and to convert the largely subsistence sector to a more knowledge-intensive, competitive, and market-oriented sector. This pattern would sustain inclusive growth and add value to production.

5. **Rwandan agriculture is characterized by small production units – the average landholding size is 0.33 ha, reflecting the high population pressure.** Eighty percent of the rural population consists of subsistence farmers who use mostly rainfed production systems, as less than 6 percent of all cultivated land is irrigated. The rural labor force is dominated by women, with 92 percent of the economically active female population engaged in agriculture.

[3] Approved by Cabinet on May 8, 2013; implementation began on July 1, 2013.
[4] *Rwanda Economic Update, Maintaining Momentum with a special focus on Rwanda's pathway out of poverty*, World Bank, May 2013, Edition No. 4.

With only 1.5 million ha of arable land, land is a binding constraint, which rules out extending the agricultural frontier if growth is to be environmentally sustainable.

6. **Improvements in the agriculture sector in the last five years have principally been driven by improvements in sustainable land management, input provision, and irrigation**.[5] The crop and livestock intensification agenda for Rwandan agriculture has been and continues to be critical. Given limited arable land, yield increases of staple crops are vital for increasing rural incomes and agricultural growth. Expanding high-value commodity crops is also important for increasing exports, increasing foreign exchange, reducing imports, and sustaining higher incomes over the long term. In the last five years, significant interventions have driven productivity gains, including: implementation of the Land Use Consolidation Policy (LUCP) and the Crop Intensification Program (CIP); greater protection against soil erosion; and increased area under irrigation, including more productive utilization of extensive fertile marshlands areas. The fundamental model used has been the formation of farmer groups that ultimately coalesce into agricultural cooperatives. Gender has been integrated into leadership structures at all levels through training of MINAGRI staff as well as via quotas for women leaders in groups. Access to agricultural finance and advisory services has improved. Expansion of input distribution networks and increased use of compost, agrochemicals, and improved seeds inputs have been significant. Increased market accessibility and improved product quality have resulted from post-harvest infrastructure investments that have reduced post-harvest losses to less than 15 percent of production. Production and productivity increases have had a positive impact on both sector growth and rural poverty reduction. Agricultural production provides 90 percent of the country's food needs, generates most of the employment opportunities, and contributes increasing levels of diversified exports.

7. **While productivity has increased, average farm sizes have declined in the face of steady population growth, putting pressure on household farm incomes.** While marketable surpluses have increased, the long-standing problem of production being consumed mainly on the farm continues. Based on recent studies,[6] the principal challenges and strategies ahead for the agriculture sector are: (i) expanding and sustaining the increased productivity gains that, in the short and medium term, have contributed to strong agriculture growth, raised rural incomes, and reduced poverty and will continue to be a central source of agricultural growth; (ii) increasing and improving food and nutrition security for the rural population; (iii) strengthening and deepening value chain development, including increasing agro-processing to create nonfarm employment, consistent with Rwanda's competitiveness; (iv) increasing commercialization of agriculture production, such as securing and strengthening domestic and international markets for agricultural production while increasing exports and reducing imports (again consistent with Rwanda's competitiveness); (v) enhancing the enabling environment to attract the private sector to invest and add value to the productivity and diversification increases; and (vi) strengthening

[5] The GoR has also been slowly withdrawing from private sector activities (e.g., tea privatization was completed in 2012) in recent years with the intention of creating more space and a more conducive environment for the private sector to take on a greater role in Rwandan agriculture.

[6] Associates for International Resources and Development (AIRD), "Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study", Rwanda CAADP 2, Background Paper #1, February 2014; International Food Policy Research Institute, "The Role of Agriculture in the Fast Growing Rwandan Economy: Assessing Growth Alternatives", Rwanda CAADP 2 Background Paper #2, February 2014.

Rwanda's systems and capacities to ensure adequate and effective management and governance of the agriculture sector.

8. **Nutrition and Household Vulnerability. Food production is increasing and food is flowing relatively easily within and outside the country.** However, the Third Integrated Household Living Conditions Survey (EICV 3) identified that in 2012, 82,000 households (4 percent) and 378,000 households (17 percent) had poor or borderline food consumption patterns, respectively. These households are vulnerable to seasonal shortages and also have inadequate provision in the case of drought or excess rainfall, both of which reduce harvests. Food insecurity follows a similar distribution across Districts as poverty. Improving nutrition faces multiple challenges, including limited knowledge of basic nutritional practices and inadequate feeding, with insufficiently diverse diets and inappropriate infant feeding. Food security also relates to the stability of rural incomes, and events including crop failures and seasonal scarcities can reduce access to food. In Rwanda, poor rural households farming small plots of land are the most food insecure.

9. **PSTA 3 and the proposed Program-for-Results (PforR) operation support a multisectoral framework of integrated interventions to tackle these issues, which are part of the Nutrition Action Plan (NAP) 2013-17.** An entire subprogram is focused on improving overall nutrition and reducing the vulnerability of rural households. Specific interventions are to: support households in nutritious garden practices and in diversifying food production (scale-up kitchen gardens program and encourage farmers to use land around their homes to grow diverse fruits and vegetables, including green leafy vegetables, and also to adopt intercropping practices); improve nutrition-related knowledge and practices for food-insecure households (nutrition gardens, intercropping and better nutrition, including cooking demonstrations, will be promoted through extension workers and Farmer Field Schools (FFS), District agronomists, agricultural village promoters, primary and secondary school gardens and a communication campaign in collaboration with the Ministry of Health (MINISANTE), Ministry of Education (MINEDUC) and the Ministry of Local Government (MINALOC). MINAGRI will support a multi-sectoral Behavioral Change Communication (BCC) initiative to improve and institutionalize nutritional knowledge; develop a program of bio-fortified food; expand the One Cup of Milk Per Child Per Day Program; continue to maintain a National Strategic Food Reserve; and strengthen Rwanda's Food Security Information System.

10. **Climate Smart Agriculture.** The World Bank and other Development Partners (DPs) have been supporting the GoR over the last 10 years to create and manage more productive and more resilient agriculture in the use of land, water, soil nutrients, and genetic resources. The government, with DP support, has been operationalizing its National Strategy for Climate Change and Low Carbon Development (2011). Efforts have focused on increasing the amount of irrigated land, reducing soil erosion, improving soil fertility with improved inputs including the expanded use of organic and inorganic resources, scaling up the production of key pro-poor food crops and export crops, increasing access to markets and improving marketing and improving livestock production and related products, and use of agro-forestry in production systems. All of these areas/interventions are captured and integrated in PSTA 3, which mainstreams the GoR's Climate Smart Agriculture and Climate Adaptation Strategy and which the proposed PforR operation seeks to scale-up to the national level.

11. **The Climate Smart Agriculture Strategy includes the following types of interventions, which are being operationalized through the proposed PforR support:** risk assessment and vulnerability mapping; program of construction of water catchment structures, to reduce damage from flooding and increase the availability of water during drought; greater emphasis to watershed management and soil retention measures, such as terraces, bunding, dissemination of fruit trees, and agroforestry; monitoring pest incidence and yields by crop, along with shifts in germination and harvest periods, and advising farmers on adaptations of cropping patterns; with the Ministry of Natural Resources (MINIRENA), exploring the options for promoting agroforestry, reforestation, and afforestation projects for carbon credit markets, especially the voluntary private markets, which are currently the most active, and developing appropriate methodologies for designing and marketing such projects.

Institutional Context of the Program

12. **As part of EDPRS 2, the PSTA 3 for the period covering 2013-2018 was approved by the Cabinet in July 2013, followed by immediate program implementation**. The PSTA 3's objectives are to transform Rwandan agriculture from a subsistence-based to a knowledge-based sector and accelerate agriculture growth to increase rural incomes and reduce poverty. The strategy encompasses four broad program areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer, and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues. These are designed to achieve the EDPRS 2 foundational goal of increased food and nutrition security as measured by a target of 90 percent of households having acceptable food consumption. PSTA 3 is supported by a Gender Strategy that requires addressing and mainstreaming gender issues in all phases of planning, implementation, and M&E of PSTA 3 activities. The strategy also stresses that program design will endeavor to avoid inadvertent negative impacts, for example, on women's nutrition and control of resources, while moving to a cash economy. The four program areas and their operational content are captured by 24 complementary subprograms (SPs).[7]

13. **Beneficiaries. PSTA 3's interventions will benefit and impact the 7.5 million farmers throughout the country through the various SPs.** EDPRS 2 with the support of PSTA 3 seeks to lift over 3 million out of poverty (over 50 percent of the poverty reduction in the country is attributed directly to agriculture). The proposed PforR operation will directly support implementation of the PSTA 3 program. Many beneficiaries will enjoy multiple benefits from the program as they will receive support from various SPs/activities (e.g., increased numbers of smallholders will benefit from: land husbandry/soil conservation terracing, contributing to sustainable crop yields; expanded access to small-scale irrigation, which will contribute to increased crop yields and diversification; improved livestock breeds and disease control, adding to increased household income and nutrition; increased access to improved seeds, fertilizer, and appropriate technology packages, contributing to increased crop and livestock productivity; strengthened farmers' organizations, enabling expanded access to more input and output markets; enhanced value chain development, yielding increased prices and sector value-addition; and strengthened institutional delivery systems, especially by the Rwanda Agriculture

[7] See further details on the 24 SPs in Annex 1.

Board (RAB), the National Agricultural Export Board (NAEB), Districts, and a more vibrant and broad-based private sector, which provide expanded and more competitive markets to smallholders). The economic assessment of PSTA 3 provides further quantitative details, based on representative farmer models, and illustrates the quantitative magnitude of these benefits for different types of beneficiaries (see Annex 5 for further details).

14. **PSTA 3 is implemented by MINAGRI, in line with its current organizational and functional structure and actors:** four departments (Planning, Inspection, Crop Production, and Animal Resources); two Task Forces (Irrigation and Post-Harvest Infrastructure); [8] two semi-autonomous implementing agencies (RAB and NAEB); three Single Project Implementation Units (SPIUs) that implement donor-supported projects (World Bank, IFAD, and African Development Bank); [9] and 30 Districts.

15. **The central government, through MINAGRI, provides policy, coordination, and financing leadership for PSTA 3, including strategic cross-cutting themes. For example, MINAGRI is responsible for implementation of the National Nutrition Plan, which it co-leads with the Ministry of Health and Ministry of Local Government (MINALOC).** Implementation responsibilities rest with the Task Forces, RAB, NAEB, SPIUs, Districts, and partnerships, with the expanded role of the private sector, including farmers' organizations/cooperatives. Implementation approaches vary, with a mix of national, District, community, and private program delivery.

16. **Rwanda's PSTA 3 is guided by the overall Comprehensive Africa Agriculture Development Programme (CAADP)** [10] **and operationalized by the Agriculture Sector Investment Plan (ASIP).** Rwanda was the first country to sign a CAADP Compact and to prepare an ASIP for implementation of PSTA 2 that was fully aligned with CAADP. Having fulfilled its first CAADP investment strategy (2008/09 – 2012/13), the country launched the second Rwanda CAADP ASIP based on PSTA 3 in June 2014.[11]

[8] As of July 1, 2014, these two task forces were integrated into the rest of MINAGRI's organizational structure.

[9] MINAGRI is taking steps in a phased manner to integrate/mainstream these three SPIUs into MINAGRI's organizational structure to achieve enhanced alignment of donor assistance, efficiencies, and sustainability.

[10] CAADP aims to help African countries reach a higher path of economic growth through agriculture-led development. CAADP's vision is to address policy and capacity issues across the entire agriculture sector and African continent. CAADP is entirely African-led and African-owned and represents African leaders' collective vision for agriculture in Africa.

[11] On June 9-10, 2014, a two day "High Level" meeting was held to mobilize national and international partners around CAADP. This meeting is part of an effort by African governments under the AU/NEPAD initiative to accelerate growth and eliminate poverty and hunger among African countries. Having successfully implemented the first cycle of CAADP, MINAGRI is now embarking on the second cycle of CAADP to operationalize the country's second EDPRS (2013-17) and the third phase of the Strategic Plan for the Transformation of Agriculture (2013/14-2017/18). At the meeting, the achievements of Rwanda's first CAADP and PSTA 2 were presented along with the PSTA 3 strategy, program, Results Framework, and ASIP. Clear sector prioritization of investment needs, funding modalities, harmonization of stakeholder activities for efficient delivery and stronger accountability mechanisms, and policies and priorities related to private sector development were also presented and generally endorsed. A memorandum of understanding (MOU) was signed by the government, private sector, civil society, and development partners, supporting the principles and objectives of PSTA 3/Rwanda CAADP 2.

C. Relationship to the CPS

17. **The proposed Agricultural PforR operation supports selected objectives and outcomes of the recently discussed Country Partnership Strategy (CPS) for 2014-2018.**[12] Under Theme 2 of the CPS: *Improving the productivity and incomes of the poor through rural development and social protection*, the PforR's proposed interventions will respond to three CPS objectives and seven key outcomes. They include:

- CPS objective 5. Improved agricultural productivity and sustainability. Key outcomes include: (i) marshland and hillside area under irrigation; and (ii) area of land developed with progressive, bench or radical terraces;
- CPS objective 6. Improved access of rural/small farmers to inputs, financing, and markets. Key outcomes include: (i) provide US$15-20 million in agriculture sector loans/financing; (ii) access to crop and livestock insurance; and (iii) number of smallholder farms that meet new market standards; and
- CPS objective 7. Improved agriculture value chains. Key outcomes include: (i) production of priority food crops increased; and (ii) increase of value addition captured within country for coffee and tea export crops.

D. Rationale for Use of Instrument

18. **The World Bank has been engaged in Rwanda's agriculture sector for more than 10 years through projects supporting various aspects of PSTA 1, PSTA 2, and now PSTA 3, which have collectively built up capacity and systems.** The GoR has demonstrated its commitment to achieve results through effective and efficient implementation of PSTA 1 and 2. It now makes sense to use an instrument that will help the government strengthen results-based programs by providing the right incentives.

19. **World Bank financing in support of PSTA 3 would add comparative value given the Bank's position to draw upon a wealth of global experience in the following areas:** (i) sustainable land management; (ii) input provision; (iii) increased irrigation in marshland and hillside approaches in support of increasing agriculture production and productivity; (iv) fostering of a more conducive policy environment for stimulating the private sector's role and investments in the agriculture sector; (v) increased marketing and sales of agriculture production and creation of on- and off-farm small and micro businesses; and (vi) providing advice to the GoR on adapting relevant agricultural policy and institutional and investment practices and innovations to the Rwandan context. These experiences and strong institutional partnerships would support the GoR's effective implementation of PSTA 3, thereby contributing to the achievement of strategic impact, outcome, and output level targets, underpinned by a results chain.

20. **As the past co-chair and current active member of the Agriculture Sector Working Group (ASWG), the World Bank has been very active in Rwanda's agriculture sector.** The ASWG is the country's main policy dialogue platform for agriculture and donor coordination. The Bank is active in the monthly meetings and various *ad hoc* subworking groups of the ASWG

[12] The Rwanda CPS was discussed on June 9, 2014.

(e.g., Mechanization, Extension, Irrigation, Soil Erosion, Rural Feeder Roads, etc.). The Bank actively supports the semi-annual Joint Sector Reviews (forward- and backward-looking). The Bank has participated in key deliverables of PSTA 2 and its annual objectives, including the formulation of various policies.[13] The Bank has also actively supported the preparation of both PSTA 2 and PSTA 3 through the ASWG, subworking groups, consultative forums, and preparation of Economic and Sector Work (ESW)[14] to provide empirical underpinnings for agricultural growth and market and competitiveness analyses in support of PSTA 3. The Bank will also stay active at the sector level, particularly in the implementation support for the PforR as outlined in Annex 10.

21. **Achievements from the successful implementation of ongoing World Bank-supported operations in the sector, the Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH) and Rural Sector Support Project (RSSP), phases 1-3, provide a strong foundation upon which to prepare the proposed PforR operation.** Both the RSSP and LWH projects[15] achieved commendable results in helping to transform Rwanda's rural farming sector. Under RSSP 1 and 2 (now closed) and the ongoing RSSP 3, farmers have moved from low-value subsistence production to a more irrigated system. Under RSSP, impressive improvements have been made in marshland rehabilitation and protection of hillsides against erosion. Similarly, LWH has made significant contributions to raising rural incomes, increasing productivity of hillsides, increasing crop yields, and improving the participatory approaches of farmers' organizations. Gender issues were reflected in implementation of these key operations. Additionally, nutrition has been an area of increased focus through promotion of home gardens, bio-fortified crops, and nutritional training via self-help groups.

22. **Outcomes from the implementation of PSTA 2 (2008/09-2012/13) were highly favorable, with over 90 percent completion of key objectives and targets.** The key *impacts* achieved related to the contribution of over 45 percent of the 12 percent reduction in poverty (2008-2012); and key *outcomes* achieved were improvements in sustainable land management, increased and improved input utilization, and significant productivity increases resulting from expanded irrigation. PSTA 3 implementation also started out strong in its first 11 months, following the same implementation pace as PSTA 2. PSTA 3 was designed taking into account key lessons from PSTA 2, including: (i) developing a strategy for the extreme poor in the lowest quintile; (ii) increasing resources for research and extension, with stronger linkages between them; (iii) carrying out, and utilizing for priority setting, the economic criteria (economic rates of returns/ERRs and net present values/NPVs) of land conservation, irrigation, and other large investments; (iv) pursuing low-cost irrigation options for high-value hillside crops; (v) focusing marshland and hillside irrigation investments for high-value crops; (vi) pursuing reduction of barriers to local and regional trade; (vii) expanding national coverage/scaling up the successful

[13] E.g., establishing the Post-Harvest Handling and Storage Secretariat and Losses Analysis; Fertilizer Regulatory Framework (nine bylaws and practices) and Recommendations; Water Users' Association; Soil Erosion Control Methodology; Malnutrition Reduction Strategy; Land Consolidation Review; Irrigation Policy; Poultry Strategy; Extension Analysis; decentralization of the One-Cow Program and various strategies (rice and meat industry and small animals and strategic environmental assessment).

[14] World Bank (2014), *Rwanda Promoting Agricultural Growth in Rwanda: Recent Performance, Challenges and Opportunities*, Report No. 86399-RW, Agriculture, Rural Development and Irrigation (AFTA2), Sustainable Development Department, Africa Region.

[15] The Rural Sector Support Program (RSSP 1, 2, 3) Series of Projects *(formerly known as Adaptable Program Loan (APL) series)*, 2001-current (US$176 million), and the Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH), 2010-current (US$141 million) and just approved Feeder Roads Development Project (FRDP), 2014-2021 (US$45 million).

models for CIP and LUCP; (viii) improving the quality and use of agricultural production statistics, including a food security information system; and (ix) strengthening the use and effectiveness of a sector-oriented M&E system by integrating and aligning project-level M&E systems, including gender-disaggregated data.

23. **The proposed Agriculture PforR operation is designed as a programmatic results-based approach in the agriculture sector.** The Program is based on well-functioning government fiduciary systems and practices, including contract and financial management (FM), governance and anti-corruption (GAC) systems, social and environmental regulations and systems, and technical capacities as demonstrated over the last 13 years in implementing World Bank-supported projects/programs in the sector. Additionally, MINAGRI has demonstrated strong gender-disaggregated monitoring and reporting against results/indicators in the Bank-financed operations. The PforR operation is also designed to reinforce and strengthen the government's own systems for delivery of key agricultural services, while putting in place processes to expand the role of the private sector in service provision and production and agro-processing investments.

24. **Given MINAGRI's demonstrated technical and administrative capacity in implementing the sector's strategic programs,** it is a natural progression to adopt the PforR instrument for this operation, as opposed to another Investment Project Financing (IPF) or Development Policy Lending (DPL). The PforR instrument's key features are to: (i) improve the efficiency and effectiveness of government program(s) of expenditures, using program systems, and strengthen them where needed; (ii) disburse directly against agreed and monitorable results; (iii) help build institutions and capacity under the program(s) being supported; and (iv) enhance partnerships with other donors in supporting the same government program of expenditures. The proposed PforR operation would help to consolidate the existing projects, programs, and sector budget support, as well as provide enhanced support and accompanying reforms to key strategic components of PSTA 3, under one set of coherent results, thereby generating greater sector-wide sustainable impacts. The instrument will also enable the Bank to use its convening power and collaborative working relationships to support the government's efforts to demonstrate to other DPs the key benefits of putting their resources into the PforR mechanism. This common approach would reduce the transaction costs for both the government and DPs.

II. PROGRAM DESCRIPTION (see Annex 1 for detailed Program Description)

A. Program Scope

25. **PSTA 3 is a five-year program covering the period 2013/14-2017/18. Its strategic objectives are to**:(i) intensify, commercialize, and transform the Rwandan agriculture sector to enhance food security and nutrition, reduce poverty, and drive rapid economic growth; and (ii) accelerate sustainable increases and an expanded private sector role in production, processing, and value addition and commercialization of staple crops, export commodities, and livestock products.

26. **Under EDPRS 2, PSTA 3's high-level targets are: agriculture growth of 8.5 percent per annum; the share of agriculture GDP reduced to 25 percent; and the number of households with good food consumption increased to 90 percent.** By increasing rural incomes and ensuring inclusive growth, the objective is for agriculture sector growth to significantly contribute to achieving the EDPRS 2 target of 11.5 percent GDP growth p.a. and poverty reduction from 45 percent to 20 percent by 2020, equivalent to lifting 3 million more Rwandans out of poverty by 2020.

27. **PSTA 3 comprises a set of four high-level and 16 intermediate-level results that are ambitious but achievable.**[16] Building on the solid performance of PSTA 2, the key results expected to be achieved under PSTA 3 are presented in Table 1.

Table 1: PSTA 3 Program Key Results (2013/14-2017/18)

Key High-level Results	Baseline (end-2012/13)	Target[a] (end-2017/18)
(1) Agricultural growth rate (% p.a.)	5.6 %	8.5 %
(2) Decreased percentage of rural population under national poverty line (2010/11)	44%	30%
(3) Increased agricultural land under "modernized" agricultural use[b]	24 %	50%
(4) Increased agriculture exports (% p.a.)	22%[c]	28%
Intermediate-level Results		
(1) Increased land effectively protected against soil erosion, based on agreed technical standards, and sustainably managed (Progressive/P and Radical/R terraces)[17]; T=Total	P: 802,292 ha R: 46,246 ha[18] T: 848,538 ha	P: 953,714 ha R: 81,337 ha T: 1,035, 051 ha
(2) Increased land developed with irrigation infrastructure, based on agreed technical standards, with adequate O&M. Main irrigation types: Hillsides/H and Marshlands/M	H: 3,075 ha M: 24,721 ha T: 27,796 ha	H: 7,575 ha M: 32,821 ha T: 42,376 ha
(3) Increased average productivity levels (crop yields) of major food and export crops and livestock.	Cassava: 15mt/ha Coffee: 2.2 kgs/tree/yr Milk: 4 ltrs/cow/day[19]	25mt/ha 3.0 kgs/tree/yr 8 ltrs/cow/day
(4) Increased total milk production (MT)	503,000 mt	724,000 mt
(5) No. of new technologies developed, released and adopted by farmers[20] (with gender breakdown in adoption rates)[e]	5	17
(6) Increased cooperatives/farmers' organizations that are graded A and B[21]	5	32

[16] In PSTA 2, MINAGRI demonstrated its capacity to achieve ambitious targets, and in many cases surpassed them (see paragraph 15). For PSTA 3, MINAGRI has sought to build its targets on its experiences and increasing capacities at various levels, while also factoring in the requirements for achieving an ambitious agriculture sector growth rate of at least 6.0 percent p.a. (in line with CAADP targets) and reduction of rural poverty, through a combination of policy, institutional, and investment reforms and effective implementation, supported by enhanced coordination and an expanded private sector role.

17 The main purpose of terracing is to reduce runoff and soil erosion on slopes and to improve soil quality and soil moisture retention. It is a sustainable land use technology for small farmers with limited land holdings. Also, a major aim is to conserve water and reduce runoff. Progressive terracing is carried out on slope gradients of 40-60% and radical terracing (bench like terraces) is used on slope gradients of 16-40%.

[18] This represents a baseline coverage of 73 percent (2012/13) and target of 91 percent by 2017/18.

[19] Milk production per cow.

[20] Which are consistent with Rwanda's competitive advantage. Technologies can come from global or local markets.

(7) Increased value of major competitive value chains[22] (total & exports) (US$)	2.3 b/132 m	3.8 b/231 m
(8) Increased private sector investments in agriculture sector (US$)	513[d]	1,263
(9) Increased agri-finance lending for agriculture investments (% of total)	3.6	18
(10) Increased agriculture production marketed (as % of total production)	28 %	35%
(11) Rehabilitated, upgraded and maintained rural feeder roads network (km)	14,374	25,061
(12) Enhanced results-focused institutional capacity of MINAGRI and Districts	Action Plans	Fully Operational.
(13) Enhanced and Gender Responsive Management Information System (MIS) Framework and Action Plan for Agriculture Sector completed, approved, initiated and fully operational[23]	Partially working, Draft framework	Fully Operational[f]
(14) Approved Seeds, Fertilizer and Agriculture Finance Policy, action plans prepared, agreed, and initiated (for each of the 3 policies)	Drafts	Implementation of policies
(15) Increased Women's Empowerment in Agriculture index for Rwanda (%)	91%	96%
(16) Food Consumption Score (which measures adequacy of food consumption	75	90

[a] Figures refer to cumulative figures.

[b] Refers to use of improved seeds (30%), fertilizer (30%), and mechanization (13%).

[c] Refers to the growth trends during the PSTA II period (2008 – 2012).

Sources of Baseline: includes EICV survey results (2010/11); national accounts; CFSVA Vulnerability Survey (2012); RDB (ref. private sector investments)

[d] Total of agriculture private sector investment from 2000-2013. The average of the last four years was US$103 million p.a.

[e] Based on several empirical surveys and studies, and the economic and financial analysis, it is estimated that by the end of the period an average of about 80% of the farmers will have adopted new and improved technologies. This will be one of the important demand parameters monitored by PSTA 3's enhanced M&E system.

[f] "Fully operational" includes preparation and dissemination of quarterly and annual progress reports on the key outputs, outcomes, and impacts of the agriculture sector, in line with PSTA 3 (including periodic analytical and evidenced-based studies on strategic themes).

28. **PSTA 3 has benefited from a recent World Bank ESW on empirical agricultural growth scenarios and market and competitiveness analyses**.[24] The objective of the ESW was to review the performance and results of Rwanda's First CAADP and PSTA 2 as inputs into the preparation of the Second Rwanda CAADP and review of PSTA 3's investment plan to assure the soundness of its assumptions and the efficiency with which Rwanda will achieve its goals going forward. The policy note recommended agricultural market opportunities at the national, regional, and global levels, analyzing the patterns of competitiveness and comparative advantage in Rwandan agriculture. While some of the crops identified for intensification in PSTA 3 by the GoR do not share equal competitive and comparative advantage, the GoR is pursuing pro-poor crops that can generate immediate income, raise families out of poverty, and build farmers' assets, allowing farmers to then diversify into more competitive crops.

29. **PSTA 3 Results Framework.** To operationalize PSTA 3, MINAGRI and its implementing agencies (RAB, NAEB, SPIUs) formulated a comprehensive and coherent Results Framework (RF). It is underpinned by an explicit results chain and the findings of evidenced-

[21] Grading will include a number of parameters such as inclusion of small and marginal holder, number of total HHs benefiting from input and output markets and services, participation and leadership of farmers/gender in managing cooperatives, and revenue generation.

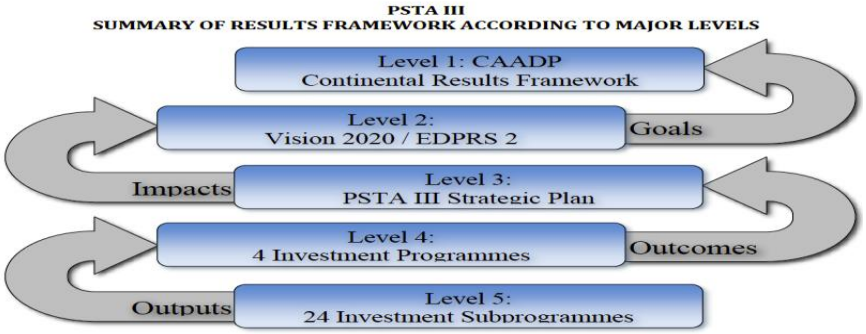
[22] Food crops, export commodities, livestock products, agro-processed.

[23] Fully operational means producing quarterly and annual reports and being used by the intended benefactors.

[24] World Bank (2014), *Rwanda Promoting Agricultural Growth in Rwanda: Recent Performance, Challenges and Opportunities*, Report No. 86399-RW, Agriculture, Rural Development and Irrigation (AFTA2), Sustainable Development Department, Africa Region. Two background studies for the ESW were: (1) The Role of Agriculture in the Fast Growing Rwandan Economy: Assessing Growth Alternatives. Rwanda CAADP 2: Background Paper #2. Prepared by Xinshen Diao*, Godfrey Bahiigwa and Angga Pradesha. IFPRI (Draft paper, January 31, 2014); and (2) Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study. Rwanda CAADP 2: Background Paper #1. Prepared by Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo (Associates for International Resources and Development (AIRD) (Draft paper, February 14, 2014).

based analyses, including a recent World Bank ESW on empirical agricultural growth scenarios and market and competitiveness analyses. Figure 1 illustrates this RF and the underlying results chain. The design and content of the RF highlights the key drivers and linkages between and within the PSTA's four programs to achieve the key strategic objectives and results at various levels (outputs, outcomes, and impacts). The RF has sought to help sharpen the evolving roles of public and private sectors while ensuring that the public sector focuses on appropriate roles, including provision of nonexclusionary public goods.

Figure 1: PSTA 3 Results Framework According to Major Levels



30. **The PSTA 3 comprises four strategic program areas and 24 component SPs.** The strategic program areas and their outcomes are:[25]

Program 1: Agriculture and animal resource intensification: (i) Soil erosion reduced and land sustainably managed; (ii) Land productivity for priority crops increased; (iii) Animal productivity increased and animal products diversified.

Program 2: Research, technology transfer and organization of farmers: (i) Improved technologies that are responsive to Rwanda's agro-ecological potential, men and women farmers' needs and resources, and market prospects; (ii) Enhanced integrated and market-oriented research, extension, and advisory services, with stronger research-extension linkages, resulting in a higher proportion of farmer adoption of improved technologies for both men and women; and (iii) Strengthened inclusive and business-oriented farmers' cooperatives/organizations with enhanced entrepreneurial skills for effective engagement in input and output markets.

Program 3: Private sector-driven value chain development and expanded investments: (i) Enhanced policy and business environment for expanded agricultural investments and value addition; and (ii) Competitive and private sector-driven value chain development and expanded commercialization of production for domestic and export markets, enabled by expanded access to finance, efficient and effective agricultural marketing systems, improved rural infrastructure, and expanded successful public-private partnerships (PPPs).

[25] The detailed RF for PSTA 3 shows the baseline and target for each outcome, as well as the underlying results chain.

Program 4: Institutional results-focused development and agricultural cross-cutting issues: (i) Enhanced capacity of agriculture and livestock sector and its institutions to deliver, facilitate, and manage efficient and effective agricultural services that expand access to both women and men farmers; (ii) Improved policy environment for enabling rapid, private sector-driven, and sustainable agricultural growth; improved and more effective M&E systems for enhanced sector management, coordination, and strategic results; and (iii) enhanced food security and nutrition for a larger proportion of rural and urban households.

31. **PSTA 3 has two costed scenarios, representing a mix of public and private sector investments over the five-year period.** The first is a "high-cost scenario" totaling US$1.9 billion of agricultural public investments; the second is a "medium-cost scenario" totaling US$1 billion with a higher level of private sector investments. Projected resources available from both the Treasury and DPs for PSTA 3 are projected at US$1.2 billion. Given an unrealistic budget gap of US$700 million under the "high-cost scenario," the PforR operation will support the "medium-cost scenario" under the ASIP, which is fully funded, based on past budgetary allocations/execution rates, and available funding figures from government and DPs. In addition, the ASIP's "medium-cost scenario" articulates a set of more sharply defined expenditure priorities that have strong linkages to strategic outcomes and outputs and the key drivers of the PSTA 3 RF and its results chain, thereby enhancing the prospects of achieving the main objectives and targets. The PforR's RF (see Annex 2) is derived directly from PSTA 3's RF based on the "medium-cost scenario."

32. **The total estimated cost for PSTA 3 public investments under the "medium-cost scenario" is approximately US$1.2 billion (Table 2), with an additional indicative investment level of about US$550 million from the private sector (including an estimated US$137 million for PPP activities).**[26] Overall, this level of funding is consistent with the government's allocations to the agriculture sector over the past five years (adjusted for inflation), coupled with the projected increases from government and DPs, given the high priority being accorded to the agriculture sector and the role of PSTA 3 in meeting EDPRS 2 objectives and targets. The "medium-cost scenario" also involves improvements in the composition of the proposed expenditure allocations, between and within programs and SPs, and envisions improvements in budgetary planning and execution, and M&E.

Table 2: Projected PSTA 3 Expenditures 2013-2018

Program	US$ million	% of Total
(1) Agriculture and animal resource intensification	628	52.3
(2) Research, technology transfer, and professionalization of farmers	86	7.2
(3) Value chain development and private sector investment	382	31.8
(4) Institutional development and agricultural cross-cutting issues	104	8.7
Total	**1,200**	**100**

[26] Based on consultations with the private sector, the GoR expects that the lion's share of private sector investment will be in irrigation schemes, mechanization, the inputs subsector (primarily seeds and fertilizer), food and export crops (primarily coffee, tea, horticulture, and flowers), livestock, hides and skins; value chain development (food, export crops, dairy/meat), market-oriented infrastructure for post-harvest marketing, and management systems.

33. **PSTA 3 financing is shown in Table 3, which reflects both existing and future commitments from DPs.** The funding modalities used for PSTA 3 are: (i) sector budget support, representing 17 percent of external funding to the sector (EU, DFID); (ii) ongoing investment operations/projects, representing 35 percent (IFAD, USAID, Swiss, Netherlands, World Bank, FAO); and (iii) the proposed PforR operation, representing 12 percent (World Bank, USAID, with other DPs exploring the viability of providing co-financing as part of ensuring aligned donor support to the sector).[27] However, this co-financing would not change the overall budget envelope and would not bring additional resources, but would mean switching modalities from either sector budget support or project financing to programmatic financing (PforR). The government, including the Ministry of Finance and Economic Planning (MINECOFIN), has reiterated its commitment to ensuring the PSTA 3 is funded in accordance with the medium-cost scenario, as illustrated in the proposed financing plan for PSTA 3. Should a funding gap emerge during implementation of PSTA 3, the government and DPs are confident that they will be able to close the gap. Enhanced annual planning and budgetary systems and enhanced M&E will help ensure adequate and prioritized funding to achieve the key targets. Private sector funding levels will be contingent on their specific and individual investment decisions, and will reflect recent trends, coupled with significant improvements in private sector strategies, an enhanced policy environment and sustainable incentive structure, and appropriate and viable models of PPPs. The PforR support operation is helping MINAGRI operationalize this financing strategy.

Table 3: PSTA 3 Financing Plan (2013/14-2017/18)

Source	**Amount** (US$ Million)	**% of Total**
Government	300	25.0
EU	160	13.3
IDA (LWH, RSSP, FRDP)	194	16.2
USAID*	138	11.5
IDA (Ag. PforR)	100	8.3
IFAD*	120	10.0
DFID*	90	7.5
Netherlands	10	0.8
Swiss	6	0.5
Japan/JICA	32	2.7
AfDB	20	1.7
FAO	30	2.5
Total Program Available Financing	1,200	100.0
PSTA 3 Costs/Requirements	1,200 [a/]	100
Funding Gap	0	0

Note: a/The detailed cost figure for ASIP costing show a cost of US$ 1.213 billion. It has been rounded to US$1.2 billion for simplicity.
* includes PforR.

34. **Assessment Results, Emerging Implications and Proposed Program Action Plan (PAP). The Bank's assessment mission (May 2014) and follow-up work involved a comprehensive review of PSTA 3, including a review of its RF and the proposed ASIP**. The review concluded that PSTA 3 is strategically relevant, technically and economically sound, and

[27] In the recently held High-Level CAADP meeting (June 9 and 10, 2014), all DPs signed a MOU with MINAGRI endorsing PSTA 3 and indicating their intention to provide financial and technical assistance within the framework of PSTA 3 (and its RF and "medium-cost scenario").

well supported by appropriate institutional arrangements from technical, fiduciary, social and environmental systems' perspectives. The preliminary results of the ongoing agricultural expenditure analysis confirms the rationale for public funding, while providing inputs to further sharpen expenditure priorities and management processes. The expenditure priorities include inclusionary access and benefits to farmers and other consumers to public sector investments that are classic public goods (e.g., nonexcludable agricultural research) that have been delayed because of a lack of private sector financing (e.g., post-harvest storage). PSTA 3 will promote actions that will remove these impediments in the future and foster PPPs. The three assessments (technical, fiduciary, and environmental and social systems) identified specific areas of risk and capacity "gaps," and recommended priority actions to enhance the implementation success of the Program. These actions constitute the core of the PAP, which comprises four strategic cross-cutting areas and their risk mitigation actions. Each of the associated SPs includes priority capacity development activities to ensure the results are achieved; they also contribute to reduced risks.

The Proposed PforR Operation

35. **Financed by a proposed IDA operation and co-financed by other DPs, the proposed PforR Program will support a time slice (three out of the five years) of the national PSTA 3 ("medium-cost" funding scenario), including its four programs and 24 SPs, as outlined below.** The PSTA 3 is a five-year program (from 2013/14 to 2017/18) and the PforR support operation would initially support years 1 - 3 (from 2013/14 to 2015/16), with potential additional financing for the last two years (2016/17 and 2017/18). The three-year funding window was requested by the MINECOFIN to align with the funding envelope available to the country.

36. **The main focus of the PforR operation will be to support the delivery of the strategic results of the PSTA 3 program, while also providing value-added contributions to the content and processes required to efficiently and effectively implement PSTA 3**, such as: (i) strengthening the implementation of key results and the underlying results chain in the PSTA 3 RF, while focusing on the RF for the PforR operation, which emphasizes the "core drivers" of agricultural growth; (ii) ensuring a sound balance and composition and effective management of agricultural public expenditures towards the key "transformative" outputs/activities; and (iii) supporting the action plans for accomplishing the key results and areas where there might be implementation and results risks (e.g., as reflected in the PAP and priority actions included in each of the SPs). Accordingly, the approach taken under the PforR will be to operationalize a strong results chain of the core drivers of PSTA 3 at the central level and in all 30 Districts. In this manner, the Bank's support will focus on leveraging strategic results for the overall PSTA 3.

37. **The PforR will support core components and activities of PSTA 3 while recognizing important linkages and synergies across the four programs and SPs**. While 88 percent of the PSTA 3/ASIP costs are allocated to nine SPs (considered core components), it must be noted that accelerated and inclusive agricultural growth is being driven and enabled through strategic and operational linkages between those nine SPs and the other 15 SPs; this includes expanded and enhanced market access, agricultural finance, and support to the PSTA 3 institutional framework. As a result, the six core drivers of agriculture growth and poverty reduction, as captured in the PSTA 3 results chain, are integrated throughout all four programs and 24 SPs, thus ensuring that

PSTA 3's design is both strategically relevant and technically sound to deliver on the government's key development objectives and targets. Therefore, the focus of the proposed PforR operation, through the Bank's and other DPs' intervention and financing, will be to support the efficient and effective operationalization of these six key "transformational drivers" of inclusive agricultural growth (see Table 4).

Table 4: Core Drivers of Inclusive Agricultural Growth

Land Husbandry	Private sector value chain development
Technology and research	Market oriented infrastructure
Agriculture Finance	Institutional Development

38. **Core Drivers: The focus of PSTA 3 is on intensifying the following 6 core "drivers" of sectoral growth, transformation and poverty reduction**.

(i) **Land Husbandry**: increasing productivity of crop, export, and livestock commodities, recognizing gender-differentiated approaches, which would improve household food security and nutrition and rural incomes, especially of vulnerable rural families. This would happen through empowerment of farmers and land husbandry actions including land conservation (terracing, increasing soil fertility), organic and inorganic fertilization, increased use of improved seeds and varieties, expanded land under irrigation, increased coverage and quality of extension services, and increased private sector-led mechanization;

(ii) **Technology and Research:** enhancing market-responsive technology introduction through research, technology transfer, strengthened research-extension linkages, and stronger and more effective farmers' organizations/cooperatives, while addressing relevant sustainability and climate change challenges;

(iii) **Agricultural Finance:** significantly expanding and strengthening accessible and inclusive agricultural finance products, and developing a sustainable agricultural finance policy framework and system (including savings mobilization and agriculture insurance) which would promote viable and inclusive investments, consistent with Rwanda's competitive advantage;

(iv) **Private Sector Value Chain Development:** stimulating expanded and inclusive private sector and market-driven value chain development and integration, facilitated by expanded models of effective PPPs;

(v) **Market-oriented Infrastructure:** expanding market-oriented rural infrastructure, especially prioritized soil and conservation works, irrigation, and post-harvest facilities; and

(vi) **Institutional Development:** strengthening institutional development and strategic cross-cutting themes, including:

- Effective multi-stakeholder formulation, consensus, and implementation of key policy reforms consistent with Rwanda's competitive advantage that will enable key drivers of the sector transformation process, in turn empowering farmers (including reforms on seeds, fertilizer, phytosanitary standards, value chain development incentive structures, and agricultural finance);
- Results-focused capacity development of key sector institutions and stakeholders at various levels (national and subnational);

- More efficient, responsive, transparent, and accountable decentralization of key agricultural services and their implementation;
- More effective and evidenced-based planning, budgetary, and M&E systems at various levels;
- Enhanced nutrition and food security;
- Climate change challenges; and
- Strengthened processes and mechanisms for more effective coordination within MINAGRI and with other relevant ministries/agencies, Districts (in support of ongoing decentralization), the private sector, and other key stakeholders.

39. **Role of the DPs**. **DFID, IFAD, FAO, EU, and the Netherlands are already providing technical assistance (TA) to address capacity gaps and actions defined in the PAP. These DPs are planning to expand their TA support over the PSTA 3 period to cover these same areas and other aspects that will achieve the PSTA 3 targets.** These same DPs are also part of the ASWG, which provides an important forum to coordinate the complementarity of TA interventions, also as part of the annual planning and budgetary processes. As part of the CAADP process, DFID, USAID, IFAD, and the EU made a MOU commitment (June 2014) to MINAGRI to support the programmatic approach to PSTA 3. Discussions are underway to explore the most appropriate modalities to be followed by these DPs, including co-financing the PforR operation. While these commitments would not bring additional resources for PSTA 3 (apart from the figures shown in Table 3 to fund PSTA 3 costs), they would potentially change the modality from sector budget support and project financing to programmatic support (i.e., PforR). Having multiple DPs finance the PforR operation would streamline and reduce transaction costs for the Ministry by having one mechanism with agreed upon results and a common set of disbursement-linked indicators (DLIs). It would also simplify the financing to support strategic results, whether policies, impacts, outcomes, and/or outputs. DPs who wish to provide co-financing under the proposed PforR operation will follow the same procedures as the PforR.

40. **Development Partner Co-financing. Once co-financing of the PforR by other DPs is confirmed, the most appropriate mechanism for their co-financing will be established (i.e., parallel financing, co-financing, establishment of a multi-donor trust fund, etc.)** To the extent that other DPs participate in co-financing the PforR, it is understood that their funding would need to fit in the overall program envelope under PforR financing and would be allocated to the same DLIs, according to a similar pattern of distribution (in agreement with the Common Framework of Engagement/CFE) of the MDTF. All existing procedures of the PforR mechanism (i.e., DLIs, verification protocols, PAP, Program Implementation Support, etc.) would apply to all co-financing provided to and from the MDTF.

B. Program Development Objectives

41. The proposed program development objective (PDO) *is to increase and intensify the productivity of the Rwandan agricultural and livestock sectors and expand the development of value chains.*

42. The proposed operation supports the GoR's strategic objectives of PSTA 3 with aims to enhance food security and nutrition contributing to a reduction in poverty and inclusive economic growth. The operation supports four broad program areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues.

C. Program Key Results and Disbursement Linked Indicators

43. **PSTA 3's key results were presented in Table 1.** As mentioned above, given that the PforR is supporting the PSTA 3, the PforR RF reflects a core of PSTA 3's comprehensive RF, except that it is for three years (2013/14-2015/16) instead of the full five years of PSTA 3 (see Annex 2). In addition, the PforR focuses on a smaller number of results and measureable indicators/targets, giving emphasis to the core drivers of growth. **Their associated DLIs are presented in Table 5**.

44. **Disbursement-Linked Indicators (= "Driver" Linked Indicators). The PforR operation will disburse against a set of agreed upon DLIs that will demonstrate evidence of achieving a selective set of strategic, achievable, and monitorable results**. The selection of the specific DLIs takes into account the following criteria: (i) a realistic balance between output and outcome indicators; (ii) a focus on "highly" strategic interventions whose effective implementation will help operationalize the "drivers" of achieving the PSTA 3 and PforR strategic development objectives, and also contribute towards the higher-level impact targets of PSTA 3 and (iii) the key risks of the Program. Table 5 highlights the proposed DLIs and the rationale for each.

