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Report No: PAD2824

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM GRANT

IN THE AMOUNT OF USD 26.3 MILLION

TO THE

REPUBLIC OF RWANDA

FOR A

SUSTAINABLE AGRICULTURAL INTENSIFICATION AND FOOD SECURITY PROJECT

September 14, 2018

Agriculture Global Practice
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective July 31, 2018)

Currency Unit = Rwandan Franc (RWF)

877 RWF = US\$1

FISCAL YEAR

January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

AIF	Africa Improved Foods
BCC	Behavior Change Communication
BNR	National Bank of Rwanda (Banque Nationale du Rwanda)
CE	Citizen Engagement
CGIAR	Consultative Group on International Agricultural Research
CIP	Crop Intensification Program
CPS	Country Partnership Strategy
CSA	Climate-Smart Agriculture
DA	Designated Account
DFID	U.K. Department for International Development
DG	Director General
DP	Development Partner
ECAATP	Eastern and Central Africa Agricultural Transformation Project
EFA	Economic and Financial Analysis
EICV	Integrated Household Living Conditions Survey
EIRR	Economic Internal Rate of Return
ESMF	Environmental and Social Management Framework
EX-ACT	Ex Ante Carbon-Balance Tool
FAO	Food and Agriculture Organization of the United Nations
FAB	Farming as Business
FBDGs	Food-Based Dietary Guidelines
FCS	Food Consumption Score
FFS	Farmers Field School
FIES	Food Insecurity Experience Score
FM	Financial Management
GAFSP	Global Agriculture and Food Security Program
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOR	Government of Rwanda
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress System
ICB	International Competitive Bidding
ICR	Implementation Completion and Results Report
ICT	Information and Communication Technology
ICT4RAg	ICT for Rwanda Agriculture
IFMIS	Integrated Financial Management System
IFPRI	International Food Policy Research Institute
IFR	Interim Financial Report
IMSAR	Improving Market System for Agriculture in Rwanda
IPSAS	International Public Sector Accounting Standards
KCB	Kenya Commercial Bank
KPI	Key Performance Indicator

LCS	Least Cost-based Selection
LWH	Land Husbandry, Water Harvesting, and Hillside Irrigation Project
M&E	Monitoring and Evaluation
MFI	Microfinance Institution
MINAGRI	Ministry of Agriculture and Animal Resources
MINECOFIN	Ministry of Finance and Economic Planning
MIS	Management Information System
NCB	National Competitive Bidding
NISR	National Institute of Statistics of Rwanda
NPV	Net Present Value
NSA	Nutrition-Sensitive Agriculture
NST	National Strategy for Transformation
O&M	Operations and Maintenance
OAG	Office of the Auditor General
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Accountability
PFM	Public Financial Management
PforR	Program-for-Result
PIM	Project Implementation Manual
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PRAMS	Procurement Risk Assessment and Management System
PSC	Project Steering Committee
PSTA	Strategic Plan for Agriculture Transformation (Plan Stratégique pour la Transformation Agricole)
QCBS	Consultants Quality and Cost-based Selection
RAB	Rwanda Agriculture and Animal Resources Board
REMA	Rwanda Environment Management Authority
RFQ	Request for Quotations
RPF	Resettlement Policy Framework
RPPA	Rwanda Public Procurement Authority
RSB	Rwanda Standards Board
RSSP	Rural Sector Support Project
RWF	Rwandan Franc
SACCO	Savings and Credit Cooperative
SAIP	Sustainable Agricultural Intensification and Food Security Project
SBCC	Social Behavior Change Communication
SBD	Standard Bidding Document
SEP	Stakeholder Engagement Plan
SHG	Self-Help Group
SME	Small and Medium Enterprises
SORT	Systematic Operation Risk Rating Tool
SPIU	Single Project Implementing Unit
SSIT	Small Scale Irrigation Technology Development Program
STEP	Systematic Tracking of Exchanges in Procurement
TA	Technical Assistance

TFP	Total Factor Productivity
ToT	Training of Trainers
UN	United Nations
WUA	Water Users Association



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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Rwanda	Sustainable Agricultural Intensification and Food Security Project	
Project ID	Financing Instrument	Environmental Assessment Category
P164520	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Disbursement-linked Indicators (DLIs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
17-Sep-2018	

Bank/IFC Collaboration

No

Proposed Development Objective(s)

To increase agricultural productivity, market access, and food security of the targeted beneficiaries in the project areas.



Components

Component Name	Cost (US\$, millions)
Component 1: Institutional Strengthening, Agriculture Productivity Enhancement and Nutrition Improvement	7.68
Component 2: Irrigation and water use efficiency	7.19
Component 3: Market Linkages and Value Addition Investment Support	7.30
Component 4: Project Management and Technical Assistance	4.13

Organizations

Borrower: Republic of Rwanda
 Implementing Agency: Rwanda Agriculture and Animal Resources Board (RAB)

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	32.97
Total Financing	32.97
of which IBRD/IDA	0.00
Financing Gap	0.00

DETAILS

Non-World Bank Group Financing

Counterpart Funding	6.67
Borrower	4.00
LOCAL: BENEFICIARIES	2.67
Trust Funds	26.30
Global Agriculture and Food Security Program	26.30

Expected Disbursements (in US\$, Millions)



WB Fiscal Year	2018	2019	2020	2021	2022	2023
Annual	1.50	4.00	5.50	6.00	6.00	3.30
Cumulative	1.50	5.50	11.00	17.00	23.00	26.30

INSTITUTIONAL DATA

Practice Area (Lead)

Agriculture

Contributing Practice Areas

Health, Nutrition & Population, Water

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Low
4. Technical Design of Project or Program	● Low
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Moderate
7. Environment and Social	● Moderate



8. Stakeholders	● Low
9. Other	
10. Overall	● Moderate

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36		✓
Pest Management OP 4.09	✓	
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37	✓	
Projects on International Waterways OP/BP 7.50	✓	
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Prior to initiating the procurement process for irrigation schemes under component 2 of the Project, the Recipient, shall submit to the World Bank, for its review and no-objection, the minutes of the approval of the designs of the irrigation schemes.



Date Due – prior to initiating procurement process for irrigation schemes

Sections and Description

Not later than three (3) months after the Effective Date, the Recipient shall establish the Project Steering Committee, with composition and mandate acceptable to the World Bank.

Date Due – 3 months after Effective Date

Sections and Description

To facilitate the carrying out of Part 4.2 of the Project, the Recipient shall cause the Project Implementing Entity to enter into a service agreement (“Service Agreement”) with a provider (“Service Provider”) selected on the basis of terms of reference, qualifications and experience satisfactory to the World Bank.

Conditions

Type	Description
Effectiveness	<p>GA, Article V. para 5.01. This financing agreement shall not become effective until evidence satisfactory to the World Bank has been furnished to the World Bank that the conditions specified below have been satisfied.</p> <p>(a) The execution and delivery of this Agreement on behalf of the Recipient and the Project Agreement on behalf of the Project Implementing Entity have been duly authorized or ratified by all necessary governmental and corporate action; and,</p> <p>(b) the Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.</p>
Effectiveness	<p>GA, Article V, para 5.02. As part of the evidence to be furnished pursuant to Section 5.01, there shall be furnished to the World Bank an opinion or opinions satisfactory to the World Bank of counsel acceptable to the World Bank or, if the World Bank so requests, a certificate satisfactory to the World Bank of a competent official of the Member Country, showing the following matters:</p> <p>(a) on behalf of the Recipient, that this Agreement has been duly authorized or ratified by, and executed and delivered on its behalf and is legally binding upon it in accordance with its terms;</p> <p>(b) on behalf of the Project Implementing Entity, that the Project Agreement has been duly authorized by, and executed and delivered on its behalf and is legally binding upon it in</p>



	<p>accordance with its terms; and</p> <p>(c) on behalf of the Recipient and the Project Implementing Entity, the Subsidiary Agreement has been duly authorized by the Recipient and the Project Implementing Entity and is legally binding upon each such party in accordance with its terms.</p>
Type Effectiveness	<p>Description</p> <p>GA, Article V para 5.03. Except as the Recipient and the World Bank shall otherwise agree, this Agreement shall enter into effect on the date upon which the World Bank dispatches to the Recipient notice of its acceptance of the evidence required pursuant to Section 5.01 (“Effective Date”). If, before the Effective Date, any event has occurred which would have entitled the World Bank to suspend the right of the Recipient to make withdrawals from the Grants Account if this Agreement had been effective, the World Bank may postpone the dispatch of the notice referred to in this Section until such event (or events) has (or have) ceased to exist.</p>
Type Effectiveness	<p>Description</p> <p>GA, Article V para 5.04. Termination for Failure to Become Effective. This Agreement and all obligations of the parties under it shall terminate if it has not entered into effect by the date ninety (90) days after the date of this Agreement, unless the World Bank, after consideration of the reasons for the delay, establishes a later date for the purpose of this Section. The World Bank shall promptly notify the Recipient of such later date.</p>
Type Disbursement	<p>Description</p> <p>GA, Schedule 2 Section IV. B 1(b). No payment shall be made under Category (2), until evidence satisfactory to the Bank has been furnished to the World Bank that the Matching Grants Manual has been adopted in a manner acceptable to the World Bank.</p>



I. STRATEGIC CONTEXT

A. Country Context

- 1. Rwanda has achieved impressive growth and poverty reduction over the last decade, but significant challenges remain.** However, the country is still dependent on Official Development Assistance which finances approximately 16 percent of the country's annual budget. Rwanda's economy has grown at 7.2 percent per year since 2000. Between 2000 and 2017, gross domestic product (GDP) per capita has increased from US\$242 in 2000 to US\$774 and poverty has fallen from 60.3 percent to 39.1 percent.¹ Inequality has declined as well, with the Gini Coefficient dropping from 0.49 in 2011 to 0.45 in 2014. Life expectancy at birth has increased from 48.2 years in 2000 to 64.5 years in 2015,² while the child mortality rate dropped from 183 per 1000 to 42 per 1000.³ The youth literacy rate increased from 77 percent in 2010 to 85 percent in 2015.⁴ Financial inclusion increased from 48 percent in 2008 to 89 percent by 2016.⁵ However, despite strong economic growth and falling poverty levels, Rwanda faces significant challenges in meeting food demands and food security, and malnutrition remains a concern, with overall stunting rates at 38 percent. Despite a reduction from 51 to 38 percent between 2005 to 2014, the stunting rate remains unacceptably high and remains higher than in most countries in Sub Saharan Africa.
- 2. Even with its impressive growth and poverty reduction, Rwanda remains a low-income country.** 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 the highest (76.6 percent) among households (often landless) who obtain more than half of their income working on other people's farms. However, demographic projections suggest that by 2032, rural areas will be home to an additional 2.5–3.5 million people, even though land is already so scarce (50 percent of rural farm households farm less than 0.35 ha) that it can hardly accommodate any more people in farming. With a working age population projected to increase from 5.2 million (in 2014) to 6.6 million—of which 4 million will be youth (14–35 years), realizing the full labor productivity potential and meeting individual aspirations will require off-farm employment opportunities.
- 3. After slowing to 6.1 percent in 2017, real GDP growth is expected to pick up in 2018–2019 and average 7.2 percent; inflation has increased above the target ceiling of the National Bank of Rwanda (BNR) of 5 percent.**⁶ The BNR has reduced the repo rate by 50 basis points to 5.5 percent, to encourage commercial banks to lower lending rates in order to drive growth in private sector credit and stimulate economic growth.⁷ Rwanda's large current account deficit (16 percent of GDP in 2016)

¹ National Institute of Statistics of Rwanda (NISR), EICV 1–4.

² World Bank Indicators: http://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=RW&name_desc=true

³ World Bank Indicators: http://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=RW&name_desc=true.

⁴ World Bank Indicators: http://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=RW&name_desc=true

⁵ NISR, FinScope (2016). Financial inclusion is defined as access to formal financial institutions and the uptake and usage of financial products and services.

⁶ EUI (European University Institute) Country Report, January 2018.

⁷ EUI Country Report, January 2018.



has been exerting downward pressure on the Rwandan Franc. The current account deficit declined significantly to 7 percent of GDP in 2017, following a 45 percent growth in exports. On the fiscal side, the deficit is expected to narrow from an estimated 4.7 percent of GDP in 2016/17 to 4.4 percent of GDP in 2018/19, financed by external project-based debt and some budgetary loans from development partners (DPs) and multilateral institutions.⁸

- 4. By 2050, Rwanda's population is projected to reach 22 million, of which 70 percent would reside in urban areas.** Assuming similar patterns as observed elsewhere in the region, food preferences will change with increasing incomes; as such, demand for more standardized and packaged or processed food is likely to grow, while food safety will become increasingly important. This will pose major challenges to the existing supply chains relying mostly on domestic producers, with likely upward pressure on the food import bill and foreign currency reserves. At the same time, tapping into this emerging market can be an important opportunity for expanding domestic value chains, diversifying out of food staples and adding more value across the agriculture and food system. Meeting these challenges for the domestic market can also serve as a launch pad for successfully penetrating regional and international markets.

B. Sectoral and Institutional Context

- 5. Agriculture is crucial for Rwanda's economic growth and reduction of poverty.** It accounted for about 31 percent of the GDP (2017) and contributed to 35 percent of the total decline in poverty rates over the past decade.⁹ Also, about 70 percent of population is engaged in the sector. At the aggregate level, domestic food production almost equals domestic demand, and farmers' own production is an important source of food at the household level. Agriculture is also a major source of export earnings. In 2016, exports of agricultural and agro-processed goods totalled about US\$252 million, roughly 52 percent of the total exports of goods.
- 6. With a 5.3 percent average annual growth, the value of agricultural output has more than doubled from 2000 to 2016.** A well-established set of policy frameworks and enhanced access to better agricultural inputs have greatly contributed to the positive agriculture sector performance. Crop yields increased significantly with the start of the Crop Intensification Program (CIP) in 2007 and the beginning of land consolidation in 2008. The total production of cassava and maize, as well as milk, meat, fish, and eggs more than doubled between 2005 and 2015. Despite these positive developments, Rwanda is yet to meet its production potential, as agricultural yields have started plateauing. Current estimates indicate that major crops such as cassava, maize, wheat, potatoes, and beans are at 40–50 percent of their productivity potential, due to the suboptimal use of production factors. Similarly, livestock yields have remained consistently low over time. Increases in productivity could be achieved through greater use of improved inputs and sustainable land husbandry techniques, better water management and extension services, and increased farmers' access to finance.

⁸ EUI Country Report, November 2017.

⁹ World Bank (2017), Transformation of Agriculture Sector Program Phase 3, Program-for-Results (PforR), Additional Financing Program Paper



7. **Small plot sizes, limited land availability, and low soil fertility due to erosion are major constraints to on-farm productivity and profitability, and prevent farmers from moving further up the value chain.** More than 60 percent of households cultivate less than 0.6 ha¹⁰ and 15 percent of the rural households farm less than 0.1 ha. Many of these are female-headed households, cultivating only 1.32 percent of national cultivable land.¹¹ The prevalence of small-scale, subsistence, rain-fed farming results in suboptimal agricultural practices, low crop yields, and exposure to risks such as weather-related shocks, and pest and disease outbreaks. Soils in Rwanda also tend to have low levels of organic matter and around 75 percent of soils are acidic,¹² with a pH below 5.5 and deficient in nitrogen and phosphorus—which are also constraining factors for plant growth. The projected increase in the rural population, an estimated additional 2.5–3.5 million people by 2032, is likely to add more pressure on land resources and farm incomes, unless alternative employment opportunities become available.
8. **Rwanda’s agricultural sector is vulnerable to climate change.** With less than 20 percent of agricultural land irrigated, Rwanda relies strongly on rain-fed agriculture, making it highly vulnerable to climate change. Rwanda already experiences periodic floods and droughts that take a severe socioeconomic toll on the country and decrease food availability. With climate change, those costs could rise additionally to 1 percent of GDP per year by 2030, an estimate which excludes the heavy periodic costs of extreme events.¹³ Localized projections for climate change in Rwanda point unequivocally to an already occurring increase in mean temperature and a projected additional increase of 1.7 to 2.8 degrees centigrade by 2065, with a likely increase in precipitation amounts and timing variability.¹⁴ Adaptation concerns are central to Rwanda's Green Growth and Climate Resilient Strategy (2011) and have been integrated into Rwanda’s Intended Nationally Determined Contribution. Identified adaptation actions in agriculture, which the project aims to promote, include sustainable pest management techniques to control plant parasites and pathogens, soil conservation and land husbandry, irrigation and water management, value addition of agriculture produce, and access to market.
9. **Despite substantial growth in agricultural production over the past 10 years, food security and nutrition remain a concern, especially when looking at the vulnerability to shocks at the household level.** While stunting and undernourishment have been declining at a steady pace, overall stunting rates (38 percent)¹⁵ remain high by international comparison, and 17.8 percent of children ages 6–23 months do not get the minimum acceptable diet.¹⁶ The Food Consumption Score (FCS) has improved from 65 percent in 2006 to 74 percent by 2015, but a large share of the population remains dependent on rain-fed agriculture and consumption of home produced food. Hence, people’s ability to adequately feed themselves is susceptible to shocks from the domestic harvest, which arise as result

¹⁰ NISR, Fourth Integrated Household Living Conditions Survey (EICV4) 2013/2014.

¹¹ International Food Policy Research Institute (IFPRI) calculations, based on EIVC 4 data 2013/2014.

¹² REMA (Rwanda Environment Management Authority). 2015. *State of Environment and Outlook Report*.

¹³ Downing et al. 2009. *Economics of Climate Change in Rwanda*. Stockholm Environment Institute

¹⁴ McSweeney, R. 2011. *Rwanda’s Climate: Observations and Projections Appendix E*. Cole, M., ed. U.K. Department for International Development.

¹⁵ NISR, Rwanda Demographic and Health Survey (2014/2015).

¹⁶ NISR, Rwanda Demographic and Health Survey (2014/2015).



of periodic droughts and floods. Consequently, food security and nutrition remain important areas to which agriculture development can contribute.

10. **The agriculture value chains face key constraints at different stages.** Research and extension systems are dominated by public institutions and there are weak linkages between the two systems. Input supply systems are still driven by the public sector, and there is low awareness of the advantages of good quality inputs. Domestic seed production is low, and there is weak access to finance. Production potential is restricted by land size, subsistence and rain-fed farming, and limited access to irrigation and mechanization. Poor storage techniques affect post-production; insufficient storage and drying infrastructure heightens food safety risks and negatively impacts the quality of agricultural produce. There is still limited processing activity, and markets are predominantly informal and unorganized. Insufficient attention has been given to the competitiveness of key value chains, which remain extremely short. Value addition and agri-processing are limited, and there is little private investment. This is due to a reluctance of the finance sector to lend to agribusinesses, and to the specific challenges associated with aggregating across thousands of small farmers to ensure competitiveness. Diversification into higher value crops has been limited to date, partly because of limited farmer knowledge and traditional risk aversion, and partly because of the public-sector support services being excessively focused on a narrow range of food staples under the Government's flagship CIP.
11. **The Central Government, through the Ministry of Agriculture and Animal Resources (MINAGRI), provides policy coordination, and monitoring.** Implementation responsibilities rest with the implementing agencies, the Rwanda Agriculture and Animal Resources Board (RAB), National Agriculture Export Board, and donor-funded projects' implementation units referred to as Single Project Implementing Units (SPIUs). The recent decentralization of Rwanda's public administration empowers local governments to deliver agricultural services to farmers and, more broadly, serve as the focal points in representing the needs of the local communities and coordinating multisectoral responses. They absorb the functions of the previous local branches of MINAGRI and rely on a new partnership with the Central Government. Extension is mainly implemented through the '*Twigire-Muhinzi-Mworozi*' Extension Model. The '*Twigire*' extension model is a national strategy that decentralizes extension services to the village level (*Umudugudu*), to empower the agricultural promoters living daily with farmers, and especially the 2,500 certified facilitators of the Farmer Field Schools (FFSs) established throughout the country. This project will work primarily with these farmer promoters and support them to achieve their mandate.
12. **Women in agriculture.** The Government of Rwanda (GoR) has made a strong political commitment to gender equality and is determined to see this reflected in the Government policies at all levels. In Rwanda, women make up 57 percent of the agriculture labor force, working an estimated 14–17 hours a day. A Women's Empowerment in Agriculture Index survey conducted in 2012 identified the key constraints for Rwandese women; these include very high workloads, lack of access to and limited involvement in decisions on credit, and inability to control the use of income. MINAGRI, guided by its agriculture gender strategy, is making concerted efforts to mainstream gender and engage in gender-sensitive policy making and programming. To support these efforts, this project will support interventions aimed at empowering women in agriculture, by targeting and including women and implementing design solutions that are tailored to their needs and challenges, such as improving



access to finance for women, and introducing technologies and approaches that could reduce their workload.

13. **Information and communication technology (ICT) and youth in agriculture.** MINAGRI has recognized the importance of better coordination and appropriate solutions using ICTs for sustainable agriculture and rural development. This has led to the development of a holistic national ICT strategy for Agriculture (ICT4Rag) to address challenges in the agricultural sector. The implementation of this strategy has involved the collaboration of youth incubator systems with the Government and the private sector to provide ICT-based solutions to the sector. This project will seek modalities to work through such systems in areas such as e-extension, nutrition messaging, and market information for project beneficiaries.
14. **Most future growth in Rwanda’s agriculture will need to come from increasing total factor productivity (TFP).** With the past performance mostly driven by productivity improvements and land expansion through public investments, the country is at a point where more efforts toward a market-led transformation and diversification are needed. These should complement efforts continuing to improve production at the farm level. According to recent analysis by the International Food Policy Research Institute (IFPRI)¹⁷, agriculture’s aggregate growth rate of 5 percent per year in recent years has been made up of land expansion (2 percentage points) and productivity growth (1.7 percentage points), with the remainder coming from increased labor productivity. Achieving rapid growth over the longer run will increasingly require a modified approach, emphasizing the allocative efficiency and technical progress of TFP. Achieving allocative efficiency calls for an increased role for farmers and private firms, and Rwanda will also need to devote more attention in the future to technological progress, or new innovations to get more from less. Rapid increases in productivity will entail more mechanization, greater use of inorganic fertilizer and improved seeds, and improved access to financing.
15. **The Fourth Strategic Plan for Agricultural Transformation (PSTA4),¹⁸ part of the National Strategy for Transformation (NST), covering the period of 2018–2024, has just been completed.** Rwanda’s NST focuses on economic, social, and governance transformation toward the aspiration of Vision 2050. Under this vision, Rwanda aspires to attain upper middle-income country status by 2035 and high-income status by 2050, with the intention of providing high quality livelihoods and living standards to the Rwandese citizens by mid-century. The new agriculture strategy’s priorities include climate smart agriculture (CSA) and nutrition-sensitive agriculture (NSA), market access for farmers and feeding the cities, and support to institutions to enable them to shift from a market actor role toward a private sector-enabler role. The project implementation will focus on CSA, NSA, and promoting market access by smallholder farmers.
16. **The World Bank has been supporting the development of the agricultural sector in Rwanda over the last decade.** Through a three-phased Adaptable Program Loan, the World Bank Group supported

¹⁷ Diao, X., P. Fang, J. Randriamamonjy, and J. Thurlow. 2017a. “Patterns of Food Consumption in Rwanda: An analysis of EICV4 data”, International Food Policy Research Institute, Washington, D.C.