Table 5: Indicative List of Results and Associated DLIs (2013/14 - 2015/16)

Result (Outcome/Output Levels)	Disbursement-Linked Indicator (Baseline and Targets - figures refer to cumulative amounts)
1. Increased soil erosion control	**DL 1**: Annual increases in terraced land area (progressive and radical), based on agreed technical standards (figures are cumulative) ▪ Baseline 2012: 802,292 ha (progressive); 46,246 ha (radical) Target by end of 2015: 903,240 ha (progressive); 69,640 ha (radical) **Rationale**: Expanded terraced land comprises key source of sustained productivity increases for vast areas of depleted soil (and also contributes toward reduction of productivity losses).
2. Increased area under irrigation and adequately maintained	**DL 2**: Annual increases of irrigated area (ha) in marshlands and hillsides, based on agreed technical standards, with adequate O&M (figures are cumulative) ▪ Baseline 2012: 3,075 ha hillsides; 24,721 ha marshlands Target by end of 2015: 6,075 ha hillsides; 30,121 ha marshlands **Rationale**: Expanded irrigated area comprises a strategic source of increase in crop productivity, diversification, and value-added activities.
3. Increased average productivity levels of major food and export crops and livestock	**DLI 3**: Increases in average crop yields per ha for key food and export crops and livestock (dairy) ▪ Cassava :Baseline 2012: 15 MT/ha Target for 2015: 18 MT/ha ▪ Coffee: Baseline 2012: 2.2 kgs of cherry per tree per year Target for 2015: 2.7 kgs of cherry per tree per year ▪ Milk per cow Baseline 2012: 4 ltrs/day:

	Target for 2015: 5.5 ltrs/day **Rationale**: Increased crop and livestock productivity is vital to achieve the overall sector growth rate target and reduced poverty; the proposed crops/livestock commodities are cultivated primarily by smallholders.
4. Improved generation and adoption of agriculture technologies, sensitive to agro-ecological potential, farmers' needs and market prospects	**DLI 4**: No. of innovation technologies introduced and released and adopted by farmers[28] ▪ Baseline 2012: 5 technologies Target by end of 2014/15: 10 additional innovation technologies (Adoption rates for the 3 years: 25%, 40% and 50%, respectively) **Rationale**: Enhanced technology introduction/transfer/dissemination/adoption from global, regional, and national markets, in an integrated and coordinated manner, comprise core drivers of agricultural growth and generate strong synergies with rural infrastructural investments and policy reforms supported by PSTA 3.
5. Increase in agricultural finance lending for agriculture sector (including production, agro-traders, and agro-processing)	**DLI 5**: Percentage increase in agricultural finance available of total finance ▪ Baseline 2012: 3.6% Target by end of 2015: 7.0% **Rationale**: To enhance private sector investment in agriculture, including from farmers and other private entities, and to increase agriculture productivity, accessibility to sufficient, affordable, and timely finance is necessary in order to purchase capital goods including equipment and post-harvest infrastructure, and to secure improved inputs and technical assistance.
6. Strengthened gender-sensitive MINAGRI agriculture sector MIS, including its operationalization and utilization	**DLI 6**: Enhanced Gender Sensitive MIS Framework /Action Plan for agric. sector completed, approved, initiated, and fully operational ▪ Baseline 2012: draft M&E framework (fragmented and partial) Target 2015: Enhanced MIS for ag. sector and action plan completed, approved, fully operational, and utilized (with periodic reports disseminated) **Rationale**: The achievement of ambitious targets under PSTA 3, especially considering the large proportion of women farmers, requires a significantly enhanced and effective operational MIS for the agriculture sector at various levels.
7. Enhanced operational policy environment for enabling rapid and sustainable agriculture growth	**DLI 7**: Approval of Seeds, Fertilizer and Ag. Finance Policy, and preparation and initial implementation of action plan (based on agreed milestones): ▪ Seeds: Baseline 2012: Draft of Policy exists Target by mid-2015/16: Seeds Policy Approved, action plan prepared and initiated ▪ Fertilizer: Baseline 2012: Draft of Policy exists Target by mid-2014/15: Policy Approved and action plan prepared (end 2014) and initiated (by mid-2015) ▪ Ag. Finance: Baseline 2012: None exists Target by end-2015/16: Approved and action plan prepared and initiated (by mid-2016). **Rationale**: Expanded access to and effective utilization of seeds, fertilizer, and agricultural finance by a larger number/proportion of smallholders, coupled with expanded role of the private sector, require important policy enhancements and their effective implementation.

45. **The above results and DLIs are designed and driven according to results chains** that link results at three levels – impacts, outcomes, and prioritized outputs – and are generated by prioritized lines of action and activities. These results and the DLI's focus on the "transformation drivers" of PSTA 3 are measured by "SMART" (specific, measurable, achievable, relevant, and time-bound) indicators and PSTA 3's corresponding ambitious but achievable transformative

[28] Improve policy framework to enhance enabling environment to encourage private sector investment. Innovative technologies can come from world or local markets.

targets. The complete table of the Results Framework and Monitoring is provided in Annex 2, and the complete DLI matrix is presented in Annex 3. It is understood that: (i) the focus and envisioned results of the DLIs reflect a core part of the drivers of agricultural growth and of the RF for the PforR; (ii) these drivers of agricultural growth and the RF will be reflected in MINAGRI's annual budgetary priorities, allocations, and execution of strategic activities; and (iii) the required budgetary levels and timely releases for supporting the achievement of the envisioned results reflected in the RF and DLIs will be supported by MINECOFIN, as part of the annual planning and budgetary cycle (including updated MTEF estimates). The policy reforms are timed in such a way that the seeds and fertilizer policies which are critical to produce some of the key productivity increases and targets in the first two years of the PforR operation will be implemented first. They will be followed by the agriculture finance policy, which will be important for delivering on the last two years of the PSTA 3 program.

D. Key Capacity Building and Systems Strengthening Activities

46. **Rwandan agricultural policies and strategies focus on intensification and increased market orientation of the smallholder agriculture sector; and farmers' cooperatives are seen as an important vehicle to achieve this goal.** Cooperatives and farmers' organizations play a key role in increasing productivity and marketing of food and export crops. Thus the process by which they are formed and strengthened is important. PforR will further strengthen cooperatives and farmers' organizations for both improved governance and effective delivery of enhanced services and linkages with input and output markets. New bottom-up and inclusive approaches are required to bring innovations to both on-farm and off-farm activities. Most of technological innovations and extension services are driven from the top, and therefore have limited outreach. Lessons from ongoing projects show that farmers with eroded human capital can benefit greatly from a bottom-up approach to the introduction of new appropriate technological processes and instruments that improve productivity and deliver extension and other services in a timely and cost-effective manner. The number of agricultural cooperatives in the country has expanded rapidly during the past few years - from 645 in 2008 to 1,877 in 2013. PSTA 3 envisages increasing the number of cooperatives from 1,877 to 2,500 by 2017-18, as well strengthening them to be more effective in serving their members. The key challenges are to operationalize the new approach and to mobilize the technical assistance required to build capacity at the farmer and cooperative level to implement the model. More focus therefore needs to be on building cooperatives' capacity, standardizing rules and operational guidelines, and improving the quality of their services to enhance farmers' organizations their ability to assume an expanded and effective role.

47. **MINAGRI has tested various methods of enhancing and measuring cooperatives' quality and performance.** These methods, especially a grading/rating system,[29] will be further

[29] The grading system consists of both self-evaluation by the cooperatives and an independent assessment by MINAGRI. A set of criteria are used to evaluate performance which includes governance and organizational functioning, inclusion of the poor, women and youth, membership size and diversity, delivery of services to members, operation and management costs, and revenue generation. The methodology consists of both self-evaluation (internal) and independent performance assessment (external) based on a set of agreed criteria. A periodic appraisal lets the cooperative institution know what is working well and what needs be improved. But grading is different from periodic appraisal. It involves judging the adequacy of the group and cooperative performance at a specific time. To assess the performance of each level and provide feedback, it is necessary to implement the grading system – both internally and externally. Internal grading system is carried out by the group and cooperative institution itself – most likely twice a year. The external one will be conducted by MINAGRI on a yearly basis.

enhanced during the PforR. The purpose of the grading system is to evaluate the organizational effectiveness, performance, inclusion, service delivery, and cost-effectiveness of self-help groups and cooperatives. It will also provide a platform to seek feedback from community members/farmers and identify areas for further improvement. The process of grading creates awareness among farmers and cooperatives and encourages them to take responsibility for their respective performance and progress, and it creates an environment for mutual learning. It will also serve as a motivational tool to recognize and incentivize high-performing groups and cooperatives for their accomplishments.

48. **The technical, fiduciary, and environmental and social systems' assessments highlighted four main types of cross-cutting risks; the resulting key actions and risk mitigation measures form the basis of the PAP.** The Integrated Risk Assessment Summary (IRAS) highlights a number of key risks and provides additional recommendations for risk mitigation as it relates to specific SPs. While the overall PSTA 3 is sound, these additional mitigation actions will facilitate smooth implementation and meet and contribute to international good practice. The main cross-cutting risks and mitigation measures to be supported during implementation as captured in the PAP are summarized below (and further detailed in the IRAS and the PAP matrix in Annex 8 and 9). These key capacity-building and system-strengthening activities have been agreed with the GoR to improve Program performance and enhance prospects for achieving the expected results.

49. **The enhanced enabling policy environment and expanded role and capacity of the private sector refer to:** the relatively infant stage of development and maturity of the private sector in the agriculture sector; the absence of clear and sound policies and supporting mechanisms to stimulate an expanded private sector role in input and output markets; and the relatively weak capacities of farmers' organizations/cooperatives. Accordingly, proposed actions to enhance required capacities and performance, as well as risk mitigation measures, are a core part of the proposed PAP.

50. **Evolving public sector institutional roles and enhanced capacities refer to important changes at the central and subnational levels, as part of the GoR's overall decentralization strategy.** Key MINAGRI implementation agencies (RAB and NAEB) are currently completing their strategic plans and undergoing a comprehensive restructuring, which includes an expanded field presence (to support the expanded role of Districts) to ensure greater sector efficiencies and effectiveness. Accordingly, selected key actions and risk mitigation measures are part of the proposed PAP.

51. **Operation and maintenance challenges and requirements refer to the challenges of ensuring that the significant expansion of productive rural infrastructure is well maintained and based on efficient and sustainable arrangements (especially soil and land conservation works, irrigation facilities, and rural roads).** Many farmer's cooperatives and organizations are relatively weak to ensure the required and timely O&M support, especially given the "public good" nature of this infrastructure, which warrants organized collective action. Accordingly, key actions and risk mitigation measures involving these maintenance aspects are part of the proposed PAP.

52. **Fiduciary, Social and Environmental Aspects. Overall, the fiduciary aspects of the relevant implementation agencies are sound and rated as Moderate risk. Some areas of improvement have been identified especially at the District level, which needs strengthening given the increasing proportion of funds channeled through and accounted for by Districts**. More specifically, the fiduciary assessment highlighted the aspects that need well-focused strengthening and appropriate mitigation measures to ensure robust and timely fiduciary accountability at all levels: (i) expenditure variance analysis; (ii) internal controls; (iii) internal audits; (iv) external audit; (v) implementation of the public procurement law, regulations, and procedures; and (vi) fraud and corruption (F&C) aspects, especially at the District level. Accordingly, relevant key actions are part of the proposed PAP.

53. **The Program's environmental and social risks are assessed as Moderate based on the assessment of the environmental and social systems and comparison of overall PSTA 3 targets and similar risks in the existing Bank-supported portfolio (RSSP 3 and LWH Project).** The PforR operation involves supporting a number of physical and economic activities involving various groups of participants. The infrastructural and economic activities of the overall PSTA 3 are expected to generate limited/negligible potential environmental and social impacts, and in most cases, are expected to generate positive environmental and social effects (drawing from ongoing relevant experiences). There are identified areas that can be improved in MINAGRI and the Districts to strengthen the existing proactive approach to preventing adverse environmental and social impacts which may arise from Program activities. Accordingly, the key actions, capacity building and risk mitigation measures, are part of the proposed PAP.

III. PROGRAM IMPLEMENTATION

A. Institutional and Implementation Arrangements

The Public Sector

54. **MINAGRI is the lead government ministry for the agriculture sector. Organizationally, it is composed of four main entities as follows**:

55. **MINAGRI Central** guides policy, strategy, and key programs for the Ministry. It comprises the Minister and Principal Secretary, and four departments/directorates: Planning, Inspection, Crop Production, and Animal Resources.

56. **Rwanda Agriculture Board (RAB)** is a semi-autonomous implementation agency of MINAGRI responsible for promoting food crop production. It has a national network of research stations, projects, and staff that focus on improved production and yields of food staple crops. Agronomists based in four zones corresponding to the four provinces are responsible for expanding farmers' access to enhanced extension services. The RAB is also responsible for all research and certification of seeds and houses two Task Forces (Irrigation and Post-Harvest Infrastructure) that were assimilated within MINAGRI's structure as of July 1, 2014, as they completed their mandates.

57. **National Agricultural Export Board (NAEB),** also a semi-autonomous implementation agency of MINAGRI, is responsible for export crop production. In the past it concentrated on coffee and tea, but NAEB is broadening its mandate to cover and expand horticulture and nontraditional export crops. It also has a national network of projects and staff focusing on improved production, yields, and competitiveness of export crops. NAEB agronomists, based in some Districts and on plantations, are responsible for expanding farmers' access to improved extension services in support of increasing export crops.

58. **Single Project Implementation Units (SPIUs)** were established to ensure efficient and timely implementation of a large portfolio of donor-funded projects and are headquartered at MINAGRI Central. Most of the projects being implemented by the SPIUs cover most of the 24 SPs. Three SPIUs are responsible for managing projects/operations funded by three key DPs: (i) IFAD-funded projects: the Kirehe District Water Management Programme; Project for Rural Income Through Exports; Climate Resilient Post-harvest and Agribusiness Support Project (PASP); (ii) AfDB-funded projects: Bugesera Natural Rural Region Infrastructure Support Project; Livestock Infrastructure Support Project; and (iii) World Bank-funded projects: LWH (basket fund), RSSP 3, and the Feeder Roads Development Project (FRDP).

59. **In addition to MINAGRI, six other government ministries have significant responsibilities in the agriculture sector, as follows**:

60. The **Ministry of Local Government (MINALOC)** is responsible for 30 Districts, which in turn are responsible for expanding local level service delivery. They promote agriculture development as part of their responsibility for local economic development. Funds are earmarked in District budgets for implementation of MINAGRI priorities as defined in PSTA 3 (currently 10 percent of MINAGRI's total budget). Although these resources pass directly to the Districts from MINECOFIN, they form part of MINAGRI's overall budget ceiling and programs. Each District and sector has an agronomist responsible for local level implementation of agriculture activities. These agronomists work closely with the RAB and NAEB agronomists in the Districts. The ongoing local government restructuring exercise is expected to further expand fiscal decentralization, including expanded earmarking of funds from MINAGRI and other central ministries, and to strengthen local government implementation capacities. Implementation of the ASIP, as well as the PforR operation, will involve expanded roles of local government actors, while also restructuring central government organizational and staffing structures to be more supportive of these decentralization changes/reforms. MINALOC also collaborates on implementation of the National Nutrition policy with MINAGRI, ensuring community training and service provisions to improve nutrition outcomes.

61. The **Ministry of Natural Resources (MINIRENA)** is responsible for state forests around the country, although MINAGRI is responsible for on-farm agroforestry. MINIRENA is responsible for environmental protection and in this capacity has its own programs of hillside terrace construction, which reinforce the land conservation terracing undertaken by MINAGRI. MINIRENA is also responsible for the Rwanda Natural Resources Authority (RNRA) water resources department, and seeks closer collaboration with MINAGRI in this area.

62. The **Ministry of Trade and Industry (MINICOM)** has the key responsibility of promoting business and trade growth and development, including expanded agribusiness. It leads the development of policy and strategy to accomplish Rwanda's goal of an expanding, competitive, and healthy private sector.

63. The **Rwanda Development Board (RDB)** is responsible for investment promotion in Rwanda. Although it concentrates on foreign direct investment (FDI), it also promotes local investment. It brings under one roof all government agencies responsible for investment. This includes key agencies responsible for business registration, investment promotion, environmental clearances, and privatization and specialist agencies that support the priority sectors of Information, Communication and Technology (ICT) and tourism as well as Small and Medium Enterprises (SMEs) and human capacity development in the private sector. RDB has a substantial portfolio of agricultural and agribusiness investment projects that it is promoting for private sector-driven investment, including expanding PPPs.

64. The **Development Bank of Rwanda** *(Banque Rwandaise de Development/BRD)* is the government's main investment arm and offers long- and medium-term loans. The GoR is pursuing privatization of the Bank and has signed an MOU with a prospective investor. In April 2014, the BRD had an agriculture and agribusiness loan portfolio of RwF 33.3 billion, accounting for a significant proportion of the Bank's total lending. Most agricultural loans were for coffee and tea production and processing and the import of fertilizer. On May 16, 2014, the International Finance Corporation (IFC) issued its first bond denominated in Rwandan francs, raising RwF 15 billion (about US$22 million) to expand the availability of long-term local currency finance for local businesses through the BRD.

The Private Sector

65. **In addition to the public sector agriculture entities, two other organizations are dedicated to supporting private sector actors in agriculture**:

66. The **Private Sector Federation (PSF)** is the representative umbrella body for the private sector in Rwanda and advocates and dialogues with the government for policies and programs that will promote private sector growth. Amongst its objectives are business promotion and development, building private sector capacity, and effective private sector advocacy. It is composed of nine chambers, including the Chamber of Rwanda Farmers. The Chamber conducts a program to train farmers and build entrepreneurship. The member associations of the Chamber cover most of the major agricultural commodities produced in Rwanda.

67. The **Rwanda Cooperative Agency (RCA)** is the representative body for the cooperative movement in Rwanda. There are 1,953 agricultural and 1,307 livestock cooperatives operating as farmer associations involved in crop production, agricultural savings and credit, livestock development, and processing and marketing of outputs. RCA promotes the interests of the cooperative movement and runs support and training programs to help cooperatives function and perform as private sector entities.

Procurement, Financial Management, Environment and Social Functions

68. **MINAGRI, RAB, NAEB, the SPIUs, and the Districts have an administrative department/unit as mandated by law. These units are responsible for their own procurement and FM related to their functions in carrying out the implementation of PSTA 3. While the SPIUs are responsible for their own procurement and FM, MINAGRI authorizes all procurement and expenditures made by the SPIUs.** Additionally, each of these implementing entities has an environmental and social specialist responsible for confirming that all activities of their respective entities are conducted in accordance with environmental and social laws, regulations, and guidelines as issued and regulated by MINIRENA/Rwanda Natural Resources Authority (RNRA), RDB, and MINALOC.

69. **The assessment of PSTA 3's implementing agencies indicates a good level of environmental and social management capacity, especially at the central level.** RAB, NAEB, and the three SPIUs in MINAGRI have dedicated staff responsible for management of environmental and social aspects within development projects. At the District level, these aspects are managed by staff reporting to REMA and MINALOC. The assessment also indicates the need to incrementally enhance the existing capacity and to build more capacity at the local level to conduct management and monitoring of environmental and social aspects. In addition to the proposed PAP, the PforR includes a separate SP specifically focused on environmental mainstreaming throughout the entire sector that will further enhance the capacity of MINAGRI, RAB, NAEB, and the Districts. It is recommended that as part of the annual reporting, MINAGRI, in collaboration with other implementing agencies, produce and submit to the World Bank an annual Program report for each fiscal year that provides information on the aggregate environmental and social performance reports, including information on grievances.

B. Results Monitoring and Evaluation

70. **Currently, M&E in the agriculture sector operates at the national and subnational levels, involving MINAGRI (coordinated by the Planning Department) and its main implementation agencies (RAB, NAEB, and the three SPIUs**). Each of these implementation agencies has its own M&E system and a number of data collection, reporting, and monitoring systems and mechanisms. Each entity plays a role in monitoring and reporting on the results, outcome indicators in the RF, and DLIs of the PforR operation. Arrangements for M&E of results and associated DLIs and indicators and specifically who is responsible for data collection and the data source are listed in the Program's RF (Annex 2). The current M&E system is sufficient to monitor, track, and report on the accomplishments of the DLIs and provide sufficient information for the verification process. In addition, specific steps being taken under the Program to strengthen the existing M&E arrangements, especially to take a more integrated sectoral approach (i.e., TA, capacity building, and incremental funds), are discussed in the IRAS and Annex 1.

71. **MINAGRI is planning an external mid-term evaluation of PSTA 3 in April 2015, and a final evaluation in December 2017**. MINAGRI is exploring the possibility of securing the services of the Development Impact Evaluations (DIME), given its previous and current baseline and evaluation work in the sector. Additionally, the World Bank is exploring conducting

a brief annual "deep dive" sectoral analysis following up on the recent Rwanda Agriculture Policy Note on specific areas of interest to both the GoR and the Bank.

C. Disbursement Arrangements and Verification Protocols (See Annex 3 for details)

72. **MINAGRI's Planning and Program Coordination Department will be responsible for gathering all data and evidence of completion of PforR results and DLIs from RAB, NAEB, the three SPIUs, Districts, MINICOM, and RDB by the end of each July (fiscal year is end-June)**. MINAGRI will present an annual report to the Prime Minister's Office (PMO) (responsible for monitoring all performance contracts), which will be responsible for independently verifying and validating all results reported and achieved, including attainment of the agreed targets for the DLIs. The PMO regularly contracts third parties for monitoring contract performance in various sectors including agriculture. This would also be the case with verifying completion of the DLIs of the PforR operation. The PMO would: (i) perform *ex-ante* site visits and field survey measurement and assessment; (ii) confirm that specified achievements have been completed based on relevant documentation and standards specified in the verification protocol (i.e., policy work, M&E reports); and (iii) provide independent technical verification of the yield statistics of national averages, for the baseline period and for figures generated and agreed by MINAGRI/RAB/NAEB and District agronomists (in line with current practices, which are expected to be improved during the next two years). Once confirmed, MINAGRI would present a verification report to the World Bank, upon which the agreed full disbursement or portion thereof would be made to the GoR.

73. **All proposed DLIs are scalable and targets are given in indicative annual time frame**. **However, once an indicator has been confirmed as achieved/completed, a disbursement request can be made based on the above-mentioned verification process**. The GoR has requested 25 percent of PforR financing proceeds on account of the DLIs met (2013/14) between the date of the Program Concept Note Review (April 14, 2014) and the date of the legal agreement for the PforR financing. Additionally, an advance on results of 5 percent has also been requested. A disbursement totaling 30 percent has been reflected in the Financing Agreement.

IV. ASSESSMENT SUMMARY

A. Technical (see Annex 4 for details)

74. **Program's strategic relevance**. **PSTA 3's four programs and SPs are strategically and highly relevant to improving productivity of food and export crops and animal resources and producing transformative growth of the sector with a focus on smallholders**. They are also of critical importance for transforming small subsistence farmers into commercial and market-oriented farmers, for promoting the development of value chains that provide off-farm employment, and for securing improvements in food and nutrition security.

75. **Technical soundness**. **PSTA 3's programs and SPs are a continuation, refinement, and promotion of increased focus on improving the enabling environment for greater**

private sector agricultural investment relative to those carried out under PSTA 2. PTSA 2 accomplished over 90 percent of its targets and surpassed many (in some cases, exceeding targets by 200 percent), and was directly responsible for 45 percent of the country's poverty reduction in the last five years. While 9 of the 24 SPs account for 88 percent of the public ASIP, the other 15 SPs catalyze and enable the majority of investments to be effective; the 24 SPs work together in a coordinated, sequenced, and complementary manner to achieve the Program's strategic objectives. One SP without the others would not achieve the desired development impact. The key drivers of agriculture growth and poverty reduction, as reflected in the results chain, are found disbursed throughout the four programs and 24 SPs. The World Bank team reviewed in detail the results chain for each PSTA 3 program and SP and found each to be technically sound and necessary to deliver on the key outcomes and associated impact targets.

76. **Institutional arrangements**. **The institutional and operational arrangements of MINAGRI, RAB, NAEB, the three SPIUs, and the 30 Districts were assessed to be adequate for implementing PSTA 3 and achieving the proposed results.** Also, the implementation of PSTA 3 is supported by MINAGRI's Agricultural Gender Strategy (AGS) (2012), which covers all aspects from policy and strategy to staffing and implementation to ensure that women farmers have equal access to Program benefits.[30] In addition, areas of potential improvement were identified and actions for improvement included in the proposed PAP.

77. **Expenditure framework**. **Building on PSTA 3's RF, the estimated total public sector cost for ASIP is about US$1.2 billion, with an additional indicative investment level of about US$550 million from the private sector**. This level of public expenditures is ASIP's "medium-cost scenario". In a recent high-level CAADP 2 meeting, the medium-cost scenario was endorsed by the GoR and DPs as constituting a credible financing level and plan. The appraisal mission has been able to obtain updated figures to complete the proposed PSTA 3 financing plan. This level is also consistent with past public agricultural expenditures and the government's and DPs' strong commitment to provide increased funding to the sector, in recognition of the sector's vital role in helping to meet country-level goals/targets and the technical soundness of the ASIP. Therefore, the expenditure framework and supporting management processes are sound and are expected to contribute to enhanced expenditure efficiencies and effectiveness, while contributing to the PSTA targets supported by the PforR operation.[31]

78. **Results framework and M&E capacity**. **PSTA 3 and the PforR's RF in its entirety (including the Strategic Objectives, PDO, PDO indicators, outcomes, intermediate results and indicators, and outputs) were reviewed and found to be sound, appropriate, relevant and underpinned by an explicit results chain,** specified at three levels, and measured by

[30] The main objectives of the AGS are to: (i) Institutionalize gender in the agriculture sector so that policies, processes, planning and operational mechanisms and structures/programs are gender sensitive; (ii) Develop capacities in the agriculture sector to enable gender sensitive programming so that technical, program and management of MINAGRI staff and stakeholders, and decentralized entities have adequate capacity to engender MINAGRI programs; (iii) To enhance the gender responsiveness in delivery of agricultural services; (iv) To promote equal participation in decision making processes; and (v) To develop and coordinate partnerships and collaborative mechanisms amongst government institutions, CSOs, private sector and development partners and integrate appropriate actions to respond to practical and strategic gender needs in the agriculture sector.

[31] MINAGRI arranged an independent team to carry out a mini-Agriculture Public Expenditure Review, building on and updating the key aspects of the previous Ag. PER (2007/08 to 2010/11).

"SMART" indicators and their corresponding baselines and targets**.** The RF has explicit linkages with Vision 2020 and EDPRS 2 and also with CAADP. The capacities of M&E units of MINAGRI, RAB, NAEB, the three SPIUs, and Districts were found to be sufficient to monitor and report on the Program's RF and the DLIs. However, capacity was identified as stronger at the national level and thus key strengthening actions and activities were included in the PAP.

79. **Economic Assessment**. **As part of the Technical Assessment, the Bank carried out quantitative and qualitative assessments of the PSTA 3 ASIP proposal. The analyses showed favorable results, confirming the strong economic soundness of and justification for the proposed Program and highlighting key underlying success factors and risks, also addressed in the PAP**. Since the PforR operation supports the PSTA 3, the economic assessment was conducted for the overall PSTA 3. In summary: (i) a 25-year cash flow model is used to assess the *ex-ante* productivity, effectiveness, and efficiency of public sector investments; (ii) a selection of key drivers of agricultural growth is quantified in the model to analyze the impact of changes in public sector investment costs by linking enterprise models and SP costs. The medium-cost scenario yields an economic NPV of US$722 million and a sound ERR of 24 percent. The results are consistent with the agriculture growth target of 8.5 percent p.a.; (iii) meaningful poverty reduction and improved food consumption are achieved through increased farm income and employment for a wide range of smallholders; (iv) estimated elasticities indicate the relative impact of different SPs, therefore confirming the soundness of the Program's expenditure balance and composition; (v) linkages between enterprise models and SPs highlight positive synergies; (vi) agriculture growth is driven by the nine quantified SPs, with linkages to the other SPs; (vii) effective institutions, adapted and implemented legal and regulatory frameworks, and effective targeting of disadvantaged beneficiary groups strengthen inclusive Program impact; and (viii) tracking impacts against a baseline with reliable M&E systems (aligned to the PSTA 3 RF) helps decision makers and DPs make better evidence-based investment decisions. In addition, in the implementation of PSTA 3 infrastructure investments, MINAGRI would apply economic criteria as part of its annual budgetary planning criteria and approach to ensure the economic viability of investing in the different types of soil conservation and irrigation infrastructure.[32] Further details of the economic analysis are summarized in Annex 4. The full economic assessment is presented in Annex 5.

B. Fiduciary

80. **The Integrated Fiduciary Systems Assessment (IFA) reviewed Program procurement and financial management systems and processes for handling fraud and corruption including fiduciary risks and risk management**. A more detailed description of the IFA can be found in Annex 6. The IFA entailed a review of the capacity of MINAGRI, NAEB, RAB, the three SPIUs (IFAD, AfDB, World Bank), and a sample of four (out of the 30) Districts on their ability to: (i) record, control, and manage all Program resources and produce timely, understandable, relevant, and reliable information for the borrower and the World Bank; (ii) follow procurement rules and procedures, capacity, and performance focusing on

[32] Guidance on types of investments in the agriculture sector that are financially viable are provided in the recent ESW done by the World Bank for the GoR: World Bank (2014), *Rwanda Promoting Agricultural Growth in Rwanda: Recent Performance, Challenges and Opportunities*, Report No. 86399-RW, Agriculture, Rural Development and Irrigation (AFTA2), Sustainable Development Department, Africa Region.

procurement performance indicators and the extent to which the capacity and performance support the PDO and risks associated with the Program and the implementing agency; (iii) investigate, control, report and manage fraud and corruption risks, and (iv) ensure that implementation arrangements are adequate and risks are reasonably mitigated by the existing framework.

81. **The fiduciary assessment revealed a few weaknesses[33] which are detailed in the assessment, however, despite these weaknesses the assessment concludes that the examined Program financial management, procurement and governance systems would be adequate to provide reasonable assurance that the financing proceeds will be used for intended purposes, with due attention to principles of economy, efficiency, effectiveness, transparency and accountability and for safeguarding program assets once the proposed mitigation measures have been implemented**. Further, the assessment concludes that the systems in place provide reasonable assurance that the program will achieve intended results through its procurement processes and procedures. The conclusion of the overall fiduciary system assessment is that the **risk** of program fiduciary system to help achieve the Program results is **moderate.**

82. **Program financial management systems**. **The review of the Program's FM arrangements indicated that there is legislative scrutiny of the Finance Law (annual budget) in conformity with the Organic Budget Law.** The budget is formulated through a consultative process involving the line ministries and MINECOFIN before scrutiny by the legislature and there are limited deviations from budget appropriations. However, sector strategic plans are not specifically aligned to the budget classification formats. Regarding Treasury management and funds flow, there is sufficient predictability of the availability of cash required for Program activities.

83. **The assessment of the accounting and financial reporting aspects indicated that periodic expenditure variance analysis is conducted and the government classification system is used for budget preparation and reporting.** The accounting systems facilitate the preparation of timely and reliable financial reports. However, the Auditor General has identified erroneous postings, unsupported debtors' balances, and unexplained reconciling items in RAB. In addition, the Districts do not incorporate the transactions of nonbudget agencies.

84. **With regard to internal controls, there is adequate segregation of duties in the payment cycle.** However, there is scope for improvement in internal controls in light of the main internal audit findings related to noncompliance with all procurement guidelines, inadequate supporting documentation, gaps in filing accounting records, and over-expenditure on certain budget lines. The internal audit function across Ministry-Districts-Agencies (MDAs – RAB, NAEB, the three SPIUs) is still at a nascent stage and capacity building is required to enhance

[33] Weaknesses identified were having qualified audit reports at districts level, low capacity of internal controls, lack of strict adherence to implementing the procurement legal framework and systems due to capacity limitations, including contracts awards through non open competitive methods, processing contracts not in the procurement plan, and prolonged period for bids preparation and evaluation than that prescribed in the legal documents, lack of publishing contract awards on media accessible to the public, inadequate arrangements to deal with F&C at the districts, challenges with retention of qualified staff, lack of information to prosecute allegations of corruption, challenge in contract management that may give rise to opportunities for rent seeking, including suspicious delays in payments of contractors.

expertise in IT audits, Value-for-Money audits, risk management, and payroll reviews. The review of the internal audit structure also needs consideration to ensure adequate staffing across the public sector.

85. **The Office of the Auditor General (OAG) is responsible for external audit of all entities associated with implementation of Program activities**. The independence of the OAG is enshrined in the Constitution and it has the mandate to audit all public expenditure. The Auditor General's audit coverage of reported government expenditure increased from 60 percent in 2007 to 75 percent in 2012. The enforcement of accountability at District level is limited given the absence of Public Accounts Committees (PAC) for that tier of government. The Auditor General's report is normally submitted within 10 months after the financial year-end but this period should be shortened to provide more time for legislative scrutiny.

86. **Program procurement management systems**. The procurement systems' performances are assessed based on the GoR's procurement legal framework and its implementation as to the degree to which the planning, bidding, evaluation, contract award, and contract administration arrangements and practices provide reasonable assurance that the Program will achieve intended results through its procurement processes and procedures.

87. **The GoR has an acceptable public procurement legal framework based on the UNCITRAL model; it is quite robust and covers all aspects of public procurement at all levels of government.** The GoR is moving toward modernizing its procurement function to improve compliance, efficiency, transparency, fair competition, value for money, and controls in public procurement. However the assessment revealed that in practice the implementation of the procurement law, regulations, and procedures needs strengthening, as there are irregularities in the implementation of the legal frameworks. In this regard, a number of procurement areas were identified for strengthening at the District level, such as: contracts awarded through nonopen competitive methods; tenders awarded that were not planned; periods for bids preparation and evaluation longer than prescribed in the legal documents; capacity limitations in terms of skilled staff to handle procurement of high-value contracts (although the PforR operation will not have any high-value contracts); lack of adequate written records of all procurement and contract documents; lack of contract awards published on media accessible to the public; and selection of consultants on an "Open Competitive" basis like bids for goods and works (without requests for expressions of interest).

88. **Governance and fraud and anticorruption systems**. **An assessment of the systems and processes for dealing with fraud and corruption (F&C) issues shows that Rwanda has strong institutional, organizational, and legal frameworks for controlling fraud and corruption when they occur**. Rwanda further strengthened its legal framework in 2013 with the amendment of the law to allow the Office of the Ombudsman (OM) to prosecute cases of corruption, though there is a transition to enable the OM to be properly prepared to take over prosecution of corruption cases from the National Public Prosecution Authority (NPPA). Rwanda also passed the Whistle Blowers Protection Act, 2013. An Organic Law n^{o}61/2008 of 10/09/2008 on the Leadership Code of Conduct is also in place to promote integrity in the public sector. Implementation and enforcement of these laws are quite robust and effective, and severe sanctions are applied to those found guilty of fraud and corruption; e.g., the names of those

convicted are published in the media and on the OM's website. The anti-corruption agencies have also been effective and have reasonable capacity to do their job, including covering the PforR operation. Analysis of data provided by the OM shows that out of 453 cases (2009-2013), 307 (about 68 percent) were investigated, with 9 sent to prosecution and 18 transmitted to other institutions, including the police. Many of the complaints received are related to maladministration, followed by complaints regarding local entities, procurement, and the justice sector.

89. **Overall, both the OM and the NPPA have reasonable capacity in terms of staffing and qualifications to investigate cases of corruption.** One constraint in the case of the OM is high turnover of investigators and the length of time it takes to replace them due to delays from the Ministry of Public Service and Labour (MIFOTRA). Overall, continuous professional development and capacity building for staff of the OM and NPPA will be necessary, since the majority of investigators are young and new. Other challenges include: (i) a shortage of suitably qualified fiduciary staff, especially as all 30 Districts have qualified audits, which increases the risks for fraud and corruption in the PforR program; (ii) difficulty of obtaining evidence and lack of information to prosecute allegations of corruption – the prosecution rate is quite low; and (iii) weaknesses in contract management, including delays in payments for contracts awarded. The PAP for the Public Sector Governance PforR operation includes specific measures to address these challenges by strengthening the PFM capacity through (a) training and professionalization of staff at the District level and there is a DLI to reduce the percentage of entities, including Districts with qualified audits, and (b) recruiting and training more internal auditors and procurement officers. These measures will have a positive impact by reducing the risks for fraud and corruption, in addition to the regular checks and audits done by the RPPA, the OM, and the OAG.

90. **The Parliamentary Public Accounts Committee (PAC) is relatively new (established in April 2011), but has proven itself to be capable and effective in providing oversight of financial management.** It has regularly called financial managers to account and has earned a reputation among the public for its robustness. Reports submitted by the OAG to the PAC are scrutinized and recommendations followed up. These reports are having a positive impact in enhancing the accountability of public institutions and officials. Consequently, Rwanda has relatively low levels of corruption and the systems in place both nationally and in the PforR implementing agencies provide reasonable assurance that the resources from the Program will be used for the intended purposes with economy and efficiency.

91. **Handling complaints and grievances in the PforR program.** Assessment of the implementing agencies of the Program (MINAGRI, RAB, NAEB, and the Districts) also suggests that the processes and systems for handling and reporting fraud and corruption are in place and functioning reasonably well. As required by anti-corruption and procurement law, all agencies have complaints handling systems. In the case of fraud and corruption, they report directly to the NPPA and the OM, who in turn will report to the World Bank as part of the compliance with the ACGs. In the specific case of the Districts, the PforR will use existing channels for complaints. For corruption, there are secured complaints boxes in all Districts, manned by the OM and checked quarterly. Complaints can also be made by phone calls, emails, and letters to the OM. The OM also has informers throughout the entire country, including

Districts who provide information on possible fraud and corruption to the headquarters in Kigali. In addition, the OM carries out surprise visits to these agencies. However, more needs to be done to improve internal controls due to capacity constraints in the Districts; capacity issues are being addressed in the PFRM PAP and are expected to have positive impact on mitigating the risk of fraud and corruption. The OM and the implementing agencies have in place a well-functioning system for receiving complaints, as does the procurement authority.

92. **Application of World Bank Anti-Corruption Guidelines.** The assessment also reviewed the capacity and commitment of the government to apply the World Bank's Anti-Corruption Guidelines in the PforR operation; the relevant government institutions include MINAGRI and its agencies and the oversight bodies (OM, NPPA, and RPPA). Each of these entities expressed their commitment to apply the AGCs in the PforR operation. Specifically they committed that: (i) firms or individuals on the World Bank's debarment or suspended lists shall not be allowed to bid for contracts or benefit from a contract or proceeds of the program – it is the responsibility of MINAGRI (the lead implementing agency) to ensure that all implementing and procuring entities have the list; (ii) the NPPA, the OM, and implementing agencies will share information on fraud and corruption in the Program with the World Bank; and (iii) the World Bank's Institutional Integrity Vice Presidency will be allowed to investigate any fraud and corruption allegations made against the Program (see Annex 6 for details of the application of ACGs).

C. Environmental and Social Effects (see Annex 7 for details)

93. **Given the nature and scope of the physical activities under the Program, the minimal adverse environmental and social impacts are anticipated to be site-specific and reversible.** Identified impacts can be effectively mitigated, based on existing environmental and social systems and the solid recent track record of the implementing agencies compliance with both national legislation and World Bank safeguards. **No anticipated Program activities are judged likely to have significant adverse impacts on the environment and/or affected people that are sensitive, diverse, or unprecedented.** The overall environmental and social risks of the Program are assessed as **Moderate**.

94. **The Environmental and Social Systems Assessment (ESSA) concluded that MINAGRI's environmental and social systems' policies and procedures are adequate for Program implementation, albeit there is a lack of human and financial resources, especially for coordination and monitoring of activities at the local level.** MINAGRI will utilize additional environmental and social expertise and a TA program to strengthen the risk management capacity. With diligent management of the environmental and social risks and implementation of the identified actions to address the gaps, MINAGRI can reduce environmental and social risks during implementation of the proposed PforR operation.

95. **Environmental Effects. The Program may include new irrigation schemes, proposed to be similar in scale to RSSP 1-3 project sites; such schemes are located in existing sites of agricultural land use, do not involve large-scale resettlement, and consist of land husbandry works (e.g., terracing), drainage canals and/or dams that are not higher than 10 m.** The potential *environmental impacts* of Program activities are generally well known and

understood by implementing authorities at the national and local levels. Potential environmental impacts include: soil erosion and quality deterioration; construction phase impacts; small dam safety-related impacts; water quality and quantity degradation (both surface and ground water); downstream flooding; surface water sedimentation; spread of waterborne diseases; introduction of invasive flora species; and loss of high-value trees, especially those with medicinal value. It is expected that the identified environmental impacts can be: (i) avoided through a careful site selection process, which entails conducting feasibility studies, an environmental impact assessment (EIA), and social screening; and (ii) reduced with implementation of known and demonstrated mitigation measures. At the same time, the Program will have a number of *environmental benefits*: (i) an opportunity for the GoR to advance its environmental agenda in the agriculture sector through SP 4.6, dedicated to environmental mainstreaming in agriculture; (ii) a soil conservation and land husbandry program that will contribute to more sustainable land and water management and decreased erosion; and (iii) mechanization, soil fertility management, and seed and livestock development, which will improve agricultural practices and increase food security in the country.

96. **Social Effects**. **The Program will pay specific attention to its potential *social impacts*, which include**: a chance of moderate physical resettlement and/or land acquisition related to Program interventions (construction of irrigation canals or small reservoirs) and temporary displacement due to land husbandry works; challenges of identifying relocation sites due to the limited land availability; loss of income from land due to demarcation of buffer zones; potential for limitations on access to natural resource use in or around protected areas; consolidation of land use; acquisition of land for agro-processing and off-farm activities; benefit sharing of commercial farming if land is rented; male capture of community institutions; obstacles for women and youth participation; difficulty of purchasing agriculture inputs for the very poor due to their limited access to micro finance; conflict over land ownership and use; and weak participatory decision making and lack of transparency. The Program is also expected to have significant *social benefits* for the rural communities in the target areas, such as increased productivity and commercialization of agriculture and improved quality and accessibility of agricultural services, thus improving citizens' incomes and overall welfare and quality of life, especially for the rural poor and vulnerable. Based on the approach established during implementation of other Bank-supported operations, the Program will target farmer groups with specific attention to gender issues, including in group and cooperative leadership, inclusion of vulnerable groups, and training in conflict resolution and family welfare. No significant changes in land use or large-scale land acquisition are expected from the proposed PforR.

97. **Sustainability. Ensuring environmental and social sustainability of Program investments requires mainstreaming sustainability planning at all levels of the government, including the continuous participation of target communities**. Currently, the challenge for the sector institutions under the Program is to ensure that decentralized decision making, transparency, and accountability are institutionalized to enhance sustainability of investments. This need has been recognized by MINAGRI and will receive support from the DPs, including implementation support to the Program by the World Bank.

98. **Capacity. Institutional arrangements for environmental management, including ESIAs, are mandated and established at all levels of government**. The legal/regulatory

procedures and policies for expropriation of land in the country adequately respond to the relocation and compensation for loss of assets, services, homes, and land. However, a common challenge is the ineffective implementation of these requirements and responsibilities due to lack of institutional capacity and financial resources at the local level. To address this concern, as part of the capacity building under the Program, the MINAGRI SPIU implementing LWH, RSSP, and FRDP will provide technical support to project stakeholders in all aspects of the Program, including the understanding and application of the ESIM. The capacity-building program will focus on improving the government's environmental and social management, including in the areas of: (i) implementation and oversight of the environmental and social assessment system within the Program; (ii) sustainability aspects of site selection and technical designs of the land husbandry and irrigation activities; (iii) documentation of involuntary resettlement and project-affected people and vulnerability assessments, including, where necessary, preparation of resettlement action plans (RAPs); (iv) screening of potential environmental and social impacts and public consultation; (v) enhancing gender-sensitive capacity building of local and national staff and service providers and gender responsiveness in agricultural service delivery; and (vi) good monitoring practices, including proactive use of grievance redress mechanisms; sampling of soil and water quality, and others.

99. **OP 7.50 on International Waterways is triggered as the Program activities will involve water extraction for irrigation activities from the streams flowing into international basins of the Nile and Lake Tanganyika**. Following the practice of the RSSP (phases 1-3), the Bank has notified riparian states as part of Program preparation. The Bank has assessed, however, that the proposed activities under the Program will not result in any adverse impacts to the riparian countries. Irrigation development and land husbandry are not expected to have adverse impacts on water quality levels. Even though agricultural intensification and increased use of agricultural inputs are objectives of the Program, pre-Program input use levels are very low, and modest increases and sustainability measures built into the Program design are not expected to have an adverse impact on water quality. In addition, environmental and pest management plans are routinely implemented in the Program to mitigate such impacts to minimal levels. **The Program will not have any adverse effects on the quantity or quality of water flows to any other riparian states**.

D. Integrated Risk Assessment Summary

Risk	**Rating**
Technical	Moderate
Fiduciary	Moderate
Environmental and Social	Moderate
Disbursement Linked Indicator	Moderate
Other	Moderate
Overall Risk	**Moderate**

100. **The Integrated Risk Framework (Annex 8) provides details of the risk analysis and proposed mitigation measures**.

101. **Overall Risk Rating Explanation**. **The overall risk is rated Moderate given that the rating is expected to reflect risks *prior* to the mitigating activities contemplated under the Program and documented in this Program Appraisal Document (PAD). Although the PforR lending instrument is new to the client, the PSTA program that it will support has a five-year history (2008-2012) of robust performance**. Satisfied with the fiduciary performance and PSTA 2 results, the EU and DFID have provided significant sector budget support for PSTA 2 and 3. Additionally, the EU has been providing direct budget support to Districts. Bank lending will benefit from TA support from DFID and the Netherlands, and there will also be a partnership with the EU on strengthening Districts' fiduciary capacity along with other donors on implementation support efforts. Lessons gained from the Bank-supported LWH and RSSP have also been brought into PSTA 3. At the same time, the Program will expand the role of the private sector, while readjusting the roles of MINAGRI's RAB and NAEB as part of the government's ongoing decentralization reforms and strategies. The ambitious but achievable targets also contribute to the Moderate risk rating, but they are considered quite manageable with support of the PAP.

E. Program Action Plan

102. **A PAP (see Annex 9 for more details) has been prepared with specific Program actions related to technical, systems, agency capacity, and performance, and includes risk mitigation measures that will be carried out to improve the Program based on the various assessments and key risk management measures proposed in the IRA**. The technical, fiduciary, and environmental and social systems' assessments highlighted five main types of cross-cutting risks; the resulting key actions and risk mitigation measures form the basis of the PAP: (i) enhancing the enabling policy environment and an expanded private sector role and capacity; (ii) strengthening evolving public sector institutional roles and enhanced capacities; (iii) strengthening the O&M of key productive rural infrastructure; (iv) strengthening the implementation of fiduciary, environmental, and social systems at the national and District levels; and (v) strengthening the agriculture public expenditure and planning framework.

103. **Annex 8 highlights key risks and provides additional inputs for the PAP with respect to specific SPs. While the overall PSTA 3 is sound, these additional actions will facilitate smooth implementation and meet and contribute to international good practice**. The main cross-cutting risks and mitigation measures and actions to be implemented during the Program and found in the PAP are summarized below and specific actions are listed in Table 6.

104. **An enhanced enabling policy environment and expanded private sector role and capacities refers to:** the relatively infant stage of development and maturity of the private sector in the agriculture sector; the absence of clear and sound policies and supporting mechanisms to stimulate an expanded private sector role in input and output markets; and the emerging capacities of farmers' organizations/cooperatives. Accordingly, proposed actions to enhance capacities and performance, as well as risk mitigation measures, are a part of the PAP.

105. **Strengthening public sector institutional roles and enhanced capacities refers to important evolving changes at the central and subnational levels, as part of the government's overall decentralization reforms and strategy.** MINAGRI agencies (RAB and

NAEB) are currently completing strategic plans, including incorporation of gender and nutrition, and are undergoing enhanced restructuring, with expanded field presence (to support the expanded role of Districts) to ensure enhanced efficiencies and effectiveness. Accordingly, key actions and risk mitigation measures are a part of the PAP.

106. **O&M challenges and requirements refer to the challenges of ensuring the significant expansion of productive rural infrastructure is well maintained and based on efficient and sustainable arrangements (especially soil and land conservation works, irrigation facilities; etc.).** Many farmers' cooperatives and organizations are young and their capacities are still developing and need strengthening to ensure the required and timely O&M support, especially as the "public good" nature of this infrastructure warrants organized collective action. Accordingly, key actions and risk mitigation measures are a part of the PAP.

107. **Fiduciary, and environmental and social systems aspects. Overall, the fiduciary and environmental and social systems of MINAGRI, RAB, NAEB, and the SPIUs are sound and sufficient to adequately deliver the results of the Program according to these systems' regulations and requirements. The overall risk is rated as Moderate.** However, some areas would benefit from strengthening, particularly at the District level considering the increasing proportion of funds being channeled through and accounted by Districts. Specifically, the fiduciary assessment highlighted the following areas at the District level that would benefit from strengthening and appropriate mitigation measures to ensure robust fiduciary accountability at all levels and times: expenditure variance analysis; internal controls; internal audits; external audit; implementation of the public procurement law, regulations, and procedures; and increased transparency by publishing contract awards. Accordingly, the key actions are a part of the PAP.

108. **Agriculture expenditure and financing framework. There is a need to further strengthen the agriculture planning and budgetary allocation system, coupled with an enhanced MIS to ensure adequate and prioritized levels of funding PSTA 3**. An improved planning and budgetary process has been in place since 2013/14 and TA support (from USAID, EU, and IFAD) to MINAGRI will provide further improvements. MINAGRI and MINECOFIN will work closely to strengthen the planning process. In addition, there will be intensified government-DP dialogue as part of the annual budgetary cycle in support of the PSTA 3 requirements

109. **The environmental and social systems risks are assessed as Moderate based on the review of the systems and comparison of overall PSTA 3 targets with risks in the existing Bank-supported portfolio (RSSP 3 and LWH Projects).** The Program involves supporting a number of physical and economic activities involving various groups of participants, including women's groups. The infrastructural and economic activities of the Program are expected to have limited/negligible potential environmental and social impacts, and in most cases, are expected to generate positive environmental and social effects (drawing from ongoing relevant experiences under PSTA 2). However, there are some capacity constraints in MINAGRI and at the District level.

110. **The key action areas, capacity building, and risk mitigation measures to be part of the PAP are shown in Table 6**:

Table 6: Summary of the Program Action Plan (PAP)

Area 1: Enhanced enabling policy environment and expanded private sector role and capacities
- Prepare and implement well-focused and updated policies and strategies of RAB and NAEB, including gender mainstreaming and incorporation of nutrition. TA support from USAID, DFID, IFAD, and EU is addressing these issues. - Prepare position paper on strategic PPPs to pursue in the sector.
Area 2: Evolving public sector institutional roles and enhanced capacities
- Ensure the reforms/strategic plans of RAB and NAEB are completed and implemented, including appropriate integration with the ongoing restructuring. - Complete integration of independent SPIUs into RAB, NAEB structure (and support implementation of action plan for smooth transition, integration, and capacity development). TA is being provided by the EU, USAID, IFAD, FAO and DFID to strengthen the evolving public sector roles and enhanced capacities at central and District levels, as well as an inclusive private sector. - Prepare and implement a capacity development plan for decentralized reforms/restructuring.
Area 3: **Operation and maintenance challenges and requirements**
- Implement and strengthen a monitoring scheme to confirm rural infrastructural investments have appropriate O&M arrangements and mechanisms in place and monitor implementation of O&M measures. - Implement O&M monitoring system to monitor O&M of major rural infrastructure (as part of the enhanced MIS for agric. sector). - Conduct well-focused capacity development/training activities of farmer-level organizational structures on O&M mechanisms. The ongoing World Bank-financed projects (LWH and RSSP 3 series) include support for addressing these O&M challenges.
Area 4: Fiduciary, environmental, and social systems
- MINAGRI, in collaboration with key actors, prepare an operational action plan to address and strengthen relevant fiduciary aspects**,** including fraud and corruption, with an emphasis on District-level capacities. - Provide on-the-job training to District accounting staff focusing on the consolidation of nonbudget agencies at the District level. - Provide on-the-job training to OM and NPPA investigators. - Develop and implement a communications strategy to sensitize stakeholders about the Program and complaints mechanism. - Develop and maintain a database of complaints and responses (MINAGRI). - Assess the risk-prone areas of the program at the District level and develop a risk profile to be monitored through the program life ensuring that timely mitigation measures are undertaken. - Reconcile the accounting/financial statements before and after the merger of both RAB and NAEB. - Implement the agreed fiduciary actions, including fraud and corruption systems. - In collaboration with participating ministries and agencies, develop a consolidated Environmental and Social Implementation Manual based on existing government guidelines; and conduct training on the understanding and application of this Manual at the national and District level.
Area 5: Ag. expenditure and financing framework
- MINAGRI will work closely with MINECOFIN to strengthen the agriculture public expenditure planning and budgetary allocation system, coupled with an enhanced MIS, to ensure adequate and prioritized levels of funding to PSTA 3. An improved planning and budgetary process has been in place since 2013/14 and TA support (from USAID, EU, and IFAD) to MINAGRI will provide further improvements. In addition, there will be intensified government-DP dialogue as part of the annual budgetary cycle in support of the PSTA 3 requirements.

Annex 1: Detailed Program Description

1. **The PforR development objective is to** *increase and intensify the productivity of the Rwandan agricultural and livestock sectors and expand the development of value chains.* The proposed operation supports the Government of Rwanda's strategic objectives of the Transformation of Agriculture Sector Program Phase 3 with aims to enhance food security and nutrition, contributing to a reduction in poverty and inclusive economic growth. The operation supports four broad program areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues.

2. **PSTA 3 has four strategic program areas comprising 24 subprojects (SPs):** Program 1: Agriculture and animal resource intensification; Program 2: Research, technology transfer, and organization of farmers; Program 3: Private sector-driven value chain development and expanded investments; and Program 4: Institutional results-focused development and agricultural cross-cutting issues.

3. **To accomplish the Program Development Objectives (PDOs), the Program finances the following types of activities and expenditures**: labor to construct terraces; labor and materials for small-scale hillsides and marshlands irrigation systems; purchase of farmer equipment (tractors, power tillers, planting machines, harvesters, post-harvesting machines, agro-processing machines); labor for training on input use, extension services, and livestock production; subsidies for seeds and fertilizer; purchase of livestock; funding of labor for agro-forestry, value chain research, and technology programs; labor and equipment to expand Farmer Field Schools (FFS); training and capacity building of farmers' and livestock cooperatives and food, export, and livestock entrepreneurs; and equipment, materials and labor for post-harvest infrastructure including storage and drying facilities, and community innovation centers.

4. **There are no high-risk activities in the Program which are or need to be excluded from the PforR operation**. A detailed description of the Program and its scope follows.

Program 1: Agriculture and Animal Resource Intensification. Program 1 comprises six SPs.

5. **Soil Conservation and Land Husbandry. Since 90 percent of domestic cropland is on slopes ranging from a 5-55 percent gradient, investing in land management structures and training are central to improving productivity**. The actions under this program involve scaling up the successes of both PSTA 1 and PSTA 2 with progressive and radical terraces, accompanied by soil fertility management and soil erosion control, including building water management infrastructure, lime and organic fertilizing, forming Water Users' Associations (WUAs), and training farmers in irrigation. For less steep slopes, progressive terracing and agroforestry will be implemented to reduce erosion and increase the economic returns from the land. In addition to construction of terraces, a systematic program of soil conservation will be implemented throughout the country. Integrated watershed management approaches will be implemented and scaled-up nationally. Soil testing capabilities will be expanded and the nutrient levels of inputs monitored. This SP will both improve information around soil management and continue to

develop a sustainable approach to land husbandry and soil protection. *Specific activities are:* creating land protection structures; training on crop residue management; scaling-up agroforestry programs; and improving the understanding of Rwanda's soils. An important underpinning will be training on land ownership, and the right of women to equal ownership of and access to land resources.

6. **Irrigation and Water Management**. **Irrigation is a key strategic activity in PSTA 3. Irrigation is important to increase agricultural productivity by allowing multiple cropping and reducing vulnerability to weather shocks.** This plan therefore proposes continued investment in irrigated agriculture to harness Rwanda's freshwater resources and increase production and to provide food security to rural households. The total area under irrigation is 27,796 (2013), including 3,075 ha of hillside irrigation and 24,721 ha of marshland irrigation. PSTA 3 plans to increase this by 20,340 ha (15,000 ha marshlands and 5,340 ha hillsides). This irrigation development will take place in line with the National Irrigation Policy, the Law on Water Users' Associations, and the Irrigation Master Plan. *Specific activities are*: (i) developing public sector irrigation (small-scale irrigation based on water catchments where feasible and training farmers' organizations in developing such systems) – as part of this activity, MINAGRI will work with Districts to develop District Master Plans for Irrigation. Efforts will be made to get youth cooperatives involved in planning for and implementing irrigation projects, especially small-scale systems; (ii) developing private sector irrigation; capacity building in irrigation extension – extension programs will accompany irrigation development to ensure effective and sustainable management. WUAs will be established and both male and female members trained on key issues, including schistosomiasis; (iii) applying lessons from Integrated Watershed Management (IWM) experiences and developing IWM in additional watersheds; and (iv) developing hydrological information for watershed management.

7. **Agricultural Mechanization. Currently there are relatively low levels of domestic mechanization and manufacturing of the required tools. Only about 12 percent of farm operations are mechanized; the target is to achieve 25 percent mechanization by 2017**. Mechanization has many benefits. It contributes to improving productivity of cultivated land and facilitates expansion of cropping areas, improving overall food security. Mechanization also eases labor constraints, including seasonal shortages, and reduces the requirement for physical drudgery, leading to both improved production and lifestyles for farmers. Agro-processing and value addition through mechanized equipment can also generate employment and raise rural incomes. MINAGRI has set up a workshop facility in Kafue, Kigali where new imported machinery is stored in the workshop and then sold through a lease agreement with farmers, where the machinery serves as collateral. When the farmer has made the full capital and interest payment, he owns the machinery. A mobile workshop has also been established to install and service farm machinery. This SP aims to accelerate the mechanization process through further provision of necessary equipment, tools, and training. *Specific activities include*: assessing and developing mechanization options; facilitating investment and financing for mechanization; incorporating mechanization in irrigation schemes; and training for mechanization.

8. **Inputs to Improve Soil Fertility and Management. Fertilizer use has increased since 2007. The fertilizer application rate in Crop Intensification Program (CIP) areas reached an annual average of 29 kg/ha/year in 2011-2012 compared to a national average of 4.2**

kg/ha/year from 1998-2005. This has increased crop yields, especially for maize and wheat. Maize yields increased from 0.65 MT/ha in 2000 to 2.5 MT/ha in 2010, while wheat yields increased by 2.5 times during the same period. Fertilizer in Rwanda has been used primarily on maize, wheat, rice, potatoes, coffee, and tea. These crops are among the strongest in market linkages, which gives farmers a better chance to recover the fertilizer expenditures plus profits. However, application rates are still below recommended levels for these crops, and for other crops it will be profitable to begin to apply fertilizers. Increasing the volume of production will require demonstration to farmers of the benefits of fertilizer use. The primary focus of this SP is increasing fertilizer use. The second goal is gradual privatization and liberalization of the fertilizer subsector, including a private import, distribution, and sales network for fertilizers and other agro-inputs, without losing the incentives for farmers to apply inputs. Privatized fertilizer supply chains will better match fertilizer use with different soil conditions and cropping patterns. *Specific activities include*: establishing a policy for successful privatization of input markets; improving the input distribution network by strengthening the network of private agro-dealers and distributors through training and policy measures that increase the profitability of firms in the network; scaling up fertilizer and seed distribution by combining advisory services with input distribution and use of microfinance to recover costs; phasing down the transport subsidy on fertilizers and encouraging fertilizer import by the private sector; improving the infrastructure for fertilizer distribution; and improving soil fertility management through use of organic fertilizers and lime.

9. **Seed Development. Sufficient quantities of quality seed are a critical resource for agricultural development. In Rwanda, there is strong public sector involvement in all seed sector components; however, private sector involvement is needed and should be "crowded in**." There have already been significant achievements regarding the legal framework concerning seeds, increased production, and the building of basic infrastructure for reinforcing production and quality control. Under PSTA 2, farmers received both high-quality seed varieties and advisory services in seed and crop production. However, challenges remain, including: (i) inadequate quantities of seeds produced nationally for some crops which forces the government to import seeds, particularly for maize and wheat; (ii) poor quality of internally produced seed; quality deterioration has occurred during seed production and storage; (iii) poor sanitary status of seed and the prevalence of crop pests and diseases; (iv) poor germination of seeds distributed under the CIP to date; and (v) limited effective distribution. Therefore, this SP has two key orientations: to develop production, quality, and maintenance of seeds; and to establish demand for high-quality seed (bio-fortified with higher levels of key micronutrients wherever possible[34]) and ensure that demand is met and maintained through effective distribution and capacity building in relation to seed use. *Specific activities include*: (i) implementing a formal seed system to provide appropriate seed varieties to farmers; (ii) developing and identifying new and more productive varieties; (iii) multiplying and distributing these on a timely basis and at an acceptable price for farmers; (iv) maintaining quality control through training and regulatory systems. Certified seed is the highest quality, most expensive seed and is produced only by certified actors. RAB and the National Seed Laboratory are responsible for quality control and the Rwanda Seed Enterprise (RSE) buys, processes, and sells the seed through a network of

[34] Higher yielding bio-fortified beans (iron) and orange flesh sweet potatoes (vitamin A) are already cultivated in Rwanda. Maize fortified with vitamin A is in the final stage of trials, and cassava (vitamin A) is being requested from the Democratic Republic of the Congo, where it is already grown.

private agro-dealers. MINAGRI will work with RSE to produce and distribute certified seeds for CIP crops, including gender training for the agro-dealers to ensure women have enhanced access to improved seeds. Quality declared seeds (QDS) are a high-quality formal seed grade locally produced by private QDS seed multipliers, with lower levels of quality control than certified seed. Currently, the demand for quality seeds in crops such as maize, wheat, and potatoes is greater than supply; and (v) facilitating the import of seeds and planting materials.

10. **Livestock development via increasing the quantity and quality of animal products (milk, meat, eggs, fish, and honey) will have two important benefits.** First, it will improve nutrition levels given these products are rich in bioavailable micronutrients such as iron and protein. Second, animal resource sector development can increase rural incomes through processing and sales. The One-Cow (Girinka) Program has been successful in raising rural household incomes and in increasing milk production in the country. Between the start of the program in 2006 and June 2012, 134,548 cows were distributed to poor families and 40,352 cows have been "passed on to other families." As cows are usually considered men's assets, women as well as men in the household have to sign to receive the cow to ensure it is recognized as a family asset. Milk production increased from 50,000 MT in 2000 to 450,000 MT in 2012. The corresponding "One Cup of Milk per Child" school feeding program has contributed to reducing malnutrition levels. The national goal is to double milk production and consumption by 2017, targeting consumption rates of 80 liters per person per year. This SP targets feed and other aspects of milk production and handling. *Specific activities are:* improving milk quality, seasonality, and productivity in line with the Dairy Strategy (training dairy specialists and improving cattle feed and water regimes); improving animal nutrition (training on the use of salt blocks and supplying other nutrients, conducting research into optimal feeding and appropriate fodder species for different agro-ecological zones, and supporting the development of the compound feeds industry and quality control); improving animal genetics in line with the 2012 Animal Genetics Improvement Strategy (targeting cattle and small livestock for genetic research and improvement); developing diversified smallholder meat production in line with the 2012 Meat Industry Strategy (nuclei centers will be set up for multiplication of rabbits, goats, sheep, pigs, and poultry to promote dissemination of quality breeds for smaller animals); expanding the Girinka Program to speed up poor families' access to the program; and strengthening the veterinary service network and improving animal health. MINAGRI's Agricultural Gender Strategy (AGS) identifies the different gender roles for different livestock and is being used to ensure women benefit from all aspects of the Program.

Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers. Program 2 comprises two SPs.

11. **Research and Technology Transfer. Agricultural research in Rwanda has made notable advances in recent years, from development of virus-free cassava varieties and disease-resistant maize to more nutrient-rich varieties to combat malnutrition[35] to higher yields of beans and rice to management techniques for plant pathogens, among other accomplishments**. The scientific team in RAB has the capacity to take on diverse issues, although Rwanda's agricultural research staff are still younger and less advanced in terms of

[35] E.g., higher-yielding maize high in lysine, tryptophan, and vitamin A; beans high in iron; and cassava rich in vitamin A.

postgraduate degrees compared with staff elsewhere in the region. More resources and partnerships with international agricultural research entities will be pursued to strengthen capacity. In this SP, research will facilitate both production gains and commercialization, two drivers of PSTA 3. Research will therefore focus on increasing crop and livestock productivity, improving natural resource management, meeting market requirements, and responding to farmers' needs. Agricultural research is a classic public good because information generation is nonexcludable. *Specific activities include*: (i) conducting market-related research (on commodities like coffee, wheat, rice, soybean, and horticulture). RAB will enter into collaborative research agreements with agro-industries; (ii) conducting long-term research on multi-crop rotations including agroforestry systems, for yield, disease resistance, and input use rates; (iii) establishing a program for developing quality seed and planting material for traditional and nontraditional crops; researching on farmers' fields (focus on varietal adaptation, fertilization, use of lime, trace elements, and organic fertilizers, cultivation practices, intercropping options, disease and pest control, and water management); (iv) instituting a mechanism for competitive research funding under which any entity or group of entities may submit proposals for the competitive award of research funding; and (v) developing and implementing a strategy to secure long-term funding support for public-sector agricultural research, with provision for eventual participation of the private sector in the funding, and for collaboration with international agricultural research entities, international universities, and academies. Distance learning programs and study visits will be carried out.

12. **Extension Services for Producers. Extension services have made substantial progress in recent years but need further strengthening and some restructuring. The two key considerations in relation to extension services are quality of the provided services and accessibility**. To increase quality, service providers must be able to deliver the most appropriate solutions according to problems faced by producers. A continuous program of skills strengthening, including effective approaches to reaching women, will be rolled out for all people involved in extension service provision. To improve accessibility, the number of extension service providers will be scaled up, including targets for women, so that the majority of farmers can access advice when needed. This will require intervention in formal and nonformal adult education, and a practical approach to understanding the daily challenges faced by farmers. Only when the majority of farmers have access to appropriate and quality extension service provision will they be able to exchange experiences and express their needs through a demand-driven process for extension service provision. *Specific activities include*: (i) expanding FFS by increasing the number of trainers and facilitators, as well as innovations to ensure both women and men have expanded access; (ii) training for agricultural entrepreneurship (farmers and farming organizations, including those targeting women and youth, will receive training in setting up businesses, during which they will develop business plans. Skills training will focus on accounting, cost control, business planning, and marketing); (iii) facilitating relationships between cooperatives and farm advisors (MINAGRI will act as facilitator to help cooperatives contact farm advisors for key issues); (iv) expanding agricultural advisory services (RAB will establish a permanent training service program for extension agents, including District agronomists, which includes intensive, up-to-date training modules on relevant agricultural topics including value chain development, post-harvest handling and storage, marketing, gender, and nutrition); and (v) establishing local forums for farmers and agricultural stakeholders (with District authorities, support and facilitate "platforms" at different levels where farmers and other

persons involved in agriculture meet frequently in the field, exchange information, and coordinate activities for agricultural development).

13. **Farmers' Organizations and Cooperatives. To increase production and commercialization of the agriculture sector, farmers' cooperatives will play a key role. This SP builds on the successful development of cooperatives under PSTA 2, and has five key objectives**: (i) develop management and entrepreneurial capacities in farmers' cooperatives and other organizations; (ii) support farmers' organization participation in activities of higher value, both at the farm level and in post-harvest handling and agro-processing; (iii) develop farmers' organizations as vehicles to improve farmers' access to inputs, always in response to farmers' initiatives; (iv) develop rural women's organizations and groups within cooperatives; and (v) promote the growth of social capital to provide farmers' organizations with an enduring foundation for the long run. This SP will further improve cooperative management and farmer engagement. *Specific activities include*: implementing a capacity-building program for agricultural organizations with MINICOM; and developing and implementing a long-term program of capacity building in village organizations, cooperatives, rural women's organizations, and other farmers' organizations, with emphasis on those dedicated to input purchase and output marketing and those linked to processing facilities. Nutrition training in collaboration with Ministry of Health community health workers is a key element. Special attention will be given to promoting and strengthening rural women's organizations.

Program 3: Value Chain Development and Private Sector Investment. Program 3 comprises eight SPs.

14. **Creating an Environment to Attract Private Investment, Encourage Entrepreneurship, and Facilitate Market Access. The main requirements for successful export of agricultural products are market-appropriate quality, quantity, and reliability**. Quantity requires sufficient land devoted to a given crop, a challenge in a sector composed almost entirely of small farms. Meeting this challenge and finding ways to bring small farmers together for producing and selling high-value crops represents a major opportunity to raise incomes for rural families. This SP proposes alternatives for the concept of consolidation of landholdings. The main alternatives are as follows: (i) *facilitated contract farming*, which uses a marketing agent, exporter, or processor who makes purchases from substantial numbers of small farmers; (ii) *satellite farming*, a variant of contract farming under which a larger farm (nucleus farm) produces a high-value product and serves as a demonstration for surrounding smaller farms (outgrowers), which over time agree to plant the same crop, follow the same cultivation procedures, and sell to the same buyer; (iii) *consolidated land leasing*, where an agricultural entrepreneur reaches a 8-15 year lease agreement with a number of farmers whose lands are contiguous; and (iv) *cooperatives*. As Rwanda's experience has shown, cooperatives can be effective in consolidating land for the purpose of cultivating larger areas of the same crop, and ensuring equal access by women as well as men. *Specific activities are*: creating a farm management unit to focus on bulking up production and new models of farming; promoting PPPs and risk management in value chains; creating a catalytic fund and support for agricultural entrepreneurship; promoting and facilitating regional and international trade of agricultural exports and promoting cross-border trade channels; and strengthening the sanitary, phytosanitary, and safety (SPS) system and sensitizing producers to follow its requirements.

15. **Development of Priority Value Chains: Food Crops (principle staple crops). Interventions are needed to remove critical bottlenecks in value chains. When implementing strategic actions, the whole value chain must be considered, including research, planting material, production, extension, post-harvest, value addition, and market analysis of supply and demand**. The process should also identify key stakeholders and the business case for each value chain. The priority staple crop value chains to develop are banana, wheat, maize, rice, Irish potato, cassava, soya beans, and beans. MINAGRI's Gender Strategy has already identified the different gender roles for each crop to ensure women farmers can be appropriately targeted.

16. **Banana is by far the dominant fruit crop in Rwanda in terms of value of production**. Four members of the banana family are consumed or produced in Rwanda: cooking bananas, beer bananas, apple bananas (*kamaramasenge*), and plantains. Given the importance of bananas as a food staple as well as in the context of export opportunities, the crop merits a higher priority in policy, research, extension, and value chain development.

17. **Wheat production in Rwanda has increased significantly over the past five years**. In 2007, its production was 24,633 MT; in 2011, it reached 114,075 MT. The main constraint for improving the production of wheat is that varieties preferred by farmers suitable for wheat porridge boiling are not appropriate for wheat mills. For this reason, wheat imports increased from 4,603 MT in 2008 to 82,616 MT in 2011. This SP aims to increase domestic production and processing to reduce the need for imports.

18. **Maize is now Rwanda's third largest crop in terms of area planted**. Yields are also increasing rapidly due to the diffusion of high-yielding, rapidly maturing varieties and higher rates of fertilizer application. Production has been boosted by the introduction of farm mechanization equipment in some parts of the country, with emphasis on women farmers. A priority area in this SP is to reduce post-harvest losses, estimated at 22.5 percent, by introducing proper drying, shelling, and storage facilities. This is critical to reduce contamination with mycotoxins, particularly aflatoxins, which have serious impacts on human health and children's nutrition.

19. **Domestic production of rice provides about 70 percent of the national annual requirement, up from 10 percent in 2008.** There is substantial potential to increase rice production due to: increased area of marshlands for rice cultivation – by 2017, a total of 32,000 ha of marshlands will be developed, mainly cultivated with rice; availability of good high-yielding varieties of rice; and the high number of cooperatives already engaging with the sector, with the potential for increased capacity building. The target is to increase productivity from the current level of 5.8 t/ha to 7 t/ha, and to expand the area under rice cultivation to 28,500 ha by 2018. To achieve these targets, Rwanda must focus on key subsector issues including quality of seeds, management of diseases, provision of seasonal irrigation, post-harvest handling infrastructure for reducing the incidence of broken grain, maintenance of appropriate levels of humidity, appropriate mechanization of farming operations, improved cooperative management, establishment of solid market linkages between producers, cooperatives, and millers, and improved milling processes.

20. **Irish potato is an important and fast growing Rwandan food crop. From 1966 to 2010, the cultivated area increased from 9,500 ha to 130,000 ha and production increased from 57,300 MT to 1,300,000 MT**. Although farmers growing Irish potato are familiar with cultivation techniques, both planted area and production have recently decreased because poor quality seed has forced producers to adopt alternatives. Seeds are provided mainly by the informal system (98 percent), with the remainder from the formal system (2 percent). To improve the value chain, intervention will focus on strengthening the seed multiplication chain from pre-basic and basic seed production to certified seeds, including quality control and certification.

21. **Cassava is the main crop proposed for intensification as a drought-resistant food security crop.** The main constraint to cassava promotion is mosaic disease. However, significant progress has been made in introducing resistant varieties and this activity should continue. Vitamin A bio-fortified cassava also has been requested from DRC. In addition, a new cassava processing plant has been constructed, which will strengthen development of the cassava value chain.

22. **Soya beans represent an important source of protein for local consumption. In addition, soya can generate significant incomes due to its processing potential, including soya oil and animal feeds**. Driven by a private company initiative, an edible oil processing complex is currently under construction in Kayonza District. Current actual production of soya is estimated at 38,400 MT with a yield of 0.8 MT/ha. However, to meet the full capacity of the plant of 45,000 MT per year, in the 2013 season soya was incorporated in the CIP to increase its productivity to at least 1.3 MT/ha. Interventions therefore focus on increasing the supply of soya for processing and potential use in a locally produced corn/soy blend, a nutritious supplemental food for children.

23. **Beans are another important source of protein in Rwandan meals and their production has a comparative regional advantage**. As farmers are already familiar with good cultivation practices, interventions will focus on scaling up adoption of higher yielding bio-fortified beans, as well as research to further enhance their nutrient content, in line with the SP on nutrition.

24. **Development of Priority Value Chains: Export Crops. As Rwanda's primary export crop, coffee's value chain deserves strategic emphasis**. Coffee is a cash crop for about 450,000 families and export receipts over the last decade have averaged US$58 million. In the 1990s, price falls led farmers to neglect coffee plantations, but coordinated efforts of value chain stakeholders have prompted dramatic growth since 2002, with receipts growing at an average of 30 percent per year, although that has come mainly from higher prices and a higher-value product. Despite the still limited quantity of fully washed coffee (29 percent of the total in 2013), Rwanda's coffee industry has gained a positive international image. If it can maintain and enhance quality it will bring about increasing demand for high-quality Bourbon Arabica coffee, with its higher and more stable prices. There is potential to increase yields 2-3 times simply through improved crop and soil management. Better practices in the field, washing stations, storage facilities, and shipping procedures will also lead to improved quality and higher prices in international markets. A strong production, logistics, and marketing strategy for Rwandan coffee will place it in higher-end niche markets with buyers. To achieve this, all stages of the value

chain, ranging from research, training, and capacity building to processing, logistics, and marketing will be targeted. The policy environment should also be reviewed to ensure it is supportive of value chain development, including export taxes and fees, selling requirements, and price setting for cherries. *Specific activities include*: supporting research for coffee; enhancing quality management throughout the value chain; improving management of coffee on farms; strengthening coffee cooperatives and rehabilitating washing stations; improving coffee marketing; and strengthening coffee value chain logistics, particularly shipping.

25. **Tea.** Similar to coffee, increasing tea sales and income will depend on improving quality and marketing to move up the value scale. As a whole, growth of the global market is slow, but trends within the market favor locations like Rwanda that deliver high-end products at competitive prices. Bulk black tea prices are projected to decline, but the opposite trend is expected for quality teas, for which Rwanda has great potential. Other favorable factors for the domestic tea industry include: major world producers are constrained by land and labor shortages; tea consumption in Africa is growing; and Rwanda is well placed to access key markets under the EBA/EPA, African Growth and Opportunity Act (AGOA), the East African Community (EAC), and other agreements. Rwanda's tea is consistently quoted at a high price in the Mombasa auctions. The tea sector is therefore another important strategic value chain to increase export revenues and drive growth. Under PSTA 2, progress was achieved in the sector through privatizing tea factories. Now, in collaboration with RDB, a prospectus has been developed to attract private investors for five new greenfield factories and expansion of coverage to an additional 18,000 ha. Strategic emphasis shall focus on the production side, through improving yields and management of tea cooperatives, and also on the need to access higher-value markets. *Specific activities include*: improving yields and the quality of tea leaves at the farm level; expanding the area under tea cultivation; improving management of tea cooperatives and integrating producers more closely into the value chain; and placing Rwanda's tea in higher-value markets (increasing and improving diversified teas; developing a Rwanda brand with a quality mark and certification of Rwandan teas; strengthening quality control by identifying new distribution channels and buyers for direct sales and strengthening the profile of Rwandan tea on the world market).

26. **Rwanda is uniquely well placed to produce pyrethrum, a natural pesticide. Considerable progress has been made in consolidating and improving the cooperatives of pyrethrum producers and improving processing.** However, pyrethrum's domestic and international market potential has not yet been fully realized and there is significant growth potential. The sole pyrethrum factory, SOPYRWA, is currently functioning below capacity due to insufficient raw material. However, the factory has potential to produce all products extracted from pyrethrum including crude extract, pale extract, and insecticide. There is market demand throughout the world, including the U.S. and Europe. This SP will focus on increasing production by providing improved planting materials and supporting growers. Coordination with SOPYRWA to facilitate activities to encourage production through training in good practice and crop management will be implemented. *Specific activities include*: providing financial support for farmers to incentivize pyrethrum planting and increase the area under production; supporting research to develop and disseminate high-quality planting material with high pyrethrum content; supporting private actors such as SOPYRWA to train growers; and developing export markets for high-value distillates.

27. **Horticulture, Floriculture and Other Emerging Value Chains**. **Several studies on horticulture, floriculture, and essential oils in Rwanda have concluded that there is significant potential for a viable export sector in these products, but important obstacles must first be overcome.** Despite a favorable climate and good soils for horticulture, Rwanda faces more constraints than its direct regional competitors. Being landlocked, Rwanda's potential for exports exists in carefully selected segments and markets. Advantages should be based on a niche appeal of high value added products, not on volume or price. Perhaps more important than product identification is to add value and build the vertical and horizontal value chains for nontraditional export products. Successful development of horticulture will require an integrated supply chain approach focusing on production and processing, transportation, and direct marketing through dedicated contracting arrangements with external buyers. This will include attracting investors for commercial production schemes and establishing linkages and relationships between stakeholders at all stages. Downstream in the export market, international partners will be identified, products promoted, and markets tested. *Specific value chains to develop are*: vegetable value chains with export potential and fruit value chains with high potential (avocado, pineapple, macadamia nuts, passion fruits, and apples); essential oils; and the floriculture industry, including cut flowers, foliage, and ornamentals. Facilitation of communication among nontraditional export crop value chain actors will be pursued to develop closer coordination and joint action teams to facilitate improvement of entire value chains for nontraditional export products, involving investor, exporter, processor, cooperatives, farmers, and financial institution in each case.

28. **Sericulture** is relatively a young industry in Rwanda and requires sustained support to make it economically meaningful. The National Sericulture Center (NSC) has invested in most key drivers of the sericulture industry, including the acquisition of silkworm seed, standard rearing techniques, improved mulberry productivity, and capacity building at various levels of the value chain. Unfortunately, cocoon production is still low. One of the major constraints in sericulture development initiatives is the lack of a dependable domestic cocoon market. Putting in place a system where farmers deliver cocoons and are paid promptly will stimulate increased cocoon production by several orders of magnitude. Other limiting factors include limited technical knowhow, inadequate extension service, lack of resilient silkworm seed adaptable to local conditions, and lack of sufficient rearing houses and equipment. In this SP, the interventions will be given priority to ensure 5,000 ha of mulberry by 2017.

29. **Development of Priority Value Chains: Dairy and Meat. Dairy. This SP aims to double milk consumption over the next five years. This increase will be driven by expanding the "One Cup of Milk per Child" program and by stimulating domestic demand through sensitization and provision of more diverse dairy products**. Currently, raw, unpasteurized milk represents the largest share of domestic milk consumption due to greater profit margins for traders and competition in the processed milk market from regional neighbors with lower costs. The country's milk processing plants are therefore operating below capacity, and some milk collection centers (MCC) in the East have closed. There is a risk that unless demand, including for processed milk, increases a surplus will result. Therefore, the dairy value chain requires attention at all steps in the process. The entire supply chain will be modernized to develop the processing industry, improve distribution channels, and improve sanitary control. To

increase demand, milk consumption habits must also be increased. *Specific activities include:* developing dairy markets (raising consumer awareness of the benefits of milk consumption and making milk more consistently available to consumers); improving quality in the milk value chain; and ensuring institutional development and coordination in the dairy subsector.

30. **Meat. There is considerable scope for expanding production of small ruminants, swine, and poultry. The related processing industries can also expand, since rising incomes are increasing Rwandans' consumption of meat products.** Current constraints include insufficient modern slaughterhouses and inadequate management of tanneries. The limitation of slaughterhouse capacity is being overcome by the construction of new facilities placed under local management. In this SP, the focus is on modernizing the meat supply chain, improving sanitary quality, and developing and strengthening the cutting and processing industry for hides and skins. To facilitate subsector growth, focus will also be on developing the value chain for small ruminants (important to women), swine, and poultry. *Specific activities are*: modernizing the meat supply chain; improving sanitary control; developing the cutting and processing industry; and improving promotion and processing of meat products.

31. **Development of Priority Value Chains: Fisheries. Demand has outpaced production in the fisheries sector, with consequent depletion of resources.** Nevertheless, the sector has great potential and with improved management is capable of meeting demand sustainably and of producing regional exports, leading to improved rural incomes. Fish is also a nutritious addition to daily diets. *Specific activities include*: developing research and technology for fish and fish products; strengthening the existing fish supply chain; implementing systems of cage and tank aquaculture; implementing a system of aquaculture parks; and establishing industry to process fish waste into animal feeds and fertilizers.

32. **Development of Priority Value Chains: Apiculture. Beekeeping is a small activity at the national scale but is important for the communities involved, representing a significant source of additional income for poor families with marginal land for agriculture**. This is particularly true in forested areas in the Southwest. *Specific activities include*: strengthening beekeeping by expanding and strengthening community development services, the provision of beekeeping equipment, and TA; conducting market research and developing a promotion campaign; and increasing and harmonizing quality standards.

33. **Agricultural Finance. Considerable recent progress has been made in the development of agricultural finance. National programs that specifically improve financial services in rural areas include the campaign to improve national financial literary, the training of staff of financial institutions, and the increased use of mobile money transfers (MMT).** At the sector level, bank supervision authorities are closely monitoring the performance of the growing number of savings and credit cooperatives (SACCOs) and the government's Agricultural Guarantee Fund (AGF) continues to encourage bank lending to agriculture. The Rural Investment Facility (RIF), now in its second phase, has boosted rural incomes. This SP aims to strengthen, expand, and introduce new agricultural finance instruments. *Specific activities include*: (i) strengthening District-level SACCOs by undertaking sensitization and training campaigns to improve SACCO governance; (ii) establishing a warehouse receipts system (in coordination with MINECOFIN and BDR); (iii) facilitating value chain finance

relationships (encourage value chain finance - triangular finance - involving a financial institution and two agents in the sector, such as a product wholesaler and a processor, or a cooperative and an exporter. The financial institution lends to one of the agents and is repaid by the other, who receives the agricultural product. The first agent lends to the other one, sometimes in the form of inputs); and (iv) expanding agricultural insurance and rural financial instruments.

34. **Market-oriented Infrastructure for Post-harvest Management Systems. Post-harvest handling and storage is a crucially important consideration across all value chains.** The 2011 National Post-Harvest Crop Strategy is a detailed, step-by-step plan for improving post-harvest infrastructure for staple crops and road access to markets. The plan identifies procedures for identifying priority post-harvest interventions and developing technologies and skills to support implementation. The Post-Harvest Crop Strategy lays out the framework to engage the private sector through dialogue on the opportunities in the value chains and encourages development of financial instruments to support private sector involvement in post-harvest investments and operations. *Specific activities are*: (i) providing efficient and equitable transport systems across crop producing areas by construction of 10,687 km of additional rural feeder roads and maintenance of an additional 1,500 km; and (ii) reducing staple crop post-harvest losses at producer and first aggregator level by promoting the construction of adequate drying grounds (150 additional), storage, and processing facilities (116,500 MT additional storage space) to preserve the quality of products. Costs of constructing facilities will be shared by the public and private sectors, and coordination with the Private Sector Federation (PSF) will help attract investment.

Program 4: Institutional Development and Agricultural Cross-Cutting Issues. Program 4 includes eight SPs.

35. **Institutional Capacity Building. The institutional side of the agriculture sector is at a critical juncture. In recent years it has performed well, delivering the results of PSTA 2 and experiencing steady growth. However, the institutional challenges that remain will be addressed through a comprehensive approach to both capacity building and institutional coordination**. In relation to ministerial capacity building, issues such as high staff turnover, weak incentives, low levels of professional development, dependence on externally funded TA, and insufficient private sector engagement skills will be tackled during PSTA 3. This will foster long-term staff development and retention through professional career advancement based on technical specialization. Institutional coordination in the sector is also important, both within and across MINAGRI agencies and with other ministries driving rural development. Efforts under this SP will seek to strengthen horizontal and vertical collaboration between these different institutions to ensure effective implementation of the EDPRS 2 rural development goals and other national targets. *Specific activities are*: identifying critical skills needs for ministry staff and developing a comprehensive Human Resources Development Plan (HRDP); developing staff incentives to facilitate the accumulation of institutional knowledge and capabilities; capacity building for staff based on the HRDP; strengthening and improving coordination of the Agriculture Sector Working Group (ASWG) and the SWAp working subgroup; and increasing recruitment and retention of women, with a target of 30 percent women in leadership and management positions.

36. **Decentralization in Agriculture. In line with the national and sector Decentralisation Strategy and under coordination of MINALOC, efforts have been made to strengthen local levels of administration, particularly at the District level.** The implementation of territorial reforms and decentralization of functions have greatly enhanced the capacities of local government. Staffing varies according to Districts and their financial capacities, which sometimes allows for additional staff such as seconded extension agents from specific projects, RAB, and NAEB. Currently, District staffing for the agriculture sector includes one agronomist, one veterinarian, one sector agronomist, and one cell development agent. RAB also has two specialized extension workers per District, and NAEB places coffee, tea, and horticulture extension workers. Sector-wide projects and national entities also have a local presence to implement their initiatives. MINAGRI has committed to gender training for all entities at the District and local levels. There is a current proposal before the Parliament to strengthen the decentralized agricultural functions and capacities at the District level. Once approved, this will form the basis of a District agriculture capacity-building program. District administrations have important roles, as they are in close contact with cooperatives and farmers and can build up knowledge of the Districts' needs and opportunities for agricultural development. District staff facilitate the implementation of PSTA 3, acting as an interface and promoting farmer-oriented extension approaches. Districts are also a channel for informing RAB and NAEB and other MINAGRI units of the priority needs of farmers in their areas, and they help inform rural families of opportunities, such as participating in new aquaculture programs or linking up with investors for export crops. The role of Districts is summarized in the dispositions of Law No 29/2005 of 31/12/2005, which endorses the principle of subsidiarity. The law charges Districts with local economic development and planning and coordinating the delivery of public services. In recognition of this competency at the District level, internationally funded and all NGO programs have to be approved at the District level by the Joint Action Development Forums (JADF). This SP aims to strengthen the capacity of Districts to carry out their roles. *Specific activities include*: strengthening the role of Districts in para-vet services and human disease control (developing human and animal disease monitoring systems at the District level with reports that can be communicated to national authorities); making Districts partners in all agricultural extension programs; supporting the JADF and District feedback mechanisms (strengthening the capacity of sector-level authorities to collaborate with farmers and farmers' organizations in the review of problems and the formulation of proposals for Program actions to be implemented at the District and national levels); and strengthening fiscal decentralization (the formula for funds allocated to Districts is based on population, cultivated area, and poverty level. A new factor in 2014 is District performance, and thus MINAGRI will seek to strengthen District agriculture implementation capacity).

37. **Legal and Regulatory Framework**. **In the context of market development and competitiveness within the region, the quality of agriculture and animal products should be improved and respond to the international required norms and standards.** In this regard, a review of the current related regulatory framework in the agriculture sector will be conducted to update laws/formulate new ones in accordance with EAC and international regulations. It is also useful to develop and disseminate examples of agreements, or model contracts that can be applied in various circumstances by cooperatives and other stakeholders in the sector. *Specific actions include*: conducting policy reviews in agriculture subsectors to establish where legal and regulatory improvements are needed; developing a comprehensive national SPS policy, strategy,

and action plan; developing seeds, fertilizer, and agricultural finance policies; establishing a registration system for agrochemicals, seeds, and plant breeders' rights; establishing a well-functioning system of border controls for the regulation and certification of agricultural exports and imports; finalizing the National Irrigation Policy followed by an action plan for implementation; developing regulations for organic agriculture, pesticide, and limestone use to protect organic agriculture and soil and water quality; developing regulations for the value chain guarantee fund, including the provision of risk guarantees to farmers and product buyers in contract farming and value chain contracts; and developing the legal basis for a catalytic fund for agriculture.