¹⁸ PSTA is the French acronym for the Strategic Plan for Agricultural Transformation.



the Rural Sector Support Project (RSSP3) (P126400), which focused on intensifying production in the marshlands; followed by the Land Husbandry, Water Harvesting, and Hillside Irrigation Project (LWH) (P114931) in 2010, and the Transformation of Agriculture Sector Program Phase 3 (P148927), a PforR operation in 2014, through which the World Bank has supported Rwanda to increase productivity on hillsides and marshlands by supporting investment in irrigation, measures to increase farmer access to inputs, and increased use of improved agriculture practices. These operations also supported investments in rural infrastructure, which have been put in place to link productive areas to markets. These investments need to be sustained through targeted support by the GoR to better leverage private sector financing. This will require supporting institutions and enabling farmers' organizations to achieve sustained productivity growth and play a more active role in marketing their produce. The World Bank will bring substantial cross-country experience and regional knowledge to assist the GoR in that next phase of agriculture transformation.

- 17. The RSSP3 and LWH projects benefited and transformed the livelihoods of more than 685,000 people from over 150,000 households.** The two projects created frameworks that link farmers to commodity buyers and to private sector investors, thus improving farmers' income. Some of the key achievements of the two projects include: (i) significant productivity increases both in the targeted irrigated hillside command areas (10 times, from a baseline of US\$ 92 to US\$5,639 per hectare), and in the targeted irrigated marshlands where farmers grow mostly rice (more than 4 times, from a baseline of US\$662 to US\$2,629 per hectare); (ii) productivity increases in targeted hillside catchment areas under rainfed production systems through improved land husbandry technologies and adoption of other improved farm methods (up to 6 times for staple crops including maize, beans and Irish potatoes); and (iii) increases in the marketing of agriculture produce (more than doubling of the share of commercialized commodities from project areas, from a baseline of 35 percent to over 70 percent in 2016). Despite these achievements, some outstanding challenges such as access to finance, water use efficiency and last mile connectivity to regional markets can still be observed in LWH and RSSP targeted areas, and SAIP will build on those and achieve even higher results and ensure their sustainability beyond its implementation period. Additional support to strengthen agricultural value chains with a significant involvement of youth and women, placing emphasis on post-harvest handling, processing and marketing systems as well as linkages with private sector, would be the natural focus of a follow-on operation after the general increases in productivity observed in the areas targeted by both LWH and RSSP. SAIP will invest in ensuring the sustainability of these achievements and introduce a gradual exit strategy for the existing projects.
- 18. The World Bank is supporting Rwanda to achieve its next transformation goals through different complementary operations.** A second PforR operation, the Transformation of Agriculture Sector Program Phase 2 (P161876) is supporting the implementation of the PSTA4; the current Strategic Plan aims at strengthening MINAGRI's capacity, to create the enabling environment that would encourage greater private sector investments and increased commercialization across key agriculture value chains in the country. However, strengthening institutional capacity alone, without tackling the issue of productivity, markets, and regional integration in the sector, will not be enough. In that regard, in the second half of FY19, through the regional Eastern and Central Africa Agricultural Transformation Project (ECAATP) (P162416), Rwanda will focus on solving the issue of land degradation, which



remains the key constraint to increasing productivity, and will support the implementation of key regional policies to facilitate farmers' access to markets. By focusing on strengthening farmer organizations to play a more active role in the sector, this project mitigates the risk of leaving behind smallholder farmers, who are not yet ready to participate in purely commercialized agriculture sector.

C. Relevance to Higher Level Objectives

19. **The proposed project is well-aligned with the Country Partnership Strategy (CPS) FY14–20, which supports the Government's efforts to accelerate private sector-led growth and further reduce poverty.** The project will support the following agriculture priorities outlined in the CPS: (a) boosting productivity through promoting soil conservation and improving land husbandry; (b) facilitating a transition from subsistence to more commercial farming practices; (c) tackling underemployment in rural areas and raising rural incomes; (d) strengthening the enabling environment to attract and retain private investments, (e) encouraging entrepreneurship; and (f) facilitating market access. Another priority of the CPS is to address the persistent challenge of child malnutrition in rural areas. The proposed project will contribute to this objective through nutrition-sensitive agriculture interventions. Overall, the project will contribute to the achievement of three CPS outcomes: (a) CPS Outcome 5, 'improved agriculture productivity and sustainability'; (b) CPS Outcome 6, 'improved access of rural /small farmers to inputs, financing, and markets'; and (c) CPS Outcome 7, 'improved agriculture value chains'.
20. **This project will support the principal national strategies for the agricultural sector, as reflected in the recently prepared NST 2017–2024 and the PSTA4 2018–2024.** Priority actions in the new strategy are centered around four pillars of the policy, which aims towards a productive, green, and market-led agricultural sector: (a) productivity and commercialization for food security, nutrition, and incomes; (b) resilience and sustainable intensification; (c) inclusive employment and improved farmers' skills; and (d) an effective enabling environment and responsive institutions. This project will contribute mostly to the PSTA4 priorities (a) productivity and commercialization for food security, nutrition, and incomes; and (b) resilience and sustainable intensification.
21. **The proposed project is also part of the joint World Bank program that responds to the government's high-level commitment to combat stunting and is an integral part of a larger World Bank program that aims to address the socio-economic determinants of stunting.** This project is one of three projects that will support a wide range of complementary nutrition interventions. These follow a community-based approach to the Early Years and Stunting Reduction goal that empowers local authorities and hold them accountable, relies on decentralized structures, and promotes broad based social mobilization and ownership. To this end, the program aims to: (i) increase coverage and quality of high-impact health and nutrition interventions (health) and child caring, feeding and WASH practices (health, social protection, agriculture); (ii) introduce conditional nutrition support grants as a component of the expanded direct support; and gender and child sensitive models of expanded public works (social protection); and (iii) strengthen food security and dietary diversity (agriculture).



II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

22. To increase agricultural productivity, market access, and food security of the targeted beneficiaries in the project areas.

PDO Level Indicators

23. The Project Development Objective (PDO)-level indicators are the following:
- Percentage increase in harvested yield of targeted crops;
 - Percentage increase of produced commodities in targeted value chains marketed by participating producers;
 - Food Consumption Score;
 - Number of farmers adopting improved agricultural technology, disaggregated by gender.

B. Project Components

24. The project will focus on consolidating and expanding the results obtained under the World Bank-funded projects, namely LWH and the RSSP3, and other selected MINAGRI-developed schemes. These operations demonstrated that the sustainability of the outcomes achieved depend, to a large degree, on the robustness and strength of the producers' organizations, their entrepreneurial skills and their negotiation capacity with commodity buyers, other value chain actors, and their entrepreneurial capacity. The project will therefore continue the capacity-building activities of the farmers' organizations (water users' associations [WUAs], self-help groups [SHGs], cooperatives) established under these projects, to support them to further increase their productivity, strengthen their organizational and management capabilities, and help them link better to the markets to create additional livelihood opportunities. The project will also further scale-up efforts on nutrition-sensitive and climate-resilient agriculture from the previous projects.
25. **The project will identify selected value chains to focus its efforts and to consolidate the results from the LWH and RSSP3, while ensuring sustainable impact through market-driven approaches.** The project will focus on the following value chains: (a) vegetables and fruits for the domestic, regional, and international markets; (b) maize for domestic and regional markets; (c) Irish potato for domestic and regional markets; and (d) beans for domestic markets. The selection of the value chains was based on the following criteria: (a) market and growth potential (unmet demand, potential for productivity gains, and value addition); (b) relevance and development impact (nutrition improvement, opportunities for on- and off-farm employment, and income-generation potential); and (c) consideration of strategic factors and feasibility for change (national priority crops and potential impact of the project).



26. The project has four components: Component 1 - Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement; Component 2 - Irrigation and Water Use Efficiency; Component 3 - Market Linkages, Value Addition, and Access to Finance; and Component 4 - Project Management and Technical Assistance.

Component 1: Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement (US\$7.7 million)

27. The component will strengthen selected farmer organizations for improved agricultural productivity and healthier household nutrition. The project will proactively engage youth and women. Specifically, the project will work closely with identified youth groups to serve as service providers and support farmers to shift from subsistence agriculture to commercial agriculture. The Food and Agriculture Organization of the United Nations (FAO) will work closely with the project and provide technical assistance (TA) and support to the component, implementing the FFS and farming as business (FAB) approach. The component has three subcomponents.

Subcomponent 1.1: Strengthening farmer organizations

28. This subcomponent will build on and further strengthen existing farmer organizations formed under the World Bank funded LWH and RSSP3 to help them transform into dynamic, successful, climate-smart, and sustainable farming businesses with productive linkages and access to agricultural markets.
29. The project will provide demand driven organizational development, climate-smart FAB, and entrepreneurial training to farmer groups. There will be a special emphasis on business planning, CSA practices and technologies, inventory management and stock checking, understanding input cost and pricing, quality control, financial planning, business audits, accounting and bookkeeping, market analysis, buying and selling in the market, and dealing with middlemen, traders, retailers, and wholesalers.
30. Farmer organizations created by the LWH and RSSP3 Projects are at different levels of maturity. Some newly created organizations still need support to strengthen their physical capital and increase their competitiveness, while the more mature cooperatives that have already benefited from previous investments in post-harvest infrastructure will be supported to plan necessary investments with their own capital. Because of these varying levels of organizational maturity, farmers organizations would benefit from exchange visits and experience and knowledge-sharing events across groups within and outside the country. The project will also seek opportunities to involve the more mature organizations in the support of the younger organizations.
31. The project will also enhance capacity and skills of public sector extension agents, by providing support to farmers to transform their farms into successful market-leading farming businesses. Additionally, local extension experts (youth and women) identified by farmer groups will be trained to provide fee-based extension services at the local level in project areas where public sector



extension agents are not present. The project will introduce ICT-enabled learning and knowledge exchange to strengthen farmer organizations and extension services.

Subcomponent 1.2: Agricultural productivity enhancements

32. Key to achieving agriculture transformation is raising farm productivity levels, with due consideration to CSA. The subcomponent will support interventions aimed at sustaining and further increasing productivity and profitability of selected crops.
33. Under this subcomponent, the project will carry out the analysis of five selected value chains, as needed, for a deeper understanding of productivity constraints, potential, and opportunities. Limitations and barriers will be addressed, and the untapped potential harnessed to the fullest with due respect to climate-smart practices. The interventions will include the promotion of improved climate-sensitive agricultural inputs, upgraded farm management practices, farm mechanization and technology, etc.

Subcomponent 1.3: Improving nutrition outcomes at household level

34. This subcomponent aims to improve nutritional outcomes at the household level in the project areas by increasing access to healthy and diversified foods and by promoting good practices for improving nutrition.
35. A healthy and diversified diet will be promoted through (a) increasing the availability of safe and diverse vegetables and fruits locally, including bio-fortified foods such as iron-fortified beans and orange-fleshed sweet potatoes with Vitamin A, through the promotion and upgrading of existing kitchen and village gardens; (b) ensuring availability of animal proteins for household consumption through backyard poultry; (c) improving the year-round availability of nutrient-rich foods at the household level by encouraging the processing and conservation of locally produced foods (through special groups); and (d) increasing the availability of safe, affordable, and nutrient-rich food items through the selection and promotion of nutrition-sensitive value chains.
36. Promotion of good practices for improved nutrition will also be done through nutrition education interventions, including Behavior Change Communication (BCC) for improved nutrition, social marketing campaigns through the media including radio programs, ICT messaging, and healthy cooking menu/demo meals.
37. These interventions will be implemented in close collaboration with the World Bank-funded Stunting Prevention and Reduction Project, which was approved in FY18, and other Government initiatives. Identified areas of collaboration include (a) the use of the nutrition education materials developed by the stunting project, in the extension messaging; and (b) in the districts where the two projects are overlapping (Karongi, Kayonza, and Nyabihu), the Sustainable Agriculture Intensification and Food Security Project (SAIP) will be able to supply nutritious foods to the beneficiaries of the stunting project, which will use the Early Child Development Centers (ECD centers) which will procure nutritious food from different sources including the SAIP producers groups.



Component 2: Irrigation and Water Use Efficiency (US\$7.2 million)

38. This component is expected to promote technology and best practice for increased availability and efficient use of water for irrigation to increase crop productivity and increase farmers' resilience to climate volatility. This component will be implemented in two subcomponents.

Subcomponent 2.1: Improved efficiency and expansion of existing irrigation schemes

39. Hillside irrigation constructed by the LWH is designed with an irrigation efficiency ranging from 60 percent to 65 percent. By maximizing the irrigation efficiency using other existing techniques of irrigation, efficiency of up to 75 percent or more can be achieved. The LWH sites were designed so that irrigation can be done without additional equipment, using unlined open irrigation ditches on the top of terraces, furrows, and big hose pipes. Farmers have successfully adopted these approaches to irrigate different types of crops. However, because the system allows for the integration of other irrigation technology, greater irrigation efficiency can be achieved by using water-efficient irrigation technologies.

40. This project will build on the existing infrastructure by providing matching grants for small-scale irrigation equipment to the farmers such as sprinklers, drip, gated-pipes, or hose-furrow technologies and creating awareness on how to use that equipment effectively and efficiently. Reduction in the water use because of more efficient irrigation will allow expansion and improvements to the existing schemes by 1,500 ha.

41. To promote the development of affordable and sustainable irrigation technologies, the GoR introduced the subsidized farmer-owned Small-Scale Irrigation Technology Development Program (SSIT) for improved productivity and commercial farming. The project will contribute to this program by providing matching grants and a support package (maintenance and business plan development) for farmers to access small-scale irrigation equipment. It is estimated that through this support, an additional 1,000 ha of land will benefit from using small-scale irrigation infrastructures and techniques.

42. The access to small-scale irrigation equipment through the project's support will target primarily farmers in existing hillside sites without irrigation schemes within the selected project sites. However, small-scale irrigation activity will also be implemented outside the selected sites, where support will be targeted to specific value chains (especially horticulture) and to youth and/or women groups.

Subcomponent 2.2: Strengthening irrigation capacity

43. The introduction of more efficient methods of irrigation will require training and TA support to farmers during installation and operation. This will go along with the social mobilization and the awareness raising of the benefits stemming from different irrigation systems. This subcomponent will fund on-farm training in the handling, assembling, and proper use of different irrigation equipment to improve adaptation rates and improve irrigation practices among farmers.



44. This subcomponent will also finance targeted capacity building of WUAs, to enable them to become effective organizations, capable of managing the irrigation systems they are assigned to manage. The capacity building of WUAs and their farmer members will lead to sustainable operation and maintenance (O&M) activities, and to an effective management of these irrigation schemes. This will include training on irrigation water management, to enable WUAs to collect and use water fees more effectively for the operation and maintenance of the targeted irrigation schemes. In addition, they will receive training to strengthen their management skills such as planning, organizational management, infrastructure O&M, O&M costing and water pricing, financial planning, accounting, and bookkeeping.

Component 3: Market Linkages and Value Addition Investment Support (US\$7.3 million)

45. This component is expected to enhance market linkages and value addition by strengthening the capacity of farmers' organizations and other value chain actors and by improving their access to finance. The project will consolidate and scale-up the efforts undertaken by LWH and RSSP3, strengthening the development of sustainable market linkages and value addition, through increased performance and commercialization of selected value chains.
46. This component, will work in tandem with Component 1, supporting farmers' organizations to improve their market orientation, and connecting farmers to markets, thus channeling the productivity gains made in Components 1 and 2.

Subcomponent 3.1: Capacity building to foster market linkages

47. This subcomponent is expected to strengthen the capacity of farmers' organizations and value chain actors to connect to both domestic, regional, and, in some cases, international markets, to be able to more effectively respond to market requirements and needs. It will build on activities initiated under LWH and RSSP3 on strengthening the market linkages and value addition potential for selected value chains. This subcomponent will also support the capacity development of farmers to access finance to meet their growing business needs.
48. The project will first provide capacity building in post-harvest handling in priority value chains to minimize losses and reduce perishability. The project will then support farmer groups in capturing value, by promoting quality enhancing and pre-processing activities, such as cleaning, grading, sorting, and packaging.
49. Following the above pre-processing activities, the project will support selected cooperatives, farmers and agri-processors to obtain quality certification, to ease access to domestic and export markets. These will include targeted efforts to improve food safety, such as the elimination of aflatoxin contamination in maize and help agri-processors supported by the project obtain the Quality Standard Mark (S-Mark) for processed goods, from the Rwanda Standards Board (RSB) and other quality standards to allow them access premium markets both local or international. The project will also provide matching grants for packaging and processing equipment (under Subcomponent 3.2) and technology, including preservation, to reduce food loss and preserve nutrition value of produce. These



interventions complement Component 1, as it supports skills development and business training, of youth, women and individual entrepreneurs.

50. Limited access to agricultural finance products constrains subsistence farmers' ability to take measured risks to increase productivity and/or profitability. To support farmers' capacity to access finance, the project will build on the activities and interventions of the LWH and focus on the identification of financial services and products required by farmers' organizations, youth, and women groups. The project will continue to support financial literacy of farmers, provision of financial skills to cooperatives for example, business planning and financial management (FM), enhancement of the culture of savings, and use of credit and better portfolio management of selected Savings and Credit Cooperatives (SACCOs).
51. The project will fund workshops and training for financial institutions and intermediaries to enhance their understanding of the agriculture sector, build awareness of the market/business potential (that is, business case for investing/supporting the sector), and utilization of SACCOs for agent banking. The project will reach out to and collaborate with existing Government ministries/agencies that are tasked with supporting the capacity building of SACCOs and microfinance institutions (MFIs) to develop financial products that better meet the needs of farmers, de-risk their investments, and enhance their access to timely and appropriate financial services.
52. The project will support farmers' organizations, entrepreneurs, and micro and small enterprises in developing business development plans. These business plans will form the basis for the grant agreements and could also be utilized by beneficiaries to access finance through MFIs or banks, especially for more mature farmers organizations.
53. Complementing these, the project staff, together with farmers' groups, will facilitate dialogue between farmers' groups and buyers/processors, to establish market linkages to intermediary and end markets. This will be done through the organization of sellers' fora and facilitation of contracting modalities, between farmers/farmers' organizations, buyers/processors, and other relevant intermediaries.

Subcomponent 3.2: Investment support to market linkages

54. This subcomponent is expected to support the provision of post-harvest facilities and equipment for improved market linkages. Through the value chain approach, the project will bundle its interventions along the value chains ensuring that market infrastructure and equipment are demand-driven and market-oriented.
55. To complement the interventions in Subcomponent 3.1, the project will provide matching grants to finance post-harvest, marketing and processing facilities for the benefit of those cooperatives, which are not yet mature enough to be able to fully self-finance required facilities' needs; at the same time, the project will support more mature organization to plan necessary investments with their own capital. The project will also provide capacity building for O&M activities and management of those facilities.



56. The project will finance the construction of drying shelters, drying grounds, collection centers, and storage and cold storage facilities, through grant agreements, and, wherever possible, through private capital co-financing, based on agreed joint business plans. In that case, the level of private capital co-financing will be determined in the joint business plans. Financing these facilities will be done based on needs; suitability assessments and feasibility studies will inform the location and design of these facilities. Rehabilitation to allow multiple use of existing facilities will be prioritized.
57. The project will provide matching grants to finance post-harvest handling and quality equipment, such as threshers, weighing balances, dryers, including solar bubble dryers, moisture meters, hermetic bags, aflatoxin kits, and relevant processing equipment.
58. The project will train farmer groups to manage these facilities and equipment to ensure their profitability and sustainability. In addition, the project will facilitate the quality control and certification of the above infrastructure and equipment according to relevant standards and requirements.

Component 4: Project Management and Technical Assistance (US\$ 4.13 million)

Subcomponent 4.1: Project management (US\$ 2.63 million)

59. This component will support all aspects of project management including (a) management and coordination, (b) monitoring and evaluation (M&E), (c) communication and knowledge sharing, (d) TA, and (e) a grievance redress system (GRS). Specifically, the project will finance the operating costs for the project implementation at the national and district levels led by the SPIU, and the establishment of the project M&E system and communication and knowledge management system.

Subcomponent 4.2: Technical assistance (US\$ 1.5 million)

60. The GoR has identified the FAO as the main provider of TA to the project with an allocation of US\$1.5 million. This component will fund TA from the FAO to improve project performance, incorporate best practices, and document lessons learned. Three specific technical areas (a) support to the further development of the extension services, (b) nutrition, and (c) implementation of the farmer-led small-scale irrigation technologies have been identified for the FAO TA, based on their comparative advantage and experience in Rwanda. The TA activities are designed to strengthen the capacities of the targeted beneficiaries of the project and to enhance the effectiveness of the project interventions. The TA will emphasize knowledge management and support coordination among stakeholders.
61. Farmers' organizations will be strengthened to improve their FAB skills and help farmers build knowledge and skills to make their farm operations more profitable. This entails support to organizational management, business planning, and making market-led production decisions. Specific emphasis will be given to building women and youth leadership skills. An FFS approach will be adopted, working within the framework of the MINAGRI extension system (*Twigire Muhinzi*). Capacity development will target cooperatives but can be extended to include individual farmers and agribusiness small and medium enterprises (SMEs), which can demonstrate externalities. The FAO will provide the technical know-how for the FFS/FAB and Training of Trainers (ToT) costs, with the project



covering the rollout to farmer cooperatives (including WUAs). The relevant technical guidelines and ToT manuals will be contextualized for Rwanda and will be available in Kinyarwanda¹⁹.

62. The TA from the FAO will also support the design of the value chain analyses, which will be conducted by the project. These analyses will include market exploration, contract farming models (including public-private partnerships [PPPs]), and strengthen contract negotiations. Building farmers' business and investment planning skills, through the practical application of Rural Invest, under Subcomponents 1.1 and 3.1, will also ease the implementation of the matching grants modalities of physical assets and small-scale irrigation as proposed by the project.
63. TA implementation of the interventions related to nutrition improvement at the household level will be done through FAO, providing the technical know-how for the enhancement and scaling-up of improved kitchen gardens models, introducing backyard poultry, and adopting new varieties of nutrient-rich bio-fortified crops, and promoting new ways of preserving and processing nutrition dense food. The TA will cover the ToT training costs, while the project will cover the rollout of training for farmers. Building on the ongoing efforts, the TA will support the practical application of food-based dietary guidelines (FBDGs) when they are available, using a social and behavior change communication (SBCC) approach, promoting nutrition education and creating menus based on the locally available seasonal food items. Project management support will be provided for implementation and monitoring of nutrition outcomes at the household level.
64. The implementation of the farmer-led small-scale irrigation component will be supported through TA interventions that will build on the ongoing work in assessing the feasibility and suitability of the small-scale irrigation kits for different agro-ecological sites and through providing capacity building on using the technologies and O&M. The capacity development will include the transfer of know-how on land husbandry under irrigated production using the FFS approach. The TA will cover the ToT training costs, while the project will cover the rollout of training.