38. **Agricultural Communication, Statistical Systems, M&E, and Management Information Systems**. **Rwanda is undergoing a transformation from an agrarian subsistence economy into a sophisticated, knowledge-based society. However, agriculture is still characterized by insufficient use of improved local and advanced knowledge and technologies.** To overcome this challenge, the agriculture sector should be deeply transformed, modernized, and commercialized. This will require agricultural knowledge generated from research and other sources to be turned into action to build a knowledge-based sector. Modernization and transformation of agriculture requires the existence and implementation of a Knowledge Management and Communication (KMC) strategy; an MIS and M&E framework, and Statistical Information System Management with the objective of providing information, evidence, and learning about best practices. *Specific activities include*: updating the M&E framework and defining an action plan; developing an agricultural communication strategy; improving the Agricultural Statistical System, including gender-disaggregated data; and collecting and using agricultural meteorology data.

39. **Gender in Agriculture. Rwanda has made great strides towards achieving gender equality. In addition to ratifying regional and international legal instruments to protect women's rights, Rwanda has a legal framework supporting gender equity and equality enshrined in the Constitution of 2003.** The Constitution reinforces the principles of gender equality and elimination of all forms of discrimination against women and provides quotas (of at least 30 percent) for women in decision-making structures. Rwanda is already ranked highly in gender equality terms. In 2007, the country had a gender development index (GDI) value of 0.459 and ranked 16th out of the 155 countries with both human development index (HDI) and GDI values. Women's participation in Rwanda's Parliament is 63 percent in 2014, the highest in the world. Nevertheless, gender disparities are still prevalent in agriculture. Generally, women in rural areas spend more time engaged in farming activities and caring for the household than men. As a result, women have longer working hours on average than men. MINAGRI's Gender Strategy describes the issues in detail and sets out an agenda to address them. This SP is based on incorporating this strategy across all programs and other SPs. To facilitate this, a Gender Steering Group has been set up, with representatives of key government ministries (MINAGRI, MINECOFIN, Ministry of Gender and Family Promotion (MIGEPROF), MINALOC), agencies (Gender Monitoring Office/GMO), DPs, civil society, and the private sector. The committee reports to the Permanent Secretary on Gender Equality in implementation as well as results. *Specific activities include*: institutionalizing gender equality in sector entities; developing capacities for gender-sensitive programming; enhancing gender responsiveness in agricultural service delivery; and continuing to develop, strengthen, and operationalize partnerships with

gender-focused institutions.

40. **Youth. In Rwanda youth are defined as those 14- to 35-years-old. There are an estimated 4,159,000 youth, or 39 percent of the total population. The largest age group within the overall youth group is the 14- to 19-year-olds, who comprise 14 percent of the total population.** The main challenge is providing youth with employment opportunities and training necessary to obtain the higher-skilled jobs that help them break out of poverty. Many youth do not find traditional agriculture attractive and aspire to rural off-farm employment or urban occupations. Sensitizing youth to the opportunities of a modernized agriculture sector is important. The EDPRS 2 Thematic Area on Youth and Productivity highlights a number of youth-targeted programs. This SP will further mainstream youth involvement in agriculture. *Specific activities include*: developing a youth-focused Technical and Vocational Education and Training (TVET) curriculum for agricultural specializations; targeting youth in entrepreneurship programs; and developing an agricultural leadership program for youth.

41. **Environmental Mainstreaming in Agriculture. Agriculture and the environment affect each other and must be considered together. To foster a sustainable sector in the long term, sound environmental management must be mainstreamed in agricultural practices.** Key areas include soil conservation, soil nutrient management, use of chemical fertilizers and pesticides, water management, and the construction of rural feeder roads. PSTA 3's SPs already address most areas, but this section systematically proposes environmental interventions. In addition, agriculture must be prepared to adapt to climate change and consider mitigation activities to assist adaptation of rural communities, and perhaps to generate carbon credits. The 2011 National Climate Change Strategy and Low Carbon Development will also be considered in agricultural planning. *Specific activities are*: mainstreaming soil conservation (watershed management and agroforestry interventions should be an integral part of crop intensification and hillside terracing efforts); promoting fertilization from a plant nutrient viewpoint; reducing pesticide hazards; implementing environmentally sound water management; taking environmental considerations into rural road design; and planning for climate change.

42. **Nutrition and Household Vulnerability. Food production is increasing and food is flowing relatively easily within and outside the country. However, EICV 3[36] identified that in 2012, 82,000 households (4 percent) had poor and 378,000 households (17 percent) had borderline food consumption patterns**. These households are vulnerable to seasonal shortages and also have inadequate provision in the case of drought or excess rainfall which reduce harvests. Food insecurity follows a distribution similar to poverty across Districts. Improving nutrition faces multiple challenges, including limited knowledge of basic nutritional practices and inadequate feeding, with insufficiently diverse diets and inappropriate infant feeding. Food security also relates to the stability of rural incomes, and events such as crop failures and seasonal scarcities can reduce access to food. In Rwanda, poor rural households that farm small plots of land are the most food insecure, and a multi-sectoral framework of integrated interventions is required to tackle this, in line with the Nutrition Action Plan (NAP) 2013-17. *Specific activities are* based on the NAP's objectives and are: (i) supporting households in nutritious garden practices and diversifying food production (scaling up kitchen garden program and encouraging farmers to use land around their homes to grow diverse fruits and vegetables,

[36] The Integrated Household Living Conditions Survey.

including green leafy vegetables, and also to adopt inter-cropping practices); (ii) improving nutrition-related knowledge and practices for food insecure households (nutrition gardens, intercropping, and better nutrition, including cooking demonstrations, will be promoted through extension workers and FFS, District agronomists, agricultural village promoters, primary and secondary school gardens and a communication campaign in collaboration with MINISANTE, MINEDUC, and MINALOC. MINAGRI will support a multi-sectoral Behavioral Change Communication (BCC) initiative to improve and institutionalize nutritional knowledge); (iii) developing a program of bio-fortified food; expanding the "One Cup of Milk Per Child" program; maintaining a National Strategic Food Reserve; and strengthening Rwanda's Food Security Information System.

Implementation Arrangements for the Program

43. **PSTA 3 is implemented by the following entities**:

- **MINAGRI,** with its current organizational and functional structure of four departments (Planning, Inspection, Crop Production, and Animal Resources), carries out policy formation for the sector and coordination and finance monitoring for PSTA 3, including harmonization and alignment of development assistance with the Program; it also confirms that financial resources are used as agreed to implement PSTA 3. MINAGRI is also responsible for overall monitoring of the RF and its associated targets, divided into annual targets and performance contracts at all levels within the institution, RAB, NAEB, SPIUs, and the Districts. Additionally, MINAGRI is responsible for developing and implementing all activities related to agricultural finance and institutional capacity development.

- **RAB,** with its two current Task Forces (Irrigation and Post-Harvest Infrastructure), is responsible for and oversees all PSTA 3 activities related to soil conservation and land husbandry, research, extension, farmer and cooperative training, and input provision, and oversees all irrigation and post-harvest infrastructure mechanization work carried out by SPIUs. Additionally, RAB implements the development and expansion of key food crop and livestock value chains.

- **NAEB** is responsible for development and expansion of export crops and livestock and for creation of an environment to attract private investment, encourage entrepreneurship, and facilitate market access. It also promotes PPP agreements in export commodities with the private sector.

- **SPIUs**. The three SPIUs implement a total of eight projects that have activities throughout most of the SPs. They secure the services of RAB and NAEB via MOUs. RAB and NAEB oversee and confirm the use of technical standards by the SPIUs.

- **Districts**. Each of the 30 Districts has a District Development Plan (DDP) that contains specific agriculture-related investments and activities agreed upon with MINAGRI, for which they receive earmarked funds to implement. These activities are in line with and part of PSTA 3. MINAGRI, RAB, and NAEB provide technical support and oversight to

Districts to carry out their agricultural activities and confirm that activities and investments comply with the appropriate technical standards.

44. **MINAGRI, RAB, NAEB, the SPIUs, and the Districts all have an administrative department/unit as mandated by law.** These units are responsible for their own procurement and FM related to their functions in carrying out the implementation of PSTA 3. While the SPIUs are responsible for their own procurement and FM, MINAGRI authorizes all procurement and expenditures made by the SPIUs. Additionally, each of these implementing entities has a dedicated environmental and social specialist responsible for confirming that all activities of his/her respective entity are conducted in accordance with the environmental and social laws, regulations, and guidelines as issued and regulated by MINIRENA (RNRA), RDB, and MINALOC.

Annex 2: Results Framework Matrix

(Targets are for each year/period and are cumulative)

Results Indicators	Core	DLI	Unit	Baseline 2012/13	Targets			Period	Data source	Data collection
					Yr 1 2013/14	Yr 2 2014/15	Yr 3 2015/16			
Program Development Objective: The PDO *is to increase and intensify the productivity of the Rwandan agricultural and livestock sectors and expand the development of value chains.* The proposed operation supports the Government of Rwanda's strategic objectives of the Transformation of Agriculture Sector Program Phase 3 with aims to enhance food security and nutrition contributing to reduction in poverty and inclusive economic growth. The operation supports four broad program areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues.										
PDO Indicator 1: Increased agr. land under modernized agricultural technologies[37]	X		%	24	27	31	34	Annual	Seasonal surveys, reports by Districts	MINAGRI
PDO Indicator 2: Increased agriculture exports	X		%	22	23	24	25	Annual	Annual reports	MINAGRI MINICOM
Intermediate Results Area 1: Agriculture and animal resource intensification*: (i) Soil erosion reduced and land sustainably managed; (ii) Land productivity for priority crops increased; (iii) Animal productivity increased and animal products diversified.*										
Indicator 1: Increased soil erosion control, based on agreed technical standards, & sustainably maintained (P: Progressive; R: Radical; T: Total)	X	X	ha	P: 802,292 R: 46,246 T: 848,538	835,941 54,044 889,985	869,590 61,842 931,432	903,240 69,640 972,880	Annual	Reports by Districts, aggregated by RAB	MINAGRI RAB
Indicator 2: Increased land (hillsides/H &marshlands/M) developed with: (i) irrigation infrastructure, based on MINAGRI technical standards; and (b) with enhanced O&M	X	X	ha	H: 3,075 M: 24,721 T: 27,796 Annual increases: H: 1000 M: 1800	4,075 26,521 30,596	5,075 28,321 33,396	6,075 30,121 36,196	Annual	Reports by Districts, aggregated by RAB	MINAGRI RAB
Indicator 3: Increased average productivity levels of major food and export crops, and livestock commodity	X	X	t/ha kgs ltrs	Cassava 15 t/ha Coffee 2.2 kgs[38] Milk: 4 ltrs /cow/day[39]	16.0 2.3 4.5	17.0 2.5 5.0	18.0 2.7 5.5	Annual (calendar year)	Reports by Districts, aggregated by RAB, and NAEB	MINAGRI RAB, NAEB
Indicator 4: Increased total milk production	X		MT	503,000	532,467	561,934	591,401	Annual	Reports by Districts and RAB	MINAGRI RAB
Intermediate Results Area 2: Research, technology transfer and organization of farmers: *(i) Improved technologies which are responsive to Rwanda's agro-ecological potential, men and women farmer needs and resources, and market prospects; (ii) Enhanced integrated and market-oriented extension and advisory services which result in higher proportion of farmer adoption of improved technologies, for both men and women; and (iii) Strengthened inclusive and business-oriented farmers' organizations/cooperatives with enhanced entrepreneurial skills for effective engagement in input and output markets.*										

[37] Refers to percent of farm families who use: improved seeds, fertilizer, and mechanization.
[38] Kgs of cherry per tree/year.
[39] Milk production per cow.

Indicator 5: No. of enhanced technology innovations (TI) introduced by public and/or private sectors, and adopted (A) by farmers (adoption rates to be shown by gender)[40]	X	X	TI # A %	5[41] (25%)	3 (25%)	3 (40%)	4 (50%)	Annual	Reports by RAB	RAB
Indicator 6: Increased % of cooperatives/farmers' organizations which are graded A and B[42] (includes gender dimension)	X		%	5	15	25	35	Annual	Reports by RCA and Grading reports by MINAGRI	RCA MINAGRI
Intermediate Results Area 3: Private sector-driven value chain development and expanded investments*: (i) Enhanced business environment for expanded agricultural investments and value addition; and (ii) Competitive and private sector-driven value chain development and expanded commercialization of production for domestic and export markets, enabled by expanded access to finance, efficient and effective agricultural marketing systems and improved rural infrastructure, and expanded successful public-private partnerships (PPPs).*										
Indicator 7: Increased value (total production and exports) of major competitive value chains[43]	X		US$	2.3 b 132 m	2.6 b 154 m	2.9 b 176 m	3.2 b 198 m	Annual	Reports by NISR, RDB and NAEB	RDB NAEB
Indicator 8: Increased agri-finance lending for: (a) farmers (F) (including gender targets); & (b) Ag. enterprise (A) investments (value chain activities)	X	X	Amount (US$ m) & % of total lending	F 3.6 A 65	F 4.8 A 68	F 5.9 A 71	F 7 A 75	Annual	Reports by IPAR, AFR, MINECOFIN and MINAGRI	Central Bank AFR MINAGRI
Indicator 9: Increased private sector investments in ag. sector (domestic and foreign)	X		US$	513	613	713	813	Annual	Reports by relevant export agencies and RDB	MINAGRI RDB
Indicator 10: Increased % of agric. production marketed	X		%	28	29	30	31	Annual	Seasonal surveys, reports by Districts	MINAGRI RAB
Intermediate Results Area 4: Institutional results-focused development and strategic cross-cutting issues*: (i) Enhanced capacity of sector and its institutions to deliver efficient and effective agricultural services; (ii) Strengthened MIS to support more efficient and effective management of the agricultural sector; (iii) Improved policy environment for enabling rapid, private sector-driven and sustainable agricultural growth; (iv) Increased public ag. expenditures and enhanced expenditure composition and effective management; (v) Improved food security and nutrition; and (vi) Enhanced inclusion of women in agricultural activities and expanded access to agricultural services.*										
Indicator 11: Enhanced results-focused institutional capacity development/CD of MINAGRI (M) &Districts (D): Action Plan (AP) updated/ prepared (UP); AP implementation initiated (II) & AP fully operational (FO)			AP	M NA D NA	M draft AP D AP UP	M AP UP & II D AP UP & II	M AP FO D AP FO	Annual	Reports by MINAGRI and Districts (coordinated via LODA)	MINAGRI (in collaboration with each agency and with MINALOC/ LODA)

[40] Which are consistent with Rwanda's comparative advantage. Also includes specific innovations to be indicated by RAB, in line with its agricultural research priorities.
[41] Maize, beans, cassava, rice, wheat, soybean.
[42] Grading will include a number of parameters such as inclusion of small and marginal holders, number of total households benefiting from input and output markets and services, participation and leadership of farmers/gender in managing cooperatives, and revenue generation.
[43] Food crops, export commodities, livestock products, agro-processed.

Indicator 12: Updated MIS Framework (FR) & Action Plan (AP) for agric. sector: completed (C), approved (A), initiated (I) & fully operational (FO, with key reports, on "core" indicators)		X	FR AP I FO	Initial draft M&E FR	Draft M&E FR	FR/AP C, A, I	FR/AP FO	Annual	Quarterly & Annual M&E report for sector/key entities[44]	Planning Depts. MINAGRI, RAB, NAEB & SPIUs
Indicator 13: Approval of Seeds (S), Fertilizer (F) & Ag. Finance (AF) Policy, action plan (AP) prepared & implemented (I)		X	Policy	S None AF None F Initial Draft	S A, AP, I	F A, AP, I	AF A, AP, I	Annual	MINAGRI	MINAGRI (Planning), RAB, NAEB
Indicator 14: Increase in Women's Empowerment in Agriculture Index for Rwanda[45]			Index (%)	91	91.5	92	92.5	Annual	IFPRI	MINAGRI, RAB,NAEB & SPIUs
Indicator 15: Increased % of households with acceptable levels of food consumption			Food Cons. Score (%)	79	80	81	82		MINAGRI (in collaboration with WFP and Districts	MINAGRI, Districts & NISR

[44] Reporting on key indicators from RF, key thematic studies completed.

[45] The Women's Empowerment in Agriculture Index was developed and is currently being compiled by IFPRI, with a focus on the countries supported by the Feed the Future Programme (supported by USAID). Rwanda is included in the coverage and tracking of this index. The index includes the increased percentage of women in the total membership and leadership positions of agricultural farmers' organizations and cooperatives.

Results Framework Indicator Detailed Description

Results Indicators	Description (This table complements the Results Framework Matrix above and provides a description of the rationale for each indicator monitored)
PDO Indicator 1: Increased agricultural land under modernized agricultural technologies	Refers to the percentage of farm families who use: improved seeds, fertilizer, and mechanization.
PDO Indicator 2: Increased agriculture exports	Refers to percentage changes in value of agricultural exports commodities (coffee, tea, pyrethrum and horticulture) from one year to another.
Intermediate Results Area 1	
Indicator 1: Increased soil erosion control, based on agreed technical standards, & sustainably maintained (P: Progressive; R: Radical)	Completion of terracing infrastructure works generating the incremental ha of terraced land for the following 2 types of technology utilized: a) progressive terracing: 100,948 ha: b) radical terracing: 23,394 ha.
Indicator 2: Increased land (hillsides/H &marshlands/M) developed with: (a) irrigation infrastructure, based on MINAGRI technical standards; and (b) with enhanced O&M	Area under irrigation refers to the total area (Marshland and hillside) equipped with water management infrastructure to provide water to crops including areas equipped for full or partial control irrigation crops. Completion of irrigation infrastructure works generating the incremental ha of irrigated area, covering hillsides (2,999 ha) and marshlands (5,400 ha).
Indicator 3: Increased average productivity levels of major food and export crops, and livestock commodity	3.1 Increase of average crop yields (MT per ha.) cassava (using average yield during 2012 for the major cassava growing Districts): Cassava (MT/ha.) 2012 (BL): 15 MT/ha. By end of 2013: 16 MT/ha. By end of 2014: 17MT/ha. By end of 2015: 18MT/ha 3.2 Increase of national average crop yields (kgs cherry per tree/year, on calendar year basis) for coffee export crop (using national average yield during 2013 season; it is understood that these yield figures reflect variable yields, farmer conditions on the ground, and exogenous factors): Coffee (kgs/ha.) 2012 (BL): 2.2 kgs of cherry per tree per year By end of 2013: 2.3 kgs of cherry per tree per year By end of 2014: 2.5 kgs of cherry per tree per year By end of 2015: 2.7 kgs of cherry per tree per year 3.3 Increase of national daily average yields of milk per cow (liters) (using national average yield during 2012/13 season, considering an accurate estimation of the distribution of quality breeds of milk cows): 2012/13 (BL): 4.0 ltrs By end of 2013/14: 4.5 ltrs By end of 2014/15: 5.0 ltrs By end of 2015/16: 5.5 ltrs
Indicator 4: Increased total milk production	Milk production refers to the total quantity of milk produced in given period. Increase of national daily average yields of milk per cow (liters) (using national average yield during 2012/13 season, considering an accurate estimation of the distribution of quality breeds of milk cows): 2012/13 (BL): 4.0 ltrs By end of 2013/14: 4.5 ltrs By end of 2014/15: 5.0 ltrs

	By end of 2015/16: 5.5 ltrs
Intermediate Results Area 2	
Indicator 5: No. of enhanced technology innovations (TI) introduced by public and/or private sectors, and adopted (A) by farmers (adoption rates to be shown by gender).	Increase in the number of innovation technologies introduced and adopted by farmers 2012/13 (BL): 5 (improved seed varieties of maize, beans, cassava, rice, wheat, soybean) (figures refer to incremental innovations) By end of 2013/14: 8 By end of 2014/15: 11 By end of 2015/16: 15 Confirmation of new technology generated and introduced to farmers. A sample of target farmers will be queried to assess if they have used new technology. Improved innovation technologies can include any from the following categories and drawn nationally, regionally, and globally (e.g.: soil conservation techniques; extension innovations; livestock innovations; and research innovations). Adoption rates to be measured, in reference to the agreed targets for each year (20%, 40% and 50%,respectively).
Indicator 6: Increased % of cooperatives/farmers' organizations which are graded A and B (includes gender dimension)	Cooperatives play a key role in increasing productivity and marketing of food and export crops. Thus the process by which they are formed and strengthening and their sustained functioning are key. Operationalization of new approaches to capacity building of cooperatives including standardizing rules and operational guidelines and improving quality of services to assume expanded and effective roles. RCA has a system that classifies cooperatives according to their capacities and performance levels with a corresponding rating system (e.g., Grade A refers to high level of performance).
Intermediate Results Area 3	
Indicator 7: Increased value (total production and of exports) of major competitive value chains	Refers to the total production in value of major exports commodities and competitive value chains in given period.
Indicator 8 Increased agri-finance lending for: (a) farmers (F) (including gender targets); & (b) Ag. Enterprise (A) investments (value chain activities)	Total amount of loans given to farmers for agricultural projects during given year and the percentage of agri-finance lending compared to the overall total amount lending. Increase in agriculture finance lending for agriculture investments (% of total) 2012 (BL): 3.6%. By end of 2013: 4.8% By end of 2014: 5.9% By end of 2015: 7%.
Indicator 9: Increased private sector investments in ag. sector (domestic and foreign)	The total amount of money channeled in agriculture sector by private investors (domestic and foreign).
Indicator 10: Increased % of agric. production marketed	It refers to the percentage of agricultural production sold to the markets compared to the total quantity produced during a given period.
Intermediate Results Area 4	
Indicator 11: Enhanced Results-Focused Institutional Capacity Development/CD of MINAGRI (M) &Districts (D): Action Plan (AP) updated/ prepared (UP); AP implementation initiated (II) & AP fully operational (FO)	A comprehensive capacity development plan of MINAGRI and Districts staff together with Cooperatives operating in agriculture sector, that is prepared and containing updated data, being implemented over a fiscal year exercise.
Indicator 12: Updated MIS Framework (FR) & Action Plan (AP) for agric. sector: completed (C), approved (A), initiated (I) & fully operational (FO, with key reports, on "core" indicators)	Updated MIS Framework and Action Plan for agriculture sector completed, approved, begin implementation and fully operational. 2012/13 (BL): draft M&E Framework/partially op. By end of 2013/14: M&E Framework/partially op. By end of 2014/15: Integrated MIS Framework and Action Plan/AP completed; AP initiated By end of 2015/16: MIS fully operational
Indicator 13: Approval of Seeds (S),	13.1: (a) Formal Government approval of seeds policy (by Cabinet).

Fertilizer (F) & Ag. Finance (AF) Policy, action plan (AP) prepared & implemented (I)	(b) Completed action plan of seeds policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR) 13.2: (a) Formal Government approval of fertilizer policy. (b) Completed action plan of fertilizer policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR) 13.3: (a) Formal Government approval of fertilizer policy. (b) Completed action plan of fertilizer policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR)
Indicator 14 Increased Women's Empowerment in Agric. Index for Rwanda	Increased women's empowerment index in percent over a year (The Women's Empowerment in Agriculture Index (WEAI) measures the empowerment, agency, and inclusion of women in the agriculture sector in an effort to identify ways to overcome those obstacles and constraints. The Index is a significant innovation in its field and aims to increase understanding of the connections between women's empowerment, food security, and agricultural growth. It measures the roles and extent of women's engagement in the agriculture sector in five domains: (1) decisions about agricultural production, (2) access to and decision-making power over productive resources, (3) control over use of income, (4) leadership in the community, and (5) time use. It also measures women's empowerment relative to men within their households
Indicator 15: Increased % of households with acceptable levels of food consumption	This refers to the increase in percentage of the food consumption score (FCS) over a period of time. The FCS is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. The information is collected from a specific list of food items and food groups and the requested information is related to frequency of consumption (in days) over a recall period of the past 7 days

Annex 3: Disbursement Linked Indicators (DLIs)
Disbursement Arrangements and Verification Protocols

Table 3.1: DLI Matrix[46]

DLI	Total DLI IDA Allocation (Million US$)[47]	As % of Total Financing Amount	DLI Baseline (2012/13)[48]	Indicative Timeline for DLI Achievement (figures are cumulative)		
				Year 1 (2013/14)	Year 2 (2014/15)	Year 3 (2015/16)
DLI 1: Soil Erosion Protection. Annual increases of land protected against soil erosion, according to agreed technical standards. Annual increases of 41,447: 33,649 has/yr progressive (P) & 7,798 has/yr radical (R)[49]	P 10.0 R 10.0	10 10	P 802,292 ha R 46,246 ha	P 835,941 ha R 54,044 ha	P 869,590 ha R 61,842 ha	P 903,240 ha R 69,640ha
Allocated amount:	20.0	20		9.0	5.0	6.0
DLI 2: Irrigation Area. Increases of irrigated area (ha) in marshlands and hillsides, according to agreed technical standards. Annual increases of 2,800 ha per year: 1,000 ha hillsides (H) & 1,800 ha marshlands (M)	H 5.0 M 5.0	5 5	H 3,075 M 24,721 T 27,796	H 4,075 M 26,521 T 30,596	H 5,075 M 28,321 T 33,396	H 6,075 M 30,121 T 36,196
Allocated amount:	10.0	10		4.0	2.5	3.5
DLI 3: Crop and Livestock Yields.[50] 3.1 Increases in average crop yields per ha for key food crop - cassava (CA)[51] 3.2 Increases in average crop yields per ha for key	CA 5.0 CF 5.0 CO 5.0	5 5 5	**2012** 15 MT/ha 2.2 kgs[52] 4 ltrs/day[53]	**2013** 16 MT/ha 2.3 kgs 4.5 ltrs/day	**2014** 17 MT/ha 2.5 kgs 5.0 ltrs/day	**2015** 18 MT/ha 2.7 kgs 5.5 ltrs/day

[46] It is understood that: (a) the focus and envisioned impact of the DLIs reflect a core part of the drivers of agricultural growth and the prioritized Results Framework (RF), derived from MINAGRI's comprehensive RF; (b) these drivers of agriculture growth and core RF would be reflected in the MINAGRI annual budgetary process and priorities, allocations and execution; and (c) the required budgetary levels and their timely releases for supporting the "core" RF and DLIs would be supported by MINECOFIN, in line with its Budgetary Policy Framework (2014 – 2017).

[47] The allocation of funds refers to the IDA contribution. To the extent other Development Partners participate in supporting the PforR, it is understood that their funding would be allocated to the same DLIs, according to a similar pattern of distribution (in agreement with the Common Framework of Engagement of the Multi-Donor Trust Fund-MDTF). DLIs 1, 2, 3, and 8 have 2-3 subindicators with different targets. The allocation of funds will be equally distributed among the subindicators based on 75 percent minimum completion.

[48] Baseline is 2012/13, unless otherwise indicated (e.g., yield levels to be reflected, measured and reported on a calendar year basis, in line with current practices).

[49] It is understood that appropriate and sustainable approaches and models of land development with respect to soil erosion protection may involve some afforestation to accompany progressive and radical terracing, which would be determined on a requirement basis (for both progressive and radical technologies). Targets refer to cumulative total.

[50] Crop yields are reported on a calendar year basis (January to December), hence it is understood that the verification of the yield results would take place during the first two months of each year.

[51] For purposes of accurate measurement, the figures refer to average yields (based on official statistics) of the major cassava growing Districts (estimated to cover about 20 Districts --- these are to be specified).

[52] Of cherry/tree/yr.

export crop – coffee (CF) 3.3 Increases in average daily yields of milk per cow (CO)						
Allocated amount:	15.0	15		4.0	5.0	6.0
DLI 4: Enhanced Ag. Innovation Technologies.[54] Number of enhanced innovation technologies introduced & released by public and/or private sectors & adopted by farmers (with targets for each year.[55] Figures refer to incremental technologies and % to adoption rate. (Adoption rates to be shown by gender.)	15.0	15	5 (25%)	3 (25%)	3 (40%)	4 (50%)
Allocated amount:	15.0	15		4.0	5.0	6.0
DLI 5: Agricultural Finance. Increase in agricultural finance lending for agriculture sector (production and agroprocessing) (% of total)	10.0	10	3.6	4.8	5.9	7.0
Allocated amount:	10.0	10		2.5	3.75	3.75
DLI 6: MIS for Agriculture Sector. Updated Gender-Sensitive MIS Framework (FR) and Action Plan (AP) for the agriculture sector: Completed (C), Approved (A), Implementation initiated (II) and Fully Operational (FO)	10.0	10	Draft M&E FR & partial MIS in MINAGRI	Draft M&E FR	FR/AP (C, A, II)	FR/AP FO
Allocated amount:	10.0	10		2.0	4.0	4.0
DLI 7: Agricultural Policy Reforms. 7.1 Approval of Seeds (S) policy (P), prepare action plan (AP), begin implementation (I) of action plan (based on agreed milestone(s): 7.2 Approval of fertilizer (F) policy (P), prepare action plan (AP), begin implementation (I) of action plan (based on agreed milestone(s): 7.3 Approval of agricultural finance (AF) policy (P), prepare action plan (AP), begin implementation (I) of action plan (based on agreed milestone(s):	20.0	20	S None exists F Initial draft exists AF None exists	F complete & approved P, AP, I	S complete & approved P, AP, I	AF complete & approved P, AP, I[56]
Allocated amount:	20.0	20		5.0	7.0	8.0
Total Financing Allocated (IDA):	100.0	100		**30.0**	**32.5**	**37.5**

[53] Milk production per cow.

[54] Innovation technologies refer to improved or new methods/practices of production (internationally or nationally generated), including more efficient input usage, that lead to increased productivity (e.g., new/improved varieties of crops introduced/ released, improved breeds of livestock, improved input usage such as improved seed varieties, fertilizers). RAB's draft Strategic Plan outlines the priority research technologies to be introduced and released for four major types of technologies, including: (i) land mgt/soil erosion control: agroforestry practices; composting and liming technologies to enhance site-specific recommendations; soil testing technologies to enhance fertilizer efficiencies; (ii) agricultural research: new improved crop varieties that would be higher yielding, disease- and pest-resistant, and drought-responsive (e.g., Irish potato, rice, maize, cassava, horticulture); improved animal breeds/genotypes; (iii) agricultural extension: enhanced extension models/approaches to promoting enhanced fertilizer application methods; improved seeds/varieties; composting; and (iv) livestock: improved animal breeds (building on current traditional stocks); improved animal feeds; enhanced technologies for small stock.

[55] Adoption rates refer to farmers who adopt these improved/new innovations (as defined above), and which were introduced two years previously (to account for the lag in adoption rates). Innovations can come from abroad or generated within the country.

[56] Key milestones of action plan to be implemented will need to be agreed (within two months after submitting the action plan).

Verification Process of DLIs. The Prime Minister's Office (PMO) will verify and validate all results achieved, including attainment of the targets for the DLIs, which is required for the disbursement of funds (see Tables 3.2 and 3.3). Discussions with the PMO confirmed the following conclusions: (i) conducting the independent verification of the DLIs would be in line with PMO's institutional mandates (including promoting economy, efficiency, and effectiveness of the use of public resources); (ii) PMO has the required technical and financial capacities to carry out this verification task; (iii) if needed, the PMO can contract the services of a specialized technical assistance entity to provide technical support in the independent assessment of the DLIs. For example, the PMO currently contracts the support of such an institution (IPAR) for verification of performance contracts; and (iv) PMO has expressed a positive response to undertaking this task (which will be formalized by the government). Since the PMO is already doing this type of performance assessment task, has implementation capacity, and its performance assessment capacity can easily be strengthened, it is agreed by the government and the Bank that the PMO carry out this function (other options were also considered).

Table 3.2: DLI Verification Protocol Table

#	DLI	Definition/ Description of achievement	Scalability of Disbursements (Yes/No)	Protocol to Evaluate Achievement of the DLIs and Data/result Verification		
				Data Source/ Agency	Verification Entity	Procedure
1	Annual increases of land protected against soil erosion, based on agreed technical standards; ha of land terraced according to 2 main types of technology: progressive and radical	Completion of terracing infrastructure works generating the incremental ha of terraced land for the following 2 types of technology utilized: a) progressive terracing: 100,948,422 ha: b) radical terracing: 23,394 ha	Yes	MINAGRI	Prime Minister's Office	MINAGRI will present to the PMO a report of developed areas of increased land protected against soil erosion for verification. If needed, field verification for achieved results will be done by sampling at least 15% of increment of terraced land in implementing sites and/or Districts.
2	Annual increases of irrigated area (ha) in hillsides and marshlands based on agreed technical standards	Completion of irrigation infrastructure works generating the incremental ha of irrigated area, covering hillsides (2,999 ha) and marshlands (5,400 ha)	Yes	MINAGRI	Prime Minister's Office	MINAGRI will present to the PMO a report of developed areas of increased irrigated area for verification. If needed, field verification for achieved results will be done by sampling at least 15% of increment of terraced land in implementing sites and/or Districts.
3	3.1 Increases in average crop yields per ha for key food crop –cassava	3.1 Increase of average crop yields (MT per ha) cassava (using average yield during 2012 for the major cassava growing Districts): Cassava (MT/ha) 2012 (BL): 15 MT/ha By end of 2013: 16 MT/ha By end of 2014: 17 MT/ha By end of 2015: 18 MT/ha	Yes	MINAGRI	Prime Minister's Office	Increased crop yields to be verified against consolidated sites (with 15% of the consolidated sites in growing areas/Districts) with provision of reduction factor of yield due to climate change variability and unpredictable disasters in relation to crop insurance.
	3.2 Increases in average crop yield per ha for key export crop – coffee	3.2 Increase of national average crop yields (kgs cherry per tree/year, on calendar year basis) for coffee export crop (using national average yield during 2013 season; it is understood that these yield figures reflect variable yields, farmer conditions on	Yes	MINAGRI	Prime Minister's Office	Increased crop yield (coffee) to be verified against consolidated sites (with a 15% of the consolidated sites in growing areas/Districts) with provision of reduction factor of yield due to climate change variability and unpredictable disasters in relation to crop insurance.

		the ground, and exogenous factors): Coffee (kgs/ha) 2012 (BL): 2.2 kgs of cherry per tree per year By end of 2013: 2.3 kgs of cherry per tree per year By end of 2014: 2.5 kgs of cherry per tree per year By end of 2015: 2.7 kgs of cherry per tree per year				
	3.3 Increases in daily average yields of milk per cow	3.3 Increase of national daily average yields of milk per cow (liters) (using national average yield during 2012/13 season, considering an accurate estimation of the distribution of quality breeds of milk cows) : 2012/13 (BL): 4.0 ltrs By end of 2013/14: 4.5 ltrs By end of 2014/15: 5.0 ltrs By end of 2015/16: 5.5 ltrs	Yes	MINAGRI	Prime Minister's Office	Milk production will be verified with a sample of 15% of beneficiaries that received a full package for proper livestock/animal husbandry in milk productive areas/Districts.
4	Number of enhanced innovation technologies introduced by public and/or private sectors, and adopted by farmers (adoption rates to be shown by gender)	Increase in the number of innovation technologies introduced and adopted by farmers 2012/13 (BL): 5 (improved seed varieties of maize, beans, cassava, rice, wheat, soybean) (figures refer to incremental innovations) By end of 2013/14: 8 By end of 2014/15: 11 By end of 2015/16: 15 Confirmation of new technology generated and introduced to farmers. A sample of target farmers will be queried to assess if they have used new technology. Improved innovation technologies can include any from the following categories and drawn nationally, regionally, and globally (e.g.: soil conservation techniques; extension innovations; livestock innovations; and research innovations). Adoption rates to be measured in reference to the agreed targets for each year (25%, 40%, and 50%, respectively)	Yes	MINAGRI	Prime Minister's Office	New technologies that are under introduction/piloting and/or scaling up phases will be verified by taking 15% of sample of tested technologies on research stations and/or farmers' fields.
5	Percentage increase in agricultural finance lending for agriculture sector (production, agro-trading, agro-processing)	Increase in agricultural finance lending for agriculture investments (% of total) 2012 (BL): 3.6% By end of 2013: 4.8% By end of 2014: 5.9% By end of 2015: 7.0%.	Yes	MINAGRI	Prime Minister's Office	MINAGRI to provide written confirmation to PMO on increases of rural finance. PMO to confirm the figures from the Central Bank.
6	Updated Gender-Sensitive MIS Framework (FR) and Action Plan/AP for agriculture sector: Completed (C), approved (A), implementation initiated (II) and fully operational (FO)	Updated MIS Framework and Action Plan for agriculture sector completed, approved, begin implementation and fully operational. 2012/13 (BL): draft M&E Framework/partially op. By end of 2013/14: M&E Framework/partially op. By end of 2014/15: Integrated MIS Framework and Action Plan/AP completed; AP initiated By end of 2015/16: MIS fully operational	Yes	MINAGRI	Prime Minister's Office	MINAGRI to provide written evidence to PMO that the M&E framework and action plan have been developed and approved, evidence that implementation has begun and that the system is fully operational (reports and information being generated from the system). PMO will conduct an audit of the system once fully operational confirming with at least one user from each category of users that the system is operational.
7	7.1 Approval of Seeds policy, prepare action plan, begin	7.1: (a) Formal government approval of seeds policy (by Cabinet)	No	MINAGRI	Prime Minister's	Agriculture Sector Working Group to endorse the content of the policies (before submission to Cabinet), action plan and key milestones

	implementation of action plan (with agreed milestone(s) completed); 7.2 Approval of fertilizer policy, prepare action plan (with milestones), implementation of action plan (with agreed key milestone(s) completed): 7.3 Approval of agricultural finance policy, prepare action plan (with milestones), implementation of action plan (with key agreed milestone(s) completed)	(b) Completed action plan of seeds policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR) 7.2: (a) Formal government approval of fertilizer policy (b) Completed action plan of fertilizer policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR) 8.3: (a) Formal government approval of fertilizer policy (b) Completed action plan of fertilizer policy (c) Compliance with agreed implementation milestone (to be specified and agreed with GoR)			Office	(ref. items 7.1, 7.2 and 7.3). PMO to confirm the specified achievements are completed (ref. items in column 2), based on relevant documentation (ref. items 7.1, 7.2 and 7.3).

Table 3.3: World Bank Disbursement Table

#	*DLI*	*Bank financing allocated to the DLI (US$ million)*	*Of which Financing available for (US$ million)*		*Deadline for DLI Achievement*	*Minimum DLI value to be achieved to trigger disbursements of Bank Financing*	*Maximum DLI value(s) expected to be achieved for Bank disbursements purposes*	*Determination of Financing Amount to be disbursed against achieved and verified DLI value(s)* (the minimum value of 75% of the agreed target value needs to be accomplished to obtain 100% disbursement target)
			Prior results	*Advances*				
1	Annual increases in soil erosion control, with terracing: Progressive method: 33,649 ha Radical Method: 7,798 ha	7.5 7.5	1.88 1.87	5.0	No deadline. Results will be verified annually and reported in the month of July.	> 0	Progressive: additional 100,948 ha/accumulative total 903,240 ha Radical: 23,394 additional ha/accumulative total 69,640 ha	Payments will be made in proportion to the achievements (and an agreed minimum value of a least 75% of the agreed target value to obtain the 100% disbursement target).
2	Annual increases of irrigated area (ha) in hillsides and marshlands (Hillsides: 1,000 has./yr) (Marshlands: 1,800/has./yr)	5.0 5.0	1.88 1.87		No deadline. Results will be verified annually and reported in the month of July.	> 0	Hillsides 3,000 ha Marshlands 5,400ha Total 8,400 ha	Payments will be made in proportion to the achievements (and an agreed minimum value of at least 75% of the agreed target value to obtain the 100% disbursement target).
3	3.1 Increases in average crop yields per ha for key food crop - cassava 3.2 Increases in average crop yields per ha for key export crop – coffee 3.3 Increases in daily average yields of milk per cow	5.0 5.0 5.0	1.25 1.25 1.25		No deadline. Results will be verified annually and reported in the month of July.	> 0	Cassava crop yield increase to 18 MT/ha Coffee crop yield increased to 2.7 kgs Milk yield increase to 5.5 liters per cow	Payments will be made in proportion to the achievements (and an agreed minimum value of at least 75% of the agreed target value to obtain the 100% disbursement target). If either crop or yield insurance payouts are made during the year for these crops, the 75% will be lowered to 40%.
4	Number of enhanced innovation technologies introduced by public and/or private sectors, and adopted by farmers (at least 25%, 40% and	15.0	3.75		No deadline. Results will be verified annually and reported in	> 0	Innovative technologies introduced and adopted by farmers increased to 15	Payments will be made in proportion to the achievements (and an agreed minimum value of least 75% of the agreed target value to obtain the 100% disbursement target).

	50%, for each year, respectively) (adoption rates to be shown by gender)				the month of July.			
5	Annual increases in agricultural finance lending for agriculture sector	10.0	2.5		No deadline. Results will be verified annually and reported in the month of July.	> 0	Increase in ag. lending for agriculture from 3.6% to 7%	Payments will be made in proportion to the achievements (and an agreed minimum value of at least 75% of the agreed target value to obtain the 100% disbursement target).
6	Updated Gender Sensitive MIS Framework (FR) and Action Plan/AP for agriculture sector: Completed (C), approved (A), implementation initiated (II) and fully operational (FO)	10.0	2.5		No deadline. Results will be verified annually and reported in the month of July.	> 0	Agriculture sector MIS framework fully operational	Payments will be made in proportion to the achievements (and an agreed minimum value of at least 75% of the agreed target value to obtain the 100% disbursement target).
7	7.1 Approval of Seeds policy, prepare action plan, begin implementation of action plan (with agreed key milestone(s) completed) 7.2 Approval of fertilizer policy, prepare action plan, begin implementation of action plan (with agreed key milestone(s) completed) 7.3 Approval of agriculture. finance policy, prepare action plan, begin implementation of action plan (with agreed key milestone(s) completed)	20.0	5.0		No deadline. Results will be verified annually and reported in the month of July.	> 0	3 policies approved 3 action plans prepared 3 action plans with key milestone(s) implemented	Payments will be made in proportion to the achievements (and an agreed minimum value of at least 75% of the agreed target value to obtain the 100% disbursement target).

Annex 4: Technical Assessment Summary

1. Annex 4 provides a summary of the full Technical Assessment carried out for the proposed PforR operation.

Description and Assessment of Program Strategic Relevance, Technical Soundness and Institutional Arrangements

i. Strategic Relevance

2. **Despite Rwanda's progress in reducing the numbers of poor households, the challenge of poverty reduction remains high, since 80 percent of the rural population consists of subsistence farm families with an average land size of 0.59 ha (EICV 3).** Between 2008-2012, increased productivity and production along with increased commercialization of production and increased off-farm self-employment generated by increasing the number of food and export crop value chains were responsible for over 45 percent of poverty reduction,[57] and for facilitating over 1 million Rwandans to lifting themselves above the poverty line. Given this, the strategic objectives of PSTA 3 are both critical and relevant and with the right focus will lift an additional 3 million Rwandans out of poverty.

3. **The four strategic program areas of PSTA 3 are: (i) agriculture and animal resource intensification; (ii) research, technology transfer, and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agriculture cross-cutting issues.** These four programs and their associated subprograms (SPs) are similar to PSTA 2 in structure and content, with increased emphasis on increasing private investment in the sector. PSTA 2 was highly successful, delivering on over 90 percent of the planned results. In addition, many of the results and targets were exceeded, some by as much as 200 percent.

4. **Much of PSTA 3 is focused on improving efficiencies and economies of scale and mainstreaming the activities that are the key drivers of agriculture development.** These include implementing and husbandry actions (including land conservation – terracing, increasing soil fertility, – organic and inorganic fertilization, increased use of improved seeds, expanded land under irrigation, increased coverage and quality of extension services, and increased private sector-led mechanization); enhancing market-responsive technology research; significantly expanding and strengthening accessible agricultural finance products; stimulating expanded and inclusive private sector and market-driven value chain development and integration; expanding market-oriented rural infrastructure (i.e., irrigation, rural feeder roads, and post-harvest facilities); and strengthening institutional development and strategic cross-cutting themes. These actions are dispersed throughout the four programs and 24 SPs.

5. **The World Bank technical team reviewed and evaluated PSTA 3's four programs and 24 SPs and found the high-level Program's strategic objectives as well as the strategic**

[57] And up to 58 percent if all off-farm self-employment is the direct result of increased self-employment associated with farm commodities.

objectives for each of the four programs and the SPs to be adequate, of strategic importance, necessary, and relevant for achieving PSTA 3's key results and desired impacts. They also address the key sector development objectives to increase economic development and reduce poverty. The Program has a suitable focus of public expenditure related to policy and other enabling environment investments and also focuses on increasing private sector investment in the sector with an appropriate mix of public-private partnership (PPP) investments planned. A summary review of the relevance of each program and SP as assessed by the World Bank technical specialists follows.

Program 1: Agriculture and animal resource intensification

6. **The SPs of soil conservation, land husbandry, irrigation and water management, agricultural mechanization, agrochemical and organic fertilizer use and markets, improved seeds, and increased productivity of animal resources are all of strategic relevance to the achievement of the PSTA 3 objectives**. To transform the farming and livestock subsector into a productive, high-value, market-oriented subsector, increased soil conservation and land husbandry, increased coverage of irrigation, improved water management, improved agricultural mechanization, increased use of both agrochemical and organic fertilizers, increased access to markets, improved seed varieties, improved productivity of animal resources and quality of animal products for improved transformative growth of the livestock subsector, with a focus on smallholders, are all highly relevant and are of critical importance.