C. Project Beneficiaries

65. The project will target men, women, and youth in rural households in sites developed by the LWH and RSSP3.
66. About 38,000 farmer households will directly benefit from the project, while 200,000 family members of the targeted households will be indirect beneficiaries of the projects, out of whom about 88,000 are women. The beneficiary farm households are organized into 1,724 SHGs of 20–30 members each, established under the LWH and RSSP3. These SHGs are mobilized into 121 zones and 16 cooperatives. During implementation, emphasis will be placed on ensuring women and youth participation and leadership in the SHGs and cooperatives.
67. Apart from farmer households, the project will also benefit other value chain actors including entrepreneurs and small and micro agri-businesses, working in selected value chains. Communities in the target areas at large will indirectly benefit from the project through investments in SACCOs, post-

¹⁹ Official local language of Rwanda



harvest and agri-processing equipment, and market linkages. Specific emphasis will be placed on identifying and providing opportunities for income-generating activities for women and youth.

68. The project will be implemented in the following selected, existing LWH and RSSP3 project areas: Muyanza, Rwamagana-34, Karongi-12, Karongi-13, Kayonza-4, Nyanza-23, Gatsibo-8, and Nyabihu. These sites are in eight districts (Rulindo, Rwamagana, Karongi, Rutsiro, Kayonza, Nyanza, Gatsibo, and Nyabihu). The list may expand during the project implementation as needed by the GoR and in agreement with World Bank.
69. These sites were selected using the following criteria: (a) food security and nutrition needs, (b) market potential and access, (c) cooperative/groups readiness, (d) agronomic suitability and potential for productivity gains, (e) likelihood that the combination of three project components can have an integrated impact, and (f) overlap with the World Bank-funded Stunting Prevention and Reduction Project (P164845).

D. Results Chain

70. **The project's theory of change** combines transformative pathways that secure the ultimate result of improving livelihoods and food security of targeted smallholder farmers through increased agricultural productivity, value addition, and access to markets.
- **The social capital pathway starts from the premise that farmers' organizations are central to a sustainable and inclusive agricultural development.** Farmers organizations need to develop into strong, well-organized, and well-managed professional and financially independent institutions, able to provide services and added value to their members. The robustness and strength of the producers' organizations will be essential to help these groups become more active partners in the next level of Rwanda's private sector-led agriculture transformation. Experience shows that fostering strong socioeconomic institutions like SHGs, cooperatives, and WUAs, is a mid- to long-term objective. This project will continue to build the capacity of farmers' organizations established by the LWH and RSSP3 through targeted interventions to bring their organizational and managerial capacities to a level where they can be independent from external assistance and become the engines of their own development.
 - **The sustainable production pathway** considers the transformative changes required to realize environmentally sustainable and resilient production and productivity increases. With the scarce land resources, increasing population, and depleting natural resource base, sustainable agriculture intensification is not an option for Rwanda's agriculture but a necessity. Sustainable intensification strategies are those which result in higher yields on existing cropland and improved nutrition and net incomes of smallholder households, while reducing the negative environmental impacts and improving the management of natural resources, particularly soil and water. The project will provide targeted support to farmers to increase the productivity of their farms, while supporting access to small-scale irrigation and improving the efficiency of existing irrigation schemes, both of which can contribute to significantly increasing the resilience of the production systems.



- **The business and market development pathway** focuses on building inclusive and durable market linkages through which strong and self-reliant cooperatives can sell increased volumes of produce. Many successful cooperatives supported by MINAGRI are now capable of exploring and consolidating market outlets for their produce at well-negotiated prices. This project will continue to accompany those cooperatives which have not yet reached the required level of maturity to develop this market development function. Efforts will be made to strengthen the role of cooperatives in business and market development. To build successful market linkages, cooperatives need to be able to produce consistent and good quality products. Investments to improve post-harvest processes and value addition will be made, while at the same time, the SACCOs will be supported to be able to provide finance to the cooperatives undertake viable investments.

E. Rationale for Bank Involvement and Role of Partners

71. The World Bank's leadership in providing technical support for preparing and implementing programs and projects aimed at poverty reduction and service delivery, including through agriculture, is well-recognized in Rwanda. Over the last several years, the World Bank committed strongly to provide adequate implementation support in many aspects of sector policy, in partnership with the GoR. The World Bank support will draw from the vast global knowledge accumulated over the years in varying country contexts. This global knowledge will be customized to the needs and priorities of Rwanda.
72. The FAO led TA activities are designed to strengthen the capacities of the targeted beneficiaries of the project and to enhance the effectiveness of the project interventions. The TA will emphasize knowledge management and support coordination among stakeholders.
73. **The project will closely collaborate with the two GAFSP private sector activities in Rwanda.** In 2015, the GAFSP private sector window provided a grant to Kenya Commercial Bank (KCB) Bank Rwanda, to ensure that farmers' organizations gain access to finance and training. The grant focuses on 11 existing cooperatives in Eastern Rwanda where more than 12,000 farmers will gain access to improved, fortified seeds, fertilizer and trainings, to be able to supply a processing plant specifically targeting babies and children to overcome malnutrition. The KCB project is considered as a pilot for future up-scaling, and SAIP will link to this initiative to obtain lessons learnt to facilitate farmers' access to finance. This project will also link with Africa Improved Foods (AIF), also recipient of a GAFPS private sector window, by providing technical support and other embedded services to improve productivity and quality of maize producers' cooperatives, which will supply to the AIF. The collaboration will be promoted through MoUs or other contracting modalities.
74. The project will also collaborate with other projects by multilateral and bilateral organizations active in agriculture development and nutrition, promoting farmers' access to markets, and supporting farmers organizations and agribusinesses in Rwanda. The collaboration will be done through knowledge sharing and joint annual planning workshops, where the implementers of these projects will be invited along with other stakeholders.
75. Specifically, this project will be integrated with other ongoing projects or projects under preparation by other donors supporting the agriculture sector in Rwanda. Potential projects identified are funded



by the GoR, U.S. Agency for International Development, U.K. Department for International Development (DFID), FAO, and the Consultative Groups on International Agricultural Research (CGIARs).

- **Feed the Future Rwanda *Hinga Weze*: 2017–2022.** *Hinga Weze's* objective is to sustainably increase smallholder farmers' income, improve the nutritional status of women and children, and increase the resilience of the agriculture and food systems to the changing climate. This project has the potential to develop linkages that could be leveraged to support activities aimed at improving farmers' access to markets.
- **DFID - Improving Market Systems for Agriculture in Rwanda (IMSAR): 2015–2023.** IMSAR will commercialize agriculture through improving the way agricultural market systems function. It will identify market failures and provide the necessary agricultural expertise and finance required to help address them. This will benefit producers, employees, consumers, and SMEs, resulting in increased sales among farmers and agri-enterprises, greater value addition to agricultural produce, and more export diversification. Under Component 3 (linking farmers to market) farmers' organizations could be linked with agri-enterprises supported by IMSAR.
- **FAO – Rural Invest:** FAO is planning to roll out the Rural Invest methodology in Rwanda. Rural Invest is the FAO methodology and toolkit for the preparation of sustainable agricultural and rural investment projects and business plans. The FAO will use these tools and methodologies in the activities aimed at building farmers' business and investment planning skills.
- **CGIAR – CIP and International Center for Tropical Agriculture/Harvest Plus:** This project will build on the partnership between the CGIAR centers in Rwanda and the RAB, especially in supporting the dissemination of bio-fortified seeds (iron fortified beans and orange fleshed sweet potatoes) developed and being promoted by these centers.

F. Lessons Learned and Reflected in the Project Design

76. **The project design builds on the LWH and RSSP3 approach and target groups, and focuses on further consolidation and sustainability of the results of these projects.** The LWH and RSSP3 have registered tremendous progress in increasing productivity and profitability of hillside agriculture across the country, both in irrigated and non-irrigated marshlands and hillsides. Despite these achievements, some outstanding challenges and unreached potential can still be observed in the LWH and RSSP3 targeted areas, especially with regard to irrigation sustainability and market access for farmers. This project will build on the achievements so far, while addressing the current challenges to attain even higher results and ensure their sustainability beyond its implementation period.



- 77. Irrigation sustainability is a challenge, as usage of the irrigation infrastructure is low and few farmers pay the required fees.** An impact evaluation of the irrigation investment under the LWH shows that positive impacts of the irrigations schemes are a result of adopting high-value crops such as horticulture. However, for large-scale irrigation, the positive impacts are concentrated among a subset of more commercial farmers, while subsistence farmers are less likely to benefit and less likely to pay water-usage fees though they do benefit indirectly through land and labor markets. The proposed project supports the GoR farmer-owned SSIT program to scale up its activities and increase outreach. This would allow farmers in areas bordering developed schemes to be able to irrigate smaller pieces of land and achieve good yield levels even during drought periods. This way, the project will enable them to cope with the negative impacts of climate change, while receiving the benefits from irrigation.
- 78. Markets need to allow farmers to realize gains from trade to sustain the economic value of agricultural investments.** The impact evaluation of the LWH found that, despite higher harvest yields, sales values of produce do not see positive effects of the same scale, which indicates systemic inefficiencies related to production and yield. These findings also point to potential inefficiencies in input-output markets. The evaluation found that on the output front, market access and production surplus remain of central concern and suggested that localized marketing facilitation activities be the focus of future project interventions, while recognizing that institutional changes and large-scale investments will be required to address these market inefficiencies that may be beyond the scope of one project. It is envisaged that the integration of this project with larger projects such as the PforR could contribute to addressing the market inefficiency.
- 79. Better-targeted nutrition investments are needed.** A One United Nations (UN) nutrition project, evaluated in February 2016, concluded that growing vegetables in home/kitchen gardens is the most direct way for many urban and rural poor families to improve their access to a variety of micronutrient-rich food. In the One UN project, 75 percent of the beneficiaries, as compared to 7 percent at baseline, indicated that they consume vegetables from their garden at least once a week. Furthermore, 58 percent of beneficiaries reported consuming bio-fortified foods (sweet potatoes, beans, maize) at least once a week compared to none at project inception. The evaluation also revealed strong synergies between kitchen gardens and nutrition education. With the introduction of education, those households who did not consume from their gardens at all fell from 16 percent to 2 percent. The project also indicated that introduction of small livestock increased the consumption of protein at the household level, in addition to raising incomes of households. By having specific objectives related to nutrition at the household level, such as nutrition education and introduction of small livestock with an objective of ensuring availability and consumption of nutritional foods, this project is expected to have greater impact on nutrition outcomes than the previous projects.



III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

80. To achieve better efficiency, the GoR has decided that the roles of the Ministries be limited to policy making and monitoring, while implementation and management of projects and programs will be transferred to implementing agencies. In that regard, the implementation of all agriculture projects has been transferred from MINAGRI to the Rwanda Agriculture and Animal Resources Board (RAB).
81. The overall implementation of the project will be coordinated by RAB, which will serve as the Project Implementing Agency. RAB is a non-commercial public institution with administrative and financial autonomy under the supervision of MINAGRI. It has a general mission of developing agriculture and animal resources through research and agricultural and animal resources extension to increase agricultural and animal productivity. RAB 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.
82. The existing SPIU within RAB managing the World Bank financed LWH and RSSP3 projects will be responsible for the day-to-day implementation. The SPIU has a strong team (technical, financial, procurement, safeguards, and M&E), which has gained experience and has obtained excellent results in the last decade. The SPIU will receive strategic guidance from a Project Steering Committee (PSC) made up of several stakeholders including various ministries and other relevant agencies, representatives of farmers' organizations, and others. The PSC will provide policy guidance and support the alignment between project activities and the respective national sectoral plans and projects of the Government.
83. This project will be well-integrated and coordinated within the portfolio of national agricultural projects financed by the World Bank. Specifically, the proposed activities on land husbandry under Component 1 will build on and use the expertise gained by Rwanda in land husbandry and soil conservation techniques through LWH and RSSP3, aimed at increasing agriculture production and farmers' participation in agricultural value chains.
84. The proposed project will seek to leverage implementation resources jointly with ECAATP (2019–2024) once approved, as both projects will be managed under the same SPIU. The third component of this project will be implemented in close collaboration with the PforR-2, focused on increasing private sector investment and improving the competitiveness of key agriculture value chains in Rwanda. This project will be able to disseminate CSA and NSA technologies developed under ECAATP. It is also foreseen that the market access component of this regional project will create opportunities for this project beneficiaries accessing regional markets.



B. Results Monitoring and Evaluation Arrangements

85. **The project has developed an M&E framework and a communication and knowledge management strategy**, which have been described in the Project Implementation Manual (PIM) and include the following: (a) the project's Theory of Change, (b) cascading Results Framework and M&E strategy to operationalize the Results Framework, and (c) compliance with the Global Agriculture and Food Security Program (GAFSP)/World Bank Group requirements, including the selection of key core indicators and specific indicators for food security, nutrition, gender, and civic engagement. These systems would guide the operational and performance monitoring, as an input into an adaptive program management and accountability. The project M&E system will assess actual change against stated objectives and make a judgment whether development efforts and investments are worthwhile or 'cost-effective'. It will also promote lessons learning and adding value to project initiatives, by ensuring availability and accessibility of information and knowledge generated by and/or required by the project and increased professional interaction.
86. **The project outcomes and impacts will be evaluated through both PDO and intermediate-level indicators²⁰** described in the Results Framework, as well as special studies on selected subjects. The monitoring of project outputs and outcomes will be conducted in partnership with the various implementing agencies. The SPIU will be responsible for data consolidation, quality control, analysis, and reporting. The annual monitoring reports will be used by the SPIU when preparing the annual work plan and budget and by the supervision missions to ensure that the project is on track.
87. **Communication and knowledge management.** The centrality of knowledge sharing and learning as a platform for technical change and innovation, rather than the increased use of inputs, is the essential driver of productivity and improved rural livelihoods. It is recommended the SPIU will constantly develop and improve its knowledge services and platforms, stimulate higher rates of engagement and willingness to collaborate in the creation of high-value content, and generate new insights that contribute to the established knowledge base and documenting lessons learned for sharing and feeding into policy reforms that can further enhance performance of the agricultural sector in Rwanda.
88. **Baseline, midterm, and program evaluation.** The presence of a project baseline and an agreed set of performance indicators relating to project outcomes and impacts is a basic requirement. The new M&E guidelines for the GAFSP projects recommend tracking food security through, among others, improved access to nutritious foods on-farm, increased availability and lower prices of diverse nutritious foods in markets, improved food safety, and income which can be spent on more diverse nutritious food if such food is available, affordable, and convenient. The Food Insecurity Experience Scale (FIES) indicator that measures the prevalence of food security, and the FCS that tracks progress on improving dietary diversity of households are the recommended core food security indicators for the GAFSP-funded projects. The baselines for these will be set through survey data at the start of project implementation as they will be required for ex post impact assessment. For the other

²⁰ A baseline survey will be carried out before the start of the project implementation as part of the project's impact evaluation strategy.



indicators in the Results Framework, where baselines cannot be established from the current databases of the SPIU generated from the LWH/RSSP3 data, the SPIU will gather some data from secondary sources and a project-specific baseline survey. Independent consultants will be required to conduct surveys required for project evaluation, including establishing the baseline at the start of the project, midterm technical audit and beneficiary assessment, and end-of-project evaluation. These assessments will also include a household food and nutrition survey in the same timelines, on start, midterm, and in year five of the project—when a rapid (non-experimental) impact evaluation will also be conducted.

89. The project will leverage ICT tools to establish an online, on-demand project management system²¹ to support communication, collaboration, citizen feedback, and grievance redressal. It will use a mobile tablet-based platform to keep track of project operations, processes, progress, and lessons learned that will feed into the project’s overall management information system (MIS) and M&E function.

C. Sustainability

90. The project will focus on consolidating the results obtained from LWH and RSSP3 and ensuring their sustainability. These projects played a very central role in identifying the technical options, organizing farmers, constructing the infrastructure, and linking farmers to markets. The proposed project provides a realistic exit strategy for the Central Government by ensuring that farmers’ organizations, local government institutions, and the private sector continue performing well and become drivers of development. The project will build on previous efforts to ensure that farmers’ organizations will be brought to maturity and have the capacity to take over functions and services previously provided by external partners, notably Government to drive agriculture development. WUAs and cooperatives will be strengthened to have the capacity to take over the maintenance of infrastructure provided by this and other investment projects. As part of the consolidation of previous work done, the project will document the pathways of transformation triggered by a holistic approach and document the approaches for project exit strategies. Special consideration will also be given to youth to stimulate profitable engagement in agriculture and agribusinesses, through developing skills and promotion entrepreneurship.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

91. The project design and rationale for supporting this project is that by supporting and organizing smallholder farmers the proposed project is de-risking the current agriculture sector ecosystem to allow private sector investment in the sector and further agriculture commercialization. Furthermore, the project will raise farmers’ incomes and improve their resilience to external shocks associated with

²¹ Project MIS, FM system, VOIP communication, mobile-based data collection, citizen feedback, grievance redress mechanism (GRM), and so on.



changing climate, which ultimately leads to poverty reduction and shared prosperity. The project interventions in NSA will retool the sector to meet the nutritional needs of the population, which will in turn contribute to long-term accumulation of human capital and economic development.

92. **Maximizing finance for development.** The agriculture sector in Rwanda remains largely fragmented, with many smallholder farmers facing low-farm productivity weak market linkages to agribusinesses, input providers, processors, and traders, and therefore less attractive to private sector investment. The transformation of Rwanda's agricultural sector from a subsistence-based farming economy to a competitive market-led agriculture sector entails investments and inputs from a broad range of private sector actors and stronger linkages to productive and efficient end-markets, as well as to well-functioning input, services, and intermediary markets. By supporting the organization of smallholder farmers into effective farmer groups, this project is de-risking the current agriculture sector ecosystem to allow private sector investment in the sector and further agriculture commercialization.
93. **The project design also reflects the lesson that TA is a necessary but not a sufficient condition** to increased access to markets, which likewise relies on organized marketing infrastructure, supply of quality agricultural inputs, linkages to buyers, fair pricing, and guaranteed markets, which are all key ingredients for increasing agriculture production. In addition, the project's focus on women, youth, NSA and climate-sensitive agriculture is expected to meet the specific needs of remote rural communities.
94. **Climate change and greenhouse gas accounting.** The project proposes several activities that can be captured with the greenhouse gas (GHG) accounting tool Ex Ante Carbon-Balance Tool (EX-ACT). Under Component 1, the project aims to enhance agriculture productivity through investments in improved agriculture practices. It is expected that about 38,000 farmers, who cultivate around 11,580 ha land in the without and with-project scenarios will be reached. While the project is demand-driven, it will provide training on CSA practice and support the adoption of improved technologies and CSA practices such as improved crop husbandry practices, fertilization, irrigation management and horticulture technologies. Results show that the project can constitute a sizeable net carbon sink of -522,594 tCO₂ equivalent over 20 years, thus -26,127 tCO₂e annually, due to the introduction of improved crop management practices and CSA practices. The cropping activities constitute an absolute carbon sink, with a carbon balance of -571,747 tCO₂ eq in the with-project scenario. Increased transportation and processing due to improved market access lead to an increase of 10,666 tCO₂ eq, the increased use of fertilizer and insecticides/herbicides leads to an increase of 38,412 tCO₂ eq, whereas the use of advanced irrigation systems leads only to 119. tCO₂ eq.
95. **Nutrition sensitive agriculture and food security.** Four primary pathways to improve nutrition outcomes of agriculture interventions have been identified: (a) improved nutritious food production; (b) increased agricultural income; (c) increased consumption of nutritious food, and (d) improved women's empowerment. Similarly, food security has four pillars: (a) availability; (b) access; (c) stability; and (d) utilization. This project focuses on strengthening the link between agriculture and nutrition activities and ensures that activities have a distinct focus, aimed at improving the nutritional status in target households and communities. The project's interventions focusing on increasing productivity and market development, will lead to increased income and a pathway to improved nutrition and food security through enhanced access. The proposed nutrition related communication,



diversification of crops, and processing will support the income pathway and lead to improved food security and nutrition outcomes for the targeted beneficiaries.

96. The project generates economic benefits from investments in development pathways related to social capital, sustainable production, and business and market development. These investments lead to development outcomes, including sustainable and strengthened farmer organizations and rural institutions, that are necessary for value chain development, sustainable and more resilient production systems, better functioning integrated value chains with cooperatives and unions, and enhanced value chains among farmers with improved access to national and regional markets, and reduced post-harvest losses that facilitate job creation and income generation. Quantification of these economic benefits is based on benefits accruing from investments along the value chain of the agricultural commodities and cross-cutting thematic area that are supported by the project, using farm and enterprise or micro processing models. The supported commodities and cross-cutting thematic areas include maize, potato, climbing beans, tomato, onion, sweet pepper, watermelon, papaya, tree tomato, passion fruit, chilli (bird-eye and hot), French beans, avocado, and local or indigenous poultry. The farm and micro processing models intend to capture: (a) improved household income; (b) increased asset accumulation; (c) adoption of climate-resilient agricultural production and livestock practices; and (d) increased market linkage for value-added produce in national and regional markets.
97. The economic analysis uses economic investment and recurrent costs of US\$28 million from year 1 to 5, and recurrent costs of US\$565,000 per annum (2percent of initial investment cost per annum) from year 6 to year 20. The resulting economic net present value (NPV) is about US\$23.2 million, the economic internal rate of return (EIRR) is 17 percent and the Benefit-Cost Ratio (BCR) is 1.82. Sensitivity analyses demonstrate that the project can absorb substantial negative impacts and still generate an EIRR above the social discount rate. Thus, the analysis supports the public investment decision.
98. With regards to the financial analysis, the NPVs of the net incremental benefits per hectare range from US\$616 for maize to US\$21,818 for passion fruit. Benefit-cost ratios range from 1.89 for maize to 5.32 for onion. The financial performance indicators indicate the robustness of the crop and farm models, indicating that the proposed activities are commercially viable.

B. Fiduciary

(i) Financial Management

99. The project will be managed by the same SPIU managing the LWH and RSSP3, under the supervision of the RAB. The FM staff (Finance Manager, Chief Accountant and two Accountants) are well-experienced in World Bank-financed project management. The FM staff are managing satisfactorily the World Bank financed RSSP3 and LWH and have a track record in the projects' FM management.
100. One Designated account (DA) in U.S. dollars will be opened at the Central Bank. The disbursement will be based on unaudited Interim Financial Reports (IFRs) and will cover the project's six months cash flow needs. The report-based disbursement will ensure that the project receives funds that meet the



real cash flow needs and reduces transactions costs. The signatories of the Withdrawal Application to replenish the DA will be proposed by the RAB and communicated to the World Bank by the Ministry of Finance and Economic Planning (MINECOFIN) after the signing of the grant agreement. The signatories comprise usually and at least the Chief Budget Manager (RAB Director General [DG]) and the SPIU Coordinator and the Finance Manager.