Program 2: Research, technology transfer and professionalization of farmers

7. **Research, technology transfer, professionalization of farmers, and extension services for producers are of key strategic relevance towards the achievement of the PSTA 3 strategic objectives and targets**. No credible productivity and commercialization gains can be made without an effective technology development and transfer system, tailored to Rwandan conditions. Equally, the envisaged expansion of private sector investments will only occur if investors are assured of enough trade volumes and of the organization of farmers into formalized groups, able to mobilize and collect adequate trade volumes. Professionalization of smallholder farmers and their organization into cooperatives and other farmer groups are necessary to ensure economies of scale in input and output markets, and to give farmers the necessary clout to bargain and benefit from market-driven trade relationships.

Program 3: Value chain development and private sector investment

8. **Creating an environment to attract expanded and inclusive private investment to the agriculture sector, encourage entrepreneurship, and facilitate market access to both inputs and outputs is strategically important for agriculture sector development**. Continued intensification and commercialization of the Rwandan agriculture sector is essential to drive inclusive economic growth and reduce poverty. Developing, rapidly expanding, and diversifying competitive food and export crops remains one of biggest contributors to the theme of rural development and economic transformation of EDPRS 2. Program 3 implements programs aimed at expanding and diversifying food and agricultural exports in areas where Rwanda has a proven comparative and competitive advantage to accelerate economic growth and increase rural

incomes and food security. Expanded and inclusive access to viable agricultural loans and enhanced recovery rates are increasing the volume, variety, and accessibility of agricultural finance products; hence, aiming to increase the number of commercial loans extended by the commercial banking industry is strategically sound. Market-oriented infrastructure (including rural feeder roads and post-harvest infrastructure) is considered a critical factor for stimulating increased agricultural production and commercialization.

Program 4: Institutional development and agricultural cross-cutting issues

9. **Derived from the RF for PSTA 3, the strategic objectives of institutional capacity building, agriculture decentralization, legal and regulatory framework, agriculture communications, statistical systems, M&E, gender and youth in agriculture, environmental mainstreaming in agriculture, nutrition, and reducing household vulnerability are sound and highly relevant in their contribution to agriculture growth and poverty reduction**. Strengthening institutional capacity to fulfill its intended strategic role and to meet the ambitious targets of PSTA 3 at impact, outcome, and output levels, as well as to ensure enhanced governance in the sector, including significantly improved M&E systems and follow-up mechanisms, are key.

ii. Technical Soundness

Program 1: Agriculture and animal resource intensification.

10. **The SPs of soil conservation, land husbandry, irrigation and water management, mechanization, agrochemicals and markets, seeds and livestock development were reviewed and found to be technically sound and of high relevance in accomplishing PSTA 3 strategic impacts**. These SPs are a continuation and refinement of those carried out under PSTA 2, which accomplished over 90 percent of its targets and surpassed many by up to 200 percent. Given that most Rwandan soils (90 percent) are on hillsides and that there are still soils that are old and depleted in nutrients either due to erosion or overcultivation, the achievement of PSTA 3 will be highly dependent on more effective use of soil. For the livestock sector, PSTA 3 and its overall results chain are technically sound and most of the proposed indicators would measure well the progress towards achieving PSTA 3's strategic objectives and PforR operation's results.

Program 2: Research, technology transfer and professionalization of farmers

11. The SPs of research, technology transfer, and professionalization of farmers are key in supporting the main drivers of agriculture and animal resource intensification and food and export value chains. The SPs were found to be technically sound in their focus on improving, refining, and scaling up key investments in research, extension, and professionalization of farmers to support agriculture growth targets.

Program 3: Value chain development and private sector investment

12. The specific objectives of increasing overall production, productivity, and value addition in target value chains as well as creating an enabling environment conducive to increased private sector participation are well aligned with the set target of increasing the value of exports in

priority value chains by 28 percent p.a. by 2018. Creating an environment to attract private investment, encourage entrepreneurship, and facilitate market access, develop priority food and export crop, dairy, meat, fisheries, and apiculture value chains, increase access to agri-finance and market-oriented infrastructure for post-harvest (including expanded coverage of rural feeder roads and post-harvest infrastructure) are key areas of focus in the agriculture sector that have been found to be both strategically relevant and technically sound to accomplish the key strategic objectives and results defined in PSTA 3's RF.

Program 4: Institutional development and agricultural cross-cutting issues

13. Institutional capacity building, decentralization in agriculture, a legal and regulatory framework, agricultural communication statistical systems, M&E and knowledge management, gender and youth in agriculture, environmental mainstreaming in agriculture, and nutrition and reducing household vulnerability are key enabling SPs that support the key drivers of agriculture growth and poverty reduction and catalyze the achievement of PSTA 3's strategic objectives and impacts. They are technically sound and backed by a results chain in each SP that defines the specific objective of each SP, its associated outcomes, and outputs.

iii. Institutional Arrangements

14. **PSTA 3 is implemented by MINAGRI with its Departments of Planning, Inspection, Crop Production, and Animal Resources. There are two semi-autonomous implementing agencies. The Rwanda Agriculture Board** (RAB) focuses on food crop production and currently has the Irrigation and Post-Harvest Infrastructure Task Force and the Mechanization Task Force, both of which merged into RAB on July 1, 2014, as they completed their terms. **The National Agricultural Export Board** (NAEB) is mandated to promote export crops. The sector also has three **Single Project Implementation Units** (SPIUs) that implement donor-supported projects (World Bank, IFAD, African Development Bank) that typically fund larger-scale infrastructure investments like terracing, irrigation works, rural roads, etc. The last implementing entities are the **30 Districts** throughout the country. Each has a District Development Plan (DDP) that corresponds to PSTA 3 and includes specific agriculture-related activities that contribute to PSTA 3 for which Districts receive earmarked funds to implement.

15. The central government, through MINAGRI, provides policy, coordination, and financing leadership for PSTA 3, including strong harmonization and alignment of development assistance. All other implementation responsibilities of PSTA 3 rest with the RAB and its Task Forces, NAEB, the SPIUs, and Districts, which are enabled by various coordination mechanisms between them and MINAGRI. Implementation roles and approaches vary, with a mix of national, District, community, and private program delivery. Based on the detailed review of the sector's institutional arrangements and the success of the same structure in delivering the key results of PSTA 2, the institutional arrangements were found to be adequate to achieve PSTA 3's results in both a timely and efficient manner, with leadership that has demonstrated a strong commitment and has a proven capacity to manage F&C risks. Additionally, MINAGRI, as part of a national process of institutional review, is completing a restructuring exercise to further streamline and enhance organizational and implementation efficiencies and effectiveness.

Description and Assessment of Program Expenditure Framework

16. Public expenditure on agriculture through MINAGRI has shown a rapidly increasing trend in recent years. Table 4.1 gives recent expenditure and the current Medium Term Expenditure Framework (MTEF) budget for MINAGRI, separated into its recurrent and development components. MINAGRI's expenditure and budget have increased significantly in recent years, with substantial increases in 2010/11 and in the current MTEF period starting in 2013/14. Development expenditure accounts for around three-quarters of total expenditure due to the large internal and donor-financed projects funded from the development budget. The recurrent budget largely covers operational costs, including salaries and wages.

Table 4.1: MINAGRI Development and Recurrent Expenditure and Budget (US$ millions)

	Expenditures in US$ Millions[a/]				**Allocations[b/] & MTEF in US$ Millions[c/]**				
	2009/10	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Recurrent	13.0	31.8	21.3	11.9	15.5	46.1	70.0	74.2	78.7
Development	33.6	49.5	54.1	73.6	88.3	120.9	100.3	99.3	104.3
Total	**46.6**	**81.4**	**75.4**	**85.6**	**103.9**	**167.1**	**170.3**	**173.6**	**183.1**

Note: [a/] Figures refer to actual expenditures.
[b/] Figures for 2013/14 refer to revised budgetary allocation. Figures for 2014/15 refer to approved budgetary allocation (90 B Fr + 14 B for transfers to Districts+ 6 B from DPs approved by MINECOFIN= 110 B).
[c/] Figures for 2015/16 and 2016/2017 refer to latest MTEF allocations.

17. **The proportion of government expenditure allocated to agriculture through MINAGRI is rising and projected to reach 6.0 percent in 2014/15.** MINAGRI does not provide all public funding in the agriculture sector. MINIRENA has significant soil conservation programs under its mandate to protect the environment and is also responsible for the forestry subsector, with MINAGRI only responsible for agro-forestry. The Ministry of Infrastructure (MINIFRA) has investments in feeder roads that are not part of MINAGRI's direct budget. When this funding for agriculture through other ministries is included, it appears that Rwanda surpasses the CAADP target of 10 percent government spending on the agriculture sector.

18. Rwanda surpasses the CAADP target of 10 percent government spending on agriculture at 13 percent.

Table 4.2: Proportion of Government Expenditure on Agriculture through MINAGRI (US$ thousands)

Institution	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**
1. MINAGRI	54,848	63,360	64,116	79,158	103,935	155,730	160,950
2. RCA (support to producer organizations)	1,245	3,319	3,268	35,327	11,836	NA	NA
3. MINIRENA (Sustainable land management & Forest management)	2,002	1,465	17,888	47,303	94,962	NA	NA
Total Agriculture sector	**58,095**	**68,144**	**85,272**	**161,788**	**210,733**	**NA**	**NA**
Total national budget	**1,166,090**	**1,427,235**	**1,592,100**	**2,066,395**	**2,284,910**	**2,594,050**	**2,819,960**
Agriculture sector as % of National budget	5.0%	4.8%	5.4%	7.8%	9.2%		

MINAGRI as % of National budget	4.7%	4.4%	4.0%	3.8%	4.5%	6.0%	5.7%

19. **MINAGRI's two implementing agencies, RAB and NAEB, are funded from the MINAGRI budget**. Most MINAGRI funds are retained centrally, reflecting the large internal and donor-funded SPIUs managed by MINAGRI. All agencies have seen a trend of increasing expenditure and budgets as the government has devoted increasing resources to agriculture. Table 4.3 shows MINAGRI's expenditure and budget by PTSA 3 program, including the new program of administrative and support services from 2013/14 onwards.

Table 4.3: MINAGRI's Expenditure and Budget by Program (US$ millions)

	Expenditure				**Budget**		
	2009/10	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**
Administrative and support services					5.9	7.8	9.4
1. Agriculture/Animal resource	36	54.1	44.7	50	96	115.4	117
2. Research and technology transfer	3.5	5.2	4.3	4.5	5.1	5.1	5.2
3. Value chain dev./Private sector	3.5	3.2	11.3	11.1	21.6	25.9	26.5
4. Institutional dev. / Cross-cutting	2.1	3.2	4.4	4.4	1.1	1.9	2.8
Total	**45.1**	**65.7**	**64.7**	**70.1**	**129.7**	**155.9**	**160.9**

20. **Slightly under three-quarters of Program expenditure and budgets are for the agriculture and animal resource intensification program.** This program covers large internal and donor-funded projects in land conservation, irrigation, provision of farm inputs, and agricultural mechanization. The second largest program addresses value chain development and private sector investment. With the increasing focus of government on the private sector, this program has received significant additional funding in recent years. The research and institutional development programs are funded at far lower levels.

21. **It is important to consider budget execution rates, especially in the current context of rapidly increasing budgets in agriculture.** MINAGRI budget execution rates are consistently high, with rates close to 100 percent for RAB and NAEB. Execution rates are significantly higher for the MINAGRI central budget, reflecting high expenditure by the large internal and donor-funded projects managed centrally. Good performance on these projects means that they consistently spend more than their initial budgets for the year, which results in MINECOFIN providing additional funds during the budget revision in the latter part of the fiscal year.

Table 4.4: MINAGRI Budget Allocation and Execution by Agency (2009/10 to 2012/13)[a/] (US$ millions)

Year	2009/2010			2010/2011			2011/2012			2012/2013		
	Budget	Execution	% (Ex)	Budget	Execution	% (Ex)	Budget	Execution	% (Ex)	Budget	Execution	% (Ex)
MINAGRI Central	54.8	46.4	85%	41.7	60.6	145 %	42.5	54.2	127 %	51.9	59.3	114
RAB				13.6	13.2	97%	12.5	12.2	98%	14.6	14.6	100
NAEB				1.1	1.14	98%	2.6	2.6	99%	3.1	3.1	100
Transfers to Districts				6.7	6.3	94%	6.3	6.3	100 %	9.4	8.4	89
Total MINAGRI	**54.8**	**46.4**	**85%**	**63.3**	**81.4**	**128 %**	**64.1**	**75.4**	**118 %**	**79.1**	**85.6**	**108**

Note: [a/] Refers to actual budget execution figures for the years 2009/10, 2010/11, and 2011/12 and to approved budget allocations for 2012/13.

ASIP Program Structure and Cost Estimates

22. **The recently prepared Agriculture Sector Investment Plan (ASIP) gave two scenarios for the five-year public investment program to support the implementation of PSTA 3**. The ASIP costing exercise adopted the prioritization criteria developed as part of the RF for PSTA 3.[58] The initial cost estimate had a resulting large and infeasible financing gap (about US$1 billion), and is referred to as the "high-cost scenario." A less expensive "medium-cost scenario" was constructed with the purpose of bringing ASIP implementation costs within an affordable range, based on likely financing sources and amounts.

23. **The main differences between the two scenarios are as follows**: (i) PSTA 3 targets were revised significantly downwards to more financially achievable levels, especially for the five highest cost SPs; (ii) there was a more rigorous application of the PSTA 3 prioritization criteria to a prioritized RF; (iii) some unit costs were revised downwards based on savings that could result from cost sharing of public projects with farmers. Land conservation terraces and irrigation schemes were identified as areas where greater cost sharing with farmers could be achieved; (iv) a strong enabling framework for private sector growth and development with a business friendly regulatory environment and more aggressive investment promotion following the strategic theme set out above is expected to lead to greater private sector investment, especially in export crops and processed products; (v) a review of the RF identified public sector projects that could be implemented by PPP arrangements. Further PPP opportunities were identified in coffee, tea, horticulture, irrigation, milk collection centers, and dairy processing, meat processing, and hides and skins; (vi) fertilizer, lime, and seed subsidies were fully phased out by 2017/18, with the private sector leading the farm inputs market; (vii) agricultural research was significantly scaled up to provide more innovative technologies for farmers, which is critical for achieving yield targets; and (viii) extension was improved and expanded to provide support and training for farmers. The medium-cost scenario is therefore one of lower costs, intended to bring the total cost within a more affordable range.

[58] Degree to which SPs/activities contribute to: (i) Vision 2020 and EDPRS 2 strategic objectives and targets (including agriculture sector growth of 8.5 percent p.a. and reduced poverty levels; (ii) increased crop, livestock productivity, and food security; (iii) inclusive agricultural private sector investment; (iv) enhanced market-oriented commercialization and value addition; and (v) agriculture export growth.

24. **Table 4.5 sets out the medium-cost scenario public sector implementation costs for ASIP by program and SP.**

Table 4.5: ASIP "Medium-cost Scenario" Costs (US$ Thousands)

Program/Subprogram	2013/14	2014/15	2015/16	2016/17	2017/18	TOTAL
1. Agriculture/Animal resource intensification	**133,326**	**141,426**	**131,122**	**121,434**	**112,649**	**639,957**
1.1. Land conservation	20,519	21,852	22,424	22,874	23,311	110,980
1.2. Irrigation	56,280	59,958	61,630	62,707	63,904	304,478
1.3. Mechanization	10,016	10,330	8,573	7,715	6,867	43,500
1.4. Improve soil fertility	18,186	24,026	16,103	8,423	1,367	68,105
1.5. Seed improvement	13,874	10,536	7,336	4,357	1,549	37,652
1.6. Livestock development	14,451	14,724	15,056	15,359	15,652	75,242
2. Research and technology transfer	**12,157**	**15,647**	**18,060**	**19,701**	**20,481**	**86,046**
2.1. Research & technology transfer	7,154	7,263	7,453	7,603	7,748	37,222
2.2. Extension services	3,837	7,129	9,247	10,638	11,234	42,084
2.3. Farmer cooperatives	1,166	1,254	1,359	1,460	1,500	6,740
3. Value chain devt./Private sector investment	**65,075**	**70,046**	**74,915**	**84,099**	**88,360**	**382,495**
3.1. Private sector development	600	914	625	638	650	3,426
3.2. Food crops	14,500	14,722	15,107	15,410	15,705	75,444
3.3. Export crops	16,650	16,905	17,347	17,695	18,033	86,631
3.4. Dairy and meat	1,200	1,218	1,250	1,275	1,300	6,244
3.5. Fisheries	250	254	260	266	271	1,301
3.6. Apiculture	120	122	125	128	130	624
3.7. Agricultural finance	1,195	1,213	1,245	1,270	1,294	6,217
3.8. Market infrastructure	30,560	34,698	38,955	47,418	50,978	202,608
4. Institutional dev. / Cross-cutting issues	**18,831**	**20,186**	**21,079**	**21,980**	**22,941**	**105,017**
4.1. Institutional capacity	1,615	1,742	1,683	1,717	1,750	8,506
4.2. Decentralization	1,065	1,437	1,683	1,982	2,291	8,459
4.3. Legal and regulatory framework	100	305	365	319	325	1,413
4.4. MIS/Agricultural statistics and M&E	1,400	1,421	1,459	1,488	1,516	7,284
4.5. Gender and youth	320	325	333	340	347	1,665
4.6. Environmental mainstreaming	115	117	120	123	125	600
4.7. Food and nutrition security	14,215	14,839	15,436	16,011	16,588	77,089
Total Costs	**229,389**	**247,305**	**245,175**	**247,215**	**244,432**	**1,213,516**

25. **ASIP public sector implementation costs under the medium-cost scenario rise gradually from US$229 million in 2013/14 to US$244 million in 2017/18, a total of US$1,213 million (rounded to US$1.2 billion) over the five-year ASIP period.** Costs by program have a very different distribution under the medium-cost scenario. Program 1 remains the largest program, accounting for just over half of all costs by 2017/18. The downward revision of PSTA 3 targets in land conservation and irrigation to more financially achievable levels as well as the phasing out of subsidies on fertilizer, lime, and seeds bring Program 1 costs to more affordable levels. Program 3 remains the next largest, with about 30 percent of implementation costs by 2017/18, but with significantly reduced costs from more financially achievable targets for the construction of rural roads. Reduction of Program 1 and Program 3 implementation costs under the medium-cost scenario creates the space to slightly increase the allocation to Program 4 and to significantly increase the allocation to Program 2, which rises to 11 percent of ASIP implementation costs by 2017/18.

26. **The proportion of ASIP medium-cost scenario public sector costs taken by capital investment rises gradually from 60 percent in 2013/14 to 68 percent in 2017/18.** The proportion of costs taken by capital is, however, significantly lower than under the high-cost scenario due to the reduction in PSTA 3 targets in land conservation and irrigation as well as the reduction of the role of the state in agricultural mechanization.

27. Table 4.6 provides the proposed financing plan, based on available information, DP ongoing projects and "firm" programming intentions for PSTA 3, and Government contributions. Table 4.7 provides a summary of the available funding vis-à-vis requirements, and a negligible deficit. However, it will be important for Government and DPs to synchronize the timing of the funding to ensure it matches the PSTA 3 cash-flow requirements.

Table 4.6: PSTA 3 Financing Table by Donor and Projects

	2013/14	2014/15	2015/16	2016/17	2017/18	Total	% of Total Funds
A) Budget Support/PforR	**40.6**	**77.7**	**83.7**	**106.0**	**71.0**	**379.0**	**31.6**
European Union	25.0	25.0	36.0	37.0	37.0	160	13.3
DFID	15.6	19.7	14.7	14.0	13.0	77.0	6.5
IFAD				21.0	21.0	42.0	3.5
IDA PforR		33.0	33.0	34.0		100.0	8.3
B) Project Support	**76.9**	**161.7**	**135.3**	**83.8**	**63.3**	**521.0**	**43.4**
World Bank Projects	33.6	80.5	52.1	18.0	9.8	194.0	16.2
Swiss	2.0	2.0	2.0			6.0	0.5
Netherlands	3.6	3.6	1.4	1.4		10.0	0.8
USAID (incl. $40 PforR)	14.5	36.5	33.5	28.5	25	138.0	11.5
JICA		4.0	9.0	11	8	32.0	2.7
AfDB	3.5	9.5	7.0			20.0	1.7
DFID	0	1.6	5.0	3.2	3.2	13.0	1.0
IFAD Projects	17.7	20.0	19.3	13.7	7.3	78.0	6.5

FAO	2.0	4.0	6.0	8.0	10.0	30.0	2.5
C) Total DP Funds	**117.5**	**239.4**	**219.0**	**189.8**	**134.3**	**900.0**	**75**
D) Government Funds	**60.0**	**60.0**	**60.0**	**60.0**	**60.0**	**300.0**	**25**
TOTAL PSTA 3 Available Funds (C+D)	**177.5**	**299.4**	**279**	**249.8**	**194.3**	**1,200.0**	**100**
PSTA 3 Req. Funds	229.4	247.3	245.2	247.2	244.4	1,213.5	
Deficit/Surplus	-51.9	52.1	33.8	2.6	-50.1	-13.5	

Table 4.7: Comparison of ASIP Medium-cost Scenario Public Sector Costs with MINAGRI Budget (US$ Thousands)

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
PSTA 3 Public Sector Costs	**229**	**247**	**245**	**247**	**244**	**1,213**
PSTA 3 Available Funds	177.5	299.4	279	249.8	194.3	1,200
Deficit/Surplus	51.9	52.1	33.8	2.6	50.1	13.5 [a/]

Note: [a/] The deficit of US$13.5 million is negligible (1 percent of total estimated costs).

28. **In summary, the ASIP program structure and expenditure levels build on the structure and expenditure trends during the PSTA 2 period, while reflecting enhancements in the Program structure and increased expenditure.** This pattern also reflects the recent increases in budgetary allocations to MINAGRI, which are expected to be sustained in the medium term. It will be important for the annual planning and budgetary cycle to ensure the required level and timing of allocations from both Government and DPs match the PSTA 3 requirements. Accordingly, it is anticipated that there will be a need to update the costs and financing plan, in accordance with actual implementation.

Description and Assessment of Program Results Framework and M&E

29. **During the initial identification mission of the PforR operation, the Bank team worked closely with and supported MINAGRI's PSTA 3 team to prepare a comprehensive and summary RF**, underpinned by an explicit results chain specified at three levels, measured by "SMART" indicators and their corresponding baselines and targets: impact level for the overall PSTA 3 (and medium-cost scenario); outcome level for each of the four programs; and outcome and output level for each of the 24 SPs. Once the targets for all outputs were costed, there was an excessive financing gap for the "high-cost scenario"; this led to a reduction in the targets for various outputs based on the consistent application of five prioritization criteria to develop a "medium-cost scenario." There were several iterations of the PSTA 3 RF, resulting in enhanced capacity and strong ownership by key MINAGRI counterparts. Based on this PSTA 3 RF, the Bank team derived a modified version for purposes of the PforR support operation.

30. **The Bank team reviewed MINAGRI's current M&E system[59] and identified and consolidated the main constraints**. These included: (i) there is no unified system in place to link the various institutions/organizations performing M&E in the agriculture sector (MINAGRI

[59] Also, a recent assessment of the M&E system in support of preparing the evaluation framework of PSTA 3 identified system-related constraints that are included in the World Bank's assessment (see "M&E Framework and ASIP for PSTA 3: Intermediate Final Report" (May, 2014), prepared by EU-funded consultants).

– coordinated by the Planning Department, and its main implementation agencies RAB, NAEB, and three SPIUs). Each of the institutions/organizations focus on input/output indicators as specified in their performance contracts but not related to PSTA 3, especially at the outcome and impact levels; (ii) MINAGRI functions to a certain extent as lead agency for M&E operations but does not link and integrate them to the PSTA 3 as yet. Nor does it cover the level of strategic objectives, but instead remains at an operational level; (iii) the formats used are not harmonized and are oversimplified. Therefore questions arise as to the validity and reliability of the collected data; (iv) M&E at all agricultural institutions suffers from shortages of adequately trained personnel as well as budgetary resources to carry out key activities. At the subnational level, the M&E assessment highlighted an additional set of constraints at District and sectoral levels, which included: (a) a focus on the priorities being determined at a higher level (national and District); (b) some reliability issues in the way that crop production/productivity harvest data are generated and reported; and (c) the diverse reporting formats used at various levels which pose additional challenges to the reliable aggregation of production data.

31. **In light of the above assessment, the PforR operation includes a framework for updating and consolidating an action plan for strengthening the M&E system for MINAGRI**, in a manner integrated and supportive of the M&E systems for each of MINAGRI's entities (RAB, NAEB, the three SPIUs), while taking a sectoral approach in line with the RF for PSTA 3.

Program Economic Evaluation

32. **The Bank team carried out an economic assessment of the Agricultural PforR support operation for PSTA 3.** The rational for public sector financing as well as the World Bank value added are presented, followed by a quantitative and qualitative assessment of the ASIP. Results are also presented to inform the relative prioritization of the different SPs in the ASIP medium-cost scenario, which total US$1,195 million over five years in constant 2014 prices (equivalent to US$1,214 million with inflation and projected changes in the RwF/US$ exchange rate).

33. **Public sector rationale.** The rationale for public sector investments includes that cash-poor farmers are unable to internalize large unit development costs combined with long-term and downstream benefits that provide inclusionary access to expected benefits by beneficiaries. In the case of irrigation and service delivery, plans include subsequent transfer of ownership and service provision to private sector entities. Public sector intervention is also justified in key post-harvest investments that create spillover effects but that have been delayed because of a lack of private sector financing.

34. **World Bank added value.** World Bank financing in support of PSTA 3 would add comparative value given the World Bank's position to draw upon a wealth of global experience and expertise in areas directly related to Program investments areas. Achievements from the successful implementation of ongoing World Bank-supported operations in the sector also provide a strong background upon which to prepare this proposed operation.

35. **A 25-year cash flow model is used to assess the *ex-ante* productivity, effectiveness, and efficiency of public sector investments.**[60] While the costs of all SPs are included in the analysis, the model only quantifies direct benefits for 9 of the 24 SPs – covering 88 percent of the public sector investment. It is assumed that the private sector and PPP investments mapped out in the ASIP costs will occur and be economically viable. The core of the analytical model estimates the impact of SP investments on revenues and costs in seven different enterprise models: three cropping models, one livestock model, and three post-harvest enterprises. In addition, the analysis quantifies increased benefits from greater employment opportunities in agriculture, and an estimate of the economic value of increased carbon sequestration.

36. **A selection of key drivers of agricultural growth are quantified in the model to analyze the impact of changes in public sector investment costs by linking enterprise models and SP costs.** Changes in public sector investments lead to changes in: the number of developed hectares with terracing or irrigation; the number of higher-yielding cows distributed; the number of infrastructures built for post-harvest drying and storage; and the extent of new or improved feeder roads. Further to this, the model captures how SPs are designed to enhance farm-level yields and affect fertilizer and seed use. The linkages between enterprise models and SP investments also capture benefits from reduced soil erosion, labor savings from mechanization, cost savings from feeder roads, avoided yield and price loss from post-harvest infrastructure, and adoption of new farming practices.

37. **The medium-cost scenario yields an economic net present value (NPV) of US$585 million and a sound economic rate of return (ERR) of 21 percent.** Undiscounted, this is equivalent to an average annual economic net benefit of US$195 million. Using this estimate as a proxy for annual growth in the agriculture sector, it constitutes 8.0 percent of the agricultural share of GDP, nearly matching the 8.5 percent growth target in PSTA 3. Some benefits are not yet captured in this analysis, including incremental benefits from value chain development.

38. **Poverty reduction is achieved through increased farm-level incomes ranging between US$320 and US$2,200 per year on a 0.6 ha farm**. Assuming five people per farm household, this constitutes about 0.3 to 2.3 times the national poverty line, or US$0.20-1.20 per person per day. Poverty is also reduced by generating agricultural employment in the order of 7.7 million work days per year or 29,400 fulltime person-years.

39. **Elasticities indicate the relative impact of different SPs.** An analysis of elasticities indicates that the economic NPV is most sensitive to changes in investments in land conservation, research and technology transfer, and soil fertility investments. Conversely, estimated elasticities indicate that the impact on employment generation is driven particularly by investments in livestock development and irrigation, while employment decreases with increased mechanization.

40. **Linkages between enterprise models and SPs highlight that there are positive synergies.** In the case of soil conservation and livestock production, increased income and

[60] Financial prices are converted to economic prices using adjustment factors and amounts are noted in constant 2014 terms; the exchange rate is RwF 650 to 1 US$.

availability of fodder and straw enable livestock production while more available manure helps improve incomes and soil fertility. The net benefit from investments in storage facilities is dependent on successful implementation of SPs that increase crop yields and prices. Program delays and low farmer adoption rates are key risk factors that can threaten the achievement of expected benefits. Risk management strategies should ensure minimum program delay while also increasing farmer adoption rates through extension. Finally, it is important that yield increases are supported through SPs for livestock and hillside developments because these enterprises constitute a large share of total program returns.

41. **Agriculture growth driven by the nine quantified SPs is enabled through linkages to the other SPs.** First, support for farmers' organizations helps improve access to inputs, markets, finance, insurance, and extension services. Based on this, benefits can be captured in cropping and livestock production because these require functioning markets for both farm inputs and outputs. Second, the enterprise models rely on access to markets via value chains for crops, dairy, and meat including for increased production of cash crops and export. This requires access to improved drying, storage, processing, and also transport, which are necessary to meet higher quality standards and sell perishable products to other than local markets.

42. **Effective institutions, adapted legal and regulatory frameworks, and targeting of disadvantaged groups strengthen Program impact.** The impacts of investment in research, technology transfer and extension rely on effective institutions that can implement research programs and ensure farmer adoption of improved technologies and farming practices. In addition, investments are planned to adapt the legal and regulatory system to transform the agriculture sector toward higher value chains including exports. Finally, because investments that increase productivity may be subject to elite capture, SP investments are planned to ensure that disadvantaged groups benefit through food and nutrition security as well as through employment generation.

43. **Tracking impacts against a baseline with reliable M&E systems helps decision makers and DPs make evidence-based investment decisions.** To ensure that the Program investment is sound and stays on target, it is important to track impacts against a baseline. Investments are needed to establish the baseline against which impacts are measured, and to assess if investment priorities should change over time as new information comes to light. By establishing a statistical system and a targeted M&E system, it becomes possible to implement sound investments in the future based on timely and reliable information.

Inputs to the Program Action Plan (PAP)

44. **The technical, fiduciary, and environmental and social systems assessments highlighted five main types of cross-cutting risks and where the resulting key actions and risk mitigation measures form the basis of the PAP**. While the overall PSTA 3 is sound, these additional actions will facilitate smooth implementation and meet and contribute to international good practice. The main areas of cross-cutting risks and mitigation measures to be supported during implementation for the overall PAP are summarized below (see detailed PAP matrix in Annex 9).

45. **The need for an enhanced enabling policy environment and expanded private sector role and capacities refers to: the relatively infant stage of development and maturity of the private sector in the agriculture sector; the absence of clear and sound policies and supporting mechanisms to stimulate expanded private sector role in input and output markets; and the relatively weak capacities of farmers' organizations/cooperatives.** Accordingly, proposed actions to enhance required capacities and performance, as well as risk mitigation measures to be a part of the PAP, include preparing and implementing well-focused and updated strategies for RAB and NAEB. This will enhance the enabling environment for an expanded private sector through better pinpointing of binding constraints involving policy, institutional, and investment aspects.

46. **Evolving public sector institutional roles and enhanced capacities refers to important changes at the central and subnational levels, as part of the government's overall decentralization strategy, and whereby MINAGRI agencies (RAB and NAEB) currently are completing strategic plans and undergoing enhanced restructuring, with expanded field presence (to support expanded role of Districts), to ensure enhanced efficiencies and effectiveness**. Accordingly, key actions and risk mitigation measures to be a part of the PAP include: (i) ensuring these reforms/strategic plans for RAB and NAEB are completed and implemented; and (ii) integrating the three SPIUs in MINAGRI's overall structure to foster enhanced capacities and sustainability of strategic activities at various levels.

47. **Operation and maintenance challenges and requirements refers to the challenges of ensuring that the significant expansion of productive rural infrastructure is well maintained and based on efficient and sustainable arrangements (especially soil and land conservation works; irrigation facilities; etc.).** Many of the farmers' organizations/cooperatives are young and have only emerging capacities to ensure the required and timely O&M support, especially given the "public good" nature of this infrastructure, which warrants organized collective action. Accordingly, key actions and risk mitigation measures to be a part of the PAP include: (i) implementing O&M arrangements and mechanisms for each of the infrastructure investments (e.g., Irrigation Water Users Organizations (IWUOs); cooperatives/farmer groups; road maintenance brigades) confirming they are operational and functional, including explicit and timely hand-over arrangements with beneficiaries (e.g., Irrigation Transfer Management Agreements for irrigation schemes); and (ii) conducting well-focused capacity development/training activities of the various farmer-level organizational structures to help ensure adequate and timely O&M (IWUOs, farmers' cooperatives/organizations, road maintenance brigades).

48. **Fiduciary, Social and Environmental Systems Strengthening**. **Overall, the fiduciary aspects of the relevant implementation agencies are sound, although there are some modest weaknesses that need strengthening, especially at the District level considering the increasing proportion of funds channeled through and accounted by Districts**. More specifically, the fiduciary assessment highlighted the following aspects which need relatively minor strengthening and appropriate mitigation measures to ensure robust fiduciary accountability at all levels and times: expenditure variance analysis; internal controls; internal audits; external audit; implementation of the public procurement law, regulations and procedures; and F&C aspects, especially at the District level. Accordingly, the key actions to be

a part of the PAP include the following: (i) MINAGRI, with support from its SPIUs and in collaboration with MINALOC, and based on a "representative" sample of Districts, will prepare an operational action plan to strengthen relevant fiduciary aspects, with an emphasis on District-level capacities in the following areas: procurement; internal controls; internal audit; external audit accountability; more effective and consistent implementation of the procurement law, regulations, and procedures; and F&C strengthening at the District level; and (ii) the agreed fiduciary, environmental, and social systems actions will be implemented.

49. **Agriculture expenditure and financing framework. There is a need to further strengthen the agriculture planning and budgetary allocation system, coupled with an enhanced MIS to ensure adequate and prioritized levels of funding PSTA 3**. An improved planning and budgetary process has been in place since 2013/14 and TA support (from USAID, EU, and IFAD) to MINAGRI will provide further improvements. MINAGRI and MINECOFIN will work closely to strengthen the planning process. In addition, there will be intensified government-DP dialogue as part of the annual budgetary cycle in support of the PSTA 3 requirements.

Technical Risk Rating

50. Based on the technical assessment findings, and considering the proposed risk mitigation, improvement, and capacity development measures summarized above, **the overall risk rating for the technical assessment is Moderate.** This rating reflects both the cross-cutting risks involving the overall PSTA 3 and the challenges of efficient and effective implementation of the large number of SPs (24), which involve promoting strategic policy, institutional, and investment reforms/enhancements in the sector; at the same time, these SPs support the achievement of ambitious but attainable strategic objectives and targets, as well as generate synergies within and between the four programs of PSTA 3, working together to generate higher-level impacts. The detailed PSTA 3 RF provides important details on the nature of the identified constraints and the explicit results chain (from inputs-to-outputs-to-outcomes, all contributing to the higher-level impacts) for achieving the strategic objectives of each SP and the overall PSTA 3. The results chain and design of the RF was intended to address the identified risk factors. Annex 7 provides further details on the nature of the constraints and related risks for each SP, and the basis of the risk rating for each SP. Table 4.7 summarizes the risk ratings for each of the SPs, which combined form a core component of this overall risk rating.

Table 4.7: Summary of Risk Ratings by Subprogram

Program and SP	Risk Rating
1. Agriculture/Animal resource intensification	
1.1. Land conservation	Moderate
1.2. Irrigation	Moderate
1.3. Mechanization	Moderate
1.4. Improve soil fertility	Moderate
1.5. Seed improvement	Moderate
1.6. Livestock development	Moderate
2. Research and technology transfer	
2.1. Research & technology transfer	Low
2.2. Extension services	Low
2.3. Farmers' cooperatives/organizations	Moderate
3. Value chain development/Private sector investment	
3.1. Enabling environment for private sector development	Moderate
3.2. Food crops	Low
3.3. Export crops	Moderate
3.4. Dairy and meat	Moderate
3.5. Fisheries	Substantial
3.6. Apiculture	Substantial
3.7. Agricultural finance	Substantial
3.8. Market infrastructure	Moderate
4. Institutional Development/Cross-cutting issues	
4.1. Institutional capacity	Moderate
4.2. Decentralization	Moderate
4.3. Legal and regulatory framework	Moderate
4.4. MIS: M&E and Agricultural stats	Moderate
4.5. Gender and Youth	Moderate
4.6. Environmental Mainstreaming	Moderate
4.7. Food and Nutrition Security	Low

Inputs to the Program Implementation Support Plan

51. **The PforR operation in Rwanda will require considerable well-coordinated and sharply focused technical support from the Bank's interdisciplinary team, particularly during the early stages of implementation.** One challenge will be to coordinate and align the actions agreed in the PAP with operational activities on the ground, ensuring that information flows effectively and on a timely basis between policy makers and implementation actors (MINECOFIN, MINAGRI, RAB, NAEB, SPIUs, and Districts). While channels of communication are generally good within Rwanda, there will be a continual flow of information to and between implementing entities and the relevant officials/counterparts during the Program, linking them to the RF of PSTA 3 and of the Program, and to the DLIs. At the District level, implementation actors will need to confirm with the Bank that their budgetary planning is technically sound and timely to ensure that available funding can be absorbed and expected results delivered on time and within expected budget envelopes. The team recognizes that the Ag. PforR mode of operation, which transfers performance risk to the implementing actors, provides a challenge, particularly at the local level. The World Bank Group's Ag. PforR Program is highly decentralized, with the task team leader and key team members based in the region, which will facilitate overall implementation and timely communication with and support to the client (and its various actors) and the diverse stakeholders involved in implementation.

52. **The Bank's implementation support will be focused on making the results-based incentive system work to its fullest potential.** This will include: (i) reviewing implementation progress, including the solid and timely achievement of Program results and DLIs, the PAP, and any required changes or updates to the PAP; (ii) providing support on resolving emerging Program implementation issues and bottlenecks and on building institutional capacity of the key actors in line with the PAP; (iii) monitoring the adequacy of systems' performance, including especially the PAP and any required updating, and monitoring compliance with legal agreements including legal covenants; and (iv) supporting the GoR in monitoring and managing changes in the various types of risks (as outlined in Annex 7).

53. **Key to the Bank's effective implementation support will be the coordination and timing with critical points in the planning and verification of results for disbursement requests to the World Bank, based on the agreed DLIs.** The first implementation support mission will take place shortly following effectiveness to provide direct and timely feedback on the quality of implementation plans. It is expected that at that stage initial progress will have been made towards accomplishment of the first set of Program results and many of the actions in the PAP and these will also be reviewed during the initial review mission. The first mission is therefore expected to include all team members (i.e., technical, environmental, social, and fiduciary specialists). Subsequent implementation support will have a stronger emphasis on verification/M&E skills and technical implementation expertise, varying according to the actual needs as specified in the PAP and priority requests by MINAGRI.

54. **Further details on the focus of the Bank's implementation support and the Bank's task team skills mix requirements for implementation support are provided in Annex 10**.

Annex 5: Economic Assessment

I. Summary

1. Annex 5 presents the economic assessment of the Agricultural Program for Results (PforR) support operation for the Government of Rwanda's (GoR) Strategic Plan for the Third Phase of the Transformation of Agriculture (PSTA 3). The rational for public sector financing as well as the World Bank value added are presented followed by a quantitative and qualitative assessment of the Agriculture Sector Investment Plan (ASIP). Results are also presented to inform the relative prioritization of the different subprograms (SPs) in the ASIP medium-cost scenario, which total US$1,195 million over five years in constant 2014 prices (equivalent to US$1,214 million with inflation and projected changes in the RwF/US$ exchange rate).

2. **Public sector rationale.** The rationale for public sector investments includes that cash-poor farmers are unable to internalize large unit development costs combined with long-term and downstream benefits. In the case of irrigation and service delivery, plans include subsequent transfer of ownership and service provision to private sector entities. Public sector intervention is also justified in key post-harvest investments that create spillover effects but that have been delayed because of a lack of private sector financing.

3. **World Bank added value.** World Bank financing in support of PSTA 3 would add comparative value given the World Bank's position to draw upon a wealth of global experience in areas directly related to Program investments areas. Achievements from the successful implementation of ongoing World Bank-supported operations in the sector also provide a strong background upon which to prepare this proposed operation.

4. **A 25-year cash flow model is used to assess the *ex-ante* productivity, effectiveness, and efficiency of public sector investments.**[61] While the costs of all SPs are included in the analysis, the model only quantifies direct benefits for 9 of the 24 SPs – covering 77 percent of the public sector investment. It is assumed that the private sector and public-private partnership (PPP) investments mapped out in the ASIP costs will occur and be economically viable. The core of the analytical model estimates the impact of SP investments on revenues and costs in seven different enterprise models: three cropping models, one livestock model, and three post-harvest enterprises. In addition, the analysis quantifies increased benefits from greater employment opportunities in agriculture and an estimate of the economic value of increased carbon sequestration.

5. **A selection of key drivers of agricultural growth are quantified in the model to analyze the impact of changes in public sector investment costs by linking enterprise models and SP costs.** Changes in public sector investments lead to changes in: the number of developed hectares with terracing or irrigation; the number of higher-yielding cows distributed; the number of infrastructures built for post-harvest drying and storage; and the extent of new or improved feeder roads. Further to this, the model captures how SPs are designed to enhance farm-level yields and affect fertilizer and seed use. The linkages between enterprise models and SP investments also capture benefits from reduced soil erosion, labor savings from

[61] Financial prices are converted to economic prices using adjustment factors and amounts are noted in constant 2014 terms; the exchange rate is RwF 650 to 1 US$.

mechanization, cost savings from feeder roads, avoided yield and price loss from post-harvest infrastructure, and adoption of new farming practices.

6. **The medium-cost scenario yields an economic net present value (NPV) of US$585 million and a sound economic rate of return (ERR) of 21 percent.** Undiscounted, this is equivalent to an average annual economic net benefit of US$196 million. Using this estimate as a proxy for annual growth in the agriculture sector, it constitutes 8.0 percent of the agricultural share of GDP only 0.5 percent short of, matching the 8.5 percent growth target in PSTA 3. Some benefits are not yet captured in this analysis, including incremental benefits from value chain development.

7. **Poverty reduction is achieved through increased employment generation and farm income,** ranging between US$320 and US$2,200 per year on a 0.6 ha farm. Assuming five people per farm household, this constitutes about 0.3 to 2.3 times the national poverty line or US$0.20-1.20 per person per day. Poverty is also reduced by generating agricultural employment in the order of 7.7 million work days per year or 29,400 fulltime person-years.

8. **Elasticities indicate the relative impact of different SPs.** An analysis of elasticities indicates that the economic NPV is most sensitive to changes in investments in land conservation, research and technology transfer, and soil fertility investments. Conversely, estimated elasticities indicate that the impact on employment generation is driven particularly by investments in livestock development and irrigation, while employment decreases with increased mechanization.

9. **Linkages between enterprise models and SPs highlight that there are positive synergies.** In the case of soil conservation and livestock production, increased income and availability of fodder and straw enable livestock production while more available manure helps improve incomes and soil fertility. The net benefit from investments in storage facilities is dependent on successful implementation of SPs that increase crop yields and prices. Program delay and low farmer adoption rates are key risk factors that can threaten the achievement of expected benefits. Risk management strategies should ensure minimum program delay while also increasing farmer adoption rates through extension. Finally, it is important that yield increases are supported through SPs for livestock and hillside developments because these enterprises constitute a large share of total program returns.

10. **Agriculture growth driven by the nine quantified SPs is enabled through linkages to the other SPs.** First, support for farmers' organizations helps improve access to inputs, markets, finance, insurance, and extension services. Based on this, benefits can be captured in cropping and livestock production because these require functioning markets for both farm inputs and outputs. Second, the enterprise models rely on access to markets via value chains for crops, dairy, and meat including for increased production of cash crops and export. This requires access to improved drying, storage, processing, and also transport, which are necessary to meet higher quality standards and to sell perishable products to other than local markets.

11. **Effective institutions, adapted legal and regulatory frameworks, and targeting of disadvantaged groups strengthen program impact.** The impacts of investment in research,

technology transfer, and extension rely on effective institutions that can implement research programs and ensure farmer adoption of improved technologies and farming practices. In addition, investments are planned to adapt the legal and regulatory system to transform the agriculture sector toward higher value chains including exports. Finally, because investments that increase productivity may be subject to elite capture, SP investments are planned to ensure that disadvantaged groups benefit through greater food and nutrition security as well as through employment generation.

12. **Tracking impacts against a baseline with reliable M&E systems helps decision makers and development partners (DPs) make evidence-based investment decisions.** To ensure that the Program investment is sound and stays on target, it becomes important to track impact against a baseline. SP 4.4 investments are needed both to establish the baseline against which impacts are measured, but also to assess if investment priorities should change over time as new information comes to light. By establishing a statistical system and a targeted M&E system, it becomes possible to implement sound investments in the future based on timely and reliable information.

II. Background

13. The GoR requested the World Bank to provide an Agricultural Program for Results (PforR) support operation for PSTA 3. The World Bank's assessment methodology calls for an economic assessment of PSTA 3, which is supported by the Bank. The focus in this annex is to analyze the medium-cost funding scenario for ASIP, and comparisons are also made to the high-cost scenario. The economic assessment addresses four key aspects:

- Rationale for Public Provision and Financing;
- World Bank Added Value;
- Program's Economic Impact; and
- Results of Economic Evaluation.