101. A separate account in Rwandan francs will be opened to receive counterpart funds. The counterpart signatories will be the same as for the DA.
102. Disbursement and financial reporting arrangement for the FAO, implementing the TA activities, will comply with the provision of the standard contract template developed for the UN organization and agreed with the World Bank. The Government, World Bank, and FAO will agree on the frequency of financial reporting, reporting formats, and payment schedules.
103. Matching grant activities' fiduciary management is done directly at the RAB-SPIU. As a result, no fiduciary responsibility of direct management of funds is delegated to the beneficiaries of the grant and no specific mitigating measures are required.
104. The FM risk is moderate given the adequate staffing, acceptable existing FM procedures and auditing arrangements.

(ii) Procurement

105. This project will be implemented in accordance with the 'World Bank Procurement Regulations for Borrowers under Investment Project Financing', dated July 1, 2016, hereafter referred to as 'Procurement Regulations'. The project will be subject to the World Bank's Anticorruption Guidelines, dated July 1, 2016.
106. According to the requirement of the Procurement Regulations, a Project Procurement Strategy for Development (PPSD) sets out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The underlying Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. After careful evaluation of various options for the procurement approach and contracting strategy, the PPSD concluded that national market approach using National Competitive Bidding (NCB) and Request for Quotations (RFQ) would be the optimum selection arrangement for procurement of Works and Goods/Supplies; whereas for consultancy service international market approach using Consultants Quality and Cost-based Selection (QCBS) and Least Cost-based Selection methods identified as optimum selection arrangements. The international or national market approach will be used based on the availability in the national market and volume. The SPIU-RAB has prior experience in implementing projects of similar nature funded by Bank and other development partners. The staff are familiar with the Bank's procurement guidelines. Though they don't have prior experience in Bank's new procurement Regulation, basic training is provided to the SPIU team by Country Office Procurement Specialist. Based on analysis of the PPSD the project risk is rated 'Moderate'.



107. The proposed project will use the Systematic Tracking of Exchanges in Procurement (STEP), a planning and tracking system that will provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance.
108. A procurement capacity and risk assessment has been carried out by the World Bank for the SPIU-RAB to review the organizational structure for implementing the project. The Procurement Risk Assessment and Management System (PRAMS) has been finalized and based on the assessment and taking note of the roles and responsibilities of the SPIU responsible for procurement—the procurement risk rating is to be ‘Moderate’.

C. Safeguards

(i) Environmental Safeguards

109. The proposed project has been assigned the Environmental Assessment Category B, based on the fact that the activities under the project would involve civil works (post-harvest infrastructure) and irrigation for increased agricultural production. It also likely that the activities will lead to increased agrochemical use, to increase production and minimize loss to diseases and pest, which will necessitate efficient management.
110. The project triggers the following World Bank safeguards policies for which appropriate instruments were prepared: Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Pest Management (OP 4.09), Physical Cultural Resources (OP/BP 4.11), Involuntary Resettlement (OP/BP 4.12), Safety of Dams (OP/BP 4.37), and Projects on International Water Ways (OP/BP 7.50). The project has prepared the following instruments in compliance with the triggered safeguards policies: (a) Environmental and Social Management Framework (ESMF); (b) Integrated Pest Management Plan (IPMP); (c) Resettlement Policy Framework (RPF), and (d) Request for a notification exception in accordance to the requirements of OP/BP 7.50²². The IPMP, ESMF and RPF²³ were cleared by the RSA and disclosed, while the Request for a notification exception has been approved by the RVP.

(ii) Social Safeguards

111. The project is rated as Category B. The aim of the proposed project is to deliver on improving livelihoods, food, and nutrition security through increased agricultural productivity, value addition, and access to markets. The project will be implemented in the RSSP3 and LWH sites in the Districts of Rulindo, Rwamagana, Karongi, Rutsiro, Kayonza, Nyanza, Gatsibo, and Nyabihu. The targeted implementation sites are characterized by cultivated marshlands and hillsides under intensive agriculture.

²² RVP approved exception to the riparian notification requirement OP7.50 on May 23, 2018

²³ (a) Environmental and Social Management Framework (ESMF) was disclosed in country on June 8, 2018 (b) Integrated Pest Management Plan (IPMP) was disclosed in country on May 29, 2018; and (c) Resettlement Policy Framework (RPF) was disclosed in country May 21, 2018.



112. As the detailed project site specific activities are yet to be determined, on the social safeguards the project team has prepared the Resettlement Policy Framework (RPF) that provides guidance on how social issues related to resettlement, citizen engagement and grievance redress mechanisms will be managed during project implementation. During the preparation of the ESMF and RPF, the SPIU undertook a citizen engagement (CE) exercise as part of the preparation process of the two-framework document (ESMF and RPF). The CE process has been documented by the PIU and included in the updated RPF and ESMF that were submitted to the RSA for review and clearance.
113. The project is expected to involve land acquisition at some of the project sites yet to be confirmed, and this is because of the civil works that will be involved under component 2. The SAIP activities likely to lead to resettlements cover investments in post-harvest facilities such as drying shelters, storage facilities, horticulture collection centers and cold rooms. Resettlement Action Plans will be prepared once sites are confirmed for activities require expropriation²⁴.
114. **Citizen engagement.** The SAIP offers an opportunity for CE in planning and monitoring implementation by providing feedback on service delivery. The identification of project beneficiaries under this project is a participatory process and transparent. The project will target 38,000 farmer households while 200,000 family members of the targeted households will be indirect beneficiaries of the project. The project will involve various CE activities that include the following: (a) community sensitization and awareness campaigns; (b) community outreach activities; and (c) community dialogues to support formation and strengthening of SHGs especially in the irrigation and post-harvest infrastructure that are newly developed. The project will place emphasis on ensuring women and youth participation and leadership in the SHGs and cooperatives. This will be reflected in benefits translated directly into improved outcomes at the household level. A detailed Stakeholder Engagement Plan (SEP) will be prepared to ensure a continuous engagement of all stakeholders throughout the implementation, covering project CE activities mentioned earlier. The beneficiary feedback on the service delivery will be annually received through an independent survey on community and beneficiary scorecards. The project Results Framework has included specific CE indicators to be monitored.
115. **Gender assessment.** The project will aim to close specific gender gaps identified to ensure women will fully benefit from the project interventions. The project will ensure that at least 40 percent of women in the farmers organizations participate in the management of these organizations. To ensure their participation in capacity-building events, the project plans capacity buildings/trainings sessions that at least 40 percent of women and youth can attend, prepare and deliver gender-sensitive training contents and avoid time-consuming sessions, and ensure that activities are held close to the residences. To address the issue of limited access to finance for women and youth, the

²⁴ The amount of land acquisition will be demand driven and the combination between government-owned land versus beneficiary-owned land will be determined during baseline survey and assessment of component activities. Guidelines for managing the land acquisition process are included in the RPF.



project will provide advocacy to financial institutions to propose financial products that are easy to access for women and youth.

116. The SPIU has developed a robust and functioning GRM under RSP3 and LWH, which will be adapted to the proposed project. The GRM proposed under the project has been well documented in the RPF. The SPIU under RSP3 and LWH has Grievance Redress Committees (GRC) on each project site to handle grievances that arise during project implementation. These GRCs have been trained on how to handle grievances from the community and are expected to continue doing so under this project and new GRCs could be established where necessary.

(iii) Other Safeguards

Not applicable

(iv) Grievance Redress Mechanisms

117. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank’s attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank’s corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

V. KEY RISKS

Table 1. Systematic Operations Risk-Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector strategies and policies	Low
4. Technical design of project	Moderate
5. Institutional capacity for implementation and sustainability	Moderate
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Low
Overall	Moderate

118. Given that the proposed project is designed to build on the results obtained under the LWH and RSP3, it was determined that the overall risk rating for the project was Moderate.



119. To achieve better efficiency, the GoR has decided that the roles of the Ministries be limited to policy making and monitoring, while implementation and management, of projects and programs will be transferred to implementing agencies. In that regard, the implementation of projects has been transferred from MINAGRI to the RAB. However, for the past two fiscal years (2014/15 and 2015/16), the Office of the Auditor General (OAG) expressed adverse audit opinion for the RAB due to internal control weaknesses. An action plan to address the audit issues has been designed and reviewed by the World Bank and currently a TA from the European Union is supporting the RAB to improve its fiduciary system. To mitigate the risks of overloading the RAB with the management of a new project, the current SPIU managing the LWH and RSSP3 at MINAGRI has been moved entirely from MINAGRI to the RAB and will be responsible for the implementation of the SAIP. This means that all existing FM and procurement staff experienced in World Bank-financed project, FM, and procurement systems and procedures will move to the RAB. The SPIU has managed satisfactorily the FM and procurement aspects and project audit reports were submitted timely with clean audit opinion.



VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Rwanda

Sustainable Agricultural Intensification and Food Security Project

Project Development Objectives(s)

To increase agricultural productivity, market access, and food security of the targeted beneficiaries in the project areas.

Project Development Objective Indicators

Indicator Name	DLI	Baseline 2019	Intermediate Targets				End Target
			1	2	3	4	
Increase agricultural productivity, market access and food security of targeted beneficiaries							
Percentage increase in harvested yield of targeted crops (Percentage)		0.00	3.00	6.00	9.00	12.00	15.00
Percentage increase of produced commodities in targeted value chains marketed by participating producers (Percentage)		0.00	5.00	10.00	15.00	20.00	25.00
Food Consumption Score (Percentage)		83.00	86.00				90.00



Indicator Name	DLI	Baseline 2019	Intermediate Targets				End Target
			1	2	3	4	
Farmers adopting improved agricultural technology (CRI, Number)		34,664.00	35,358.00	36,065.00	36,786.00	37,522.00	38,606.00
Farmers adopting improved agricultural technology - Female (CRI, Number)		14,512.00	14,802.00	15,098.00	15,400.00	15,708.00	16,215.00
Farmers adopting improved agricultural technology - male (CRI, Number)		20,152.00	20,550.00	20,967.00	21,386.00	21,814.00	22,391.00

Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline 2019	Intermediate Targets				End Target
			1	2	3	4	
Institutional Strengthening, Agriculture Productivity Enhancement and Nutrition Improvement							
Number of producer-based organizations supported by GAFSP (GAFSP core 4) (Number)		0.00	874.00	1,048.00	1,233.00	1,398.00	1,747.00
Number of people receiving improved nutrition services and products (GAFSP core 11) (Number)		0.00	58,000.00	96,000.00	145,000.00	193,000.00	200,000.00
Number receiving improved nutrition services and products -Female (Number)		0.00	24,360.00	40,320.00	60,900.00	81,060.00	84,000.00
Farmers reached with agricultural assets or services		0.00	19,303.00	24,129.00	28,955.00	33,780.00	38,606.00



Indicator Name	DLI	Baseline 2019	Intermediate Targets				End Target
			1	2	3	4	
(CRI, Number)							
Farmers reached with agricultural assets or services - Female (CRI, Number)		0.00	8,108.00	10,134.00	12,161.00	14,188.00	16,215.00
Irrigation and water use efficiency							
Area provided with new/improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	125.00	625.00	1,375.00	2,375.00	2,500.00
Area provided with new irrigation or drainage services (CRI, Hectare(Ha))		0.00	50.00	250.00	550.00	950.00	1,000.00
Area provided with improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	75.00	375.00	825.00	1,425.00	1,500.00
Number of farmers benefiting from the project supported small-scale irrigation interventions (Number)		0.00	100.00	500.00	1,100.00	1,900.00	2,000.00
Number of farmers benefiting from the project supported small-scale irrigation technologies - Female (Number)		0.00	42.00	210.00	462.00	798.00	840.00
Number of users paying water fees to the water users associations (Number)		914.00	1,387.00	2,775.00	4,162.00	5,549.00	6,937.00
Number of users paying water fees to the water users associations - Female		383.00	583.00	1,165.00	1,748.00	2,331.00	2,913.00



Indicator Name	DLI	Baseline 2019	Intermediate Targets				End Target
			1	2	3	4	
(Number)							
Market Linkages and Value Addition Investment Support							
Volume of agricultural production processed by post harvest facilities established with project support -GAFSP core 9 (Metric ton)		2,181.00	2,290.00	4,690.00	7,602.00	10,816.00	14,045.00
Number of farmers organization - buyer linkages established (Number)		0.00	8.00	12.00	16.00	24.00	32.00
Value of contracts/agreements negotiated through linkages established (Amount(USD))		0.00	137,400.00	281,400.00	456,000.00	649,400.00	842,700.00
Amount of credit mobilized by farmers and farmers organization (Amount(USD))		0.00	50,000.00	112,500.00	185,500.00	275,000.00	375,000.00
Project Management and Technical Assistance							
Number of knowledge products produced by the project (Number)		0.00	7.00	10.00	15.00	20.00	20.00
Percentage of beneficiaries satisfied with the services provided by the project (Percentage)		0.00	100.00				100.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Percentage increase in harvested yield of targeted crops		Semi-annually	Project MIS	Farmers surveys	SPIU
Percentage increase of produced commodities in targeted value chains marketed by participating producers		Semi-annually	Project MIS	Farmer surveys and cooperatives records	<i>SPIU</i>
Food Consumption Score		Baseline, Mid-Term and End line	Project MIS	Surveys	SPIU
Farmers adopting improved agricultural technology	The household irrigation systems will be used for supplementary irrigation of rained agriculture, for diversification of production or for the transformation from a primarily subsistence agriculture towards the production of one or two marketable products, depending on the regional conditions and depending on the farmers' interests. Technical assistance will introduce good agricultural practices adjusted to each situation. These are, among other, the use of organic	Semi-annual	Project MIS		



	<p>fertilizer, certified seeds, diversification and shifting cultivation and will be identified during project implementation. The indicator evaluates if at least one good agricultural practice transferred during technical assistance is being adopted by the farmer. Municipal staff using their site visits will evaluate use of agricultural practices or improved agricultural technology. One year after the completion of the first systems, an independent evaluation will confirm monitoring results of the municipal staff. If needed, an additional independent evaluation will be realized during mid-term review.</p>				
Farmers adopting improved agricultural technology - Female		Semi-annual	Project MIS	Household surveys	SPIU
Farmers adopting improved agricultural technology - male		Semi-annual	Project MIS	Surveys	SPIU



Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Number of producer-based organizations supported by GAFSP (GAFSP core 4)		Semi-annually	Project MIS	Field staff reports	SPIU
Number of people receiving improved nutrition services and products (GAFSP core 11)		Semi-annually	Project MIS	Staff reports	SPIU
Number receiving improved nutrition services and products -Female		Semi annual	Project MIS	Field staff and monitoring reports	SPIU
Farmers reached with agricultural assets or services		Semi-annually	Project MIS	Field staff and project monitoring reports	SPIU
Farmers reached with agricultural assets or services - Female		Semi annual	Project MIS	Field staff and monitoring reports	SPIU
Area provided with new/improved irrigation or drainage services	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigation and drainage services, expressed in hectare (ha).	Semi-annually	Project MIS	Staff reports and farmers surveys	SPIU
Area provided with new irrigation or drainage services	Measures in hectares the total area of land provided	Semi-annually	Project MIS	Staff reports and surveys	SPIU



	with new or improved irrigation or drainage services in operations supported by the World Bank.				
Area provided with improved irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World Bank.	Semi-annually	Project MIS	Project reports and surveys	SPIU
Number of farmers benefiting from the project supported small-scale irrigation interventions		Semi-annually	Project MIS	Staff reports and surveys	SPIU
Number of farmers benefiting from the project supported small-scale irrigation technologies - Female		Semi-annual	Project MIS	Project reports	SPIU
Number of users paying water fees to the water users associations		Semi-annually	SPIU MIS	Staff reports and surveys	SPIU
Number of users paying water fees to the water users associations - Female		Semi-annual	Project MIS	WUAs records and project monitoring	SPIU
Volume of agricultural production processed by post harvest facilities established with project support -GAFSP core 9		Semi-annually	Project MIS	Staff reports and surveys	SPIU
Number of farmers organization - buyer linkages established		Semi-annually	Project MIS	Staff reports and surveys	SPIU



Value of contracts/agreements negotiated through linkages established					
Amount of credit mobilized by farmers and farmers organization		semi-annually	Project MIS	Staff reports and surveys	SPIU
Number of knowledge products produced by the project		Semi-annually	Project MIS	Staff reports	SPIU
Percentage of beneficiaries satisfied with the services provided by the project		Baseline, Mid-term and end of project	Project MIS	Beneficiary surveys	SPIU



ANNEX 1: Implementation Arrangements and Support Plan

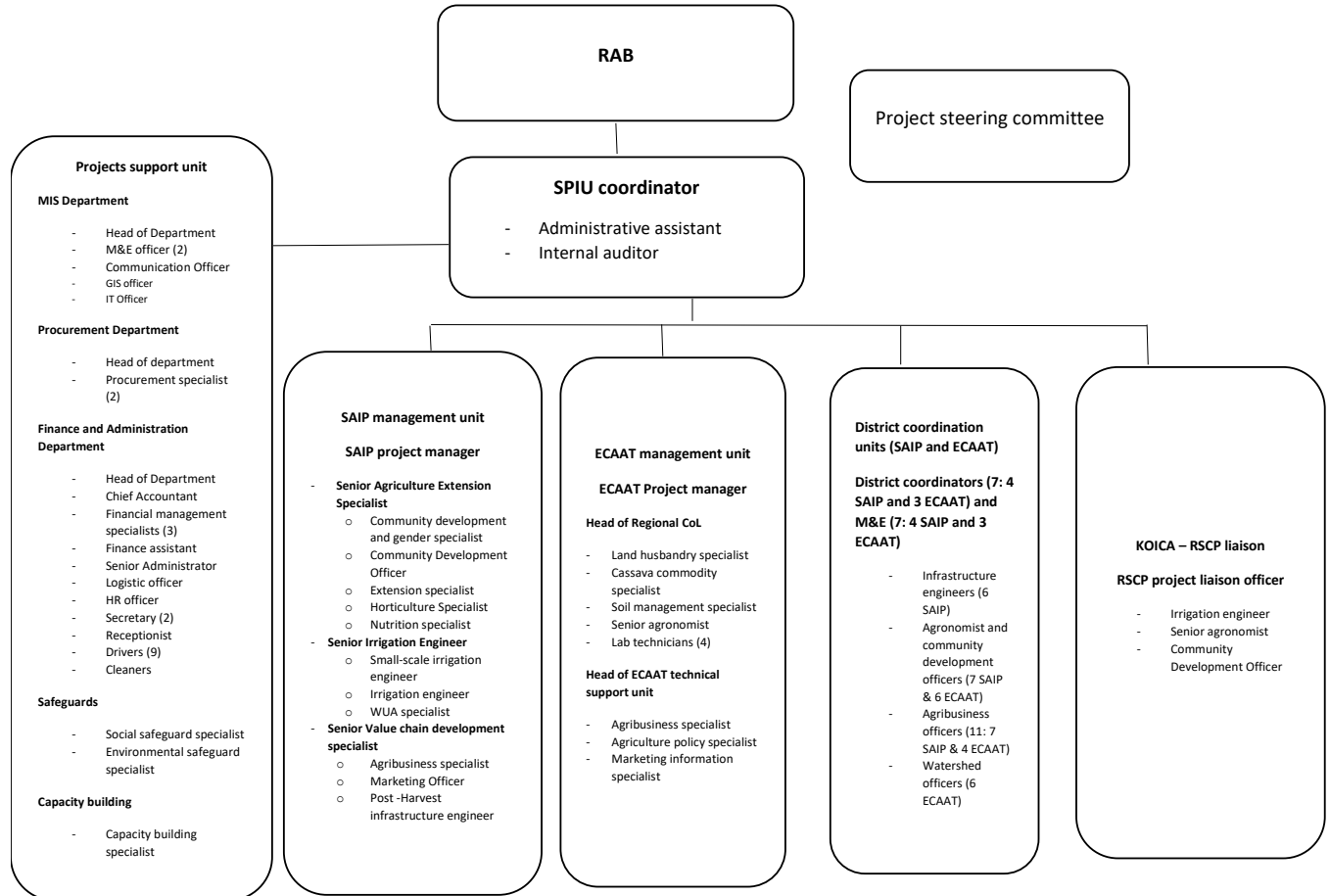
COUNTRY: Rwanda Sustainable Agricultural Intensification and Food Security Project

Project Institutional and Implementation Arrangements

1. **The implementing agency.** The RAB will be responsible for the overall project management and implementation. The RAB is a noncommercial public institution with administrative and financial autonomy under the supervision of MINAGRI. It has a general mission of developing agriculture and animal resources through research and extension to increase agricultural and animal productivity. The RAB 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.
2. **The PSC,** made up of several stakeholders, including various ministries and other relevant agencies, representatives of farmers organization, under the leaderships of MINAGRI will be responsible for the provision of strategic guidance to the project.
3. **The SPIU** will be responsible for day-to-day project management and implementation, including FM, procurement, and monitoring. The SPIU will have a coordinator, a fiduciary, safeguards, technical, and M&E teams to coordinate the day-to-day implementation of different components of the project.



Organization Chart of the SPIU²⁵





Financial Management

4. The objective of the assessment was to determine whether the implementing entities have acceptable FM arrangements, which will ensure: (a) that funds are used for the intended purposes in effective, efficient, and economical way; (b) the preparation of financial report is reliable and timely; and (c) the appropriate safeguard of the entity's assets. The assessment complied with the World Bank policy and directives on investment financing. The assessment concluded that the implementing entity has adequate FM systems since the MINAGRI SPIU staff and system are moved to the RAB.

5. The overall FM risk for the project is moderate and the proposed mitigation measures are (a) enroll the project into an integrated financial management information system (IFMIS), (b) upgrade of IFMIS to prepare project consolidated financial statement for project managed by multiple implementing entities, and to classify and retrieve information by project component and disbursement categories, and (c) provide training to internal auditors on World Bank-financed project risks.
 - (a) **FM Conditions and FM covenants:** No FM conditions or dated covenants.
 - (b) **Country System and Use of Country System:** Rwanda Public Financial Management (PFM) system is anchored in:
 - (i) The 2003 Rwanda Constitution revised in December 24, 2015, Articles 162 to 166.
 - (ii) The Organic Law No. 12/2013 of 12/09/2013 on State Finances and Property that establishes principles and modalities for sound management of State finances and property. The Organic Law applies to all budget entities at the central and decentralized level and sets up fundamental PFM principles as comprehensiveness, transparency, accountability, uniformity, consolidation, and gender balance in public State finance management.
 - (iii) The Ministerial Order no. 001/16/10/TC dated 26/01/2016 on financial regulations that regulates the structure and functioning of PFM, the preparation and implementation of the State budget; the accounting and reporting of all financial transactions, and the financial control. The order applies to the management of public finances of all public entities including the Central Government entities, decentralized entities, public institutions, and subsidiary entities.
 - (iv) The Government Accounting Policies Manual.
 - (v) The Articles 165,166 of the Rwanda revised Constitution and the Law No. 79/2013 of 11/9/2013 determines the mission, organization, and functioning of the OAG of State finances.