14. This assessment aims to further enhance the design of the proposed PforR. The results of the economic assessment can also be used as a tool to help determine the most suitable composition of public agricultural investment costs. Where possible, the indicators and elasticities estimated in the model are used as proxies to discuss the proposed prioritization criteria listed below for PSTA 3's Results Framework (RF):

- Degree to which SPs/activities contribute to achieving Vision 2020 and EDPRS 2 strategic objectives and targets;
- Degree to which SPs/activities contribute to achieving increased crop, livestock productivity, and food security;
- Degree to which SPs/activities contribute to more inclusive agricultural private sector investment;
- Degree to which SPs/activities contribute to promoting enhanced market focus commercialization and value addition; and
- Degree to which SPs/activities contribute to accelerating agriculture export growth.

III. Rationale for Public Provision and Financing

15. In many cases, investments in productive activities are private goods for which there is no rationale for public sector financing. Public sector investments are generally justified in the case of provision of public goods and nonmonetary benefits, dealing with market failures, spillovers to non-Program areas, environmental externalities, redistribution of wealth, and social and political concerns.

16. **Development of hillside terraces includes high unit costs combined with long-term and downstream benefits**. In the case of the ASIP medium-cost scenario, investments in radical and progressive terracing do generate direct benefits to farmers. However, the investments also reduce long-term productivity losses from soil erosion, which cash-poor farmers are not able to internalize in their farm management plans. Reduced soil erosion also generates benefits for downstream irrigation systems that will experience reduced costs of clearing sediment loads.

17. **Irrigation developments include high unit costs that are later transferred to private Water Users' Associations (WUAs).** In the case of irrigation development, the unit costs are so high that cash-poor farmers are not able to cover the costs themselves nor to obtain financing without public sector support. Irrigation development has spillover effects on the local population through employment generation and improved availability of water for household use as well as livestock production. The investment includes the transfer of self-reliant and self-financing irrigation schemes to WUAs and other nonpublic entities.

18. **Key post-harvest investments have been delayed because of a lack to access to adequate financing but have the potential to generate key spillover effects.** With a lack of access to financing for farmers, and often also farmers' organizations, public sector funding can initialize investments in post-harvest infrastructure projects. Again, some of these benefits are captured by farmers, but spillover effects include increased employment opportunities and strengthening of high-value chains. In the case of building rural feeder roads, the public sector justification is clearer, as roads are classical public goods with substantial spillover effects of employment generation, greater productivity in all sectors, and easier access to health, education, and social facilities and services.

19. **Research, technology transfer, and extension are public goods with spillover effects to non-Program areas.** As is planned in the PforR operation, private sector investment can be incorporated in research and extension where sufficient private benefits can be captured to make investments economically viable. The PforR operation is designed to reinforce and strengthen the government's own systems for delivery of key agricultural services, while putting in place processes to expand the role of the private sector in service provision. With respect to agricultural research and related knowledge-generation activities, these activities are nonexcludable, therefore making them classical public goods. At the same time, PSTA 3 will endeavor to expand the range of actors in promoting agricultural research, including the private sector, for higher-value crops.

IV. World Bank Added Value

20. World Bank financing in support of PSTA 3 would add comparative value given the Bank's position to draw upon a wealth of global experience in the following areas: (i) sustainable land management; (ii) input provision; (iii) increased irrigation in marshland and hillside approaches in support of increasing agriculture production and productivity; (iv) fostering of a more conducive policy environment for stimulating the private sector's role and investments in the agriculture sector; (v) increased marketing and sales of agriculture production and creation of on- and off-farm small and micro businesses; and (vi) provision of advice to the GoR on adapting relevant good practices and innovations to the Rwandan context. These experiences would support the GoR's effective implementation of PSTA 3, thereby contributing to achievements of strategic impact, outcome, and output level targets, underpinned by a strong results chain.

21. Achievements from the successful implementation of ongoing World Bank-supported operations in the sector provide a strong foundation upon which to prepare this proposed operation. Both the Rural Sector Support Project (RSSP) and the Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH) achieved commendable results in helping to transform Rwanda's rural farming sector. Under RSSP 1 and 2 (now closed) and the ongoing RSSP 3, farmers moved from low-value subsistence farming to a more productive irrigated system. Under RSSP, impressive improvements were made in marshland rehabilitation and protection of hillsides against erosion. Similarly, LWH made significant contributions to raising rural incomes, increasing productivity of hillsides, increasing crop yields, and improving participatory approaches of farmers' organizations.

V. Quantitative Methodology

22. **This economic assessment includes a quantitative cost-benefit analysis of nine SPs and qualitative discussion of the remaining 15 SPs.** An Excel-based cash flow model was designed to assess the *ex-ante* productivity, effectiveness, and efficiency of public sector investments in different SPs using the ASIP medium-cost funding scenario of US$1,195 million over five years, as shown in Table 5.1 (equivalent to ASIP public sector estimate of US$1,214 million with inflation and projected exchange rates).[62] While the costs of all SPs are included in the analysis, the model only quantifies direct benefits for 9 of the 24 SPs – covering 77 percent of the public sector investment. It is further assumed that the private sector and PPP investments mapped out in the ASIP costs will occur and be economically viable, even if the costs and benefits are not quantified in this current analysis. Some comparisons are made to the ASIP high-cost scenario, also shown in Table 5.1.

[62] The analysis reported in this annex is based on the Excel-based Economic and Financial Analysis Model version dated June 16, 2014. The exchange rate is RwF 650 to US$1.

Table 5.1: ASIP Public Sector Investments by SP as Included in the Analytical Model

Investment costs for 5-year period	Medium-cost Scenario		High-cost Scenario	
Subprogram	**(million US$)**	**(% of total)**	**(million US$)**	**(% of total)**
1.1. Land conservation	107	9	282	15
1.2. Irrigation	292	24	597	32
1.3. Mechanization	42	4	323	18
1.4. Improve soil fertility	71	6	115	6
1.5. Seed improvement	39	3	45	2
1.6. Livestock development	72	6	100	5
2.1. Research and technology transfer	36	3	12	1
2.2. Extension services	40	3	17	1
3.8. Market-oriented infrastructure	216	18	291	16
Sub Total	914	77	1,784	97
Remaining 15 SPs [(2)]	280	23	61	3
Total Public Sector Investment [(3)]	1,195	100	1,845	100

Note: (1) Amounts are in constant 2014 prices (no inflation). When including projected inflation and projected exchange rates for the 5-year period as reported in the ASIP report, the totals correspond to US$1,214 million in the medium-cost scenario and US$1,907 million in the high-cost scenario.
(2) In the analysis these costs are deducted from the net benefits of the other nine SPs.
(3) Analysis excludes ASIP costs assigned to private sector and PPPs (US$528 million in the medium-cost scenario and US$358 million in the high-cost scenario - excluding inflation and projected exchange rates).

23. The core of the analytical model estimates the impact of SP investments on revenues and costs in seven different enterprise models and two additional benefit flows. The analytical model and associated assumptions are an amalgamation of the Economic and Financial Analysis (EFA) models used in 2013 for two World Bank investment projects in Rwanda: LWH and RSSP. The current model therefore includes three cropping enterprises, one livestock enterprise, and three post-harvest enterprises as described below:

a) **Cropping on irrigated hillside areas** (command areas). This enterprise model includes a representative cropping pattern for the without- and with-Program situations. The crops include: avocado, banana, maize, mango, onion, tomatoes, and sorghum (see Table 5.2). Furthermore, the assumptions include farm-level yields, crop prices, and costs of: labor, planting, manure, fertilizer, chemicals, and irrigation operating and management fee, as applicable on the different crops. It is assumed that without the Program there is a 1 percent annual yield loss due to soil erosion. The annual gross margins per ha are calculated for each crop while allowing for delayed harvesting for up to two years after planting, and replanting of certain crops every 10 or 25 years, such as in the case of banana, avocado, and mango. Incremental Program impact is aggregated up by 12,300 ha developed for hillside irrigation. It is assumed that 5 percent of the hectares developed will be occupied by reservoirs without any agricultural production in the with-Program situation. It is also assumed that farmers on 95 percent of the area adopt the improved with-Program cropping practices, leaving 5 percent to achieve net benefits equivalent to those without the Program.

b) **Cropping on nonirrigated hillside areas**. This enterprise model has representative cropping patterns for the without- and with-Program situations with the following crops: banana, beans, cassava, Irish potato, maize, and sorghum (see Table 5.2). As in the irrigated hillsides enterprise model, the assumptions include yields, crop prices and

operating costs as applicable to the different nonirrigated crops. It is assumed that without the Program there is a 1 percent annual yield loss due to erosion. Annual crop margins per ha take into account replanting of bananas every 10 years and a one-year delay after planting before first harvest. Incremental Program impact is aggregated up by 310,854 ha developed for nonirrigated hillside farming. It is assumed that 5 percent of the hectares developed will be silt trap zones in the with-Program situation. Incremental benefits are added from producing poles, charcoal, forage, and grass on these areas. It is also assumed that farmers on 95 percent of the area adopt the improved with-Program cropping practices, leaving 5 percent to achieve net benefits equivalent to those without the Program.

c) **Cropping on irrigated marshlands**. In this enterprise model, it is assumed that sweet potatoes are grown in the without-Program situation, and the irrigation development enables two seasons of paddy rice. As in the irrigated hillsides enterprise model, the assumptions include yields, crop prices, and operating costs as applicable for sweet potatoes and paddy rice. Incremental Program impact is aggregated up by 13,500 ha developed for marshland irrigation. It is assumed that 5 percent of the hectares developed will be occupied by reservoirs without any agricultural production in the with-Program situation. It is also assumed that farmers on 95 percent of the area adopt the improved with-Program cropping practices, leaving 5 percent to achieve net benefits equivalent to those without the Program.

Table 5.2: Assumed Representative Farm Cropping Pattern Without- and With-Program by Area

Share of farm area / Yield	Irrigated Hillsides			Nonirrigated Hillsides			Irrigated Marshlands		
	Crop	**Share**	**kg/ha**	**Crop**	**Share**	**kg/ha**	**Crop**	**Share**	**kg/ha**
Without Program	Banana	33%	15,000	Banana	20%	15,000	Sweet Potato	100%	6,000
	Maize	33%	2,000	Beans	18%	600			
	Onion	2%	8,000	Cassava	9%	10,500			
	Sorghum	32%	1,600	Irish potato	7%	8,500			
				Maize	24%	1,600			
				Sorghum	22%	1,400			
With Program	Avocado	22%	8,000	Banana	1%	25,000	Paddy Rice **(1)**	100%	13,000
	Banana	10%	35,000	Beans	23%	2,300			
	Mango	19%	5,000	Irish potato	12%	20,000			
	Onion	19%	15,000	Maize	40%	4,000			
	Tomatoes	30%	15,000	Soybeans	24%	2,000			

Note: (1) Includes two seasons for paddy rice.
Source: Economic and financial analyses for the LWH and RSSP projects.

d) **Livestock cooperatives producing meat, milk, and manure**. Because data were more readily available at the cooperative level, net benefits of cow production were calculated for a single cooperative and aggregated up to the Program level based on the number of cooperatives involved in cow production. Individual farmers remain the direct beneficiaries from the cow production activities. This enterprise model includes herd projections and prices per head of calves and cows; milk and manure yields; and

operating costs for veterinary care, forage, feed concentrates, stud fees, labor, and construction and maintenance of stables and forage installations. It is assumed that each cooperative in the without-Program situation has a total herd of 465 heads (cows, bulls, and calves) based on annual purchase of 35 heifers for a stable herd. The Program target is to distribute 210,796 higher-yielding cows, which when divided by 900 cooperatives constitutes 47 heifers per year for five years. This builds up to a stable herd of 653 heads per cooperative. It is also assumed that 95 percent of the cooperatives adopt the improved with-Program livestock production practices, leaving 5 percent to achieve net benefits equivalent to those in the without-Program situation.

e) **Post-harvest drying of crops on new drying floors**. Use of Program-financed drying floors ensures faster and more complete drying of crops, thereby reducing storage losses and improving the quality of products so they can command higher prices in the market. The benefit of investing in each drying floor is assumed to constitute an average of 225 tonnes/month for four months of the year with a 10 percent quantity loss avoided and 10 percent price loss avoided. The value of the benefit is measured as the full drying capacity multiplied by the weighted average of prices of the share of crops that are typically dried, including paddy rice, sorghum, maize, and beans. Operating costs include materials and labor.

f) **Post-harvest storage of crops in new facilities**. Use of Program-financed storage facilities reduces storage losses and allows crops to be sold at higher prices compared to those prevailing immediately following the harvest. The benefit of investing in each storage facility is assumed to constitute an average of 400 tonnes/month for two 3-month periods of the year with a 20 percent quantity loss avoided and 20 percent price loss avoided. The value of the benefit is measured as the full storage capacity multiplied by the weighted average of prices of the share of crops that are typically stored, including paddy rice, maize, beans, sorghum, banana, and vegetables. Operating costs include materials and labor.

g) **Post-harvest transport on new or improved feeder roads**. Net benefits are calculated as a 5 percent avoided post-harvest transport loss due to new and improved feeder roads multiplied by the value of with-Program transported crops, including paddy rice, maize, beans, sorghum, banana, and vegetables. Further to this, it is assumed that this investment can yield a 5 percent reduction in input costs of seed, fertilizer, and chemicals for farmers. These cost savings are captured in the above cropping models. The estimated benefits from feeder road investments exclude any additional benefits captured by non-Program agricultural production and other sectors as well as benefits to communities by providing easier access to health, education, and social facilities.

h) **Employment opportunities in agriculture**. The incremental labor costs accounted for in the three cropping models, livestock model, and post-harvest drying and storage facilities are included as net benefits from greater employment opportunities in agriculture. This excludes any multiplier effects in other agribusinesses or other sectors. It also excludes labor generated from construction during Program

implementation. For cropping farms in the without-Program situation or when there is no irrigation, it is assumed that 10 percent of the labor requirements are hired labor. On farms with irrigation, this is 50 percent.

i) **Economic value of increased carbon sequestration**. The links between land degradation and CO_2 emissions are numerous and complex, but studies from some countries suggest that sustainable land management (SLM) measures such as those that have been supported under the LWH project contribute to CO_2 mitigation by at least 0.5 tonnes of carbon per ha per year (or 1.785 tonnes of CO_2 per ha per year using a 3.57 transformation ratio). The estimate of 0.5 tonnes of C was used in the Kenya Agricultural Productivity and SLM Project and the Western Kenya Community Driven Development and Flood Mitigation Project. It can go as high as 12 tonnes of C from 5-year-old forest land used in the Western Kenya Integrated Ecosystem Management Project and even as high as 20 tonnes of C for regenerated closed areas to 40 tonnes of C for afforested land used in the Loess Plateau Watershed Rehabilitation Project. In the current analysis it is assumed that nonirrigated areas sequester 0.5 tonnes of carbon per ha per year while silt trap zones sequester 12 tonnes of C per ha per year. In terms of valuing sequestered C or CO_2, activities that result in increased carbon sequestration in Biocarbon Fund projects in 2009 typically were compensated at a level of US$5 per tonne of CO_2. Estimates of social price in different studies indicate US$5-125 per tonne CO_2.[63] From the literature on carbon finance, this can be interpreted as the social cost of CO_2 emission or as a pollution tax required to keep CO_2 emissions at the socially optimal level. In this Program, farmers will not receive direct compensation based on carbon sequestration and the benefit therefore only constitutes an economic value for a global public benefit. As a conservative estimate and, in line with the European Point Carbon price at the time of writing, the assumed value of carbon sequestration is set at US$7 per tonne of CO_2.

24. **Adjustment factors for economic analysis.** An economic benefit assessment is concerned with value addition to GDP and therefore ignores all transfer payments such as taxes, subsidies, grants, loans, interests, and repayments. Each of the above seven enterprise models and two benefit flows are calculated annually over a 25-year period using financial prices measured at the farm gate in constant 2014 amounts. The discount rate is set to 12 percent in line with the assumption in other World Bank projects in Rwanda. Financial prices and costs are converted to economic prices using adjustment factors. First, the shadow price of unpaid family labor is US$0.98 per day (RwF 634 per day), which is 14 percent below the market price of US$1.14 per day (RwF 740 per day) for unskilled hired labor used in agricultural production, in line with the Implementation Completion Report of RSSP 2. Second, the economic paddy rice price is assumed to be 80 percent of the financial price due to the import tariff imposed on imported rice from outside the East African Community (EAC). This is in line with findings in a

[63] Sources: Fankhauser, S. 1995. Valuing Climate Change: The Economics of the Greenhouse. London: Earthscan. Cavatassi, Romina. 2004. "Valuation Methods for Environmental Benefits in Forestry and Watershed Investment Projects," ESA Working Paper No. 04-01, FAO; and Dutilly-Diane, C., et al.. 2007. "Could Payments for Environmental Services Improve Rangeland Management in Central Asia, West Asia and North Africa?" CAPRi Working Paper No. 62, International Food Policy Research Institute.

rice value chain study.[64] Third, the financial analysis includes the current 50 percent fertilizer subsidy on maize and wheat while the subsidy is excluded from the economic analysis. Remaining financial prices and costs are converted to economic prices using a standard factor of 0.9. When investment costs do not indicate the proportion allocated to labor, it is assumed that 15 percent of the costs are labor in order to apply a different conversion factor to the two portions.

25. **Additional model refinements are implemented to analyze prioritization between SPs.** The analytical model outlined thus far enables an assessment of the *ex-ante* productivity, effectiveness, and efficiency of public sector investments overall and by SP for the base ASIP medium-cost case. However, a few more model refinements are necessary to be able to analyze the impact of reallocating funds between SPs and thus discuss budget prioritization.

26. **Linkages between SP investment costs and key enterprise model assumptions help quantify the relative impact of SPs.** Through the enterprise models described above, the key linkages to agricultural growth are quantified in that changes in public sector investment costs lead to changes in: the number of developed hectares with terracing or irrigation; the number of higher-yielding cows distributed; the number of infrastructures built for post-harvest drying and storage; and the extent of new or improved feeder roads. However, to further enable an analysis of the relative return of different SPs, some additional linkages are implemented in the analytical model. These linkages go across SPs and show the impact on: crop yields, input use and costs, and adoption of improved farming practices. These captured linkages are described below – keeping in mind that more intricate linkages should be considered in future improvements of this analytical model. As with all farm-level assumptions on revenue and costs, the relative contributions of each SP investment are based on expert assessment by the LWH and RSSP project team:

a) **Irrigated hillside yields.** The with-Program yield potential on irrigated hillside areas is achieved by investments in several SPs. As shown in Table 5.3, it is assumed that 10 percent of the yield increase is achieved through land conservation measures (terracing), 25 percent from irrigation, 5 percent from mechanization, and 20 percent to each of the SPs for improved soil fertility, seed improvement, and research and technology transfer. A numerical example is presented in Box 5.1. Note that the ASIP medium-cost area developed in SP 1.1 includes about 80 percent in progressive terraces and 20 percent in radical terraces. The radical terraces require large investments in manure and compost to build up organic matter and achieve yield improvements. If more radical terraces are built, this could be reflected by a higher yield impact than the 10 percent being allocated to SP 1.1.

b) **Nonirrigated hillside yields.** It is assumed that the with-Program yield potential on nonirrigated hillsides is achieved through land conservation (10 percent), mechanization (5 percent), and 75 percent split evenly between improved soil fertility, seed improvement, and research and technology transfer (see Table 5.3). A numerical example is presented in Box 5.1.

[64] See Rwanda Rice Commodity Chain Strategic Options to Maximize Growth and Poverty Reduction, prepared by D. Stryker, 2010.

c) **Irrigated marshland yields.** As shown in Table 5.3, the with-Program potential yield increase is achieved through irrigation (25 percent), mechanization (5 percent), and the remaining 70 percent split evenly between improved soil fertility, seed improvement, and research and technology transfer. A numerical example is presented in Box 5.1.

d) **Linkages to input use and input costs.** [65]

(i) **Soil erosion and downstream irrigation fee.** It is assumed that a change in investments in land conservation (terracing) leads to a proportional change in the irrigation fee per ha for farmers. The rationale is that less terracing than planned does not reduce soil erosion as planned and a high level of sediment load increases the costs of maintaining downstream irrigation systems. This model linkage assumes that at least some of the incremental maintenance costs are passed on to farmers via the irrigation fee.

(ii) **Mechanization and labor savings.** It is assumed that the investment in tractors, tillers, planters, harvesters, and so on can lead to a 15 percent per ha labor saving on farms. Most of the mechanization investment costs are included in SP 1.3 and some are also included in SP 3.8. The assumption is that 80 percent and 20 percent of the labor saving potential is achieved by the two SPs, respectively. For example, a 10 percent reduction in SP 1.3 means that only 92 percent of the labor saving potential is achieved (i.e., 14 percent labor saving rather than the full 15 percent).

(iii) **Fertilizer and seed use.** The model linkages include a proportional change in fertilizer use in kg per ha for crops in all areas when the investment costs change in SP 1.4. It also includes a proportional change in seed use in kg or plants per ha when the investment costs change in SP 1.5. This comes parallel to the yield change discussed above from changes in SP investments.

(iv) **Feeder roads and input cost savings.** It is assumed that if rural feeder roads are developed as planned, farmers can achieve a 5 percent cost saving on the costs of seeds, fertilizers, and chemicals. A reduction in SP 3.8 investment causes a proportional reduction in achieved cost saving.

e) **Adoption of improved farming practices.** It is assumed that in the base case, 20 percent of farmers on developed areas adopt the improved farming practices each year to a maximum of 95 percent, leaving 5 percent to achieve net benefits equivalent only to the without-Program situation. This adoption rate is linked to investment costs in SP 2.2 for extension services. A reduction in investment in this SP leads to a proportional reduction in the annual adoption rate. This is illustrated in Figure 5.1, showing the adopters, nonadopters, and silt trap zones on nonirrigated hillsides with 20 percent and 10 percent annual adoption rates.

[65] For future considerations in developing this model, one could consider the legitimacy of introducing multiplicative functions to capture the investment impacts. For example, this may imply that investing less in soil fertility (fertilizer use) may also lead to less seed use. Similarly, if soil erosion increases due to lack of terraces, fertilizer use will be less effective but seed use may not change equivalently. Further work is needed to obtain data to determine such functional relationships.

Table 5.3: Example of Model Linkages - Yield Impacts by SP

Share of max yield potential (1) / Subprogram (2)	W/P Yield on Irrigated Hillside Areas	W/P Yield on Nonirrigated Hillside Areas	W/P Yield on Irrigated Marshlands
1.1. Land Conservation	10%	10%	
1.2. Irrigation	25%		25%
1.3. Mechanization	5%	5%	5%
1.4. Improve soil fertility	20%	28%	23%
1.5. Seed improvement	20%	28%	23%
2.1. Research and technology transfer	20%	28%	23%
Total share of max yield potential (1)	100%	100%	100%

Note: (1) Each crop has its own assumed maximum yield potential in each cropping area. (2) Each SP contributes by a certain share of 100% to reach the maximum yield potential. Rounding errors may occur.

Box 5.1: Numerical Illustration of Model Linkages - Yield Impacts by SP

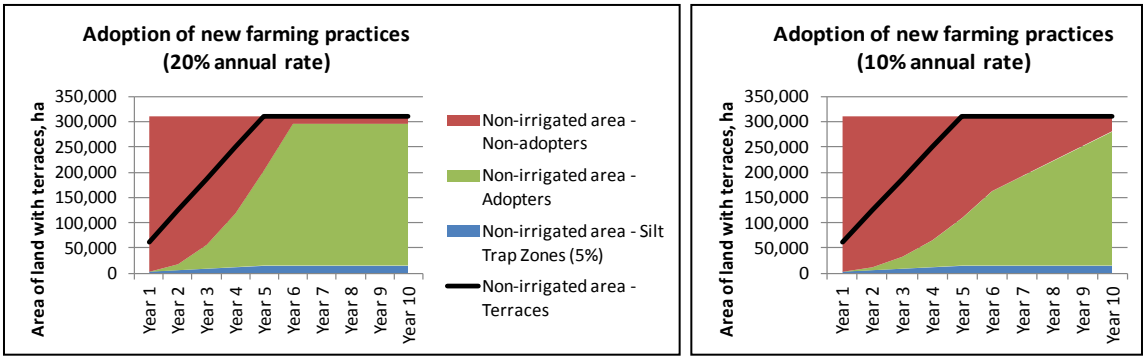
Table 5.3 shows how a number of SP investments are linked to key assumptions in the enterprise models. This is done to capture the effect investments have on the progress towards the maximum yield potential. Each crop has its own assumed maximum yield potential in each cropping area. The implication is that if investments are reduced in one of the SPs, the maximum yield potential is not reached.

For example: If the soil fertility SP's share of the ASIP investment halves from 6 percent to 3 percent, the maximum with-Program yield on irrigated hillsides will decrease by 50 percent of the 20 percent share allocated to soil fertility, equal to a 10 percent reduction. This means that one only reaches 90 percent of the yield potential on irrigated hillside crops.

At the same time, that investment cost change leads to a 50 percent decrease of 28 percent of the maximum yield potential on nonirrigated areas, equal to a 14 percent reduction. This means that one only reaches 86 percent of the yield potential on nonirrigated areas.

And finally, the 50 percent decrease in investment in SP 1.4 would halve 23 percent of the maximum yield potential on irrigated marshlands. This means that one only reaches 88 percent of the yield potential on irrigated marshlands.

Figure 5.1: Illustration of 20% and 10% Annual Adoption Rate on Nonirrigated Hillsides



Note: (1) Maximum adoption rate is 95 percent. (2) Left panel shows how a 20 percent annual adoption rate builds up to the maximum of 95 percent, while with a 10 percent annual adoption rate the maximum of 95 percent has not been reached by year 10.

VI. Quantitative Analysis of Key Subprograms

27. **This section presents the main results of the economic assessment.** First, the results are measured through proxy indicators for growth in agricultural GDP and poverty reduction through growth in income and employment. Second, results show how the different SPs rank in terms of driving the overall return on investment and employment generation. These items are covered first as they are of particular interest for prioritizing the government's investment between SPs. Third, other key results are discussed including: synergies between different SPs as well as the impact of Program delay and other risk factors. The unit costs of different SP activities are also discussed. Finally, the results are presented for the ASIP high-cost scenario.

28. **There is a sound return on public sector investment in the ASIP medium-cost scenario contributing to agricultural growth.** Estimates for the ASIP medium-cost scenario indicate that the planned US$1.2 billion five-year investment yields a sound overall economic NPV of US$585 million with an ERR of 21 percent. As shown in Table 5.10, the estimated 21 percent ERR lies within the range of rates of returns calculated on existing and closed investment projects in Rwanda and other Sub-Saharan African countries as implemented through different organizations (ERRs ranging from 14-93 percent on projects with a varying combinations of soil conservation, irrigation, and post-harvest components). Annual net benefits are shown in Table 5.11 and Table 5.12 for the financial and economic values, respectively. Note that these estimates are based on the 25-year model, which includes recurrent investment costs in year 6 and onwards from the ASIP cost estimate. Undiscounted, this is equivalent to an average annual economic net benefit of US$196 million (excluding carbon sequestration). Using this estimate as a proxy for annual growth in the agriculture sector, this constitutes 8.0 percent of the agricultural share of GDP.[66] The analysis seems generally consistent with an 8.5 percent growth target for the sector. In addition, this analysis does not capture incremental benefits from other enterprises, including those further up the value chain. Additional benefits will also be achieved outside the Program area but have not been accounted for here.

29. **Poverty reduction through farm-level income growth.** The ASIP medium-cost scenario drives a change in cropping pattern and farm management practices that greatly improve farm-level income. As shown in Table 5.4, estimates indicate a 77 percent increase in per ha gross margin on nonirrigated hillsides, and much larger increases on irrigated areas as shown in the table. With an average farm size of 0.6 ha, household incomes could increase by between US$320 and US$2,200 per year. If one assumes an average farm household of five people, this increase in income constitutes about 0.3 to 2.3 times the poverty line for Rwanda, or US$0.20-1.20 per person per day.[67] When targeting poor farmers, poverty can be reduced by increasing household income through increased productivity and also by switching more to cash crops such as maize and rice. These estimates are based on the cropping patterns shown in Table 5.2. For example, if the nonirrigated with-Program pattern instead included 23 percent banana and 1 percent beans, the gross margin would have increased by 123 percent rather than 77 percent. As such, the income effects will vary from area to area and farm to farm. Note that as is

[66] National Institute of Statistics of Rwanda (March 2014). Gross Domestic Product - 2013. GDP for 2013 was estimated as RwF 4,819 billion (US$7,414 million) of which 33 percent is value added by the agriculture sector.

[67] Official poverty line and extreme poverty line in 2012 prices are RwF 118,000 and 83,000 per person per year, which is equivalent to US$192 and US$132, respectively, in 2014 prices. (National Institute of Statistics Rwanda. 2012. The evolution of poverty in Rwanda from 2000 to 2011.)

appropriate in a financial and economic analysis, the gross margins presented in Table 5.4 exclude the cost of the farmer's own labor. Further to this, the increased gross margins will help motivate farmers to adopt improved technologies. This is discussed further below.

Table 5.4: Poverty Reduction from Increased Annualized Financial Gross Margins by Cropping Area

(Apr-2014 prices)	Unit	Irrigated Hillside Areas	Nonirrigated Hillside Areas	Marshland Areas
Without Program	US$//ha	661	693	906
With Program	US$/ha	4,325	1,227	4,319
Incremental increase:	US$/ha	3,664	533	3,412
% increase	%	554%	77%	376%
Increase on 0.6 ha farm (5 persons)	US$/farm/year	2,198	320	2,047
Increase per person	US$/person/year	440	64	409
Increase as share of poverty line	ratio	2.3	0.3	2.1
Increase as share of extreme poverty line	ratio	3.3	0.5	3.0
Increase per person per day	US$/person/day	1.2	0.2	1.1

Note: (1) Estimates based on annualized and weighted averages of crops harvested in each area. Excludes the cost of the farmer's own labor.
(2) The Rwanda poverty line in 2012 prices was RwF 118,000 per person per year; converted to 2014 prices, it is US$192.
(3) The Rwanda extreme poverty line in 2012 prices was RwF 83,000 per person per year; converted to 2014 prices, it is US$135.

30. **Poverty reduction through generation of agricultural employment.** Under the ASIP medium-cost scenario, the NPV of increased agricultural employment due to changes only in cropping, livestock, and drying and storage facilities was estimated at US$39 million. The average economic net benefit was US$7.5 million per year, which is equivalent to 7.7 million work days with a daily economic wage rate of US$0.98/day. If one assumes 260 work days in a year, this translates to about 29,400 person-years, or with 130 work days in a year, over 58,800 person-years. This includes increases due to cropping intensification particularly on irrigated areas, decreases from mechanization, and increased livestock production, as well as employment in new drying and storage facilities. This is a conservative estimate and excludes employment generation in other agricultural production systems including export commodity chain and post-harvest businesses as well as labor for constructing terraces, irrigation systems, post-harvest infrastructure, and rural feeder roads. It also excludes any multiplier effects on employment inside and outside the Program area due to improved roads.[68]

31. **According to estimated elasticities, overall return to public sector investment is driven particularly by investments in soil conservation, research, and soil fertility.** To quantify the relative return on investment from different SPs, elasticities were calculated instead of using absolute or proportional measures, with the difference shown in equations 1, 2, and 3:

Absolute: $dY = NPV_{case} - NPV_{base}$ (eq. 1)

[68] For example, according to the RSSP2 Implementation Completion Report, the summary of findings from stakeholder consultations (Nov. 29 – Dec. 1, 2012) indicated that job creation had occurred both temporarily through construction activities and permanently through intensification. While there were emerging labor shortages during the peak season of crop activities, there had been use of community labor groups to cover labor shortages.

Proportional: $dY/Y = (NPV_{case} - NPV_{base})/ NPV_{base}$ (eq. 2)

Elasticity: $E = (dY/Y) / (dX^n / X^n) = dY/Y / (Cost_{case} - Cost_{base})/ Cost_{base}$ (eq. 3)

where

dY = Change in NPV

Y = Estimated NPV

E = Elasticity measure of NPV from changes in investment cost assumptions

dX^n = Change in investment costs in subprogram n

X^n = Investment costs in subprogram n

In line with a typical interpretation of elasticities and to explore the result's sensitivity to changes in investment level, the costs in each of the nine SPs were decreased by 1 percent from the ASIP medium-cost scenario. Table 5.5 shows that the economic NPV for the entire Program is most sensitive to changes in investments in land conservation (SP 1.1) and research (SP 2.1), where a 1 percent decrease in investment leads to a 1.6 percent or 1.2 percent reduction in economic NPV, respectively. There is also a relatively large impact of 0.9 percent when changing the investment in soil fertility (SP 1.4) by 1 percent. This result is driven partly by land conservation increasing yields, reducing soil erosion, and also by covering a large share of the developed area. It is also driven by the assumed linkages between SPs and yields in Table 5.3. It is worth noting that the negative relationship with investment level in market-oriented infrastructure (SP 3.8) needs to be investigated further; however, it is most likely because this SP is dominated by investments in rural feeder roads, for which only a part of the benefits have been quantified.

Table 5.5: Elasticities of Economic NPV and Employment When Reducing Investment Costs by 1%

Subprogram	Base	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	3.8
Economic NPV (million US$)	585	576	582	584	580	580	581	578	583	586
Elasticity		1.6	0.5	0.2	0.9	0.8	0.7	1.2	0.4	-0.1
Increased employment (1,000 days per year)	7,650	7,652	7,622	7,669	7,650	7,650	7,540	7,650	7,640	7,654
Elasticity		0.0	0.4	-0.2	0.0	0.0	1.4	0.0	0.1	-0.1

Note: (1) Base is ASIP medium-cost scenario. SPs are listed in Table 5.1.
(2) Economic NPV is calculated using a discount rate of 12%.
(3) The economic labor rate used to value increased employment is RwF 634/day or US$0.98/day.

32. **According to estimated elasticities, the impact on employment in the agriculture sector is driven particularly by investments in livestock development, irrigation, and mechanization.** Equation 3 is also used to calculate how different SPs impact employment generation. A 1 percent increase in investments in livestock (SP 1.6) and irrigation (SP 1.2) increase employment the most, with elasticities of 1.4 percent and 0.4 percent, respectively (see Table 5.5). As can be expected, the SP for mechanization (SP 1.3) reduces the employment benefit due to labor savings from investing in tractors, planters, and other equipment.

33. **Most of the Program returns are from nonirrigated hillsides and livestock production, which together constitute 29 percent of the five-year investment costs.** While investments on nonirrigated hillsides cover 22 percent of the five-year investment costs, they

generate US$257 million of the Program returns measured in economic NPV. Moreover, the analysis shows that most of the net benefits on hillsides are driven by the improved gross margins and not just the avoided yield loss (refers to the empirical finding that reduction of soil erosion will generate about a 1 percent increase in yields). From 7 percent of the public investment costs, improved livestock production generates another US$440 million of the economic NPV (see Table 5.6). Some enterprise models are close to or do not break even at a 12 percent discount rate, including storage facilities and feeder roads. This is discussed further below with respect to unit investment costs and benefits that have not been captured in this analysis. ERRs for a range of similar investment projects are listed in Table 5.10. Care should be taken when comparing returns due to different sizes of investments, the year in which the analyses were done, and the complexity of the projects compared to individual enterprise models.

Table 5.6: Net Return on Public Sector Investment by Enterprise Model and Benefit Stream

	Financial Values				Economic Values			
million US$	**Year 1-5 Investment (undisc.)**	**NPV (12% disc.)**	**Share**	**FRR**	**Year 1-5 Investment (undisc.)**	**NPV (12% disc.)**	**Share**	**ERR**
Irrigated hillsides	137	83	12%	21%	123	76	13%	21%
Nonirrigated hillsides	267	455	66%	33%	239	372	64%	31%
Irrigated marshland	194	52	8%	17%	174	19	3%	14%
Livestock (meat, milk)	84	487	71%	84%	76	440	75%	84%
Infrastructure (drying floors)	4	27	4%	118%	4	23	4%	117%
Infrastructure (storage facilities)	30	0	0%	12%	27	-1	0%	11%
Feeder roads (value of cropping)	196	-21	-3%	9%	175	-20	-3%	9%
Increased employment (agriculture)		46	7%			39	7%	
Carbon sequestration						34	6%	
Investment costs (15 other SPs)	280	-443	-65%		250	-396	-68%	
Net Return on Public Sector Investment	**1,195**	**685**	**100%**	**21%**	**1,068**	**585**	**100%**	**21%**

Note: Investment costs for years 1-5 are not discounted. NPV is calculated using a discount rate of 12% over a period of 25 years with recurrent costs after Year 6. Amounts are in constant 2014 prices.

34. **Positive synergies with livestock production.** As seen by the high return on investment in livestock development, projects such as the LWH and RSSP show that investments in terracing lead to increased livestock production due to higher farmer income as well as the availability of fodder and straw from silt trap zones. Subsequently, the increased availability of manure benefited the local cropping systems and for building organic matter on new radical terraces. In the LWH project it is emphasized that availability of fodder for livestock and improved access to water for livestock are incentives for farmers to diversify and expand their livestock enterprises and enhance adoption rates of improved breeds which are early maturing and high yielders. Finally it is noted that, in the case of RSSP, significant net benefits were also captured by beneficiaries who stocked irrigation reservoirs with fish.

35. **The net benefit from investments in storage facilities is dependent on a successful implementation of SPs that increase crop yields and prices.** The returns on investments in post-harvest infrastructure are highly dependent not only on their ability to avoid yield/price losses, but also on the value of the crops that are dried and stored. It is assumed that all facilities are used to their full capacity as described in Section V.[69] The value of the avoided yield and price losses are weighted averages of the obtained crop prices. While the NPVs of infrastructure investments are too small to have a significant impact overall, their individual rates of return should be explored to ensure that they are viable businesses. As shown in Table 5.6, the 11 percent ERR on storage facilities is marginal compared to a discount rate of 12 percent. The main crops that are stored are paddy rice and maize. So to achieve sufficient return on post-harvest investments, it is important to invest in other SPs to achieve the potential yields and prices. This is necessary to shift away from basic production practices towards higher value chain activities, including those with an export focus. Note that this analytical model currently does not include an enterprise model for export crops such as tea, coffee, or flowers.

36. **Program delay and low farmer adoption rates are key risk factors that can threaten the achievement of expected benefits.** As indicated in the risk framework, MINAGRI plans to monitor the implementation of terracing and irrigation schemes to avoid delays and thereby maximize Program returns. In addition, returns to Program investments are particularly sensitive to delays in improving livestock production and building post-harvest facilities and feeder roads. It is also important how many farmers ultimately adopt the new farming practices and how fast they do so. The original assumption is that 95 percent of the farmers adopt new practices eventually. Adoption rates from other projects range from 70-80 percent.[70] In the current model, a 70 percent final adoption rate leads to an economic NPV of US$376 million and a reasonable ERR of 16 percent. A switching values analysis shows that the break-even point for the investment is when adoption only reaches 56 percent of the total developed area – compared to the assumed 95 percent. The NPV also drops to zero if the annual adoption rate drops to 7 percent compared to the assumed 20 percent, thereby delaying incremental benefits. A farmer's incentive to adopt the new farming practices is driven by the increase in gross margins as well as sufficient extension services. As shown in Table 5.4, the gross margin incentives are strong on irrigated areas, but the smaller gross margin increase on nonirrigated areas may not be sufficient to encourage adoption.[71] Risk management strategies should ensure minimum Program delay while also increasing farmer adoption rates through extension for improved with-Program gross margins.

37. **Reduced livestock and hillside revenues are also potential risk factors.** Because a large share of total Program returns are generated by livestock production and crops on nonirrigated hillsides, the switching values analysis shows that results are somewhat sensitive to changes in the associated milk yields, crop yields, and operating costs. For example, the economic NPV becomes zero if the milk yield per head of cow falls by 50 percent from 8 to 4 liters/head/day, which is the same as the without-Program milk yield. Similarly, it takes a 64-75

[69] To investigate possible shortages or excess capacities, future refinements of the analysis should investigate the existing and new capacity for drying and storage versus the increase in crop production achieved by the program.

[70] Examples include a 74 percent adoption rate in the Uganda-National Agricultural Advisory Services Project (NAADS) and a 70-80 percent adoption rate in the IFAD Rwanda Project For Rural Income Through Exports (PRICE).

[71] More information is required to determine at what level increased gross margins encourage adoption in the Program areas.

percent drop in maize or Irish potato yields or prices before the economic NPV becomes zero. As set out in Table 5.3, yield increases are supported particularly through SPs for soil fertility, seed improvement, and research and technology transfer - and separately also livestock development. The relative impact of these SPs is illustrated in the elasticity analysis in Table 5.5.

38. **Incremental benefits of the public sector's share of investment in research, technology transfer, and extension have been captured through increased productivity and farmer adoption in the quantitative analysis.** Benefits are estimated through: improved gross margins at the farm level, technology adoption rates, and avoided post-harvest yield loss. An elasticity factor of 1.2 percent and 0.4 percent is calculated for a 1 percent change in research and extension investments, respectively. However, as these SPs were not quantified in separate enterprise models, no rates of return on investment have been calculated. Examples of different investment projects targeting research and extension have rates of return ranging from 12 percent to over 75 percent in different countries, indicating potentially large impacts on agricultural growth (see Table 5.7).

Table 5.7: Economic Returns to Investment Projects for Agricultural Research and Extension

Project	Year	Investment US$ million	NPV @12%	ERR
West Africa Agricultural Productivity Program Support Project (WAAPP): World Bank	2007	49	n/a	40-75%
Africa-Agricultural Productivity Program for Southern Africa (APPSA): World Bank	2013	95	n/a	40-60% (3)
Eastern Africa Agricultural Productivity Program Project (EAAPP): World Bank	2009	90	n/a	
Ethiopia-Pastoral Community Development Project III: World Bank	2013	210	n/a	16%
Alston et al.: A Meta-Analysis of Rates of Return to Agricultural R&D Ex Pede Herculem?	2000	n/a	n/a	48%-81%

Note: (1) Investment costs are in US$ from the year of analysis
(2) NPVs were calculated using 12% discount rate
(3) Refers to the same study by Alston et al. 2000
Source: Review of project documents.

39. **The estimated rates of return are higher on nonirrigated areas compared to irrigated areas because the assumed incremental benefits are not large enough to outweigh the higher unit costs of establishing irrigation systems compared to terrace construction.** In addition, as pointed out in the RSSP 2 Implementation Completion Report and in CAADP 2 Background Study #1 (Stryker et al. 2014), hillside irrigation is more expensive than marshland irrigation due to the size requirement for dams as well as extra costs to line the main canals and to build a secondary pipe network. As shown in Table 5.8, unit costs vary greatly between areas and countries.

Table 5.8: Unit Cost Comparison of Different Investments

Unit prices	ASIP (1)		CAADP (2)	RSSP2 (3)	LWH (3)	Sub-Saharan Africa (4)	South Asia (4)
Investment	**RwF**	**US$**	**US$**	**US$**	**US$**	**US$**	**US$**
Progressive Terrace Construction, per ha	32,500	50	300	240	2,300	-	-
Radical Terrace Construction, per ha	975,000	1,500	3,000			-	-
Hillside Irrigation Construction, per ha	6,500,000	10,000	15,504	-	13,000-22,000	19,572	4,581
Marshland Irrigation Construction, per ha	7,800,000	12,000	9,302	3,700-6,800	-		
Drying floors constructed, per floor	14,000,000	21,538	-	22,600	-	-	-
Expanded storage facilities, per tonne	126,352	194	-	68	-	-	-

Note: (1) ASIP medium-cost scenario.
(2) Stryker et. al. (2014) p 8. Hillside irrigation interpreted as "Progressive terracing with irrigation" less "Progressive terracing without irrigation."
(3) RSSP2 Implementation Completion Report (2013) p. 39-40. Radical terracing was used more in LWH project than in RSSP2.
(4) Inocencio et al. (2005) p 18. Adjusted from 2000 to 2014 costs using the World Bank MUV index. Does not distinguish between hillsides and marshlands.

40. **The ASIP high-cost scenario has 54 percent higher investment than the medium-cost scenario and yields a 54 percent higher economic NPV but a lower ERR of 21 percent. Because of the focus on irrigation and livestock in the high-cost scenario, employment generation increased by 17 percent in spite of increased mechanization.** So far, the analysis has focused on the ASIP medium-cost scenario. In general, the so-called high-cost scenario is larger in scope by increasing investments in post-harvest infrastructure as well as program 1 for sustainable agriculture and animal resource intensification. Total public sector investment costs are 54 percent higher than in the medium-cost scenario. However, less is invested in research, extension, and the remaining SPs including value chain development (see Table 5.1). To analyze this, two main assumptions were made. First, farm-level cropping patterns and gross margins remain unchanged from the medium-cost scenario and the higher investment increases the size of the developed area. Second, because the high-cost scenario assumes a 50 percent higher unit cost in distributed cows under SP 1.6, milk yields increase by 25 percent. Otherwise, using the same model as above, the high-cost scenario of a 5-year US$1.8 billion investment yielded an economic NPV of US$898 million and an ERR of 21 percent. As such, the economic NPV is 54 percent higher than in the medium-cost scenario. The average annual net benefits in the high-cost scenario are US$303 million, which constitutes 12.4 percent of the agriculture share of GDP. This exceeds the 8.5 percent growth target. The result follows the pattern of the earlier elasticity analysis where net benefit from public sector investment is most sensitive to changes in research

and technology transfer together with irrigation development and efforts toward soil fertility. Employment generation came to 9 million work days per year or 34,400 fulltime work-years, which is a 17 percent increase from the medium-cost scenario in spite of a higher investment in mechanization.

VII. Qualitative Discussion of Linkages To and Between Subprograms

41. **Agriculture growth driven by the nine quantified SPs is enabled through linkages to the remaining 15 SPs, which provide market access, agricultural finance, a strengthened institutional framework, and targeting of disadvantaged groups.** By including the public sector investment costs of all SPs, it is assumed explicitly that these are necessary investments to drive agricultural growth. These SPs include key activities such as: developing farmers' cooperatives; supporting value chain development; and enabling access to markets, finance, and insurance. The institutional development and cross-cutting issues are similarly linked to the successful outcome of all other SPs. As noted in the methodology and results, the incremental benefits of those 15 SPs were not quantified because of lack of time and resources to obtain the necessary information for such an analysis. These SPs are an integral part of the investment to transform Rwanda's agriculture sector, and therefore the analysis includes the 23 percent they constitute of the total public sector investment. The result is that the net returns discussed earlier are understated, given the undeniable incremental benefits from these 15 other SPs.

42. **Support for farmers' organizations helps improve access to inputs, markets, finance, insurance, and extension services.** Many of the benefits captured in the cropping and livestock models assume functioning markets for both farm inputs and outputs. The ability of farmers to obtain support from farmers' cooperatives and organizations affects how and at what cost they can obtain the necessary planting materials, fertilizer, chemicals, and extension services as well as irrigation services through WUAs, such as those as first established in RSSP 2. As pointed out in the risk framework, these benefits are currently captured by a few better-off farmers. At the same time, marginal smallholders and women farmers do not benefit much from agricultural commercialization. With increased investment in this area through SP 2.3, the aim is to establish more farmers' organizations and strengthen existing ones in management, post-harvest handling, and improved access to finance and agricultural insurance, especially for disadvantaged groups. No specific examples have been found on estimated return on investments in strengthening farmers' organizations because this is typically an integral and necessary part of rural development projects, not a separable component.

43. **To increase growth in the agriculture sector, investments are also planned for value chain development and private sector investment** (SP 3.1-3.8), of which the quantitative analysis has only covered incremental benefits from market-oriented infrastructure. Many of the assumed yields and prices incorporated in the analysis rely on access to markets via value chains for crops, dairy, and meat. In addition, increased productivity and cropping patterns toward cash crops can also target export crops in line with the strategic plan. This requires having access to improved drying, storage, and also transport, all key to be able to meet higher quality standards and sell perishable products to other than local markets. As shown in Table 5.9, 77 percent of the private sector investments as part of the ASIP medium-cost scenario target value chain development and include 39 percent of the PPPs. As stated in the methodology, it is assumed that

these additional investments will occur and will be economically viable, even if the costs and benefits are not quantified in this current analysis.

Table 5.9: Private Sector Investments Excluded from Quantitative Analysis, ASIP Medium-Cost Scenario

	Private Sector		Public-Private Partnerships	
Investment Area	US$ million	Share	US$ million	Share
1. Agriculture and animal resource intensification	30	8%	42	32%
2. Research and technology transfer	62	16%	38	29%
3. Value chain development and private sector investment	305	77%	52	39%
Total excluded from analysis = US$528 billion	396	100%	132	100%

44. **Investments in SPs 4.1-4.3 help strengthen institutional development to support transfer of new technologies to farmers.** The impact of investments in research, technology transfer, and extension rely on effective institutions that can implement research programs and ensure farmer adoption of improved technologies and farming practices. Decentralizing service delivery can improve the relevancy to farmers as well as improve farm-level adoption rates. It is therefore important that investments in institutional capacity building and also the legal and regulatory framework continue to enable transfer of both national and internationally available technologies to farmers (SPs 4.1-4.3).

45. **To transform the agriculture sector toward higher value chains including exports, the legal and regulatory system needs to be strengthened and adapted.** The planned value chain development will require a more efficient import and export market for both farm inputs and outputs. This includes improving border control, using SPS measures, and certifying imports and exports. Investments to establish a system for registering farm inputs and plant breeders' rights will enable higher farm productivity as well as access to improved seeds and planting materials.

46. **Investments that increase productivity may be subject to elite capture unless parallel efforts are made to ensure that disadvantaged groups are also reached.** Investments in SPs 4.5-4.7 will ensure that disadvantaged groups are targeted by building capacity for mainstreaming gender issues in future projects and by targeting youth employment in the sector. Because of the complexity of the terracing and irrigation developments with respect to environmental impact, SP 4.6 builds capacity in the agriculture sector to manage future investments that take environmental externalities into account. While increased productivity in other SPs helps improve food and nutrition security, the final SP targets the most disadvantaged groups by ensuring that some benefits are captured directly by poor households.

47. **Tracking impacts against a baseline through reliable M&E systems helps decision makers and DPs make evidence-based investment decisions.** To ensure that the Program investment is sound and stays on target, it is important to track impacts against a baseline. SP 4.4 investments are needed to establish the baseline against which impacts are measured and to

assess if the investment priorities should change over time as new information comes to light. By establishing a statistical system and a targeted M&E system, it becomes possible to implement sound investments in the future based on timely and reliable information. Communication of results and impacts also helps DPs and beneficiaries make informed investment decisions.

Table 5.10: Economic Returns to Different Agricultural Investment Projects in Rwanda

Project	Interventions	Year	Investment US$ million	NPV @12%	ERR
Land husbandry, water harvesting and hillside irrigation (LWH): World Bank	Land husbandry, hillside irrigation, radical terraces, post-harvest and storage, produce collection centers	2009	166	73.8	29%
Second Rural Sector Support Project (RSSP2): World Bank	Marshland irrigation, soil and land management, co-operatives	2008	39	90	47%
Third Rural Sector Support Project (RSSP3): World Bank	Marshland irrigation, soil and land management, co-operatives	2011	101	228	93%
Kirehe Community-Based Watershed Management Project (KWAMP): IFAD	Hillside and marshland irrigation, radical and bench terraces, rural feeder roads, crop and livestock intensification	2008	49	n/a	17%
Bugesera Natural Region Rural Infrastructure Support Project (PAIR): AfDB	Soil and water conservation, marshland irrigation, post-harvest and storage, marketing support	2009	46	16.2	19%
Bugesera Agricultural Development Support Project (PADAB): AfDB	Soil and water conservation, marshland irrigation, post-harvest and storage, marketing support	2006	19	n/a	15%
Smallholder Cash and Export Crops Development Project: IFAD	Agricultural mechanization, farm inputs, seeds, extension	2011	15	5.2	18%
Post-Harvest and Agribusiness Support Project (PASP): IFAD	Climate resilience, agribusiness support, capacity development, post-harvest and storage	2013	47	8.3	16%
Project For Rural Income Through Exports (PRICE): IFAD	Coffee, tea, silk, horticulture development. Business support, export	2011	56	18.6	17%
Burundi - Rwanda - Project to Develop Roads and Facilitate Transport on the North-South Corridor - Phase III: AfDB	Roads and export	2012	127	58.5	19%
Rwanda Rural Feeder-road Development Program (RRFD): MINAGRI	Roads	2012	876	-	14%-59%
Uganda-Agricultural Technology and Agribusiness Advisory Services Project (ATAAS): World Bank	Soil conservation, seeds, agricultural research and extension	2010	666	80.2	40-60% (3)
Burundi - Agricultural Rehabilitation and Sustainable Land Management Project	Soil conservation, irrigation, extension, post-harvest and storage	2004	55	35.5	58%

(PRASAB): World Bank					
Kenya-Water Security and Climate Resilience Project: World Bank	Irrigation	2013	183	7.3	15%
Uganda - National Livestock Productivity Improvement Project (NLPIP): AfDB	Livestock, post-harvest and storage	2010	36	7.59	19%

Note: (1) Investment costs are in US$ from the year of analysis
(2) Net Present Values were calculated using 12% discount rate
(3) Refers to the Alston et al. 2000

Source: Review of World Bank, African Development Bank, IFAD, and MINAGRI project documents

Table 5.11: Switching Value Analysis of Key Assumptions

Variable	Unit	Base Assumption	Switching Value	% change
Total farmer adoption rate W/P	% of area	95%	56%	41%
W/P-Milk production	liter/head/day	8.00	4.05	49%
W/P-Milk production	RwF/quantity	159	80	49%
Maize-Nonirrigated area-W/P-Price	RwF/kg	264	96	64%
Annual farmer adoption rate W/P	% of area	20%	7%	66%
Maize-Nonirrigated area-W/P-Yield	kg/ha	4,000	1,260	69%
Discount rate	percent	12%	21%	74%
Irish potato-Nonirrigated area-W/P-Price	RwF/kg	159	39	75%
Irish potato-Nonirrigated area-W/P-Yield	kg/ha	20,000	4,921	75%
Storage Facilities-Number of periods	3-months/ year	2	0	90%
Storage Facilities-Quantity dried/ stored per period	t/ 3-months	250	25	90%
W/P-Manure production	tonne/head	15	0	99%
WO/P-Manure production	tonne/head	15	34	126%
WO/P-Milk production	RwF/quantity	127	320	153%
WO/P-Milk production	liter/head	4.00	10.11	153%
Banana-Nonirrigated area-WO/P-Yield	kg/ha	15,000	39,427	163%
Banana-Nonirrigated area-WO/P-Price	RwF/kg	74	196	164%
W/P-Feed concentrates for cows/bulls/heifers	kg/head	720	2,145	198%
W/P-Feed concentrates for cows/bulls/heifers	RwF/quantity	106	315	198%
Cassava-Nonirrigated area-WO/P-Yield	kg/ha	10,500	33,844	222%
Cassava-Nonirrigated area-WO/P-Price	RwF/kg	159	512	223%
W/P-Veterinary care	RwF/quantity	65,527	222,371	239%
Irish potato-Nonirrigated area-W/P-Seeds	kg or plants /ha	2,500	8,731	249%
Irish potato-Nonirrigated area-W/P-Seed price	RwF/kg /plant	423	1,476	249%
Irish potato-Nonirrigated area-WO/P-Yield	kg/ha	8,500	38,513	353%
Irish potato-Nonirrigated area-WO/P-Price	RwF/kg	159	719	354%
Maize-Nonirrigated area-WO/P-Yield	kg/ha	1,600	8,102	406%
Sorghum-Nonirrigated area-WO/P-Yield	kg/ha	1,400	7,132	409%
Sorghum-Nonirrigated area-WO/P-Price	RwF/kg	264	1,404	431%
Fertilizer price	RwF/kg	528	2,821	434%

Note: Switching values calculated by changing one variable at a time - until the economic NPV becomes zero.

Table 5.12: Net Financial Benefit by Year - ASIP Medium-cost Scenario

US$ million	Irrigated Hillside Areas	Nonirrigated Hillside Areas	Marshland Areas	Livestock	Drying Floors	Storage Facilities	Feeder Roads	Employment	All Other SP Costs	Total Financial Net Benefits
2014	-27	-62	-37	-16	-1	-6	-26	0	-55	-229
2015	-28	-64	-38	-3	0	-6	-27	0	-56	-220
2016	-24	-40	-32	10	1	-5	-29	1	-56	-175
2017	-18	-6	-23	25	2	-5	-34	3	-57	-112
2018	-8	40	-10	42	3	-4	-31	4	-57	-21
2019	27	104	37	56	5	3	19	5	-57	199
2020	35	111	37	66	5	4	20	7	-57	229
2021	39	114	37	79	5	5	20	9	-57	251
2022	40	117	37	100	6	5	20	10	-57	277
2023	40	120	37	115	6	5	20	11	-57	296
2024	48	254	37	126	6	5	19	11	-57	450
2025	40	124	37	133	6	5	20	11	-57	318
2026	39	125	37	136	6	5	20	11	-57	322
2027	39	126	37	135	6	5	19	11	-57	322
2028	38	128	37	135	6	5	19	11	-57	323
2029	38	130	37	135	6	5	19	11	-57	325
2030	40	137	37	135	6	5	20	11	-57	335
2031	41	140	37	135	6	5	20	11	-57	337
2032	41	142	37	135	6	5	20	11	-57	340
2033	41	145	37	135	6	5	20	11	-57	343
2034	49	271	37	135	6	5	19	11	-57	477
2035	41	149	37	135	6	5	20	11	-57	346
2036	40	150	37	135	6	5	19	11	-57	347
2037	39	151	37	135	6	5	19	11	-57	347
2038	39	152	37	135	6	5	19	11	-57	348
									Financial Net Benefits (average/year)	**231**
									Financial NPV (12%)	**685**
									Financial IRR	**21%**

Note: (1) Amounts are shown in constant 2014 dollars (i.e., no inflation is included).
(2) Net benefits from feeder roads. Employment only includes incremental benefits from crop and livestock production and labor operating costs for new drying floors and storage facilities.
(3) Net benefits (average/year) are not discounted. Financial NPV is calculated using a discount rate of 12% over a period of 25 years.
(4) Rounding errors may occur.

Table 5.13: Net Economic Benefit by Year - ASIP Medium-cost Scenario

US$ million	Irrigated Hillside Areas	Nonirrigated Hillside Areas	Marshland Areas	Livestock	Drying Floors	Storage Facilities	Feeder Roads	Em-ployment	Total Direct Net Benefits	Carbon Sequestration	All Other SP Costs	Total Economic Net Benefits
2014	-24	-56	-33	-15	-1	-5	-23	0	-156	0	-49	-205
2015	-25	-57	-34	-2	0	-5	-24	0	-147	0	-50	-197
2016	-22	-37	-30	9	1	-5	-26	1	-108	1	-50	-158
2017	-16	-8	-23	23	2	-4	-30	2	-54	1	-51	-104
2018	-7	31	-13	38	3	-4	-27	3	24	2	-51	-25
2019	25	85	28	50	5	2	17	4	216	4	-51	169
2020	32	92	28	60	5	3	17	6	243	8	-51	200
2021	36	95	28	72	5	4	17	7	263	8	-51	220
2022	36	97	28	90	5	4	17	8	286	8	-51	243
2023	36	100	28	104	5	4	17	9	303	8	-51	260
2024	44	221	28	114	5	4	17	10	442	8	-51	399
2025	36	104	28	120	5	4	17	10	323	8	-51	280
2026	35	105	28	122	5	4	17	10	327	8	-51	284
2027	35	106	28	122	5	4	17	10	327	8	-51	284
2028	34	108	28	122	5	4	17	10	328	8	-51	285
2029	34	109	28	122	5	4	17	10	329	8	-51	286
2030	37	116	28	122	5	4	17	10	338	8	-51	295
2031	37	118	28	122	5	4	17	10	341	8	-51	298
2032	37	120	28	122	5	4	17	10	343	8	-51	300
2033	37	123	28	122	5	4	17	10	346	8	-51	303
2034	44	236	28	122	5	4	17	10	466	8	-51	423
2035	37	126	28	122	5	4	17	10	349	8	-51	306
2036	36	127	28	122	5	4	17	10	349	8	-51	306
2037	36	128	28	122	5	4	17	10	349	8	-51	306
2038	35	129	28	122	5	4	17	10	350	8	-51	307
											Economic Net Benefits (average/year)	**203**
											Economic NPV (12%)	**585**
											Economic IRR	**21%**

Note: (1) Amounts are shown in constant 2014 dollars (i.e. no inflation is included).
(2) Financial prices are converted to economic prices using adjustment factors.
(2) Net benefits from feeder roads. Employment only includes incremental benefits from crop and livestock production and labor operating costs for new drying floors and storage facilities.
(3) Net benefits (average/year) are not discounted. Financial NPV is calculated using a discount rate of 12% over a period of 25 years.
(4) Rounding errors may occur.

Annex 6: Summary of Fiduciary Systems Assessment

Introduction

1. **An integrated fiduciary assessment for the proposed Transformation of Agriculture Sector Program Phase - 3 (PSTA 3) Program-for-Results (PforR) operation was carried out as part of the overall system assessment.** The assessment covered the institutions that will implement the proposed operation consistent with Operational Policy/Bank Procedure (OP/BP) 9.00 Program for Results Financing; namely: Ministry of Agriculture and Animal Resources (MINAGRI), Rwanda Agriculture Board (RAB), and National Agricultural Export Board (NAEB); Rwanda Public Procurement Authority (RPPA); National Public Prosecution Authority (NPPA); Office of the Ombudsman (OM); Office of Auditor General (OAG); and one District Council from each of the four provinces based on the size of budget transfers and population.

Assessment Scope, Key Findings and Risk Mitigation Measures

2. **MINIAGRI will have overall responsibility for the efficient and effective implementation of the Agri. PforR operation, while the Program is implemented at national and subnational levels.** At the national level, MINAGRI is the core implementing agency, while the PforR funds will flow directly from the Ministry of Finance and Economic Planning (MINECOFIN) to respective implementing agencies; MINAGRI, RAB, NAEB, Special Project Implementation Units (SPIUs), and the 30 Districts.

3. **The Integrated Fiduciary Systems Assessment (IFA) reviewed Program procurement, FM and governance, and fraud and corruption (F&C) systems including fiduciary risks and risk management**. The IFA entailed a review of the capacity of MINAGRI, NAEB, RAB, three SPIUs (IFAD, AfDB, WB) and a sample of four (out of the 30) Districts on their ability to: (i) record, control, and manage all Program resources and produce timely, understandable, relevant, and reliable information for the borrower and the World Bank; (ii) follow procurement rules and procedures, capacity, and performance focusing on procurement performance indicators and the extent to which the capacity and performance support the Program Development Objectives (PDOs) and risks associated with the Program and the implementing agency; and (iii) ensure that implementation arrangements are adequate and risks are reasonably mitigated by the existing framework.

4. **The review of the Program FM arrangements indicated that there is legislative scrutiny of the Finance Law (annual budget) in conformity with the Organic Budget Law.** The budget is formulated through a consultative process involving the line ministries and MINECOFIN before scrutiny by the legislature and there are limited deviations from budget appropriations. However, sector strategic plans are not specifically aligned to the budget classification formats. Regarding Treasury management and funds flow, there is sufficient predictability of the availability of cash required for Program activities.

5. **Assessment of the accounting and financial reporting aspects indicated that periodic expenditure variance analysis is conducted and the government classification system is used for budget preparation and reporting.** The accounting systems facilitate the preparation of timely and reliable financial reports. However, the Auditor General has identified erroneous

postings, unsupported debtors' balances, and unexplained reconciling items in the case of the RAB. In addition, the Districts do not incorporate the transactions of nonbudget agencies.

6. **With regard to internal controls, there is adequate segregation of duties in the payment cycle.** However, there is scope for improvement in internal controls in light of the main internal audit findings related to noncompliance with all procurement guidelines, inadequate supporting documentation, gaps in filing of accounting records, and overexpenditure on certain budget lines. The internal audit function across Ministry-Districts-Agencies (RAB, NAEB, and SPIUs) (MDAs) is still at a nascent stage and capacity building is required to enhance expertise in IT audits, Value-for-Money audits, risk management, and payroll reviews. The review of the internal audit structure also needs consideration to ensure adequate staffing across the public sector.

7. **Concerning external audit, the OAG is responsible for auditing all entities associated with implementation of Program activities.** The independence of the OAG is enshrined in the Constitution and it has the mandate to audit all public expenditure. The Auditor General's audit coverage of reported government expenditure increased from 60 percent in 2007 to 75 percent in 2012. The enforcement of accountability at the District level is limited given the absence of Public Accounts Committees (PAC) for that tier of government. The Auditor General's report is normally submitted within 10 months after the financial year-end but this period should be shortened to provide more time for legislative scrutiny.

8. **The procurement systems' performances were assessed based on the government's procurement legal framework and its implementation on the degree to which the planning, bidding, evaluation, contract award, and contract administration arrangements and practices provide reasonable assurance that the Program will achieve intended results through its procurement processes and procedures**. The Government of Rwanda (GoR) has an acceptable public procurement legal framework based on the UNCITRAL model; it is quite robust and covers all aspects of public procurement at all levels of government. The GoR is moving toward modernizing its procurement function to improve compliance, efficiency, transparency, fair competition, value for money, and controls in public procurement.

9. **However, the assessment revealed that implementation of the procurement law, regulations, and procedures has some irregularities and needs strengthening**. In this regard, a number of procurement areas were identified for strengthening at the District level, including: contract awards made through nonopen competitive methods; award of tenders that were not planned; periods for bid preparation and evaluation that were longer than prescribed in the legal documents; capacity limitations in terms of skilled staff to handle procurement of high-value contracts (although the PforR operation will not have any high-value contracts); lack of adequate written records of all procurement and contract documents; lack of published contract awards on media accessible to the public; and selection of consultants on an "Open Competitive" basis like bids for goods and works (without requests for expressions of interest).

10. **An assessment of the systems and processes for dealing with fraud and corruption (F&C) issues showed that Rwanda has strong institutional, organizational, and legal frameworks for controlling F&C when it occurs.** Rwanda further strengthened its legal

framework in 2013 with the amendment of the law to allow the OM to prosecute cases of corruption, though there is a transition to enable the OM to be properly prepared to take over prosecution of corruption cases from the NPPA. Rwanda also passed the Whistle Blowers Protection Act, 2013. An Organic Law n°61/2008 of 10/09/2008 on the Leadership Code of Conduct is also in place to promote integrity in the public sector. Implementation and enforcement of these laws are quite robust both in the PforR implementing agencies specifically, and the public sector in general. Severe sanctions are applied to those found guilty of fraud and corruption, including imprisonment, dismissal from office, and publication of names of those convicted in the media and on the OM's website. The Parliamentary PAC is relatively new (established in April 2011), but has proven to have robust oversight of financial management, with financial managers regularly called to account. Reports submitted by the Office of the Auditor General to the PAC are scrutinized and recommendations followed up; these are having a positive impact in enhancing the accountability of public institutions and officials. Consequently, Rwanda has relatively low levels of corruption and the systems in place both at the national level and in the PforR implementing agencies provide reasonable assurance that the resources from the program will be used for the intended purposes with economy and efficiency. Assessment of the implementing agencies of the program (MINAGRI, RAB, NAEB, and Districts) also suggest that the processes and systems for handling and reporting F&C are in place and functioning reasonably well, though in the case of Districts, more needs to be done to improve oversight and internal controls due to capacity constraints. In addition, the OM carries out surprise checks on these agencies. The agencies are obliged to report allegations of F&C for investigation and these are reasonably enforced within the agencies assessed. The OM and the implementing agencies also have in place a well-functioning system for receiving complaints, as does the procurement authority.

11. **Overall, there is strong political will and institutions dedicated to fight corruption and to promote public integrity and accountability. On the Transparency International's CPI, Rwanda was ranked the 4th least corrupt country in Africa out of 53 countries and 49th of 177 countries globally, with a score of 5.3 in 2013.** Its score has improved significantly from 2.7 out of 10 in 2007 to 5.3 in 2013. There also reasonably well-functioning systems for receiving complaints and grievances on F&C and dealing with them in the OM, NPPA, and RPPA. The PforR implementing entities have internal arrangements for handling complaints and grievances on procurement and allegations of F&C and for referring cases to the OM, National Independent Review Panel (NIRP), and NPPA as appropriate. The assessment noted the existence of third-party arrangements for receiving complaints and grievances from citizens and the business community (e.g., Transparency International Rwanda and the Private Sector Federation). These complaints are regularly passed on to the public authorities for investigations or responses and there are institutionalized arrangements for following up.

12. **However, there are some challenges, including**: (i) inadequate arrangements to deal with F&C at the subnational levels where the OM is not decentralized and there is shortage of suitably qualified PFM staff (all Districts have qualified audits); (ii) retention of qualified staff, especially investigators (as at March 2014, two out of the six investigators at the OM had left and have yet to be replaced); (iii) obtaining evidence and lack of information to prosecute allegations of corruption; (iv) problems in contract management that may give rise to opportunities for rent seeking, including suspicious delays in payments of contractors and anecdotal evidence of

budget administrators/executive secretaries in the Districts who try to informally influence procurement committees' decisions with the aim of favoring friends or an influential individual who is part of the competition.[72] Overall, while most stakeholders agree that Rwanda has strong institutional arrangements for controlling and prosecuting F&C, there is also agreement that "soft corruption" exists in the ways things are done and there is difficulty in getting information and evidence due to fear. While the Rwanda Bribery Index shows strong public trust in the institutions, almost 20 percent of victims or witnesses of corruption do not report and private businesses are even more reluctant to report for fear of not getting government contracts next time.

13. **Despite these shortcomings, the assessment concluded that the examined Program's FM, procurement, and governance systems are adequate to provide reasonable assurance that the financing proceeds will be used for their intended purposes, with due attention to principles of economy, efficiency, effectiveness, transparency, and accountability and for safeguarding Program assets once the proposed mitigation measures have been implemented.** Further, the assessment concluded that the systems in place provide reasonable assurance that the Program will achieve its intended results through its procurement processes and procedures. The conclusion of the overall fiduciary system assessment is that the **risk** of the Program fiduciary system to help achieve Program results is **Moderate.**

FM System Assessment

14. **The GoR's Public Financial Management (PFM) systems and processes have both strengths and challenges, as shown in recent PFM diagnostic reports.** According to this fiduciary assessment, the strengths of the PforR operation's FM systems include: (i) the simplified PFM guidelines for Chief Budget Managers, which provide clear descriptions for the various PFM processes; (ii) an orderly, participatory, and transparent planning and budget preparation process, and (iii) a strong FM legal framework. However, a number of challenges remain in certain aspects of FM arrangements especially with regard to: (i) inadequate numbers of suitably qualified officials to handle FM functions at the District level, where there is high turnover of the few trained staff; (ii) unsupported account balances and failure to consolidate transactions for subsidiary entities, giving rise to qualification of the annual financial statements; (iii) internal control challenges: poor records management, over-expenditure on budget lines, long outstanding reconciling items, and inadequate sales records; and (iv) submission of annual audit reports to Parliament 10 months after the year-end.

15. **The main fiduciary risks to the PforR operation from an FM standpoint are:** (i) inadequate numbers of suitably qualified and experienced staff at the District level; (ii) inability to properly budget and report at the targeted Sector Strategic Plan (SSP) program/SP level within the responsible Ministries, Districts and Agencies (MDAs); (iii) a largely undeveloped internal audit function at both national and subnational levels; and (iv) improper/incomplete books of accounts, leading to qualified audited financial statements. Since Bank funding is to flow to the existing PSTA 3, the Integrated Fiduciary Assessment (IFA) also assessed the performance of the fund as well as the beneficiary entities. The FM system assessment established the following:

[72] Transparency International Rwanda (2012), Contract Monitoring in Infrastructure at the District Level.

- **Planning and budget preparation**. The budget is formulated through systematic consultations with spending ministries and the legislature, adhering to a fixed budget calendar. MDAs plan their expenditure allocations by programs and SPs based on their strategic priorities and the national Medium Term Expenditure Framework (MTEF) communicated to them in the Budget Call Circular (BCC). Despite the integration of the MTEF into the budget cycle, the effectiveness of the MTEF process is undermined due to lack of fully costed sector strategies, the weak link between the sector strategies and the budget, and the limited use of MTEF outer years as a basis for yearly budget preparation. The capacity for budget formulation and preparation in MDAs remains a challenge, particularly regarding linking the budget to policy priorities and costing of programs and strategies. Therefore, the main challenge is the inability to properly budget and report at the targeted SSP program/SP level within the responsible MDAs.

- **Treasury management and funds flow**. After the submission of the Finance Bill to both Chambers of Parliament, the Secretary to the Treasury shall require the Chief Budget Managers to prepare and submit to MINECOFIN on the basis of the draft budget, provisional annual expenditure plans broken down by month and quarter consistent with the public entity procurement plan. Upon adoption of the annual budget, the Minister shall inform the Chief Budget Manager of each public entity of its approved budget and request for a detailed final annual expenditure plan based on the approved budget. Authorization shall be issued on a quarterly basis and on each budget item. Depending on the available resources, the Minister may decide to issue the authorization on a monthly basis. Cash flow plans are then prepared on a quarterly basis, and spending agencies make commitments on the basis of the approved cash flow plans**.**

- **The strict budget controls** ensure that the budget is implemented in accordance with the budget as approved by Parliament. In aggregate, the difference between actual expenditure and the original budgeted expenditure was -0.95 percent in FY2010/11 and 0.06 percent in FY2011/12. FY2012/13 outturns are being finalized, attesting to the strong foundation of aggregate fiscal discipline underlying the government budget preparation and implementation processes. However, time lags between revenue collection and banking at the District and sector level need to be reduced, as constantly noted in the Auditor General's report. A Treasury Single Account (TSA) concept is in place whereby all entities and autonomous agencies now operate with subaccounts of the main TSA. Each day a notional amount equal to the commitment ceiling would be associated with a subaccount and purchases made through these accounts involved a debit of funds directly from the TSA. Each of these accounts operates as a zero balance account. Any payments into those accounts are cleared against the TSA daily. Commitment ceilings are modified daily according to expenditure and revenue flows through the accounts for application at the start of the next day. All cash balances, therefore, are calculated daily and consolidated.

- **Accounting and financial reporting**. In-year and annual financial statements are timely with reasonable quality. **The Auditor General qualifies the District Council annual financial statements among other weaknesses, largely due to a failure to consolidate sectors' and other nonbudgeting agencies' transactions and balances**. Transfers to

sectors and nonbudgeting agencies are expensed in the books of the District Councils at the point of transfer. Accountability is subsequently done but outside the District financial statements. The authorities have agreed to undertake an International Public Sector Accounting Standards (IPSAS) gap analysis and develop a roadmap towards compliance over time. The gap analysis will help with the format, content, and frequency of reporting by public entities to be prescribed in the financial regulations. The government's intention to embark on an accrual basis of accounting will need to be carefully reconsidered as part of the IPSAS (cash basis) gap analysis.

- **Integrated Financial Management Information System (IFMIS)**. The SmartFMS currently has three core modules in active use, namely: General Ledger; Accounts Payable; and Revenue Management. The SmartFMS is operational in 131 out of 156 Budget Agencies (i.e., 84 percent) and covers 83 percent of government payments. The SmartFMS as an enabler has contributed to improved timeliness of reporting and should be seen as a tool, not a "silver bullet" that will address the PFM challenges. A multi-pronged approach that ensures sustained progress in the other reform areas will be essential. Internal Audit information systems audit capability through the use of Computer Aided Audit Techniques (CAATs) and Audit Command Language (ACL) will help in detecting the fraud exposures inherent in an IT environment. There is need to develop a robust Business Continuity Management (BCM) and disaster recovery plan as part of the information security policy for IFMIS.

- **Internal controls (including internal audit).** The main internal controls are in place and documented in the government FM and procedural manuals. The main internal control issues as identified in the management letters for external audits and internal audit reports include: (i) noncompliance with all procurement policy and guidelines; (ii) poor documentation and filing of accounting records; (iii) irregular and unauthorized expenditure; (iv) weak controls over the management of fixed assets, cash collections, and bank transactions; and (v) overexpenditure on budget lines despite the IFMIS in-built budget controls. The Organic Law on State Finances and Property (commonly called OBL) Article 19 7º requires the Chief Budget Manager "to establish and maintain effective, efficient and transparent systems of internal controls and risk management." With the new OBL in 2013 and regulations in place, business processes will need to be reengineered to strengthen existing processes such as budget controls, requisitioning, purchase orders, invoicing, payment authorization/approval, accounting, and reporting. The emerging business processes together with functionalities in the new IFMIS will lead to the development of a Comprehensive Operating Procedures Manuals (COPM).

- **The internal audit function** is in its early stages of development. Starting from a level of between 1 and 2 in 2010; the Office of the Government Chief Internal Auditor (GCIA) targets to achieve level 4 by 2017 of the public sector internal audit capability model (IA-CM). An internal audit service has been established in all government institutions. It is estimated that there are currently 200 internal auditors throughout the country but only two qualified Certified Professional Accountants (CPA) are in post. Currently the internal audit structure is flat; it does not specify a Head of Unit, which poses a challenge in terms of leadership of the internal audit function at the MDA level.

- **Audit Committee**. Of the 94 MDAs, 68 have had Audit Committees since 2011 and submit reports either to Council (83 percent by December 2013) or to heads of entities. In July 2012, MINECOFIN published a model Audit Committee Charter, followed by a Handbook in 2013 that provides broad guidelines that can be used by Audit Committees in MDAs and Government Business Enterprises. At the central government, 14 out of 21 ministries and agencies have established Audit Committees, but very few have held meetings. Thirty budgeting agencies have yet to establish the required internal audit committees. The internal audit departments of NAEB and RAB both report to their respective Audit Committees.

- **External audit**. Under the Rwanda Constitution, the Auditor General of State Finances in Rwanda has the mandate to audit all public expenditures under Law N° 79/2013 of 11/9/2013 determining the mission, organization, and functioning of the OAG of State Finances.[73] This law also governs procedures for auditing state finances. Reports prepared by the Auditor General are submitted to the Parliament and considered by the Public Accounts Committee (PAC). In FY 2011/12, 72 percent of the MDA audit reports (97 reports) were qualified mainly due to avoidable and easily addressable factors. The number of entities that obtained reports with unqualified (clean) audit opinion increased from 11 reports (9 percent) in the previous year to 37 reports (28 percent) in FY 2012/13. All 30 Districts have qualified audit reports.

- **Public Accounts Committee (PAC)**. There is notable improvement in the implementation of prior year audit recommendations; 60 percent of all recommendations were fully implemented in 2012 compared to 49 percent in 2011. The PAC conducts public hearings on the audit reports[74] and this oversight includes the audit reports for the District Councils. There is no PAC similar to the one in the Chamber of Deputies at the District level. District Council Audit Committees have yet to conduct public hearings. However, District audit reports are not publicly disclosed in order to inform the citizens. The publication of District Council audit reports on their notice boards or websites or at Rwanda Governance Board (RGB) would push the boundaries of transparency. Public dissemination of audit reports could be considered to improve fiscal transparency and accountability.

- **Human resources**. There is a dearth of suitably qualified personnel to handle PFM functions, especially at the District level where there is high turnover of the few trained staff. More than half of the total number (1,065) of accountants and auditors (internal and external) have a first degree but there are only 16 (i.e., 2 percent) fully qualified professional accountants in the government. Through support from the Institutional Development Fund (IDF), the Institute of Certified Public Accountants of Rwanda (ICPAR) has established its own examination that complies with the International Education Standards (IESs) published by the International Accounting and Education Standards Board (IAESB) of the International Federation of Accountants (IFAC). IFAC also seeks to reinforce professional accountants' adherence to these values through the

[73] Official Gazette nº 45 of 11/11/2013.

International Ethics Standards Board for Accountants' *Code of Ethics for Professional Accountants* (IESBA Code). The ICPAR has launched its own professional courses - the Certified Public Accountants of Rwanda (CPA-R) and the Certified Accounting Technicians of Rwanda (CAT-R), both benchmarked against the IESs. To further support ICPAR, PFM education and training could be strengthened by appropriately updating the technical content of the curriculum in accordance with the IESs by introducing public sector-specific professional values, ethics, and attitudes; coaching and mentorship to acquire practical public sector experience; and leadership skills for improving capabilities and competence for FM tasks.

16. **The following areas for strengthening the FM system should be included in the fiduciary strengthening plan as part of the PAP:**

- **Planning and budget preparation.** Deepen mapping of EDPRS 2 initiatives to the MDA level to allow for better attribution of the EDPRS 2 outcomes to MDA performance and hence contribute to the overall performance management system (Imihigo).

- **Treasury management and funds flow.** Under the Program, prompt banking of District revenue collection at the nearest commercial bank with a service level agreement to sweep to the main District Treasury bank account will be introduced.

- **Accounting and financial reporting.** The Program will undertake an IPSAS gap analysis and develop a roadmap towards compliance over time. The gap analysis will help with the format, content, and frequency of reporting by public entities to be prescribed in the financial regulations.

- **Internal controls (including internal audit).** A Comprehensive Operating Procedures Manuals (COPM) with the new OBL and regulations in place together with the future IFMIS will be developed to support the Program. To create an internal audit cadre, the right number of internal auditors at each public sector institution in the country will be established, with clear progression paths and commensurate compensation packages. District Council Audit Committee membership and co-opted competent members will also be strengthened, based on an agreed sitting fee.

- **External audit.** The Program external audit will shorten the time to no more than six months after the year-end for submission of audit reports and District-level PACs will be established to bring accountability much closer to the electorate.

- **Public Accounts Committee (PAC).** There is notable improvement in the implementation of prior year audit recommendations; 60 percent of all recommendations were fully implemented in 2012 compared to 49 percent in 2011. The PAC conducts public hearings on the audit reports and this oversight includes the audit reports for the District Councils. There is no PAC similar to the one in the Chamber of Deputies at the District level. District Council Audit Committees are yet to start conducting public hearings.

Procurement Systems Assessment

17. **The Program procurement systems' assessment was conducted at all implementing agencies at the national level and three sample Districts at subnational level.** Accordingly, the three SPIUs of MINAGRI, the SPIU of RAB, Corporate Service of MINAGRI and NAEB, and three Districts were assessed. The procurement systems' performances were assessed based on the government's procurement legal framework on the degree to which the planning, bidding, evaluation, contract award, and contract administration arrangements and practices provide reasonable assurance that the Program will achieve intended results through its procurement processes and procedures.

18. **Despite having robust procurement legal framework in place, the assessment revealed that there are both strengths and areas for improvement with the procurement system.** Each implementing agency visited has an established institutional framework for implementation of procurement activities. The unit responsible for handling procurement in each implementing agency at the national level is Procurement Units in the SPIUs and Procurement Units under the Corporate Service of each respective agency; at the District level, the Procurement Unit is under the Chief Budget Manager (Executive Secretary).

19. **Based on the current records, all national implementing agencies and Districts spend more than 60 percent of their annual budget through procurement.** The scope of procurement of contracts in terms of number and value of items undertaken by the agencies, each year, varies among agencies. The total number of contracts procured each year (works, goods and consultancy services) ranges from as low as 14 at MINAGRI's Corporate Service Procurement Unit to as high as 125 at the procurement unit of RAB. Procurement of goods contracts takes a major share in terms of number contracts, while procurement of works contracts stands first in terms of contract values. The average annual value of works contracts handled by the agencies assessed is about US$16 million, in spite of the big differences from agency to agency. Some agencies demonstrated experience with handling procurement of a single contract as high as US$8-13 million for works. No high-value contracts above the current Bank OPRC threshold are expected under the proposed Agri. PforR operation.

Summary of Major Procurement System Assessment Findings

20. The assessment revealed both strengths and areas for improvement in the procurement environment. The strengths in the procurement systems and practices are:

(i) MINAGRI's and Districts' procurements are generally sound, entered in IFMIS, and consistent with the budget, and completion reports are prepared;

(ii) Each implementing agency at the national and District level has an established institutional setup for implementation of procurement activities;

(iii) There are adequate suppliers of goods, works, and services at the national and District level;

(iv) Reasonable oversight and accountability exist. Procurements and/or contracts are monitored regularly by RPPA on a sample basis. All procuring entities are required to provide a monthly report to RPPA on the implementation of the procurement plan. RPPA has the overall responsibility to train all newcomers' procurement officers as well as new internal tender committees in national procurement procedures as outlined in the Procurement Law. In addition, RPPA provides training to all procurement officers to refresh their knowledge at least once a year. The OAG undertakes compliance auditing, in addition to the established financial auditing. The OM also oversees on an information basis. Each procuring entity at the national and District level has an internal auditor who reviews financial and procurement operations on a regular basis. Provinces also sometimes conduct audits, including reviewing procurement operations of Districts (e.g., Western Province);

(v) The Public Procurement Directives stipulate that implementing agencies are required to comply with the well-defined complaints-handling mechanism, which is implemented at the national and District levels through a National Independent Review Panel and a District Independent Review Panel mechanism;

(vi) A good number of contracts of works and goods are awarded based on the lowest evaluated bidder (least evaluated responsive bidder);

(vii) A good number of contracts are awarded based on criteria provided in the bidding documents; and

(viii) A good number of consultancy services contracts are awarded through the Quality and Cost Based Selection (QCBS) procedure.

21. **Key findings on the areas for improvement of procurement system and practices are that**:

(i) There are irregularities in implementing the procurement laws, regulations, and procedures in some implementing agencies. The assessment revealed areas to be strengthened, such as: (a) lack of adequate written records of all procurements and contract documents by all procuring entities; (b) lack of publication of contract awards on media accessible to the public as per the requirement of the RPPA procurement procedures; (c) no formal internal approval of contract awards as required by the procurement law. Provisional notification and letter of awards signed by the authorized body are considered as internal contract award approval; (d) delays in payment of executed contracts, especially at the District level, due to delays in budget replenishment by MINECOFIN; and (e) award of contracts through nonopen competitive methods, award of tenders that are not planned, and longer periods for bid preparation than prescribed in the legal documents. These challenges will be mitigated by RPPA through tailored procurement trainings for the Agri. PforR before the start of the Program, twice in the first year, and then annually during the second and third years of the Program.

(ii) RPPA's staffing capacity is too low to carry out comprehensive procurement audits on an annual basis as part of its regulatory mandate. At the national level, most agencies are audited only once in two years. RPPA should annually audit all MDAs implementing the

Program. There is also lack of coordination of procurement auditing between RPPA and the OAG.

22. **Proposed risk mitigation measures are detailed in Table 6.1**.

Table 6.1: Procurement Risks Mitigation Measures

Procurement Risk	Description	Proposed Mitigation Measures
Compliance with procurement legal and procedural frameworks	There is lax compliance with the laws and procedures with regard to use of noncompetitive methods, awarding tenders that are not planned, delays in payment to executed contracts, and selection of consultants without using "Requests for Expression of Interest."	RPPA will provide reminders to implementing agencies and organize training on procurement laws, procedures, standard bidding documents and manuals. At least one procurement training session will be provided for staff from all implementing agencies before Program effectiveness. Continued training and clinics will be offered at least twice a year for the first year and once a year for subsequent years. The training should be extended to the Tender Committees, Procurement Officers, and Chief Budget Managers.
Procurement capacity	There are capacity limitations in terms of skilled staff to handle procurement and contract administration of high-value contracts at the District level. The implementing agencies experience high staff turnover. In most agencies, most procurement staffs have been in position for less than 2 years.	In line with Program requirements, adequate procurement staff at each implementing agency, both at the national and Districts level will be maintained throughout the Program. Each participating entity at the national level will maintain at least one qualified procurement specialist dedicated to the PforR. The Program will support training of procurement specialists from agencies.
Transparency and fairness	A number of tenders are awarded using noncompetitive methods. Most implementing agencies do not publish contract awards, impacting on transparency and fairness in bid evaluation.	RPPA will provide reminders to implementing agencies and organize training on the use of procurement laws procedures and manuals. At least one procurement training session will be provided for staff from all implementing agencies before Program effectiveness.
Accountability, integrity and oversight	Contract awards lack formal internal approval. RPPA has low capacity to conduct procurement audits on an annual basis for all procuring entities. Procurement audits by RPPA and OAG lack strategic coordination.	RPPA will enforce procurement laws to ensure contract awards get formal and recorded appropriate internal approval and procurement records keeping. RPPA and OAG will agree and plan on how best to coordinate procurement auditing. RPPA will come up with a comprehensive capacity-building plan that includes capacity building of all Agri. PforR implementing agencies and RPPA itself.

Governance and Anti-corruption (GAC) Considerations

23. **There are relatively strong institutions of accountability, integrity, and oversight, including the Public Accounts Committee (PAC) of Parliament, the Office of the Ombudsman (OM), and the Office of the Auditor General (OAG).** There is a division of responsibilities between the OM, which deals with cases of corruption, and the Criminal

Investigation Department (CID), which deals with cases of fraud, while the National Public Prosecution Authority (NPPA) prosecutes cases of F&C after investigations. The NPPA has 12 prosecutors dedicated to the prosecution of F&C and one prosecutor for each of the 30 Districts. The Prevention Directorate of the OM assists public, private, and nonprofit organizations in reviewing their business processes to identify and address gaps that might create opportunities for corruption. It also has the mandate to proactively intervene in organizations to suggest corruption prevention measures. There seem to be good working relationships and understanding among the agencies, with a common purpose of minimizing opportunities for F&C and dealing decisively with it through investigation and prosecution when it occurs.

24. **The legal provisions for investigation, prosecution, and prevention of F&C and its enforcement are quite strong.** Corruption is comprehensively defined in Article 633 of Organic Law No. 01/2012/OL of the Penal Code and there are several other laws to help fight, prevent, investigate, and punish F&C. The Law establishing the OM was amended in 2013 (Law No. 76/2013) to enable the OM to prosecute cases of corruption to speed up the process of prosecution. At the time of the assessment, the OM was in the process of setting up a prosecution unit and thus the NPPA was still responsible for prosecution of both F&C cases. A Whistle Blowers' Protection Act was passed in 2013 to give reasonable assurance and incentives to report cases of F&C. One key innovation for deterrence is a "naming and shaming" policy for persons convicted of corruption, whereby their names and offences are published in newspapers and at the OM's website (http://www.ombudsman.gov.rw). Overall, the legal and institutional frameworks give reasonable assurance of the capacity to deal with cases on F&C in the PforR operation. However, staffing capacity in investigation in OM is a concern, as there were two vacancies yet to be filled at the time of the assessment. It will be important as part of the PAP for the OM to complete the process of setting up and appropriately staffing the prosecution unit. It may also require more investigators beyond the current establishment level of six to cover the entire country.