²⁵ The SPIU is managing the SAIP and ECAAT funded by GAFSP and IDA, and a KOICA project



6. The PFM system had gone through a series of reforms since 2008 guided by the PFM strategy plan 2008–2012 and the Sector Strategic Plan (SSP) 2013–2018. At the national level, progresses have been made in budget planning, expenditures efficiency, enhancement of the internal audit function, external audit coverage, and financial reporting. The public expenditure and financial accountability (PEFA) assessment 2015 (2011 methodology) confirmed these strengths. Nevertheless, areas of weaknesses pertain to weak consultative approach in the budget preparation, access to fiscal information, and lack of qualified PFM staff. At the districts level, these weaknesses are exacerbated and result in adverse or qualified audit opinions on the financial statements. To address these weaknesses, policies reforms and initiatives led by the Government and supported by DPs (PFM Basket Funds and PforR Public Sector Governance) are ongoing to strengthen the PFM system at the central and decentralized levels. The local government PEFAs are ongoing at eight pilot districts level and the conclusions will nurture ongoing and future reform. As a result of the mentioned strengths, the project’s arrangements will rely on the existing PFM system at the central and decentralized levels with some amendments to take into accounts the project’s and the World Bank FM requirements.

Table 1.1. Risk and Mitigating Measures Tables

Risks	Risks Mitigating Measures Incorporated into Project Design	Residual Risks/Risk Rating	Implementation
Inherent Risk		Moderate	
Country level: Lack of qualified PFM staff, and adverse, or qualified audit opinion at districts	Implement the PFM reform agenda with the support of the World Bank and other donors. The World Bank-financed project (P149095, Public Sector Governance) supports the design of the PFM learning and development strategy and accountability completed by the pipeline project on PFM reform	Moderate	Implementation
Entity level: Adverse audit opinions at RAB	One DLI of the second agriculture PforR agriculture provides incentive to address weaknesses in audit reports	Substantial	Implementation
Project level: Grants to beneficiaries	Clear eligibility criteria and direct management at the SPIU/RAB lowers the risk	Moderate	Implementation
Control Risk		Moderate	
Budgeting		Moderate	Implementation
Delay in preparing yearly budget and inappropriate monitoring of budget execution resulting in delay in achieving project’s objectives	Follow national budget procedures and timeline strictly	Moderate	Implementation



Risks	Risks Mitigating Measures Incorporated into Project Design	Residual Risks/Risk Rating	Implementation
Unreliable budget forecast	<ul style="list-style-type: none"> Ensure that the annual work plan and budget is in line with the Procurement Plan to prevent any delays due to the procurement process Track budget variances and take proactive decisions 	Moderate	Implementation
Accounting: IFMIS is not tailored to track expenditures by project component and disbursement categories, and to consolidate financial report for projects implemented by multiple entities. Thus, manual retreatments increase the risk of inaccuracy.	Upgrade IFMIS	Moderate	Preparation/implementation
Internal controls and internal audit		Moderate	Preparation/Implementation
Role and responsibility is clearly delineated. Internal control environment is characterized by low collusion.		Moderate	Preparation/Implementation
Internal audit plan and three years audit plan linkage with project risk is limited and focuses on financial aspects	Enforce and improve the risk-based audit plan and three-year audit plan by developing detailed guidelines and hands-on support	Moderate	Preparation/implementation
Funds flow: The DA is opened at the BNR where internal control system is globally adequate. But suspense account due to system changes at the BNR.	Clean up the suspense account and improve system change management at the BNR	Moderate	Implementation
Financial reporting and monitoring: Harmonized financial report to be prepare for accountability purpose	Harmonized financial reporting for the World Bank-financed project will be prepared on semester basis and submit to the World Bank not later than 45 days after end of the semester	Low	Implementation
External auditing: Delay in submitting the audit report	The OAG has mandate to audit all public funds and will audit the project. The SPIU will inform the OAG earlier to include the	Low	Implementation



Risks	Risks Mitigating Measures Incorporated into Project Design	Residual Risks/Risk Rating	Implementation
	assignment in the audit plan. The audit report will be shared with the World Bank not later six months after the end of the fiscal year.		
Fraud and corruption: Rwanda is ranked fourth in Africa in corruption Index. However, risk of fraud and corruption in the contracts is not zero (49 percent of Rwandan considered that corruption is not low) and the average complaint-handling length is still long	Complaint-handling mechanism exists but effectiveness shall be improved by further reducing the length of the process. E-procurement, rolled out in 2017, is reducing physical contact between contracting authority and bidders and thus, opportunity of corruption	Moderate	Preparation/implementation
Overall Risk		Moderate	

7. The overall residual risk rating is Moderate.

Table 1.2. Key Weaknesses and Action Plan to Reinforce the Control Environment

Significant Weaknesses or Risks	Actions	Responsible	Completion
IFMIS information not yet classified by project component or disbursement categories; project implemented by multiple entities financial reports cannot be consolidated	Upgrade IFMIS	SPIU	
Internal audit awareness and skills on project related risks is still moderate	Organize induction training on project's risks	SPIU/World Bank	

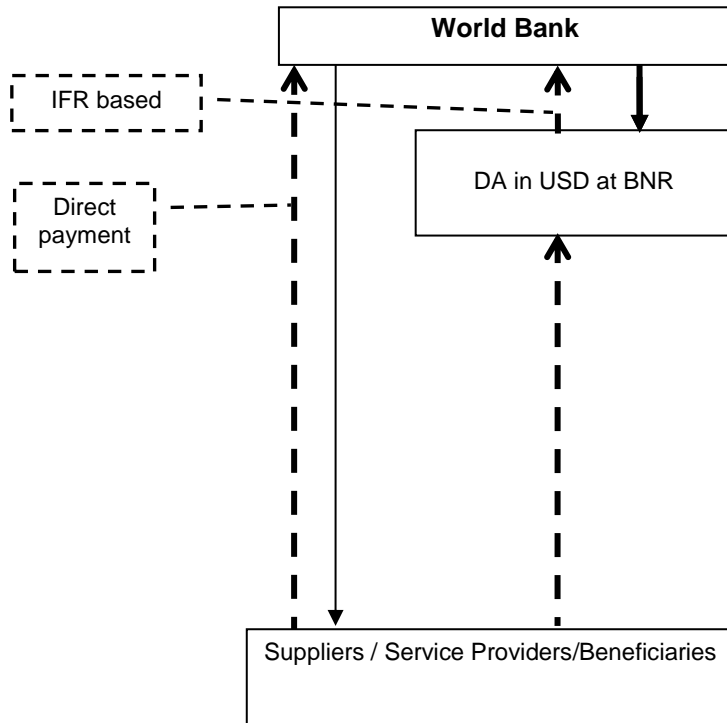
- Staffing.** The SPIU is managed by qualified FM staff. One Financial Manager, one Chief Accountant, and two Accountants. These staff are well-experienced in the World Bank-financed projects' FM procedures. The FM staff are managing satisfactorily the RSP3 and LWH both financed by the World Bank.
- Budgeting arrangements.** The project will comply with the GoR planning and budgeting processes guided by the Organic Law on State Finances and Property (2013) and Ministerial Order on Financial Regulations (2016). The RAB will prepare the medium-term expenditure framework, annual plan and budget, with the disbursement forecast in coordination with the MINECOFIN Planning and Budgeting Department. The budget shall be consistent with the Procurement Plan. The planning and budgeting documents alongside with the disbursement forecast shall be communicated to the World Bank for review and advice before inclusion in the state budget and enactment by the Parliament. This will mitigate the risk of unreliable budget widely noticed due to inadequate coordination with the World Bank during the planning and budgeting process.



10. The project expenditures in the budget report is classified following the economic classification for the monthly reporting to MINECOFIN—current expenditure, including employee compensation costs, and payments of goods and services. Nevertheless, a reclassification per project components and disbursement categories shall be done in the budget execution report to be sent to the World Bank to meet with the need to monitor the project through these line items. A comprehensive analysis of the budget performance indicator with detailed corrective action shall be included in the budget performance report.
11. **Accounting arrangements.** The project will comply with the GoR accounting policies, modified cash basis of International Public Sector Accounting Standards (IPSAS), that is considered acceptable. A SMART-IFMIS rolled out by MINECOFIN is in use and the project will be enrolled into IFMIS.
12. **Internal control and internal auditing.** The GoR PFM regulation provides for a clear segregation of duties between the Chief Budget Manager, the account, and the Internal Auditor and describes well procedures applied to accounting chain. The RAB's internal audit unit exists and is staffed but its effectiveness shall be enhanced to further master the risk-based internal audit and training shall be provided to the internal audit staff on the World Bank-financed project risks. Audit committees provide independent oversight and review internal audit reports. The audit committee shall review and endorse the internal audit work plan and provide necessary oversight on the external audit and internal audit recommendations implementation. The Project will use the same FM manual as for the LWH and RSSP, as required by the GoR PFM regulations and financial guidelines.
13. **Funds flow arrangements and lending instrument.** The flow of funds arrangement (figure 1.1.) is similar to the one adopted for the majority of the ongoing projects in Rwanda. The RAB will receive funds from IDA using the IFR-based method of disbursement. A DA (U.S. dollar) will be opened at the BNR and managed by the RAB. The account will be jointly signed by the SPIU Finance Manager, the SPIU Coordinator, the RAB DG or the Director of Corporate Services in RAB. The ceiling of the DA will be set at six months cash flow needs.



Figure 1.1. Funds Flow Chart



Legend	<i>Transfers of funds</i>	
	<i>Flow of documents</i>	
	<i>Payment to suppliers</i>	

Table 1.3. Cost by Disbursement Category

Category	Amount of the Grant Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Training and Operating Costs under the Project except for Parts 2.1 3.2(i) and 4.2	13,800,000	100%
(2) Matching Grants under Parts 2.1 and 3.2(i) of the Project	11,000,000	100% of amount disbursed
(3) Training under Part 4.2 of the Project	1,500,000	100%
TOTAL AMOUNT	26,300,000	



14. **Financial reporting arrangements.** The SPIU will prepare monthly financial reports according to the GoR requirement but a quarterly report will be submitted to the World Bank within 45 days after the end of the calendar quarter and shall include the following:

- Sources and uses of funds (revenues and expenditures statement)
- Financial position statement
- Cash flow statement
- DA activity statement
- Budget execution report
- Notes on accounting policies

15. Financial statements shall be prepared in accordance with the GoR accounting policies which operate on the modified cash basis of IPSAS.

16. **External auditing arrangements.** There is a well-established Supreme Audit Institution called the OAG in place in Rwanda which provides external audit of the Government expenditure and which also provides external audit of World Bank projects. The audits are undertaken in accordance with International Standards on Auditing. Audit reports would be produced on the financial statements for the project and would be submitted to the World Bank within six months following the end of the accounting year. The audit report should be inclusive of a Management Letter (opinion on compliance) setting out any internal control weaknesses.

17. In line with the access to information policy date July 2010, the project will comply with the World Bank disclosure policy of audit reports (for example, make publicly available, promptly after receipt of all final financial audit reports).

Table 1.4. FM Actions

Action	Date Due by	Responsible
Train the internal auditors	Throughout the project implementation	RAB, World Bank, CIO
Roll out of IFMIS for the financing	At project effectiveness	RAB and MINECOFIN
Open a DA	No later than one month after effectiveness	RAB and MINECOFIN

18. **Conclusions of the FM assessment.** The overall residual FM risk is considered Moderate. The proposed FM arrangements for this project are considered adequate and meet the World Bank’s minimum fiduciary requirements.

19. **Implementation Support and Supervision Plan.** FM implementation support intensity and frequency will be in line with risk-based approach and will involve a collaborative approach with



the entire task team. The first implementation support mission will be performed three months after project effectiveness. Afterward, the missions will be scheduled by using the risk-based approach model and will include the following diligences: (a) monitoring of the FM arrangements during the supervision process at intervals determined by the risk rating assigned to the overall FM Assessment at entry and subsequently, during implementation; (b) integrated fiduciary review on key contracts; (c) review of the IFRs; (d) review of the audit reports and Management Letters from the external auditors and follow-up on material accountability issues by engaging with the task team leader, client, and/or auditors; the quality of the audit (internal and external) is to be monitored closely to ensure that it covers all relevant aspects and provide enough confidence on the appropriate use of funds by recipients; and (e) other assistance to build or maintain appropriate FM capacity and efficient internal control system. The FM will perform periodic field missions to review the FM performance and risk and provide adequate advice and recommendations. Monthly FM meetings will be organized to follow up FM progress.

Procurement

20. Procurement for the project will be carried out in accordance with the Procurement Regulations. The Sustainable Agricultural Intensification and Food Security Project will be subject to the World Bank's Anticorruption Guidelines, dated July 1, 2016.
21. As per requirements in the Procurement Regulations, a PPSD has been prepared and approved by the World Bank. The Procurement Plan sets out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.



Box 2.1. Summary of the PPSD

The project procurement profile comprises of procurement of Works, mainly rehabilitation, Goods & Non-consultancy services, and consultancy services. The Civil works contracts including rehabilitations are small scale nature. National market approach mainly, NCB and RFQ procurement methods will be used to procure goods, IT equipment and non-consultancy services. The Works contracts are mainly Construction Works of Drying Shelters, Storage facilities, Market Centres and Medium Scale Irrigation Scheme, and Rehabilitation and Expansion Works of post-harvest infrastructure and existing irrigation schemes. Procurement of Goods mainly comprises Supply of Goods and Equipment for maintenance and operation of existing irrigation schemes and post-harvest facilities, Supply of relevant Technology and Equipment for Agro-Processing, Supply of IT and Communication equipment and operating costs. The project also envisages to deploy few consultants for providing supervision services for the construction and rehabilitation works, Consultancy Services for Base-Line and End-Line Surveys, Mid Term review and conducting ICR and Technical Assistance. After careful evaluation of various options for the procurement approach and contracting strategy, national market approach using NCB and RFQ would be the optimum selection arrangement for procurement of Works and Goods/Supplies; whereas for consultancy service international market approach using QCBS and IC selection methods identified as optimum selection arrangement. The international or national market approach will be used based on the availability in the national market and volume.

The SPIU-RAB is an implementing agency and is having prior experience in implementing projects of similar nature funded Bank and other development partners. The staff are familiar with the Bank's procurement guidelines. Though they don't have prior experience in Bank's new procurement Regulation, basic training is provided to the SPIU team by Country Office Procurement Specialist. Further trainings will be organized by Bank at country and regional level. The mitigated risk is 'Moderate'

- 22. **STEP.** The project will use STEP, a planning and tracking system, which will provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance.
- 23. **Procurement risk assessment.** A procurement capacity and risk assessment has been carried out by the World Bank for the implementing agency the SPIU-RAB to review the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement duties and management of the agency. The PRAMS has been finalized. Based on the assessment and taking note of the roles and responsibilities of the SPIU-RAB, which is responsible for procurement, the procurement risk rating is 'Moderate'.
- 24. The proposed project will be implemented by the SPIU-RAB. The SPIU-RAB has extensive experience and a good track record in implementing World Bank-financed projects. The SPIU-RAB is currently managing four Development Partners (DP)-financed projects: two IDA-financed, and two other DP-financed projects. The total finance of the SPIU for FY17 is US\$38 million. Out of these, US\$34 million (89 percent) is spent through procurement while the remaining US\$4 million (11 percent) is spent as operating cost. Out of the total procurement expenditure managed by the SPIU-RAB, in FY17, 20 percent comprises Goods procurement, 73 percent works, and 7 percent consultancy services. Construction of dams and irrigation and associated design and supervision consultancy services as well as procurement of common goods such as vehicles are major



procurements categories managed by the SPIU-RAB in the past. The average typical value of procurement managed by the SPIU-RBC is US\$4,500,000. The single largest procurement value managed by the SPIU-RAB in the last three years is US\$380,000 for goods, US\$6,800,000 for works, and US\$1,000,000 for consultancy services. This is evidence that the SPIU-RAB had gained adequate experience in procurement management of high- and low-value contracts of all categories in the past years.

25. Starting July 1, 2017, all procurement entities in the country are using the e-procurement system for Government-financed and most DP-financed projects. However, the e-procurement is not yet applied to World Bank-financed projects. The Government has requested the World Bank to approve the use of e-procurement for World Bank-financed projects. The World Bank conducted e-Procurement system assessment using DP E-Procurement manual and verified that the Rwanda e-Procurement is adequate and can be used for Bank Financed projects. Following the assessment and verification Road Map for the roll-out is prepared by the government and accepted by Bank and as per the road map all Bank finance projects will start using Rwanda e-Procurement system starting November 1, 2018.
26. Suppliers of goods, works and services are available in sufficient number and qualification. The average number of bidders for all categories is 13. Average number of suppliers of goods is 20, contractors for works is 12, and consultants is 8. The most common procurement methods used are International Competitive Bidding (ICB) and National Competitive Bidding (NCB) for goods and works, and Quality- and Cost-Based Selection for consultancy services. Bid prices are commonly in reasonable range compared to estimates of the Procurement Plans.
27. There have been delays in the procurement process in the past. This is attributed to the mandatory review by the legal officers in MINAGRI. According to the directive from the Prime Minister's Office, review of draft contracts by the legal officer is mandatory. RAB will ensure the reviews are done in a timely manner to avoid delays so that all the tendering process remains within the required timelines.
28. There are internal auditors to oversee day-to-day transaction of the agency. In addition, external audit is conducted by the OAG, and Rwanda Public Procurement Authority (RPPA) is conducting procurement auditing on an annual basis. The Office of Ombudsman also does random audits and investigations based on information they may receive.
29. There is adequate complaint review and resolution mechanism in Rwanda. There is a National Independent Review Panel independent of Government that deals with complaints received from bidders or consulting firms, as provided in the Procurement Law. No complaints were received in FY17.
30. The SPIU-RAB used to have a procurement unit with six staff. However, with the closing of some projects and resignation of the Procurement Head, the number of procurement staff dropped to three. Currently, there are three active projects and two projects under preparation. The three



active projects are: (a) LWH (closing June 2018); (b) RSSP3 (closing October 2018); (c) FRDP²⁶ (transferred to RTDA²⁷), and (d) RCSP-KOICA^{28,29} (closing December 2018). The two new projects under preparation are the ECAATP and the SAIP.

31. In general, the assessment revealed that the track record of procurement performance of SPIU-RAB is satisfactory. However, there is lack of experience in applying the World Bank's New Procurement Framework and the Procurement Regulations, and hence, the agency needs to get training before the effectiveness of the project.
32. **Use of national procurement procedures.** All contracts following the national market approach shall follow the procedures set out in the Rwanda Public Procurement Law (Law No. 12 of 2007) as revised in 2013 (Law No. 5 of 2013). The RPPA governs purchase of works, goods, and services using public resources by the national and district government entities, sectors, health and education institutions, and the City of Kigali. The RPPA as a regulatory body sets out the rules and procedures of public procurement and provides a mechanism for the enforcement of the law. The procurement function is decentralized to individual procuring entities. The RPPA has oversight and regulatory function including undertaking procurement reviews and audits. The provisions of the Procurement Law are consistent with the World Bank Procurement Regulations Section V - paragraph 5.4, National Procurement Procedures.
33. **Procurement of works.** These activities will be implemented using the national procurement systems. Small-value works will be undertaken through request for quotation procedures. The request for quotation will indicate the specifications works as well as the delivery/completion time and the contract award will be based on comparing price quotations from several qualified contractors, with a minimum of three, to ensure competition. When the value of the contract of such works exceeds the shopping threshold and when procured through NCB procedures, the national Standard Bidding Documents (SBDs) issued by the RPPA and acceptable to the World Bank, will be used. Direct contracting shall be used where it is to the benefit of the project and in accordance with the Procurement Regulations. Community procurement will follow the procedure set out in the national Procurement Law.
34. **Procurement of goods and IT.** Goods to be procured under the Project include Supply of Goods and Equipment for maintenance and operation of existing irrigation schemes and post-harvest facilities, Supply of relevant Technology and Equipment for Agro-Processing, Supply of IT and Communication equipment.
35. Procurement of goods other than through ICB would use the national procedures and SBDs as agreed with and deemed satisfactory to the World Bank. Direct contracting will be used where the PPSD dictates so to the benefit of the project. Procurements while approaching the international

²⁶ FRDP: Feeder Roads Development Program

²⁷ RTDA: Rwanda Transport Development Agency

²⁸ RCSP: Rural Community Support Project

²⁹ KOICA: Korea International Cooperation Agency



market will be done using the World Bank's Standard procurement documents. Procurements while approaching the national market will be done using the national SBDs with an additional annex to address the World Bank's Anticorruption Guidelines and to ensure universal eligibility.

36. **Procurement of consultancy services.** Consulting services to be procured under the project include activities related to the mapping of land units across Rwanda will be used to inform decision making and planning of public investments with communities, development and testing of enabling policies, building human and institutional capacity in the Rwanda public universities of the transformation of agriculture, strengthening capacity (human, institutional, and infrastructure) of stakeholders along commodity value chains, procurement methods to be used—are specified in the PPSD. Any staff required for project implementation support will be recruited/selected following project implementation support personnel, paragraph 7.32 of Procurement Regulations.
37. **Operating costs.** These items will be procured using the borrower's national procurement and administrative procedures acceptable to the World Bank including selection of project implementation support personnel. The borrower will also pay for costs associated with any resettlement, land acquisition, compensation, and relocation of services from counterpart funds.
38. **Record keeping.** All records pertaining to award of tenders, including bid notification, register pertaining to sale and receipt of bids, bid opening minutes, bid evaluation reports, and all correspondence pertaining to bid evaluation, communication sent to/with the World Bank in the process, bid securities, and approval of invitation/evaluation of bids will be retained by the respective agencies and uploaded in STEP.
39. **Disclosure of procurement information.** The following documents shall be disclosed on the agencies websites: (a) a Procurement Plan and updates; (b) an invitation for bids for goods and works for all contracts; (c) Request for Expression of Interest for selection/hiring of consulting services; (d) contract awards of goods, works, and non-consulting and consulting services; (g) a monthly financial and physical progress report of all contracts; and (h) an action-taken report on the complaints received on a quarterly basis.
40. The following details shall also be published in the United Nations Development Business and the World Bank's external website: (a) an invitation for bids for procurement of goods and works following open international market approaches; (b) Request for Expression of Interest for selection of consulting services following open international market approaches; and (c) contract award details of all procurement of goods and works and selection of consultants using open international market approaches.
41. **Fiduciary oversight by the World Bank.** The World Bank shall prior review contracts according to prior review thresholds set in the PPSD/Procurement Plan.
42. All contracts not covered under prior review by the World Bank shall be subject to post review during implementation support missions and/or special post review missions, including missions



by consultants hired by the World Bank. To avoid doubts, the World Bank may conduct, at any time, independent procurement reviews of all the contracts financed under the loan.

- 43. **Contract management.** The first 18 months procurement plan prepared didn't include, high-risk and high-value procurements requiring increased contract management support. However, if such contracts are identified in the course of implementation, the implementing agency will develop key performance indicators (KPIs) for such identified contracts and the KPIs will be monitored during actual execution of contracts. The World Bank team will provide additional due diligence and independent review of the contract performance of such identified procurements. A fully staffed SPIU will be responsible for overall project/contract management.
- 44. **Risks and mitigation measures.** Risks identified are presented in table 1.5 with the mitigation measures and time frame.

Table 1.5. Risks and Mitigation Measures

S. No.	Issue/Risk	Recommended Mitigation Measures	Owner and Time Frame
1	Lack of experience in the use 'Procurement Regulations' of the World Bank New Procurement Framework	Training will be organized for the procurement team on the World Bank Procurement Regulations and New Procurement Framework in general.	SPIU-RAB in coordination with World Bank and Rwanda Country Office

Environmental and Social (including safeguards)

- 45. The proposed project has been assigned the Environmental Assessment Category B, based on the fact the activities under the project would involve civil works (post-harvest infrastructure) and irrigation for increased agricultural production. It also likely that the activities will lead to increased agrochemical use, to increase production and minimize loss to diseases and pests, which will necessitate efficient management.
- 46. The project implementation arrangements related to the environmental and social safeguard requirements, national legislation and World Bank policies, will be under responsibility of the SPIU. The SPIU will have in its team one Social Safeguard's Specialist and one Environmental Safeguard Specialist to assess, approve, monitor, and report on safeguard's compliance to each activity to be financed under the project that could potentially generate environmental and social impacts on natural resources or/and communities, as well as to train other SPIU staff, district staff, and communities on issues related to safeguards.
- 47. The Social Safeguards Specialist will: (a) provide social development expertise including providing inputs for project documents and reports and participating in project-related meetings and implementation support missions; (b) improve the social development outcomes of the project by facilitating CE and public participation processes and ensuring that the gender and youth aspects included in the project design are adequately addressed during implementation; and (c) build long-



term capacity in the RAB in the preparation and supervision of social safeguards measures and instruments. The Social Specialist will be working closely with the Environmental Specialist.

48. The Environmental Specialist will be responsible for the following: (a) providing environmental management expertise to the SPIU which will include providing inputs to project documents, subprojects screening, monitoring and reports, and participating in project-related meetings and implementation support missions; (b) strengthen the SPIU capacity in the implementation of the environmental safeguards polices and applicable national regulations and ensure that the projects likely environmental impacts are well-managed during implementation; and (c) building long-term capacity in the RAB in the preparation and supervision of environmental safeguards measures and instruments.
49. The Safeguards Specialists will liaise with REMA to ensure that the project meets national legislation requirements such as for environmental permits, water permits, and approves environmental and social impact assessments of activities eligible under the Environmental Impact Assessment Law.
50. The SPIU will be trained by the World Bank and supported by service providers for certain environmental activities, to support the supervision of social tools of environmental and social measures and instruments. for example, ESMP, RAP but also on training and capacity-building service providers, most likely from the agricultural and irrigation field, may need to receive inputs to better adjust their content and modules on environmental and social safeguards good practices to be taught to farmers or other GoR institutions.
51. The SPIU under RSSP3 and the LWH has GRCs on each project site to handle grievances that arise during the project implementation. These GRCs have been trained on how to handle grievances from the community and are expected to continue doing so under this project.
52. **Citizen engagement.** The SAIP offers opportunity for CE in planning and monitoring implementation by providing feedback on service delivery. The identification of project beneficiaries under this project is a participatory process and transparent. The project will target 38,000 farmer households while 200,000 family members of the targeted households will be indirect beneficiaries of the project. The project will involve various CE activities that include the following: (a) community sensitization and awareness campaigns; (b) community outreach activities; and (c) community dialogues to support formation and strengthening of SHGs especially in the irrigation and post-harvest infrastructure that are newly developed. The project will place emphasis on ensuring women and youth participation and leadership in the SHGs and cooperatives. This will be reflected in benefits translated directly into improved outcomes at the household level. A detailed SEP will be prepared to ensure continuous engagement of all stakeholders throughout the implementation covering project CE activities mentioned earlier. The beneficiary feedback on the service delivery will be annually received through an independent survey on community and beneficiary score cards. The project Results Framework has included specific CE indicators to be monitored.



53. **Gender.** The project will aim to close specific gender gaps identified to ensure women will fully benefit from the project interventions.

54. Table 1.6. provides a snapshot of identified gender gaps and proposed actions to address them.

Table 1.6. Gender Gaps and Proposed Actions

SAIP Gender Gaps Identified	Project Team’s Plan for Addressing Gender Gaps
Access to the farmer’s organizations may be limited to women especially if this requires a membership fee.	Ensuring at least 40 percent of women in the farms organizations given their important presence in agriculture and rural areas (In Rwanda, women make up 57 percent of the agriculture labor force).
The limited participation of women in all the capacity-building sessions given their heavy workload at home and in the farms. It is estimated that in Rwanda women work 14–17 hours a day	Plan capacity buildings/trainings sessions that at least 40 percent of women and youth can attend, prepare and deliver gender-sensitive training contents and avoid time-consuming sessions.
Lack of comprehensive information for food security and nutrition if women’s participation is limited.	Involve women and youth in the initial research to get comprehensive data on food security and nutrition issues to minimize biased information.
Absence or limited presence of youth and women in the decision-making levels of farmer’s organizations based on the cultural barriers and beliefs.	Create conditions to facilitate women’s access to finance such as women and youth’s farmers’ associations.
Lack of access to finance for women and youth and hence, limited products for markets.	Propose financial products that are friendly for women and youth so that they can access.
Restrictions to women’s mobility which will affect their access to existing infrastructures and hence the economic opportunities.	Bring the activities closer to the residence areas specially to reduce the distance from their households.

55. The project implementation arrangements related to gender will be under the responsibility of the SPIU. The SPIU will have in its team one gender focal point to monitor and report on gender mainstreaming for the project. The gender focal point will also train other SPIU staff, district staff, and communities on issues related to gender in close collaboration with the GoR’s Gender Monitoring Office and other stakeholders.

Monitoring and Evaluation

56. **The project has developed an M&E framework and a communication and knowledge management strategy** as part of the PIM and describes the following: (a) the project Theory of Change; (b) cascading Results Framework and M&E strategy to operationalize the Results Framework; and (c) compliance with the GAFSP/World Bank Group requirements, including the selection of key core indicators and specific indicators for food security, nutrition, gender, and civic engagement. In addition, the systems would guide operational and performance monitoring as input into adaptive program management and accountability. The project M&E system will assess



actual change against stated objectives and make a judgment on whether development efforts and investments are worthwhile or 'cost-effective'. It will also promote lesson learning and add value to project initiatives by ensuring availability and accessibility of information and knowledge generated by and/or required by the project and increased professional interaction.

57. **The project outcomes and impacts will be evaluated through both the PDO and intermediate-level indicators** described in the Results Framework, as well as special studies on selected subjects. A baseline survey will be carried out before the start of the project as part of the project's impact evaluation strategy. The monitoring of project outputs and outcomes will be conducted in partnership with the various implementing agencies. The SPIU will be responsible for data consolidation, quality control, analysis, and reporting. The annual monitoring reports will be used by the SPIU when preparing the annual work plan and budget and by the supervision missions to ensure that the project is on track.
58. **Communication and knowledge management.** The centrality of knowledge sharing and learning as a platform for technical change and innovation rather than the increased use of inputs, is the essential driver of productivity and improved rural livelihoods. It is recommended that the SPIU will constantly develop and improve its knowledge services and platforms, stimulate higher rates of engagement and willingness to collaborate in creation of high-value content, and generate new insights that contribute to the established knowledge base and documenting lessons learned for sharing and feeding into policy reforms that can further enhance performance of the agricultural sector.
59. **Baseline, midterm, and program evaluation.** The presence of a project baseline and an agreed set of performance indicators relating to project outcomes and impacts is a basic requirement. The new M&E guidelines for the GAFSP projects recommend tracking food security through, among others, improved access to nutritious foods on-farm, increased availability and lower prices of diverse nutritious foods in markets, improved food safety, and income which can be spent on more diverse nutritious food if such food is available, affordable, and convenient. The Food Insecurity Experience Scale (FIES) indicator to measure the prevalence of food security, and the Minimum Dietary Diversity score reflecting overall nutrient adequacy and dietary diversity are the recommended core food security indicators for the GAFSP-funded projects. The baselines for these will be set through survey data as they will be required for ex post impact assessment. For the other indicators in the Results Framework, where baselines cannot be established from the current databases of the SPIU generated from the LWH/RSSP3 data, the SPIU will gather some data from secondary sources and a project-specific baseline survey. Independent consultants will be required to conduct surveys required for project evaluation, including establishing the baseline at the start of the project, midterm technical audit and beneficiary assessment, and end-of-project evaluation. These assessments will also include a household food and nutrition survey in the same timelines, on start, midterm, and in year five of the project—when also a rapid (non-experimental) impact evaluation will be conducted.



60. The project will leverage ICT tools to establish an online, on-demand Project Management System³⁰ to support communication, collaboration, citizen feedback, and grievance redressal. It will use a mobile tablet-based platform to keep track of project operations, processes, progress, and lessons learned that will feed into the project's overall MIS and M&E function.

Strategy and Approach for Implementation Support

61. The key elements of the implementation support strategy include the following:
- (a) **Timely support.** The World Bank implementation support will begin immediately after project approval to help the client achieve effectiveness on time (this will involve formally establishing the PIUs and recruiting key staff and signing agreements with co-implementing partners/agencies),. In some of the program counties, the project could use existing systems and arrangements. However, the frequency of supervision missions may be maintained at the usual two missions per year. The first Implementation Support Mission (ISM) would be undertaken six months after effectiveness of the project. Nevertheless, provisions would be made to provide close monitoring especially during the first year of implementation and whenever implementation challenges require speedy interventions.
 - (b) **Continuously strengthening capacities.** While most of the capacities created (human and physical) during the implementation of the LWH and the RSSP3 are still intact, the technical team will require some capacity building in the area of value chain development and linking farmers to markets. In addition, trainings will be provided by the task team on World Bank operations, fiduciary, and safeguard aspects of the project to staff in the PIU with a focus on new/additional staff. Moreover, on top of carrying out their usual implementation support functions, World Bank fiduciary, safeguard, and M&E specialists will be available to provide close support and detailed hands-on guidance to their counterparts during the initial months following effectiveness.
 - (c) **Technical support.** The World Bank task teams will include technical specialists with expertise in a range of areas, drawn from within the institution and DPs such as the FAO/CP. Technical specialists unavailable in the World Bank Group and FAO/World Bank Cooperative Program (FAO/CP) pool would be recruited externally to support the implementation plan of the project. Members of the project task team would organize and undertake field visits to verify compliance with the policies and procedures spelled out in the Operational Manual, identify bottlenecks affecting implementation progress, and provide informed advice and recommendations to overcome the identified implementation challenges.
 - (d) **Capacity.** Strong implementation support will likely be needed while some staff of the PIU climb the learning curve. For this reason, the World Bank task teams would be prepared to provide additional implementation support if needed during the first year of implementation.

³⁰ Project MIS, FM system, VOIP communication, mobile-based data collection, citizen feedback, GRM, and so on.



- (e) **Fiduciary aspects.** The World Bank Fiduciary Specialist will provide hands-on procurement management and FM support to the SPIU and the RAB. The World Bank Procurement and FM Specialist will be providing the required support and guidance to avoid initial delays in submitting withdrawal applications, performing FM activities, processing procurement requests, etc.
- (f) **Safeguard compliance.** The task team will also have safeguard experts to help in capacity building and technical review of demanding safeguard cases. The Safeguards Specialists' role will be to monitor progress of the different environmental and social management systems that will be put in place, build up a database, develop indicators, and ensure that all the stakeholders are properly briefed and coordinating among themselves and provide expert advice as and when required.
- (g) **Monitoring, evaluation, and knowledge management.** The task team will have an M&E Specialist who will help the SPIU in setting up and maintaining the project's decentralized M&E system. The system will be designed to facilitate systematic collection of the required data, which are needed to track progress in meeting the PDO, generate financial information, and document compliance with safeguards policies. Information generated by the M&E system, complemented by information emerging at the time of the midterm review, will be used to adjust operational procedures and make the required mid-course corrections to the project implementation modalities, if deemed necessary.

62. The project's implementation will be supported by the task team based in the World Bank office in Kigali. Staff from other offices and consultants will provide additional support on a needs basis. The implementation support envisages two implementation support missions per year, but during the first year, the team will undertake three missions.

Implementation Support Plan and Resource Requirements

- 63. The task team will conduct two annual implementation support missions and field visits to the target provinces. In principle, the missions will be in March and September of every year. The Government will be required to prepare and share the formal documents for the mission's consideration at least two weeks before the mission takes place.
- 64. The World Bank's Procurement, FM, and Safeguards (both social and environment) Specialists will provide regular, timely implementation support, and TA to the counterpart teams during project implementation. These team members will also identify capacity building needs to strengthen procurement, FM, and safeguard capacity of the client.
 - **Procurement.** In addition to carrying out an annual post review of procurement that falls below the prior review thresholds, the Procurement Specialist will provide focused procurement support including: (a) reviewing procurement documents and providing timely feedback to the counterparts; (b) providing detailed advice and guidance on the application of the World Bank's Procurement Guidelines; and (c) monitoring procurement progress against the Procurement Plan.



- **Financial Management.** The FM Implementation Support Plan will be risk-based and will include review of the project’s FM system, including but not limited to, accounting, reporting, and internal controls. The FM team will also include reviews of quarterly reports; review of annual audited financial statements, and Management Letter as well as timely follow up of issues arising; and participation in project supervision missions as appropriate.

65. Table 1.7 and table 1.8 indicate the level of inputs that will be needed from the World Bank to provide appropriate and adequate implementation support for the proposed project during implementation.

Table 1.7. Implementation Support Plan

Time Year	Focus	Primary Skills Needed	Number of Missions	Estimated Budget (US\$)
Year 1	<ul style="list-style-type: none"> • Project launch • Initialization of project components • FM systems functioning effectively • Procurement practices following World Bank norms • ESMF in place 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environmental Specialist • Social Safeguards Specialist • Irrigation Specialists • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist • Communication Specialist 	3	250,000
Year 2	<ul style="list-style-type: none"> • Monitor implementation on project activities • FM, procurement, safeguards 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environmental Specialist • Social Safeguards Specialist • Irrigation Specialist • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist 	2	185,000
Year 3	<ul style="list-style-type: none"> • Monitor implementation of project activities • FM, procurement, safeguards • Midterm review 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environmental Specialist • Social Safeguards Specialist • Irrigation Specialists • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist/communication 	2	185,000



Time Year	Focus	Primary Skills Needed	Number of Missions	Estimated Budget (US\$)
Year 4	<ul style="list-style-type: none"> • Monitor implementation of project activities • FM, procurement, safeguards 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environmental Specialist • Social Safeguards Specialist • Irrigation Specialists • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist/communication 	2	185,000
Year 5	<ul style="list-style-type: none"> • Monitor implementation of project activities • FM, procurement, safeguards 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environment Specialist • Social Safeguards Specialist • Irrigation Specialist • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist/Communication 	2	185,000
Year 6	<ul style="list-style-type: none"> • Project withdrawal and closure • Implementation Completion and Results Report (ICR) 	<ul style="list-style-type: none"> • Team lead • FM, procurement • Environmental Specialist • Social Safeguards Specialist • Irrigation Specialists • Value Chain Specialist • Agricultural Economist • Gender Specialist • Nutrition Specialist • M&E Specialist • Communication Specialist • Economist • ICR writer 	2	185,000

**Table 1.8. Skills Mix Required**

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task Team Leader	50	13	Rwanda country office-based
Co-Task Team Leader	50	13	Rwanda country office-based
FM Specialist	17	8	Rwanda country office-based
Procurement Specialist	17	8	Rwanda country office-based
Environmental Specialist	17	8	Rwanda country office-based
Social Safeguard Specialist	17	8	Rwanda country office-based
Irrigation Specialist	17	8	Ethiopia country office
M&E Specialist	17	8	Washington, DC, other Country Offices or FAO CP
Value Chain Specialist	17	8	Washington, D.C., other Country Offices or consultant FAO CP
Agricultural Specialist	17	8	Washington, D.C., other Country Offices or consultant FAO CP
Nutrition Specialist	17	8	Washington, D.C., other Country Offices or consultant FAO CP
Gender Specialist	17	8	Washington, D.C., other Country Offices or consultant FAO CP
Communication Officer	17	8	Rwanda country office- based
Operation Analyst	17	8	Rwanda country office- based
Program Assistant	30	10	Rwanda country office-based



ANNEX 2: DETAILED PROJECT DESCRIPTION

COUNTRY: Rwanda

Sustainable Agricultural Intensification and Food Security Project

Project Overview

1. The PDO is to increase agricultural productivity, market access, and food security of targeted beneficiaries in the project areas.
2. The project will focus on consolidating and expanding the results obtained under the World Bank-funded projects: the LWH and RSSP3, and other selected MINAGRI-developed schemes. The project will continue the capacity-building activities of the farmers' organizations (WUAs, SHGs, cooperatives) established under these projects, to support them to further increase their productivity, strengthen their organizational and management capabilities, and help them link better to the markets to create additional livelihood opportunities. The project will also further scaleup efforts on NSA and climate resilient agriculture from the previous projects.
3. LWH and RSSP have registered progress in increasing productivity and profitability of hillside agriculture across the country, both in irrigated and non-irrigated marshlands and hillsides. The project created frameworks that link farmers to commodity buyers and private sector investors thus facilitating farmers' access to loans and improved income. The two projects benefited and transformed the livelihoods of more than 685,000 people from over 150,000 households. Some of the key achievements include:
 - Increased productivity in the target irrigated hillside command area for more than ten times from a baseline of US\$492/ha to US\$5,639/ha and an increase of more than four times in targeted irrigated marshlands where farmers grow mostly rice, from a baseline of US\$662 to US\$2,629 per hectare.
 - Moreover, productivity in targeted hillside catchment areas under rainfed production systems, as a consequence of improved land husbandry technologies and adoption of other improved farm methods, have similarly experienced an increase in yield, with productivity increasing up to six-fold, for staple crops including mainly maize, beans and Irish potatoes.
 - The increased productivity has also led to increased marketing. The share of commercialized commodities from targeted areas has therefore more than doubled to over 70 percent in 2016 from the baseline of 35 percent. The marketed share of rice has increased to over 90percent from the baseline of 79 percent.
4. Despite the above achievements, some outstanding challenges and unreached potential can still be observed in LWH and RSSP targeted areas, and SAIP will build on those and achieve even higher results and ensure their sustainability beyond its implementation period. Additional support to strengthen agricultural value chains with a significant involvement of youth and women, placing



emphasis on post-harvest handling, processing and marketing systems as well as linkages with private sector and rural finance institutions would be the natural focus of a follow-on operation after the general increased productivity observed in the areas targeted by both LWH and RSSP. SAIP will invest in ensuring the sustainability of these achievements and introduce a gradual exit strategy for the existing projects.

5. **Project areas.** The project will be implemented in selected sites from the existing LWH and RSSP3 using the following criteria: (a) LWH and RSSP sites; (b) food security and nutrition; (c) market potential and access; (d) cooperative/groups readiness; (e) market access; (f) agronomic suitability; (g) potential for productivity gains; (h) LWH-irrigated command areas; (i) likelihood that the combination of three project components can have an impact; and (j) overlap with the World Bank-funded Stunting Prevention and Reduction Project. Using these criteria, eight sites where the project will be implemented are Muyanza, Rwamagana-34, Karongi-12, Karongi-13, Kayonza-4, Nyanza-23, Gatsibo-8, and Nyabihu developed under the LWH and RSSP3. These selected sites are in eight districts (Rulindo, Rwamagana, Karongi, Rutsiro, Kayonza, Nyanza, Gatsibo, and Nyabihu) covering all the four provinces. The list of sites may expand during implementation as needed by the GoR and approved by the World Bank. The details of the selected sites are in table (2.1) and the project areas are shown in Annex 5.

Table 2.1. Details of the Selected Project Sites

No	Site Name	Districts	#Households	# Cooperatives	# WUAs
1	Muyanza	Rulindo	12,071	6	1
2	Rwamagana -34	Rwamagana	5,606	2	1
3	Karongi 12	Karongi	2,074	2	1
4	Karongi 13	Rutsiro	1,381	1	1
5	Kayonza 4	Kayonza	3,319	1	1
6	Nyanza 23	Nyanza	4,700	3	1
7	Gatsibo 8	Gatsibo	1,804	1	1
8	Nyabihu	Nyabihu	7,651	2	n.a.
Total		8	38,606	18	7

6. **Project beneficiaries.** The project will target men, women, and youth in the farm households in existing irrigation schemes and their catchment areas. About 38,000 farm households will directly benefit from the project and 200,000 family members are the beneficiaries of the project, out of whom 88,000 are women. The farm households are organized into 1,724 SHGs of 20–30 members each established under the LWH and RSSP3. These SHGs are mobilized into 121 zones and 18 cooperatives. Emphasis will be placed on ensuring women and youth participation and leadership in the SHGs and cooperatives. Apart from farm households, the project will also benefit other value chain actors including entrepreneurs and small and micro agribusinesses, working in select value chains.
7. **The project will focus on selected value chains, to better direct its efforts and to consolidate the results from the LWH and RSSP3, while ensuring sustainable impact through market-driven approaches.** The project will focus on the following value chains: (a) vegetables and fruits for the



domestic, regional, and international markets; (b) maize for domestic and regional markets; (c) Irish potato for domestic and regional markets; and (d) beans for domestic markets. The selection of the value chains was based on the following criteria: (a) market and growth potential (unmet demand, potential for productivity gains, and value addition); (b) relevance and development impact (nutrition improvement, opportunities for on- and off-farm employment, and income-generation potential); and (c) considering strategic factors and feasibility for change (national priority crops and potential impact of the project).