25. **The independence of the OM is key for effectiveness.** The OM has operational independence; the Chief Ombudsman is appointed for a five-year term, renewable once, and two deputies are appointed for a four-year term each, renewable once. The OM reports to Parliament and the Office of the President and has independence in its operations.

26. **The Auditor General's report provides pointers to potential cases of F&C, in addition to the public providing information through hotlines and other media.** The OAG produces an annual report on the use of public funds in governmental organs and institutions. This report is sent to Parliament (to the PAC) and a copy is provided to the Prosecutor-General as provided for by Article 184 of the Rwandan Constitution as revised to date. The NPPA then appoints a team to analyze the report and investigate persons suspected of complicity in mismanagement of public funds in general, where necessary. However, the law does not require that a copy of the report be provided to the OM.

27. **Multiple channels exist for making and recording complaints on F&C, including on procurement.** There is reasonably good citizens' engagement and complaints-handling mechanism for F&C. Both the OM and NPPA have regular press conferences aimed at sensitizing the public at large on corruption to prevent the public from engaging in this and

related crimes, since persons found guilty are harshly punished. Handling complaints and grievances related to fraud and corruption are reported or redirected to NPPA/CID, while corruption cases are reported directly to the OM or redirected to OM from other agencies such as NPPA or RPPA. On fraud, Chief Prosecutors at all Prosecution Levels are duty bound to receive complaints from the public every day on allegations of fraud in any government agency, including MINAGRI, RAB, NAEB and Districts. This enables issues to be handled in a timely manner and prevents complainants from seeking corrupt means to solve their concerns. The Chief Prosecutors write monthly reports to the Prosecutor-General informing him of all complaints received and how they were resolved. Prosecutors also have timelines within which they must have taken a decision on each case, failure of which reasonable cause must be given. A similar process is used in the OM to handle complaints on fraud. The NPPA has a free hotline (3677) that enables anyone with information on corruption or who has a complaint can easily communicate to NPPA. The OM also has multiple ways to receive complaints, including hotlines, secure complaint boxes in most public organizations, and via email and letters to each of the 30 Districts. The assessment suggests that these complaint mechanisms work reasonably well.

28. **Procedures related to complaints on public procurement are stipulated in the procurement law and can come from bidders, who have seven days to lodge a complaint or request a review.** The reporting system for procurement complaints is adequate for this Program. There is also an appeal mechanism for bidders if they are not satisfied. Complaints related to suspected cases of F&C in procurement are referred to the OM and NPPA by the NPA for investigation and possible prosecution. Complaints from citizens on suspected cases of F&C are also lodged with the RPPA or directly with the OM or NPPA.

29. **Since 2009/10, 453 complaints of corruption have been received by the OM, of which 307 were investigated, with only 9 sent to prosecution and 18 transmitted to other institutions, including the police**. Many of the complaints received are related to maladministration, followed by ones related to local entities, procurement, and the justice sector. A major challenge noted is the lack of evidence or information to prosecute allegations of corruption. Almost all cases prosecuted have been for petty corruption rather than grand corruption.

30. ***Application of World Bank Anti-Corruption Guidelines*:** The assessment also examined the capacity and commitment of the Government institutions to implement the Bank's ACGs which measures that will mitigate that will mitigate the risks of fraud and corruption in the Agric PforR operation. The application to the Agriculture PforR operation, as currently proposed is summarized below:

(i) *Sharing of debarment list of firms and individuals:* MINAGRI will share with the procuring entities list of firms or individuals on the World Bank's debarment or suspended list and ensure that these are not allowed to bid for contracts or benefit from a contract under the operation during the period of debarment or suspension. Though Rwanda procurement law does not automatically debar firms on the World Bank list from participating in public procurement, the application of the ACGs agreed to by the Government will require the use of the World Bank list of debarred and suspended firms and individuals. The Office of the

Auditor General and RPPA will check compliance and report to the World Bank every six months as part of the reporting requirement of the operation.

(ii) *Sharing of information with the World Bank on fraud and corruption allegations:* All program managers are required by law to forward any allegations of fraud and corruption to the OM and NPPA respectively. The OM and NPPA will share such information with the World Bank every six months on all allegations of fraud and corruption received from the public and the complaints system. This is necessary to demonstrate commitment to transparency and openness in the program to the ACGs.

(iii) *Investigation of fraud and corruption*: The OM and NPPA have the legal mandate to investigate any allegations of fraud and corruption and prosecute such cases. As a result, all allegations of fraud and corruption will be investigated by the OM and the NPPA and those found to be credible will be prosecuted by NPPA. The World Bank's Institutional Integrity Vice Presidency (INT) may also investigate any fraud and corruption allegations made against the entire program or part of the program. Thus there are two possible tracks to investigation, depending on the circumstances: (i) The OM and NPPA may undertake their own independent investigations of fraud and corruption allegations that may arise from complaints or sharing of information under the above paragraph; (ii) INT may undertake its own corruption fraud investigations related to the PforR operation. In such cases the Agriculture PforR operation and OM and NPPA will collaborate with INT to acquire all records and documentation that INT may reasonably request from the operation regarding the use of the PforR financing.

31. **In conclusion, the F&C risks for implementing the PforR operation are "Moderate."** Rwanda has the institutional and organizational capacity to handle issues of F&C in the Program but will have to take action to address the risks areas identified, including adequate staffing in investigations and PFM at the District level. These capacity issues are being addressed in the PFM PforR PAP. Otherwise, the *ex-post* detection and *ex-ante* prevention of corruption are quite sound and give reasonable assurance that issues of F&C will be handled and that the existing systems will respond adequately.

32. **To minimize F&C risks in the Program, the following mitigation measures are proposed**:

- For weaknesses in internal audit and controls, especially at the District level, the proposed mitigation measure is to recruit and train additional auditors for Districts, especially large ones with relatively large budgets. Central agencies such as RPPA, OM, and OAG conduct regular audits and Districts conduct submit regular audit report to the District Councils. These oversight and reporting functions need to be maintained with more regularity.
- On procurement, surprise and spot checks of procurement files by the OM and RPPA should be continued. Improved transparency through the publication of contracts in regular media will help prevent corruption in procurement, especially for high-value contracts in irrigation and supply and distribution of fertilizers.
- As suggested above, the OM needs to strengthen its investigation capacity by recruiting staff to fill existing vacancies and expanding its establishment level for investigators to more than six to cover all 30 Districts plus central government agencies. The OM is in the process of hiring staff to fill two vacant positions. There is also need for better

coordination between the OM and the OAG: the OAG needs to officially share his report with the OM, not just the NPPA, as the OAG report provides pointers to possible cases of F&C that need follow-up attention.

Annex 7: Summary Environmental and Social Systems Assessment

1. **Annex 7 summarizes the findings of the Environmental and Social Systems Assessment (ESSA) undertaken for the Rwanda Transformation of Agriculture Sector Program-For-Results (PSTA 3)**. The ESSA examines the Program's systems for environmental and social management for consistency with the standards outlined in OP/BP 9.00 (Program-for-Results Financing), with an aim to manage Program risks and promote sustainable development. Paragraph 8 of OP 9.00 outlines what the ESSA should consider in terms of environmental and social management principles in its analysis. Those core principles are:

2. **Environmental Management Systems**: (a) promote environmental and social sustainability in the Program design; avoid, minimize, or mitigate adverse impacts, and promote informed decision making relating to the Program's environmental and social impacts; (b) avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the Program; and (c) protect public and worker safety against the potential risks associated with: (i) construction and/or operations of facilities or other operational practices under the Program; (ii) exposure to toxic chemicals, hazardous wastes, and other dangerous materials under the Program; and (iii) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards.

3. **Social Management Systems**: (a) manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement and assist the affected people in improving, or at the minimum restoring, their livelihoods and living standards; (b) give due consideration to the cultural appropriateness of, and equitable access to, Program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups; and (c) avoid exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes.

4. **The ESSA considers the consistency of the Program systems with these principles on two levels:** (i) as systems are defined in laws, regulations, and procedure; and (ii) the capacity of Program institutions to effectively implement the Program’s environmental and social management systems. To assess the existing systems as well as analyze how they are implemented, the ESSA process included a broad range of inputs, including: (i) a legal and regulatory analysis of policies, laws, regulations, and sector-specific guidelines related to environmental and social impact assessment, participatory planning, decentralization, resettlement and compensation, and social inclusion; (ii) a desk review including: (a) Aide Memoires and technical documents (including Environmental and Social Management Frameworks, Resettlement Policy Frameworks, Environmental and Social Impact Assessments, and Resettlement Action Plans) from the Bank-supported projects in or related to the agriculture sector; e.g., LWH, RSSP, Landscape Approach Forest Restoration project (LAFREC), FRDP, and the Lake Victoria Environmental Management project (LVEMP); (b) literature including reports on land issues, environmental assessment, poverty and participatory planning specific to Rwanda; and (iii) field visits to Rutsiro, Ngororero, Nyabihu, Nyagatare, and Rubavu Districts that included consultations with District technical staff as an input to the capacity and performance assessment. Meetings and interviews were conducted with MINAGRI, RAB,

NAEB, SPIUs, MINIRENA, REMA, RNRA, RDB, DPs, consultants, NGOs, and technical practitioners in environmental and social impact assessment.

5. **A formal consultation on the draft ESSA was organized with a view to elicit inputs from the key stakeholders.** Feedback from the key stakeholders in the GoR was instrumental in identifying the actions that serve as inputs into the PAP. This feedback was sought both through the formal consultation events as well as through meetings held during the Bank missions.

6. **The overall environmental effects of the Program are expected to be positive with potentially significant environmental benefits.** The Program includes: (i) a soil conservation and land husbandry program - contributing to more sustainable land and water management and decreased erosion; and (ii) mechanization, soil fertility management, and seed and livestock development – improving agricultural practices and increasing food security in the country. The proposed activities are envisioned to be undertaken within existing sites of agricultural land use. However, the Program may include new irrigation schemes, which are proposed to be similar in scale to RSSP 1-3 project sites. The sites will be chosen based on a set of criteria, including: the level of environmental impact on a watershed and on downstream marshlands; and the level of social impact, including the number of beneficiaries on the site, the proportion of female-headed households, etc.

7. **Potential adverse impacts at each site may include:** erosion and quality deterioration; small dam safety-related impacts; water quality and quantity degradation (both surface and ground water); downstream flooding; surface water sedimentation; spread of waterborne diseases; introduction of invasive flora species; loss of high-value trees, especially those with medicinal value; potential damage to aquatic habitats; and construction phase impacts generally associated with civil works. Based on the Assessment and experience with other Bank-supported projects, the Program activities, such as land husbandry works and construction of the irrigation infrastructure, are not expected to result in significant adverse cumulative or induced impacts with diligent implementation of the proposed mitigation measures at each site. Routine screening by the District staff and MINAGRI should determine if a potential site is located in proximity to another site. Should cumulative impacts be identified, an assessment needs to be carried out to inform the planning and design of the involved project sites. Examples of cumulative impacts that can potentially develop from the combined impacts of more than one SP, especially in the absence of diligent implementation of project mitigation measures, include: (i) increased use of chemical fertilizer which may have downstream impacts; (ii) reduced water to downstream users due to dams; and (iii) increased sedimentation of the natural water bodies and valley.

8. **The Program assessment revealed that its social impact is likely to be positive given benefits such as**: increased productivity and commercialization of agriculture and improved quality and accessibility of agriculture services, thus improving citizens' incomes and overall welfare and quality of life, especially the rural poor and vulnerable. The proposed operation targets farmer groups, focusing on poverty reduction and increased food security. No significant changes in land use or large-scale land acquisition are expected for the proposed PforR.

9. **MINAGRI has a proven track record in implementing projects that ensure the inclusion of vulnerable households and groups in the project design and implementation**,

developing projects that target people with disabilities and the elderly, youth groups, and women's groups. Learning from the participatory planning processes of existing projects such as RSSP 1-3 and LVEMP, MINAGRI has adopted a participatory approach to project design through regular public consultations with Program beneficiaries, including project-affected people. The Ministry has adequate information flow at the District and grass roots levels to ensure a participatory approach to the decentralized planning process to SP design and implementation. **In addition, a grievance and redress mechanism is in place at the District level to mitigate complaints from communities**.

10. **The potential social risks of the Program include**: chance of physical resettlement and/or land acquisition related to Program interventions and difficulty of identifying relocation sites due to the limited land availability; loss of income from land due to demarcation of buffer zones; potential for limitations on access to natural resource use in or around protected areas; consolidation of land use; acquisition of land for agro-processing and off-farm activities; benefit-sharing of commercial farming if land is rented; male capture of community institutions; obstacles for women and youth participation; difficulty of purchasing agriculture inputs for the very poor due to their limited access to micro finance; conflict over land ownership and use; weak participatory decision making; and lack of transparency.

11. **Land requirements are minimal as the construction interventions under the Program are mostly either rehabilitation or require small portions of land.** Rwanda's legal/regulatory system and Land Policy include provisions for compensating for loss of assets at replacement cost and rehabilitation of adversely affected people. As per the Valuation Law, all people affected by expropriation must receive fair and just compensation. The calculation of fair and just compensation is to be made by independent valuators. Whilst fair and just compensation is stipulated to be market value for land and other assets, clarification of what this comprises is not made clear in the existing legislation (this is one issue being considered in the draft amended Expropriation Law before the Parliament). The GoR's approach to land procurement is to: (i) use available public land; or (ii) buy private land at a negotiated market price. Under the PforR Program, it will be the responsibility of the GoR/MINIRENA to provide land for the Program, following the sequence of options mentioned above. The preferred method is to identify public land that is free from encumbrances. In the case of private land, MINAGRI will purchase the land at "replacement cost." Land owned by vulnerable groups will not be considered.

12. **The ESSA concluded that the GoR's environmental and social systems are adequate for Program implementation in terms of policies and procedures, albeit both human and financial resources need to be strengthened,** especially for coordinating and monitoring activities at the local level. With additional environmental and social experts and a Technical Assistance program and with implementation of the identified actions to address the gaps, MINAGRI and other Program implementers can significantly reduce environmental and social risks during implementation of the proposed PforR operation.

13. **The proposed operation to support PSTA 3 will be implemented by the MINAGRI, in line with its current organizational and functional structure and actors**: four departments (Planning, Inspection, Crop Production, and Animal Resources); two Task Forces (Irrigation and Post-Harvest Infrastructure); two semi-autonomous implementing agencies (RAB and NAEB);

the three SPIUs that implement donor-supported projects (African Development Bank, IFAD, and World Bank); and 30 Districts.

- **MINAGRI's SPIUs** will be responsible for delivery of the majority of SPs under the PforR. The SPIUs will work with the District authorities responsible for environmental management and social aspects, including those related to resettlement and compensation, to ensure that the relevant policies are properly applied across all relevant SPs. Their initial role will be to undertake screening and assessment of potential SPs to determine whether resettlement and/or compensation will be required. The SPIUs will provide capacity building and technical support in all aspects of the Program, including resettlement. They will work closely with the District authorities to ensure that funds are allocated as per the approved resettlement action plan (RAP).

- **RAB** and **NAEB** were created in 2010, with RAB responsible for research in staple crops and NAEB for export crops. The implementation of research and extension has been decentralized; however, both institutions face challenges with coordinating research programs and support services between the Districts and the central level, and with setting priorities for Districts among the different institutions. Another challenge is lack of technical and professional staff in the Ministry and at the local level.

14. **Based on a capacity assessment of these agencies, the ESSA highlighted areas that would benefit from strengthening during Program implementation, including**: (i) increasing local level capacity for M&E for MINAGRI, RAB, and NAEB; (ii) strengthening the regulatory framework in at least two areas: use of agro-chemicals and safety of irrigation structures. However, most investments involving similar risks have been, and may likely be, implemented by GoR together with DPs applying international standards and regulations; and (iii) ensuring that decentralized decision making, transparency, and accountability are institutionalized to enhance sustainability of investments in social management aspects. This will require capacity building of all stakeholders at the District level.

15. **To address these capacity challenges and to streamline procedures at the Program level, the "Institutional Development and Agricultural Cross-Cutting Issues" program will include:** (i) development of a consolidated Environmental and Social Implementation Manual based on existing government guidelines; and conduct training on the understanding and application of this Manual at the National and District level (in collaboration with participating ministries and agencies).; and (ii) an SP on Environmental Mainstreaming in Agriculture, which will promote sound environmental management in agricultural practices, including such key areas as soil conservation, soil nutrient management, use of chemical fertilizers and pesticides, water management, and sustainability of irrigation structures.

16. **To address the identified environmental impacts, risks, and gaps, the following key actions were identified as**:

a) **High-risk interventions**. No activities contemplated in the Program are judged to be likely to have significant adverse impacts on the environment and/or affected people that are sensitive, diverse, or unprecedented, nor are there activities that involve procurement

of works, goods, and services under contracts whose estimated value exceeds specified monetary amounts (high-value contracts) and require mandatory review by the Bank's Operations Procurement Review Committee (OPRC). Specifically, site selection criteria will be used to ensure that the Program does not support irrigation schemes that involve construction or rehabilitation of dams that fall under the International Commission on Large Dams' (ICOLD) definition of large dams (15 m or higher; and/or dams of 5-15 m height with >3 million m^3 reservoir volume) or (i) schemes with high population density downstream from the dam; (ii) groundwater-based schemes in overexploited and critical basins that do not integrate source sustainability measures; or (iii) schemes involving highly polluted surface water sources. In addition, investments with significant negative impacts on ecologically important areas, according to GoR environmental regulations, will not be included in the Program. Such areas of ecological sensitivity include the National Parks (Volcanoes, Akagera and Nyungwe Forest), as well as other protected areas, such as forests (e.g., Gishwati and Mukura), lakes such as Muhazi, Cyambwe, Rwampanga, Rweru, Nasho, Gisaka, Bugesera, and the Northern lakes (Bulera and Ruhondo).

b) **Strengthening the existing GoR system for environmental management.** The Program Action Plan (PAP) includes measures on strengthening the GoR's procedures and capacity for environmental management of the Program. The associated action is "conducting training on the understanding and application of ESIM at the National and District level (in collaboration with participating ministries and agencies)."
c) **Inclusion of EIAs and other environmental due diligence aspects into SPs dedicated to Environmental Mainstreaming in Agriculture**.

17. **To address challenges with implementation of social aspects of the Program, the ESSA recommended the following actions**:

a) **The PAP will include a training program on social aspects to inform Program implementing organizations about key social issues** such as: resettlement, equity, and benefit sharing; social inclusion processes and procedures; roles and responsibilities of all stakeholders; and SP cycles to facilitate planning, implementation, and post implementation. MINAGRI has a Resettlement Policy Framework and Process Framework prepared for other agriculture projects that will remain relevant for this Program.
b) **Training on social development.** Training will be provided, including the understanding and application of the ESIM at the local levels (including the cell level) to ensure that they are in compliance on inclusion, community consultations, gender, land acquisition, benefit sharing, and provision of services to vulnerable groups and households.

Annex 8: Integrated Risk Assessment

PROGRAM RISKS	
Technical Risk	**Rating: Moderate**
Description : (a) Enabling Policy Environment and Expanded Private Sector Role and Capacities: - Key PSTA 3 Program goals, objectives and targets hinge on an expanded role of a broad-based private sector in carrying out numerous strategic programs/SPs, involving input, output and value chain markets. The stage and capacity of an expanded private sector, especially in the agriculture sector, is still at an early stage of development, although recently showing positive signs of growth and maturity (from a low base). - There is a need to strengthen policies to stimulate a more dynamic private sector role in input, output and value chain markets, although currently government is formulating policies involving seeds, fertilizers, agricultural mechanization, and agricultural finance. Once approved and effectively implemented, these policies are expected to play a key role in phasing out current and unsustainable input subsidies (for seeds, fertilizers, mechanization and finance), and stimulating market-based and efficient input and output markets and enhanced producer, trader and processor incentives to achieve the ambitious targets of PSTA 3. - Most farmers' organizations and cooperatives are young and developing and need to strengthen their organizational structure, operational functioning in the provision of quality services to their members, and transparency and accountability to their members (especially marginal smallholders and women farmers). (b) Evolving Public Sector Institutional Roles and Capacities: In conjunction with the above risk area (a), various recent assessments have identified specific constraints in the institutional capacities of key public sector actors to fulfill efficient and effective changing roles at central and subnational levels. These constraints and associated risks are outlined below. Central Level: (i) MINAGRI's capacity to coordinate efficiently and effectively the large and varied number of PSTA 3 SPs (24), including an integrated and responsive M&E system, which can serve as an effective management tool, is stretched thin (currently the M&E is fragmented among various agencies, and provides partial responses to various challenges, and weak linkages at the District level, in the context of decentralizing agricultural functions and services); (ii) RAB and NAEB are undergoing important institutional reforms outlined in the ongoing formulation of their Strategic Plans (due to be completed in 2014), including the challenges of: adopting a decentralized structure and staffing presence; promoting the	**Risk Management:** (a) Enabling Policy Environment and Private Sector Development: These policy-related and private sector capacity risks will be addressed in a coordinated manner through numerous ways and levels, through supporting MINAGRI to take an active role (in close collaboration with other key state and nonstate actors) to: (i) enhance the enabling environment by removing key policy, institutional, and investment constraints (already identified in the PSTA 3 RF); (ii) formulate comprehensive and sound policy reforms (currently underway, to be finalized in 2014) for seeds, fertilizer, agricultural mechanization, and agricultural finance, including removal of subsidies for these programs (by 2016); (iii) promote private sector investments in value chain development of competitive food and export crops by further clarifying public-private roles and provision of sound, market-based, and sustainable incentive framework, support to business plan preparation and implementation, and expanded access to finance; (iv) promote improved and sustainable land-use models, which will encourage more efficient land use markets and promote expanded domestic and foreign investments; (v) promote strategic PPPs, while reflecting clear and sound roles for the public and private sectors; (vi) provide appropriate capacity development activities targeted to cooperatives and farmers' organizations, with a strong market and self-reliance orientation, while ensuring inclusive approaches are taken to benefit small and marginal farmers and women members. (b) Evolving Public Sector Roles and Capacities: Given the ongoing institutional reforms and roles of the central and subnational levels, MINAGRI will be supported/encouraged to ensure these ongoing reforms: (i) are completed expeditiously (by end of 2014, which currently appears to be on track); (ii) continue to get political and leadership support at various levels to ensure efficient and timely implementation of the proposed reforms. The Bank has provided technical inputs to the strategic and operational plans of MINAGRI, RAB, and NAEB, while also encouraging complementarity of these institutional reforms. The Bank's ongoing support of various major ongoing projects being implemented by these entities (through one of the SPIUs) also provides another avenue for regular policy, institutional and technical dialogue and appropriate operational support. It will be important for the Bank to monitor closely these institutional transitions over the next 1-2 years, and to provide appropriate and timely support to MINAGRI and

roles of and collaboration with multi-stakeholders from the public at large (including subnational levels), NGOs, private sector (including farmers' organizations/cooperatives), and to assuming increasingly a facilitator and catalyzing role to Program implementation; RAB and NAEB effectiveness in making this smooth transition will be a key factor in achieving many of the ambitious targets outlined in the PSTA 3; (iii) SPIUs play a key role in the efficient and timely implementation of donor-supported programs and projects of MINAGRI. There is a risk that the capacities of the SPIUs will not be transferred to the permanent units and staff of MINAGRI. Subnational Level: Various types of capacity constraints exist at the subnational level for effective planning, implementation, and M&E activities of agricultural programs (as well as other sectors). Continued decentralization of public functions and staffing to the District level will pose additional challenges, although there are various ongoing initiatives to address these constraints (e.g., ongoing local government restructuring process, which includes increased technical staff at the District, sector, and cell levels and commensurate increases in revenues to finance these expanding functions and staff). (c) Operation and Maintenance (O&M) Requirements: The PSTA 3 will finance a significant expansion of productivity- and market-augmenting rural infrastructure, especially soil conservation works, irrigation facilities, and rural feeder roads, to help achieve the expected targets. The sustainability of the incremental benefits will hinge on the beneficiary farmers, farmer groups and cooperatives having the incentives and organizational arrangements to provide the required O&M activities on a regular basis. From past similar investments in Rwanda, there has been the adequate response by the beneficiaries to provide such O&M, but experience also shows that the beneficiaries/ groups need to be properly mobilized and organized from the outset to provide the required O&M. Otherwise, there is a high risk that the infrastructural works will deteriorate, resulting in a loss of sustained production/productivity and marketing benefits. Various mechanisms and processes need to be established, functional, and strengthened for each type of works and need to be supported efficiently and effectively by the relevant institution (e.g., Irrigation Water User Organization, to be supported by the District support system, RAB; farmer cooperative/farmer organization, and rural road maintenance brigades). Many of these entities have limited capacity and need strengthening from the outset, and on a periodic basis. Given the "public good" nature of some of these infrastructural works, it is unlikely one individual beneficiary will provide the needed O&M attention without the coordinated support of the larger group of beneficiaries.	its implementing entities; and (iii) through support for the PAP, the Bank will support the strengthening of a sector-wide M&E system, with strong linkages with relevant entities, so that it becomes a more effective tool to assess progress and stimulate the achievement of the key PSTA 3 objectives and targets (as outlined in the RF). In addition, the Bank will actively support MINAGRI management intentions and actions to integrate the roles and activities of the SPIUs in the overall MINAGRI organizational and functional structure; this transition will enhance the balance of the efficiency, effectiveness, and sustainability aspects in the implementation of the PSTA 3 investment programs. Regarding the ongoing decentralization processes currently underway, the Bank will monitor these activities and transition, and through the PAP, provide needed technical and capacity development support, especially at the subnational levels, given that there are already substantial capacity-building activities with central agencies. There also will potentially be TA funds available for other DPs for supporting the PAP and also demand-driven capacity requirements that would emerge during implementation. (c) O&M Support Arrangements: The PSTA 3 Program design and implementation arrangements accord high priority to ensuring adequate O&M support is provided to each of the infrastructural investments and devotes resources to providing adequate capacity development of the various farmer-level organizational structures (IWUOs, farmers' organizations/cooperatives, road brigades) to ensure they provide the required O&M, with technical support from the relevant technical agencies. There will be increased attention to the introduction and "handover" phases of the improved infrastructure works to secure a stronger commitment from the beneficiary groups (e.g., through an MOU, which specifies O&M roles, responsibilities, and possible penalties if there is neglect). The M&E system includes relevant indicators for monitoring on an ongoing basis the O&M aspects of the enhanced facilities. This would include quarterly reporting of these results and required interventions to ensure adequate O&M, and therefore, sustainability of the benefits. Accordingly, the PSTA 3 M&E system, with strengthened linkages to the District-level O&M system, will devote special attention to tracking the adequacy of O&M, and ensuring corrective actions are taken on a timely basis. After 2 years of implementation, it is proposed that MINAGRI arrange an independent evaluation exercise to determine the degree and quality of O&M being provided by the relevant actors, and to identify operational recommendations to strengthen the performance of O&M activities.

	Resp: GoR and Bank teams	**Stage:** Appr. and Implementation	**Due Date:** App. & Imp. Support Miss.	**Status:** Key issues are being addressed
Fiduciary Risk	**Rating: Moderate**			
Description: Overall, the fiduciary aspects of the relevant agencies are sound, although there are identified weaknesses, especially at the District level, which need strengthening, particularly as an increasing proportion of funds are being channeled through Districts. More specifically, the fiduciary assessment highlighted the following aspects that need strengthening and appropriate mitigation measures to ensure robust accountability at all levels: a) Periodic expenditure variance analysis by the OAG revealed erroneous postings, unsupported debtors balances and unexplained reconciling items in the case of the RAB. In addition, the Districts do not incorporate the transactions of nonbudget agencies; b) There is scope for improvement in internal controls in light of the main internal audit findings related to noncompliance with procurement guidelines, inadequate supporting documentation, and gaps in filing of accounting records and overexpenditure on certain budget lines; (c) The internal audit function across **MDAs** is still at a nascent stage and capacity building is required to enhance expertise in IT audits, Value-for-Money audits, risk management, procurement, and payroll reviews. The review of the internal audit staffing structure also needs strengthening to ensure adequate staffing across the public sector; (d) Regarding external audit, the enforcement of accountability at the District level is limited, given the absence of public accounts committees for that tier of government; (e) While Rwanda has an acceptable public procurement legal framework, the assessment revealed inadequate implementation of the procurement law, regulations, and procedures; the assessment specified several specific examples of these shortfalls and irregularities, also attributable to skilled staffing constraints. The review concluded that the systems and processes for dealing with F&C issues shows that Rwanda has strong institutional, organizational, and legal frameworks for controlling F&C when it occurs. At the same time, the assessment identified some areas that need strengthening (e.g., inadequate arrangements to address F&C at the District and sub-District level; retention of qualified staff, especially investigators; and difficulty in obtaining needed evidence to prosecute corruption cases).	**Risk Management:** - The Governance PforR operation will address many of the areas identified in the fiduciary assessment for strengthening at the District level. - MINAGRI (with support from its SPIUs), and in collaboration with MINALOC and a "representative" sample of Districts, will prepare an operational action plan to assess in greater detail and to strengthen relevant fiduciary aspects, with an emphasis on District-level capacities in the following areas: procurement; internal controls; internal audit; external audit accountability at the District level; more effective and consistent implementation of the procurement law, regulations, and procedures; and F&C strengthening at the District level. - Based on the results of the above exercise, include the implementation of the agreed actions in the PAP being supported by the Ag. PforR support operation (including a representative sample of Districts, whereby this capacity development experience can be scaled up through the support of other programs).		
	Resp: GoR (with support from the Bank)	**Stage:** Appr. and Implementation	**Due Date:** App. & Imp. Support Miss.	**Status:** Ongoing
Environmental and Social Risk	**Rating: Moderate**			
Description: The environmental and social risks are assessed as "Moderate," based on the review of the national environmental and social systems and those of MINAGRI, RAB, NAEB, the SPIUs, and the Districts and also based on a comparison of overall PSTA 3 targets with risks in the existing Bank-supported portfolio (RSSP 3, LWH Project,	**Risk Management:** In the spirit of taking a proactive preventive approach to possible adverse environmental and social effects, four key actions should be included as part of the mitigation strategy: (i) ensure "SMART" indicators are included in the monitoring			

<table>
<tr><td rowspan="2">LVEMP, and LAFREC). The Program involves supporting a number of physical and economic activities involving various groups of participants. These activities are expected to have limited potential adverse environmental and social impacts, and in most cases, are expected to generate positive environmental and social effects (again, drawing from ongoing experience). Those with potential adverse environmental and social impacts, which would be identified through the Program monitoring system, can effectively employ mitigation measures given the adequate environmental and social systems of the implementing agencies. Two key actions need to be completed during 2014 (as envisioned by government authorities) that could potentially pose a road block during implementation: (i) the legislation of the land and expropriation policy, already updated and approved by the Cabinet, by the Parliament prior to implementation; and (ii) designation of National Parks, demarcation of buffer zones for protected forests, and demarcation of protection zones for rivers and lakes. The lack of clarity of these buffer and protection zones could potentially delay implementation.</td><td colspan="4">plan of PSTA 3 to track and ensure there are no adverse environmental and social effects and to review their progress on a regular basis; (ii) monitor and follow up to ensure the two key pending actions are taken by GoR (involving the final legislation of the land and expropriation policy; and the designation and demarcation involving National Parks); and (iii) development of a consolidated Environmental and Social Implementation Manual based on existing government guidelines; and conduct training on the understanding and application of this Manual at the National and District level (in collaboration with participating ministries and agencies).</td></tr>
<tr><td>Resp: GoR and Bank Team</td><td>Stage: Implementation</td><td>Due Date: Implementation</td><td>Status: Ongoing</td></tr>
<tr><td>Disbursement linked indicator risks</td><td colspan="4">Rating: Moderate</td></tr>
<tr><td rowspan="2">Description :
- Development and implementation of terracing and irrigation schemes could be delayed, and there could be inadequate O&M actions and support;
- Strong research-extension linkages which could affect the flow of appropriate enhanced technologies to farmers and farmer adoption rates of improved technologies to achieve the targeted productivity increases;
- Delayed or inadequate response from the private sector to assume an expanded role in input distribution/provision and competitive marketing, and access to finance, based on the expected approved policies (for seeds, fertilizer, mechanization and finance);</td><td colspan="4">Risk Management: MINAGRI will ensure both adequate funding and timely completion of key Ag. PforR results and associated DLIs and closely monitor implementation, taking the appropriate and timely required actions. Key actions would include: (i) building on the extensive experience of MINAGRI, Districts, and contracts in implementing the targeted productivity-enhancing infrastructural works; (ii) timely approval and implementation of the policy papers (all four papers are currently in draft form and expected to be approved in 2014), with adequate stakeholder consultation; and (iii) completion and effective implementation of RAB’s strategic plan, including restructuring to strengthen field presence (strategic plan currently in draft form).</td></tr>
<tr><td>Resp: GoR and DP teams</td><td>Stage: Prep., Implementation</td><td>Due Date: Continuous</td><td>Status: Ongoing</td></tr>
<tr><td>Other Risks (Optional)</td><td colspan="4">Rating: Moderate</td></tr>
<tr><td rowspan="2">Description :
- Adequate financing to ensure funding of the PSTA 3 (medium-cost scenario), with adequate funding support from MINECOFIN, DPs, and private sector;</td><td colspan="4">Risk Management: Build broad-based support and ownership for the Program within the implementing agencies, MINAGRI, MINECOFIN, and an inclusive private sector and farmer groups. Ensure the budgetary requirements are reflected in the MTEF of MINAGRI and the annual budgets. MINAGRI management needs to convene periodic meetings of the SWAp group and the ASWG and to draw from participatory Joint Sector Reviews and results from its enhanced sectoral M&E system to ensure effective implementation, with a strong results-orientation and solid ownership and engagement by key stakeholders.</td></tr>
<tr><td>Resp: GoR</td><td>Stage: Implementation</td><td>Due Date: Continuous</td><td>Status: Ongoing</td></tr>
<tr><td colspan="5">OVERALL RISK RATING: MODERATE
The overall risk is rated Moderate. Although the PforR lending instrument is new to the government, the PSTA program that it will support has a five-year history (2008-2012)</td></tr>
</table>

of robust performance. Lessons gained from the Bank-supported LWH Project and RSSP have also been brought into PSTA 3. The Program will expand the role of the private sector, while readjusting the roles of MINAGRI's RAB and NAEB as part of the government's ongoing decentralization reforms and strategies. The ambitious but achievable targets also contribute to the Moderate risk rating, but they are considered quite manageable with support of the PAP.	

Legend: L – Low, M – Moderate, S – Substantial, H – High

Annex 9: Program Action Plan

Action Description	Due Date	Responsible Party	Completion Measurement	Link to DLI*	Covenant *
Area 1: Enhanced Enabling Environment and Expand Private Sector Role and Capacities					
Finalize RAB and NAEB Strategies	Dec. 15, 2014	RAB, NAEB	Approved strategies	DLI 8	
Prepare position paper on strategic PPP to pursue in the sector	Mar. 30, 2015	MINAGRI	Position Paper	DLI 5, 7	
Area 2: Evolving Public Sector Institutional Roles and Enhanced Capacities					
Ensure the reforms/strategic plans of RAB and NAEB are completed and implemented, including appropriate integration with the ongoing restructuring	Mar. 15, 2015	RAB, NAEB	New structure in place	DLI 4	
Complete integration of independent SPIUs into RAB, NAEB structure (and support implementation of action plan for smooth transition, integration, and capacity development)	Jun. 30, 2015	MINAGRI, Public service reform commission	On-going restructuring completed, approved and implemented	DLI 1, 2, 4	
Prepare and implement capacity development plan for decentralized reforms/restructuring	June 30, 2015 Dec. 31, 2015	MINAGRI, MINALOC	Preparation of capacity development action plan for Districts; implementation of key milestones of the action plan	DLI 4	
Area 3: O&M Challenges and Requirements					
Confirm all rural sector infrastructure investments have adequate O&M arrangements	June 30, 2015	MINAGRI (in collaboration with MININFRA)	Report (to be prepared by MINAGRI, in collaboration with MININFRA).	DLI 1, 2	
Implement O&M monitoring system to monitor O&M of major rural infrastructure (as part of the enhanced MIS for agric. sector)	Dec. 31, 2015	MINAGRI (in collaboration with MININFRA)	Periodic MIS Reports (to include monitoring indicators of O&M of rural infrastructure)	DLI 1, 2	
Conduct well-focused capacity development/training activities of farmer-level organizational structures on O&M capacity mechanisms	Dec. 31, 2014 June 30, 2015	MINAGRI (in collaboration with MININFRA)	Capacity development action plan prepared and approved	DLI 1, 2	
Area 4: Fiduciary, Environmental and Social Systems					
Prepare an operational action plan to address and strengthen relevant fiduciary aspects**,** with an emphasis on District-level capacities	Mar. 15, 2015	MINAGRI in collaboration with key actors	Action plan		
Provide on-the-job training to District Accounting staff focusing on the consolidation of nonbudget agencies at District level.	September 2014	MINALOC	Improvement in the accounting and audit reports of Districts		

	September 2015 September 2016	Districts			
Assess the risk prone areas of the Program at the District level and develop a risk profile to be monitored through the Program life ensuring that timely mitigation measures are undertaken	June 2015	MINECOFIN (OGCIA)	Strengthen internal controls capacities to deter internal control risks		
Reconcile the accounting/financial statements before and after merger of both RAB and NAEB	December 15, 2015	MINAGRI, RAB, NAEB	Eliminate annual adverse audits from legacy issues.		
Implement the agreed fiduciary, including fraud and corruption systems actions	Dec. 31, 2015	MINAGRI	Report		
In collaboration with participating ministries and agencies develop a consolidated Environmental and Social Implementation Manual based on existing government guidelines; and conduct training on the understanding and application of this Manual at the National and District level.	November 2014 March 2015 November 2015 March 2016	MINAGRI, MINALOC, MINARENA/ REMA	Capacity development/training	DLI 1, 2	
Develop and implement a communications strategy to sensitize stakeholders about the Program and complaints mechanism	January 2015	MINAGRI	Communications strategy developed		
Develop and maintain a database of complaints and responses. Implementing agencies and Districts to report to MINAGRI on F&C complaints on a quarterly basis	January 2015 and on quarterly basis.	MINAGRI			
Provide on-the-job training and capacity strengthening to OM and RPPA investigators on annual basis	January 2015 January 2016 January 2017	RPPA OM	Strengthened capacity of investigators		
Area 5: Ag. Expenditure and Financing Framework					
MINAGRI to work closely with MINECOFIN to strengthen the ag. public expenditure planning and budgetary allocation system to ensure adequate and prioritized levels of funding to PSTA 3. An improved planning and budgetary process has been introduced since 2013/14 and TA support (from USAID and IFAD) to MINAGRI will provide further improvements. In addition, there will be intensified government-DP dialogue as part of the budgetary cycle in support of the PSTA 3 requirements.	MINECOFIN Annual Planning and Budgetary cycle calendar (September – May)	MINAGRI, MINALO, MINARENA, MINECOFIN	Formulation and approval of annual budget and updated MTEF for each annual budgetary cycle	DLI 1, 2, 3, 4	

* This column should indicate the reference, if any, to either one of the Program DLIs or legal covenants (or both) as appropriate.
** This column should indicate the agreed basis to determine if the action has been satisfactorily completed.
RF = Results Framework, IR = Intermediate Results, P = Program

Annex 10: Implementation Support Plan

1. **While nine of PSTA 3's subprograms (SPs) consume 88 percent of the budget, the remaining 15 SPs are also key to delivering the results, DLIs, and key impacts desired for PSTA 3.** Therefore, a multi-disciplinary set of technical specialists along with fiduciary and environmental and social specialists will be needed to support the Government of Rwanda (GoR) in the overall implementation of the PSTA 3/PforR operation. While results and DLIs are planned to be assessed as completed annually, a 6-month approach to implementation support, where a specific one to two week implementation support mission would be carried out, will be employed. In addition, a number of technical specialists are based in the region, subregion, and country office, which will allow timely follow-up on specific issues and/or areas of concern if needed.

2. **Thus, the Agriculture PforR operation in Rwanda will require considerable, well-coordinated, and timely focused technical support from the World Bank team, particularly during the early stages of implementation**. One challenge will be to coordinate the actions agreed in the Program Action Plan (PAP) with operational activities on the ground, ensuring that information flows effectively and on a timely basis between policy makers and implementation agents (MINAGRI, RAB, NAEB, SPIUs, and Districts). While channels of communication are generally good within Rwanda, there will be a continual flow of information to and between implementing entities during the Program relating to the implementation of PSTA 3. At the District level, implementation actors will need to confirm that their planning is timely to ensure that available funding can be absorbed and results delivered in time and within expected budget envelopes. The team recognizes that the PforR mode of operation, which transfers performance risk to the implementing agents, provides a challenge particularly at the local level. The fact that the World Bank Group's Ag. PforR Program support staff are highly decentralized, with task team leader and key team members based in Rwanda and Kenya, will facilitate overall implementation and timely communication with the client, and the various stakeholders involved in the implementation phase.

3. **The focus of the Bank's implementation support will emphasize making the results-based incentive system work to its full potential.** This will include: (i) reviewing implementation progress, including the PAP and achievement of Program results (of core results of the PSTA 3, as reflected in the Results Framework), and DLIs; (ii) providing support on resolving emerging Program implementation issues and bottlenecks and on building institutional capacity of the key actors at various levels; (iii) monitoring the adequacy of systems' performance and monitoring compliance with legal agreements; (iv) supporting the government in monitoring and managing changes in the various types of risks; and (v) confirming that MINAGRI has prepared and is implementing the plan to enhance the relevant MIS capacity development gaps identified in the Technical Assessment.

4. **Key to the Bank's effective implementation support will be its coordination and timing, aligned with critical points in the planning and verification of results for disbursement requests to the Bank.** The first implementation support mission will take place as soon as possible after effectiveness to provide direct and timely feedback on the quality of

implementation plans (MINAGRI, RAB, NAEB, and Districts) and their likely soundness and acceptability, as well as to assess initial results emerging from 2013/14. It is expected that at that stage initial progress will have been made towards achievement of the first set of results and DLIs and achievement of many of the actions in the PAP. These will be reviewed during the initial review mission. The first mission is therefore expected to include all team members (i.e., technical, environmental, social, and fiduciary specialists). Subsequent implementation support will have a stronger emphasis on verification/M&E skills and technical implementation expertise, varying according to the actual needs as specified in the PAP.

5. **An outline of the indicative implementation support required is shown in Table 10.1, Table 10.2, and Table 10.3**.

Table 10.1: Main Focus of the World Bank's Implementation Support

Time-Frame	***Focus***	***Skills Needed***	***Resource Estimate***
Months: 0 to 12	Implementing the PAP; changing operational procedures and their communication to implementing agents (MINAGRI, RAB, NAEB, Districts); establishing arrangements for independent verification of compliance with the DLIs; enhancing District and national planning and budgetary processes; strengthening the M&E system at various levels.	Legal; fiduciary; procurement; social; M&E; technical (land husbandry, irrigation & water management, mechanization/ input markets, livestock, research and technology, extension, farmers' cooperatives /nutrition/gender and youth, food and export crop value chains, post-harvest infrastructure/ transport, rural finance and trade, capacity building, M&E, economics and finance)	2 implementation support missions 2 x 15 people x 2 weeks = 60 weeks Total 60 weeks over 12 months
Months: 13-36	Reviewing implementation progress; cross-checking linkages between planning, budgeting, and results; providing support in case of disputes relating to DLI verification.	Legal; fiduciary; social; environmental; M&E; technical (land husbandry, irrigation & water management, mechanization/ input markets, livestock, research and technology, extension, farmers' cooperatives / nutrition/ gender and youth, food and export crop value chains, post-harvest infrastructure/ transport, rural finance and trade, capacity building, M&E, economics and finance)	2 implementation support missions per year including midterm review 2 x 2 yrs x 10 people x 2 weeks = 80 weeks Total 80 weeks over 24 months

Table 10.2: Task Team Skills Mix Requirements for Implementation Support (entire Program life)

Skills Needed	***Number of Staff Weeks***	***Number of Trips***
Legal	2	1
Fiduciary systems	8	6
Social systems	6	6
Environment systems	6	6
M&E	8	6
Economics and finance	8	6
Livestock	8	6
Food and export crop value chains	8	6
Input markets, mechanization	8	6

Nutrition	8	6
Research and technology	8	6
Extension	6	6
Farmers' cooperatives	8	6
Post-harvest infrastructure	8	6
Transport	6	6
Gender and youth	6	6
Rural finance and trade	8	6
Land husbandry	8	6
Irrigation & water management	8	6
Social development	6	6

Table 10.3: Role of Development Partners in Program Implementation

Name	***Role***
USAID	Co-financier and participation in implementation support.
EU	Co-chair of Agriculture Sector Working Group – coordinate and harmonize DP financing of PSTA 3. Co-financier and participation in implementation support.
IFAD	Co-financier and participation in implementation support.
DFID	Co-financier and participation in implementation support. Technical Assistance support for Program Action Plan and capacity strengthening of MINAGRI.

Annex 11: MAP of Rwanda