8. **Youth and ICT mainstreaming will be at the core of the project implementation.** The GoR has developed a National ICT for Rwanda Agriculture (ICT4RAg) Strategy (2016–2020). The overall objective of ICT4RAg is to achieve agricultural productivity increase through use of ICT. It proposes the use of ICT to address some of the structural challenges faced by farmers. In line with the ICT4RAg strategy, the project will actively promote the use of ICT applications to improve and expand farmers' access to knowledge, agricultural information, and markets. Special emphasis will be given to identify and support initiatives that spur job creation for the youth in the agricultural sector and related services.
9. **Matching grants will be used by the project to finance facilities and equipment.** To ensure sustainability of project investment and ownership of the beneficiaries, the project support to farmers to access facilities and equipment in different project components will be done through matching grants based on eligible business plans. As farmer groups have different level of capacity and are not all able to effectively manage funds, the matching grants will be done through grant agreements where the SPIU will manage the procurement and payments to contractors. The minimum contribution by farmers will be 10 percent in cash or in-kind.
10. **Nutrition-sensitive value chains.** Measures can be taken to promote investment in value chains which can have a higher impact on nutrition outcomes at the consumers' level. They are part of the broader food system and can significantly influence the composition, safety, and quality of consumers' diet. The following criteria (among others) can be considered in the SAIP to enhance the nutritional impact of commercial value chains (Subcomponent 3.1): (a) choice of varieties with a high nutrition content, including bio-fortified varieties both at the community level (Subcomponent 1.3.) as well as for commercial purposes (Subcomponent 1.2.); (b) choice of processing methods that enhance shelf-life with minimal nutrient loss; and (c) clear labeling of production to guide consumers' selection.
11. **The project has four components:** Component 1 - Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement; Component 2 - Irrigation and Water Use Efficiency; Component 3 - Market Linkages and Value Addition Investments Support; and Component 4 - Project Management and Technical Assistance.



Component 1: Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement (US\$7.7 million)

12. This component will strengthen selected farmer organizations for improved agricultural productivity and healthier household nutrition. The project will proactively engage youth and women. Specifically, the project will work closely with the groups from young graduates who have gained exposure to modern agriculture practices in other countries with the support of the Government³¹, to support farmers to shift from subsistence agriculture to commercial agriculture. The component has three subcomponents.
13. In this component, through the FAO TA farmer organizations will be strengthened to improve their skills to help farmers build knowledge and skills to make their farm operations more commercially profitable. This entails capacity building on organizational management, business planning, and making market-led production decisions. Specific emphasis will be given to building women and youth leadership skills. An FFS approach will be adopted, working within the framework of the MINAGRI extension system (*Twigire Muhinzi*). Capacity development will target cooperatives but it can be extended to include individual farmers and agribusiness SMEs which can demonstrate externalities. The FAO will provide the technical know-how for the FFS/FAB, with the project covering the ToT training costs and rollout to farmer cooperatives (including WUAs). The relevant technical guidelines and ToT manuals will be contextualized for Rwanda and will be available in Kinyarwanda.

Subcomponent 1.1: Strengthening farmer organizations

14. LWH and RSSP3 supported the organization of farmers into SHGs and cooperatives, with more than 6000 SHGs, 70 cooperatives and 40 WUAs established by the two projects. The projects provided basic capacity building through consultation meetings, awareness sessions, training modules, workshops and exposure visits. However, these groups still need to strong trainings to ensure their sustainability.
15. This subcomponent will build on and further strengthen existing farmer organizations formed under the World Bank-funded LWH and RSSP3 to help them transform into dynamic, successful, and sustainable farming businesses with productive linkages and access to agricultural markets.
16. The project will provide demand-driven organizational development, and entrepreneurial training to farmer groups. There will be a special emphasis on business planning, CSA practices and technologies, inventory management and stock management, understanding input cost and pricing, quality control, financial planning, business audits, accounting and bookkeeping, market analysis, buying and selling in the market, and dealing with middlemen, traders, retailers, and wholesalers.

³¹ There is a network of young graduates who are being sent by GOR to Israel for a year training and have an MoU with RAB to support in transfer of the technologies.



17. Farmer organizations created by the LWH and RSSP3 are at different levels of maturity. Some newly created organizations still need support to strengthen their physical capital and increase their competitiveness, while the more mature cooperatives that have already benefited from previous investments in post-harvest infrastructure will be supported to plan necessary investments with their own capital. Because of these varying levels of organizational maturity, farmers organizations would benefit from exchange visits and experience and knowledge-sharing events across groups within and outside the country. The project will also seek opportunities to involve the more mature organizations in support of the younger organizations.
18. The project will also enhance capacity and skills of public sector extension agents for providing support to farmers to transform their farms into successful market-leading farming businesses. Local extension experts (youth and women) identified by farmer groups will be trained to provide fee-based extension services at the local level. The project will also introduce ICT-enabled learning and knowledge exchange to strengthen farmer organizations and extension services.

Subcomponent 1.2: Agricultural productivity enhancements

19. Key to achieving agriculture transformation is raising farm productivity levels with due consideration to CSA. Under the LWH and RSSP3, improved agronomic practices resulted in significant yield increases, that is, Irish potato yields increased from 3 tons per ha to 15 tons per ha; maize and beans from 0.8 tons per ha to 4 tons per ha and from 0.6 tons per ha to 3 tons per ha, respectively. These achievements will be scaled up and consolidated by this project in the selected sites. The subcomponent will support interventions aimed at sustaining and further increasing productivity and profitability of selected crops.
20. The project will carry out the analysis of five selected value chains on a need basis for a deeper understanding of productivity constraints, potential, and opportunities so that the limitations and barriers could be addressed, and the untapped potential could be harnessed to the fullest with due respect to climate-smart practices. The interventions will include the promotion of improved climate-sensitive agricultural inputs, upgraded farm management practices, farm mechanization and technology, and so on.
21. Under this component, the project will fund training aimed at: (a) strengthening the knowledge of farmers related to improved agricultural practices, technology, and inputs use; (b) strengthening the functional literacy and numeracy of farmers; (c) improving soil fertility and integrated nutrient management; (d) promoting conservation agriculture; and (e) setting technology demonstration trails.

Subcomponent 1.3: Improving nutrition outcomes at household level

22. Food and nutrition security remains one of Rwanda's greatest development challenges despite significant improvements over the last decade—prevalence of stunting (chronic malnutrition) continues to be above the World Health Organization threshold and a major public health concern



with almost 38 percent of children under five (600,000) who are chronically malnourished (stunted). In addition, overall 37 percent of children suffers from some degree of anemia. In the critical age range 6–11 months the prevalence of anemia peaks at 66 percent.

23. Improving nutrition in Rwanda has received strong political support, translated into the creation of the National Early Childhood Development Program that is under the leadership of the Ministry of Gender and Family Promotion. This program is mandated to coordinate investments across seven sectors to reduce stunting in children.
24. In alignment with this cross-sectoral approach adopted by the GoR and building on lessons learned from the implementation of the LWH, this project aims at leveraging the impact of agriculture investments to improve nutrition of the target population. Areas of emphasis will include increased nutrition education actions (including cooking demonstration on newly introduced nutrient-rich food items) and better variety of household food production. This subcomponent aims to improve nutritional outcomes at the household level in the project areas by increasing access to healthy and diversified food, and promoting good practices for improving nutrition.
25. A healthy and diversified diet will be promoted through: (a) increasing the availability of safe and diverse vegetables and fruits locally, including bio-fortified foods such as iron-fortified beans and orange-fleshed sweet potatoes with Vitamin A through the promotion and upgrading of existing kitchen gardens and village gardens; (b) ensuring availability of animal proteins for household consumption through backyard poultry; (c) improving the year-round availability of nutrient-rich foods at the household level by encouraging the processing and conservation of locally produced foods (through special groups); (d) increasing the availability of safe, affordable, and nutrient-rich food items through the selection and promotion of nutrition-sensitive value chains.
26. **Kitchen gardens and bio-fortified foods.** The project will support farmers to increase households' availability of vegetables and fruits and their consumption through kitchen gardens. Training activities on good agricultural and hygiene practices linked to healthy and diverse food consumption will be delivered using existing kitchen garden demonstration plots (50 in each site) at the community level and FFSs sites. Nutritionally vulnerable households (approximately estimated at 20 percent of the total beneficiaries), will receive seeds for starting kitchen gardens at their households. Selected communities (or special groups) will receive seeds of iron-fortified beans and cuttings of orange flesh sweet potatoes and training on how to grow and prepare them for household consumption. Harvest Plus through the RAB could support the project in the implementation of this activity. The project will benefit and integrate ongoing activities under the national horticulture policy and strategic implementation plan to improve kitchen gardening. Some of these activities are: (a) establish village nurseries for fruit trees; (b) provide training to households vulnerable to food insecurity through farmer field schools; (c) provide TA in food preservation tailored to meet the needs of the most vulnerable; and (d) establish and improve existing gardens at pre-primary, primary, secondary, and vocational training schools.



27. **Backyard poultry rearing.** To increase availability and consumption of animal source foods at the household level, nutritionally vulnerable households will receive a poultry kit (chickens and vaccination) to promote consumption of eggs and meat. The selection of poultry breeds will serve the purpose of improving nutrition at the household level. The project has identified two locally adapted and low-maintenance breeds, *Sasso* and *Kuroiler*, that seem to be easily available on the Rwanda market. The project will distribute poultry kits (nine hens and one rooster per household and also vaccination). Existing private service providers of young entrepreneurs can support the project for the distribution and provision of TA. Prior to and as a prerequisite of receiving the poultry kit, households will receive trainings on poultry rearing, and they will be required to build their own hen-houses/shelters. Training will be organized through FFs on different aspects of animal health as well as, but not exclusively, hygiene practices related to chicken rearing and nutrition benefits of animal source food consumption. To reduce child exposure to animal feces, which may lead to increased risk of diseases, training modules will have to address critical aspects of human-animal cohabitation, such as: (a) reduce human-animal cohabitation by separating chickens from human living quarters to reduce children exposure to animal feces contamination in domestic environments; (b) promotion of animal feces removal from the domestic environment and proper disposal through provision on metal scoops and sani-scoops for animal feces as well as potties for young children feces; (c) promotion of handwashing and domestic environment hygiene; and (d) fencing around public sandboxes to limit contact between livestock and children. As the FFs in Rwanda do not currently have learning cycles on poultry rearing—relevant material will be developed (or adapted) for this use.
28. **Conservation and transformation and of locally produced foods.** One or two special groups of young women and men at each project site will be identified and trained in transformation and conservation of locally produced foods (vegetables and fruits). Fruits and vegetables that are consumed domestically in fresh form are not available throughout the year, making regular consumption of highly nutritious foods a challenge. The aim of this action is to ensure availability of nutrient-rich foods, beyond the two cropping seasons, when food production becomes scarce. The project will provide training using the FFs and upon completion of the training, setup one or two small-equipped transformation units at each site.
29. **Promoting good practices for improved nutrition.** The nutrition education interventions will be based on: (a) the identification of behaviors related to food through a participatory analysis of the situation (focusing on the understanding of the contextual determinants of behaviors and practices, barriers, and opportunities for promoting behavior change, analysis, and identification of influencers); (b) the design of an evidence-based model for nutrition education; (c) its implementation; and (d) evaluation. The main components of the intervention (for example, training of front-line educators, community-based sessions, household coaching, school-based projects, media campaigns, and so on) and duration of the intervention, will be better-defined from the situation analysis described earlier. Different mechanisms can be foreseen for the delivery of the nutrition education sessions: (a) over the course of the project, progressive mothers can be identified and involved in activities of awareness-raising within groups of peers



(other mothers); (b) the SAIP can benefit from the know-how of the LWH and fully integrate nutrition education activities into FFSs curricula; (c) periodic campaigns for the SBCC will be organized and the use of existing ICT tools encouraged to maximize their impact.

30. **Targeting of households receiving training and seeds for kitchen gardens as well as the poultry kit** will be through the special groups at each project site. Data from the health centers/health posts in the project sites will help identify those households with children diagnosed with undernutrition (particularly stunting). Households not participating in the special groups, but who have children (0–5) affected by undernutrition will also be included in the target group. Criteria for selection are detailed in table 2.2.

Table 2.2. Criteria for Selection for kitchen gardens and poultry kits

1	Households with undernourished children (0–5 years)
2	Households with pregnant, lactating women, and households with children under 2 years
3	Female-headed households participating in project activities
3	Households of Ubudehe Category 1

31. Nutrition education activities as well as broader BCC will be integrated into all agriculture training delivered to cooperatives and FFSs. Therefore, they reach all households’ beneficiaries of project activities.

32. **Coordination and collaboration with the Rwanda Stunting Prevention and Reduction Project.** The SAIP and Stunting Prevention and Reduction Project will be implemented in three common districts: Nyabihu and Karongi Districts in Western Province, and Kayonza District in Eastern Province; convergence of actions will be promoted in the sites where they both intervene. Proposed joint and mutually benefitting activities include: (a) joint situation analysis for food security and nutrition and for the identification of nutrient-rich foods based on the agro-ecological potential of the three sites; (b) provision of TA for kitchen gardens and backyard poultry rearing to the Stunting Prevention and Reduction Project beneficiaries; (c) identification of opportunities for institutional procurement of locally sourced nutritious foods; (d) knowledge-and information-sharing of good practices and advocacy for desirable behavioral change (for example, cooking demonstration, new variety of bio-fortified and/or nutrient-dense food items as well as labor/energy-saving technology, especially for women); and (e) harmonization of nutrition education messages and tools for community health workers, agriculture extension service providers, and farmer promoters.

33. TA from the FAO related to nutrition improvement at the household level will be provided through FAO for the improvement and scaling-up of improved kitchen gardens models, introducing backyard poultry, and adopting new varieties of nutrient-rich bio-fortified crops, promoting new ways of preserving and processing nutrition dense food. The FAO will cover the ToTs training costs, and the project’s rollout of training for farmers and the related investment. Building on the ongoing efforts, the TA will support the practical application of the FBDGs when they are available,



using an SBCC approach, promoting nutrition education and creating menus based on the locally available seasonal food items. The TA will also support the monitoring of nutrition outcomes at the household level.

Component 2: Irrigation and Water Use Efficiency (US\$7.2 million)

34. Rwanda has 589,711 ha of irrigation potential out of which 47 percent is on marshlands and 63 percent is on hillsides. About 7.5 percent of this potential has been successfully developed to-date, covering an area of 48,508 ha. More than a third of these irrigation schemes were developed under RSSP3 (in the marshlands) and the LWH (on hillside). To promote the development of affordable and sustainable irrigation technologies, the GoR introduced the SSIT Project for improved productivity and commercial farming. There is great potential and demand for investments in small-scale irrigation systems to complement the large-scale irrigation investments already undertaken.
35. This component is expected to promote technology and best practice for increased availability and efficient use of water for irrigation to increase crop productivity and increase farmers resilience to climate volatility. This component has two subcomponents.
36. The FAO will provide TA in the implementation of this component. TA interventions will build on the ongoing work in assessing the feasibility and suitability of the small-scale irrigation kits for different agro-ecological sites and by providing capacity building on using the technologies and operation and maintenance. The capacity development will include the transfer of know-how on land husbandry under irrigated production using the FFS approach. The project will cover the costs of the ToT and the rollout of training.

Subcomponent 2.1: Improved efficiency and expansion of existing irrigation schemes

37. Hillside irrigation constructed by the LWH are designed with an irrigation efficiency ranging from 60 percent to 65 percent. By maximizing the irrigation efficiency using other existing techniques of irrigation like drip and sprinkler irrigation, which are mostly used for horticulture crops, irrigation efficiency of up to 75 percent or more can be achieved. These sites were designed in such a way that irrigation can be done without additional equipment using unlined open irrigation ditches on the top of terraces, furrows, and big hose pipes. Farmers have successfully adopted these approaches to irrigate different types of crops. However, because the system allows adopting other irrigation technology, greater irrigation efficiency can be achieved by adding sprinkler, drip, gated-pipe systems, or hose-furrows.
38. This project will build on the existing infrastructure by providing matching grants for small-scale irrigation equipment to the farmers such as sprinkles, drip, gated-pipes, or hose-furrow technologies and creating awareness on how to use that equipment effectively and efficiently. Reduction in the water use because of more efficient irrigation will allow expansion and improvements to the existing schemes by 1,500 ha.



39. To promote the development of affordable and sustainable irrigation technologies, the GoR introduced the subsidized farmers-owned SSIT for improved productivity and commercial farming. Through the use of matching grants, the project will contribute to this program by providing to selected farmers up to a maximum of 50 percent subsidy to access small scale irrigation along with providing a support package (maintenance and business plan development) to farmers to access small-scale irrigation equipment. It is estimated that through that support, an additional 1,000 ha of land using small-scale infrastructures and techniques will be irrigated.
40. The support to access small-scale irrigation equipment through the subsidy support will target primarily farmers in existing hillside sites without irrigation schemes. However, small-scale irrigation activity could also be implemented outside the selected sites. In the latter case, the support will target selected value chain (especially horticulture) and support to youth and/or women groups.
41. The eligibility criteria for the project support based on the GoR guidelines to assess farmers proposals interested in participating in the program are (a) availability of reliable water source; (b) water source not excluded by the national environmental regulations (that is, not affecting transboundary waters or protected areas); (c) consolidated land area of 0.5 ha to 5 ha of slopes less than 60 percent; (d) land is not within the prescribed environmental buffer zone (20 m from river and 50 m from the lake); (e) total pumping requirements not to exceed 5 bars pressure requirements; and (f) quoted equipment is per the GoR standard schedule and fits the provided layout. The project staff will review the proposals based on these criteria.
42. To avoid a situation where the service providers will over-quote or situations where the GoR verification irrigation engineers will be compromised to validate an inflated quotation, there is an internal audit and inspection team that cross-checks the approved quotations.

Subcomponent 2.2: Strengthening irrigation capacity

43. The introduction of more efficient methods of irrigation will also require training and TA to farmers during installation and operation. This will go along with the social mobilization and the creation of awareness resulting from showing of the benefits of different irrigation systems. This subcomponent will fund on-farm training in the handling, assembling, and proper use of different irrigation equipment to improve adaptation rates and improve irrigation practices by farmers. Capacity building of the WUAs and its to farmer members will continue to allow sustainable operation, maintenance, and management of these irrigation schemes.
44. This subcomponent will also finance targeted capacity building of WUAs to strengthen their capacity to make them effective organizations capable of managing the irrigation systems they are assigned to manage. Capacity building of the WUAs and the farmer members will allow for the sustainable operation, maintenance, and management of these irrigation schemes. This will include training on irrigation water management to enable them to collect and use water fees more effectively for the efficient operation and maintenance of targeted irrigated schemes. In



addition, they will receive training to strengthen their management skills such as planning, organizational management, infrastructure O&M, O&M costing and water pricing, financial planning, accounting, and bookkeeping.

Component 3: Market Linkages and Value Addition Investment Support (US\$7.3 million)

45. The component will enhance market linkages and value addition by strengthening the capacity of farmers' organizations and other value chain actors and improving their access to finance. The project will consolidate and scale-up the efforts undertaken by the LWH and RSSP3, strengthening the development of sustainable market linkages and value addition, through increased performance and commercialization of selected value chains.
46. This component, will work with the farmer organizations, to improve their market orientation; and connecting farmers to markets, channeling the productivity gains made in Components 1 and 2.

Subcomponent 3.1: Capacity building to foster market linkages

47. This subcomponent will strengthen the capacity of farmer organizations and value chain actors to connect to both domestic, regional, and in some cases, international markets, to be able to more effectively respond to market requirements and needs. It will build on activities initiated under LWH and RSSP3, on strengthening the market linkages and value addition potential for selected value chains. This subcomponent will also support farmers access to finance to meet their growing business needs.
48. The project will first provide capacity building in post-harvest handling in priority value chains to minimize losses and reduce perishability. Secondly, the project will support farmer groups in capturing value, by promoting quality enhancing and preprocessing activities, such as cleaning, grading, sorting, and packaging.
49. Following the abovementioned preprocessing activities, the project will support selected cooperatives, farmers, and agri-processors to obtain quality certification and to ease access to domestic and export markets. These will include targeted efforts to improve food safety, such as the elimination of aflatoxin contamination in maize and help agri-processors supported by the project in obtaining the Quality Standard Mark (S-Mark) for processed goods, from the RSB and other quality standards to allow them to access premium markets, both local or international. The project will also provide matching grants for packaging and processing equipment (under Subcomponent 3.2) and technology, including preservation, to reduce food loss and preserve nutrition value of produces. These interventions build on Component 1, skills development and business training, of youth and women in cooperatives and/or individual entrepreneurs, already managing or wanting to start up a business.
50. Limited access to agricultural finance products constrains subsistence farmers' ability to take measured risks to increase productivity and/or profitability. To support farmers access to finance,



the project will build on the activities and interventions of the LWH and focus on the identification of financial services and products required by farmer organizations, and youth and women groups. The project will continue to support the financial literacy of farmers, provision of financial skills to cooperatives, for example, business planning and FM, enhancement of the culture of savings, and use of credit and better portfolio management of selected SACCOs.

51. The agricultural sector has specific financing needs, which are different from most of the available commercial banking products that target urban real estate markets and the formal sector. Agricultural financing needs follow a seasonal pattern with a peak at the time of acquiring inputs and at the post-harvest stage, so the required amortization period is shorter than the real estate and longer than most microfinance products. Products matching these needs are still embryonic, with collateral requirements that often go beyond the loan-size and interest rates as high as 21 percent. The project will fund workshops and training for financial institutions and intermediaries to enhance their understanding of the agriculture sector, build awareness to the market/business potential (that is, business case for investing/supporting the sector), and utilization of the SACCOs for agent banking. The project will reach out to and collaborate with existing Government ministries/agencies that are tasked with supporting the capacity building of SACCOs and MFIs to develop financial products that meet the needs of farmers, de-risk their investments, and enhance their access to timely and appropriate financial services.
52. The project will support farmer organizations, entrepreneurs, and micro and small enterprises in developing business development plans. These business plans will form the basis for the grant agreements and could also be utilized for beneficiaries to access finance through MFIs or banks, especially for more mature farmers organizations. The project will link with the KCB Rwanda, recipient of the GAFSP private sector windows to obtain lessons learnt to facilitate farmers' access to finance.
53. Complementing these, the project staff, together with farmers groups, will facilitate dialogue between farmers groups and buyers/processors, to establish market linkages to intermediary and end-markets. This will be done through organization of sellers' forum and facilitation of contracting modalities, between farmers/farmers organizations, buyers/processors, and other relevant intermediaries. Specifically, the project will link with AIF, also recipient of a GAFPS private sector windows by providing technical support and other embedded services to improve productivity and quality of maize producers' cooperatives which will supply to the AIF. The collaboration will be promoted first through MoUs and later other contracting modalities.

Subcomponent 3.2: Investment support to market linkages

54. This subcomponent is expected to support the provision of post-harvest infrastructure and equipment for improved market linkages. Through the value chain approach, the project will bundle its interventions along the value chains ensuring that market facilities and equipment are demand-driven and market-oriented.



55. To complement the interventions in Subcomponent 3.1, the project will finance through matching grant agreements post-harvest, marketing, and processing facilities to the benefit of those cooperatives, which are not yet mature enough to be able to fully self-finance required facilities' needs while the project will support more mature organization to plan necessary investments with their own capital. The project will also provide capacity building for O&M activities and management of those facilities.
56. The project will finance the construction of these drying shelters, drying grounds, collection centers, and storage and cold storage facilities, through matching grants, and wherever possible, will be co-financed through private capital, based on agreed joint business plans. In that case, the level of private capital co-financing will be determined in the joint business plans. Financing these facilities will be done based on a needs and suitability assessments on necessary facilities, and feasibility studies will inform the location and designs of these facilities. Rehabilitation to allow multiple use of existing facilities will be prioritized.
57. With regard to post-harvest handling and quality equipment, the project will provide matching grants to finance equipment, such as threshers, weighing balances, dryers, including solar bubble dryers, moisture meters, hermetic bags, aflatoxin kits, and relevant processing equipment.
58. The project will train farmer groups to manage these facilities and equipment to ensure their profitability and sustainability. In addition, the project will facilitate the quality control and certification of the above infrastructure and equipment according to relevant standards and requirements.

Component 4: Project Management and Technical Assistance (US\$ 4.1 million)

Subcomponent 4.1: Project management (US \$ 2.6 million)

59. This component will support all aspects of project management including: (a) management and coordination; (b) M&E; (c) communication and knowledge sharing; (d) TA; and (e) a GRS. Specifically, the project will finance the operating costs for the project implementation at the national and district levels led by the SPIU, and the establishment of the project M&E system and communication and knowledge management system.
60. **Project management.** The project will cover the costs related to project management support, including TA and incremental support for the SPIU to ensure coordination, adequate FM and procurement, as well as environmental and social safeguard compliance, audits, and reporting.
61. **Project M&E, communication and knowledge management.** The project will fund costs related to (a) the establishment of a robust M&E and reporting system, including baseline surveys, a midterm assessment, and end of project evaluation; (b) establishment a clear and effective mechanism for grievance redress, including a system for receiving, recording, and addressing complaints and using them for course corrections as required; (c) strengthening project communication and knowledge management as well as document, collate, and disseminate



project experiences and learning; and (d) support reviews, studies, and policy analysis that would contribute to the country's agriculture, food security, and nutrition policies and plans.

Subcomponent 4.2: Technical assistance (US \$ 1.5 million)

62. The GoR has identified the FAO as the main provider of TA to the project with an allocation of US\$1.5 million. This component will fund TA from the FAO to improve project performance, to incorporate best practices and document lessons learned. Three specific technical areas (a) support to the further development of the extension services, (b) nutrition, and (c) implementation of the farmer-led small-scale irrigation technologies have been identified for the FAO TA based on their comparative advantage and experience in Rwanda. The TA activities are designed to strengthen the capacities of the targeted beneficiaries of the project and to enhance the effectiveness of the project interventions. The TA will emphasize knowledge management and support coordination among stakeholders.
63. Farmer organizations will be strengthened to improve their FAB skills to help farmers build knowledge and skills to make their farm operations more profitable. This entails support to organizational management, business planning, and making market-led production decisions. Specific emphasis will be given to building women and youth leadership skills. An FFS approach will be adopted, working within the framework of MINAGRI extension system (*Twigire Muhinzi*). Capacity development will target cooperatives, but can be extended to include individual farmers and agribusiness SMEs which can demonstrate externalities. The FAO will provide the technical know-how for the FFS/FAB and ToT costs, with the project covering the rollout to farmer cooperatives (including WUAs). The relevant technical guidelines and the ToT manuals will be contextualized for Rwanda and will be available in Kinyarwanda.
64. TA from the FAO will also support the design of the value chain analyses, which will be conducted by the project. This analysis will include market exploration, contract farming models (including PPPs), and strengthening of contract negotiations. Building farmers' business and investment planning skills, through the practical application of Rural Invest,³² under Subcomponents 1.1 and 3.3, will also ease the implementation of the matching grants modalities of physical assets and small-scale irrigation as proposed by the project.
65. TA implementation of the interventions related to nutrition improvement at the household level will be done through the FAO providing the technical know-how for the improvement and scaling up of improved kitchen gardens models, introducing backyard poultry, and adopting new varieties of nutrient-rich bio-fortified crops, and promoting new ways of preserving and processing nutrition dense food. The TA will cover the ToT training costs, while the project will cover the rollout of training for farmers. Building on the ongoing efforts, the TA will support the practical application of the FBDGs when they are available, using an SBCC approach, promoting nutrition

³² FAO methodology and toolkit for the preparation of sustainable agricultural and rural investment projects and business plans.



education, and creating menus based on the locally available seasonal food items. Project management support will be provided for implementation and monitoring of nutrition outcomes at the household level.

66. The implementation of the farmer-led small-scale irrigation component will be supported through TA interventions that will build on the ongoing work in assessing the feasibility and suitability of the small-scale irrigation kits for different agri-ecological sites and by providing capacity building on using the technologies and operation and maintenance. The capacity development will include the transfer of know-how on land husbandry under irrigated production using the FFS approach. The TA will cover the ToT training costs, while the project will cover the rollout of training.



Project cost and Financing, including beneficiaries and GoR contributions

Project Components / Sub-components	Total Project Cost (US \$)	Beneficiary contributions (US \$)	GAFSP (US \$)	GAFSP (%)	GOR (US \$)
Component 1: Institutional Strengthening, Agriculture Productivity Enhancement, and Nutrition Improvement	8,150,355	468,500	7,681,855	26.2	
1.1. Strengthening Farmers Organizations	2,010,955		2,010,955	7.7	
1.2. Agricultural Productivity Enhancement	4,978,200	468,500	4,509,700	17.1	
1.3. Improving nutrition outcomes at household level	1,161,200		1,161,200	4.4	
Component 2: Irrigation and water use efficiency	8,558,500	1,156,000	7,185,500	27.3	221,400
2.1. Improved efficiency and expansion of existing irrigation schemes	7,660,500	1,156,000	6,283,100	24	221,400
2.2. Strengthening irrigation capacity	902,400		902,400	3.4	
Component 3: Market Linkages and Value Addition Investment Support	8,345,718	1,044,253	7,301,465	27.8	
3.1. Capacity building to foster market linkages	3,137,660	171,900	2,633,600	10.1	332,160
3.2. Investment support to market linkages	5,872,379	872,353	4,667,865	17.7	332,160
Component 4: Project Management and technical assistance	7,577,580		4,131,180	15.7	3,446,400
4.1 Project Management	6,097,580		2,631,180	10	3,446,400
4.2. Technical Assistance	1,500,000		1,500,000	5.7	
Total cost	32,968,753	2,668,753	26,300,000		4,000,000



ANNEX 3: ECONOMIC AND FINANCIAL ANALYSIS

COUNTRY : Rwanda

Sustainable Agricultural Intensification and Food Security Project

1. This annex presents the economic and financial analysis (EFA) for the Sustainable Agricultural Intensification and Food Security Project (SAIP) that aims to consolidate and expand the results of the Land Husbandry, Water Harvesting and Hillside Project (LWH) and the Third Rwanda Sector Support Project (RSSP3), and other selected schemes. The analysis here highlights the benefits associated with investing along value-chains. The EFA also benefits from previous ex-ante project analysis of agriculture projects in Africa and follows the World Bank guidelines.
2. The World Bank approach to EFA seeks to address three questions, in all projects. First, what is the project's development impact? This is an underlying question to cost-benefit analysis, which considers expected stream of project benefits and costs, and establishes an explicit causal framework linking project activities to targeted outcomes. Second, is public sector provision or financing the appropriate vehicle? It probes the rationale for public financing and/or implementation, and explicitly considers alternative modes of financing, such as cascade. Third, what is the World Bank's value added? It examines the Bank's contribution to the project outcomes, and seeks to determine the benefit from Bank's involvement, or whether the proposed project maximizes the development impact.

Project benefits

3. The proposed project will benefit farmers and stakeholders through the following development impacts: (i) strengthened and sustainable farmers' organizations and supporting rural institutions; (ii) sustainable and more resilient production systems; (iii) well-functioning value chains through vertical integration of cooperatives and unions in the value chains; increased shares or produce will be marketed commercially.
4. The proposed project will target men, women and youth in rural households in existing and newly developed irrigation schemes and their catchment areas; 38,600 farmer households will directly benefit from the project while 200,000 family members of the targeted households will be indirect beneficiaries.
5. **Women empowerment, youth employment and improved nutrition.** Anticipated benefits are likely to continue beyond the immediate beneficiary target numbers. It is realistic to expect additional spill over effects in education and health related areas due to improved diets, improved health and extended lifetime earning capacity with fewer days off work.

Methodology

6. When assessing the benefits of investments, a causal link between upstream and downstream activities is made along the value-chain. In this sense, the value-chain represents the ultimate conduit for directing investments within a food systems approach, from input suppliers, farmers



and producer organizations to post-harvest handlers and agribusiness processors. To capture the benefits of transformational change by the project interventions, crop and farm budgets and micro-processor/enterprise models are used to aggregate data up to the project level, using an input-output model for comparison against a base scenario without project intervention. The net incremental benefits are used to calculate the viability of the project using indicators such as the internal rate of return (IRR), benefit-cost ratio (B/C) and net present value (NPV). The timeframe used in the financial analysis is 20 years, with a discount rate of 12 percent, which reflects an average commercial lending rate. The economic analysis evaluates the project’s benefits and costs to the national economy over a period of 20 years with a social discount rate of 6 percent. The economic analysis aggregates the incremental benefits of the selected crop models and those related to potential reduction in GHG emissions (estimated using the FAO EXACT model), while factoring in the project’s investment and recurrent costs.

Financial analysis

7. The commodities and cross-cutting thematic area supported include maize, potato, climbing beans, tomato, onion, sweet pepper, watermelon, papaya, tree tomato, passion fruit, chilli (bird-eye and hot), French bean and avocado. Six farm models were created, each with a without and with-project scenario: (i) model 1 for maize and climbing beans; (ii) model 2 for potato and climbing beans; (iii) model 3 for domestic vegetables; (iv) model 4 for domestic fruits; (v) models 5 for export vegetables; (vi) model 6 for export fruits. The farm and micro-processing models intend to capture: (i) improved household income; (ii) increased asset accumulation; (iii) adoption of climate-resilient agricultural production and livestock practices; and (iv) increased market linkage for value-added produce in national and regional markets. In addition, a model was developed for the processing of maize.

8. With regards to the financial analysis, the NPVs of the net incremental benefits per hectare range from US\$ 616 for maize to US\$ 21,818 for passion fruits. Benefit-cost ratios range from 1.89 for maize to 5.32 for onion. The financial performance indicators indicate the robustness of the crop and farm models, indicating that the proposed activities are commercially viable.

Table 1: Summary of the financial analysis of the crop models

Crop	NPV @ 12% discount	Benefits/ Costs
Maize	616	1.89
Climbing bean	815	2.06
Potato	7,688	2.96
Tomato	12,419	2.44
Onion	11,288	5.32
Watermelon	11,873	2.78
Chili BE	19,158	3.28
French bean	14,741	1.96
Sweet pepper	7,883	4.12
Chili hot pepper	10,881	2.88



Crop	NPV @ 12% discount	Benefits/ Costs
Papaya	15,436	3.82
Tree tomato	11,774	3.04
Avocado	16,071	4.62
Passion fruit	21,818	3.11

Economic analysis

9. The project generates economic benefits from investments in development pathways related to social capital, sustainable production and business & market development. These investments generate development outcomes, including sustainable and strengthened farmers’ organizations and rural institutions that are necessary for value chain development, sustainable and more resilient production systems, better functioning integrated value chains with cooperatives and unions, and enhanced value chains among farmers with improved access to national and regional markets, reduced post-harvest losses that lead to job creation and income generation. Quantification of these economic benefits is based on benefits accruing from investments along the value chain of the agricultural commodities and cross-cutting thematic area that are supported by the project, using farm and enterprise or micro-processing models.
10. The economic analysis uses economic investment and recurrent costs of US\$28 million from year 1 to 5, and recurrent costs of US\$ 565,000 per annum (2percent of initial investment cost per annum) from year 6 to year 20. The resulting economic net present value (NPV) is about US\$ 23.2 million, the economic internal rate of return (EIRR) is 17 percent and the Benefit-Cost Ratio (BCR) is 1.82.
11. Sensitivity analyses demonstrate that the project can absorb substantial negative impacts and still generate an EIRR above the social discount rate. Thus, the analysis supports the public investment decision.
12. **Environmental benefits.** The EX-ACT modelling was used to assess the project’s public good benefits in the form of its climate change mitigation potential. The analysis uses the same assumptions and project boundaries as the economic analysis and is presented in Annex 4. According to the World Bank Guidance Note on the Social Value of Carbon (2014), the value of carbon can be derived from three different measures: (i) the social cost of carbon; (ii) the marginal abatement costs; and (iii) the carbon market prices. The social cost of carbon attempts to capture the marginal global damage (cost) of an additional unit of CO₂e emitted. The recent draft Guidance Note on Shadow Price of Carbon in Economic Analysis (September 2017) recommends “projects’ economic analysis use a low and high estimate of the carbon price starting at US\$40 and 80, respectively, in 2020 and increasing to US\$50 and 100 by 2030”. Marginal abatement costs are designed to reflect the carbon price necessary to achieve various climate change targets.



Carbon market prices are the market value of CO₂e emission reductions or sequestration (offsets) that are registered and sold through various market structures.

13. On average, the positive impact on GHG is -26,127 tCO₂ eq. per annum. Following the World Bank guidelines, this analysis presents three scenarios: using the low and high range social cost of carbon and at market prices. Carbon market prices currently average USD 8 per ton, resulting in a value of 200,000 USD per annum. The range of US\$40 – US\$80, results in incremental economic benefits of US\$ 1.04 – US\$ 2.09 per annum.
14. This range results in an NPV of US\$ 45 million and US\$ 58 million and an EIRR of 38.1 percent and 52.8 percent, respectively.

Rationale for public sector provision/financing, if applicable.

15. The main rationale for public sector financing is that by providing support for organizing poor smallholder farmers the proposed project is de-risking the current agriculture sector eco-system to allow private sector investment in the sector and further agriculture commercialization. Furthermore, the project will raise the incomes of poor farmers and improve their resilience to external shocks associated with climate change, which ultimately leads to poverty reduction and shared prosperity. The project interventions in nutrition-sensitive agriculture will re-tool the sector to meet the nutritional needs of the population, which will in turn contribute to long-term accumulation of human capital and economic development.

Value added of Bank's support.

16. The World Bank's leadership in providing technical support for preparing and implementing programs and projects aimed at poverty reduction and service delivery, including through agriculture, is well recognized in Rwanda and reflected in the GoR request to serve as a supervising entity for the GAFSP grant proposal. The World Bank over the last several years committed strongly to providing adequate implementation support in many aspects of sector policy, in a partnership with the GoR. The World Bank support will draw from the vast global knowledge accumulated over the years in varying country contexts. This global knowledge will be customized to the needs and priorities of Rwanda.



Table 2: Summary of Economic Analysis of the project

	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr 10-20
Project benefits										
Total Project Benefits	0	304	3,827	4,395	4,306	5,419	5,881	4,828	5,565	5,565
Project costs										
Investment and Recurrent costs	6,715	7,401	6,939	5,011	2,166					
Other costs										
Maintenance and fees						565	565	565	565	565
Total Project Costs	6,715	7,401	6,939	5,011	2,166	565	565	565	565	565
TOTAL PROJECT INCREMENTAL NET BENEFITS	-6,715	-7,097	-3,112	-617	2,140	4,854	5,316	4,263	5,000	5,000

NPV (in USD '000) @ 0.06	23,222	105
EIRR	17%	
Social discount rate	6%	

Project benefit stream	0	304	3,827	4,395	4,306	5,419	5,881	4,828	5,565	5,565
NPVb (in USD) @ 0.06	51,656									
Project cost stream	6,715	7,401	6,939	5,011	2,166	565	565	565	565	565
NPVc (in USD) @ 0.06	28,434									
Project net incremental benefits	-6,715	-7,097	-3,112	-617	2,140	4,854	5,316	4,263	5,000	5,000
NPV (in USD) @ 0.06	23,222									
Break-Even in Year-11	-6,335	-12,652	-15,264	-15,753	-14,154	-10,732	-7,196	-4,521	-1,562	1,231

Switching values	Appraisal value	Switching value	% change
Incremental benefits	51,656	28,434	-45%
Incremental costs	28,434	51,656	82%
BCR	1.82		

Inc.
Costs 100% cost
Benefits 100% ben

With Environmental co-benefits

Market price of carbon (USD/tCO ₂)		8								
Carbon prices - Low* (USD/tCO ₂)	39	39	40	41	42	43	44	45	46	47
Carbon prices - High* (USD/tCO ₂)	78	78	80	82	84	86	87	89	91	94
Uptake	0.2	0.4	0.6	0.8	1	1	1	1	1	1
Total tCO₂ emission over 20 years (EX-ACT)										
Total tCO₂ emission per year (EX-ACT)										

Values (000 US\$)

Environmental co-benefits @ market price (8 USD/tCO ₂)	209	209	209	209	209	209	209	209	209	209
Environmental co-benefits @ low estimate price (avg. 49)	1,019	1,045	1,071	1,097	1,123	1,150	1,176	1,202	1,228	1,228
Environmental co-benefits @ high estimate price (avg. 98)	2,038	2,090	2,142	2,195	2,247	2,273	2,325	2,378	2,456	2,456
<i>Total Benefit with ENV Market Price</i>	<i>513</i>	<i>4,036</i>	<i>4,604</i>	<i>4,515</i>	<i>5,628</i>	<i>6,090</i>	<i>5,037</i>	<i>5,774</i>	<i>5,774</i>	<i>5,774</i>
<i>Total Benefit with ENV Low Price</i>	<i>1,323</i>	<i>4,872</i>	<i>5,466</i>	<i>5,403</i>	<i>6,542</i>	<i>7,030</i>	<i>6,004</i>	<i>6,767</i>	<i>6,793</i>	<i>6,793</i>
<i>Total Benefit with ENV High Price</i>	<i>2,342</i>	<i>5,917</i>	<i>6,537</i>	<i>6,500</i>	<i>7,666</i>	<i>8,154</i>	<i>7,153</i>	<i>7,943</i>	<i>8,021</i>	<i>8,021</i>
Total Net Benefit Without ENV Benefits	-7,097	-3,112	-617	2,140	4,854	5,316	4,263	5,000	5,000	5,000
Total Net Benefit With ENV Benefits @ Market Price (000 US\$)	-6,888	-2,903	-408	2,349	5,063	5,525	4,472	5,209	5,209	5,209
Total Net Benefit With ENV Benefits @ Low Price (000 US\$)	-6,078	-2,067	455	3,237	5,978	6,466	5,439	6,202	6,228	6,228
Total Net Benefit With ENV Benefits @ High Price (000 US\$)	-5,059	-1,022	1,526	4,334	7,101	7,589	6,589	7,378	7,456	7,456

		<u>Market</u>	<u>Low</u>	<u>High</u>
NPV w ENV Benefits	(000 USD)	33,663	44,863	58,363
EIRR w ENV Benefits	(%)	28.8%	38.1%	52.8%
NPVb	(000 USD)	57,088	68,287	81,787
NPVc	(000 USD)	28,434	28,434	28,434
BCR ratio		2.01	2.40	2.88
Switching values - benefit	(%)	-50%	-58%	-65%
Switching values - cost	(%)	101%	140%	188%
ENV Benefits as a percentage of total	(%)	6.9%	30.2%	46.3%

* Source: World Bank Guidance notes on shadow price of carbon; September, 2017



ANNEX 4: GREENHOUSE GAS ACCOUNTING ANALYSIS

COUNTRY : Rwanda

Sustainable Agricultural Intensification and Food Security Project

1. **Motivation.** The World Bank Environment Strategy (2012) adopted a corporate mandate to account for the GHG emissions for investment lending. The quantification of GHG emissions is an important step in managing and ultimately reducing emissions as it provides an understanding of the project's GHG mitigation potential and can support sectoral strategies toward low-carbon development.
2. **GHG accounting methodology.** The World Bank has adopted EX-ACT, developed by the FAO in 2010³³ to estimate the impact of agricultural investment lending on the GHG emission and carbon sequestration in the project area. EX-ACT allows the assessment of a project's net carbon balance. The carbon balance is defined as the net balance across all GHGs expressed in CO₂ equivalents (CO₂e) that will be emitted or sequestered due to project implementation (WP), as compared to a business-as-usual scenario (WOP). EX-ACT is a land-based accounting system, estimating CO₂e stock changes (i.e. emissions or sinks of CO₂) expressed in equivalent tons of CO₂ per hectare and year. The tool was designed using mostly data from the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (NGGI-IPCC, 2006), which furnishes EX-ACT with recognized default values for emission factors and carbon values in soils and biomass (the so-called "Tier 1 level" of precision).
3. **Assumptions in the EX-ACT model.** The project proposes several activities that were captured with the GHG accounting tool EX-ACT. The assumptions for this analysis were informed by discussions during project preparation, pre-appraisal and appraisal stages and are aligned to the assumptions of the Economic and Financial Analysis (EFA) presented in Annex 3.
4. The project area covers eight districts of Rwanda. The climate and moisture regime for Rwanda is assumed to be tropical mountain for Rwanda. The dominant soil type is High Activity Clay. The project implementation duration is 5 years and the capitalization period assumed to be 15 years. Dynamics of implementation are assumed to be linear over the project period. Default Tier 1 coefficients are used. The project aims to enhance agriculture productivity through investments in improved agriculture practices and expansion of area under irrigation. It is expected that about 38,600 farmers will be reached, who cultivate around 11,580 ha land with the proposed technologies. Given the very high pressure on farmland in Rwanda, it is assumed that the benefits would come from improvements of productivity, as well as the shift from low value to high value crops (vegetables and fruits, for domestic and export markets), and not from the expansion of the cultivated area. While the project is demand-driven, it will support the adoption of improved technologies such as improved crop husbandry practices, fertilization, irrigation management and

³³ <http://www.fao.org/tc/exact/ex-act-home/en/>.



horticulture technologies. Enhanced market linkages will ensure marketing additional production for domestic and export markets.

5. The GHG calculation is based on the following three elements, which are derived from the EFA: (a) incremental production from productivity increases in the targeted value chains (maize, Irish potato, climbing beans, vegetables and fruits), with a shift from traditional cultivation to improved agronomic practices, as well as from low added-value to high added value crops; (b) additional fuel consumption due to marketing and transport of the additional production; (c) increased use of fertilizer and agro-chemicals. The assumptions for the GHG calculation are summarized in the table below.

Table 1. Data inputs to EX-ACT in the Without Project and With Project Scenario

Activities	Without Project Scenario	With Project Scenario								
Productivity increases	11,580 ha under traditional cultivation thereof: <ul style="list-style-type: none"> • Maize 5,834 ha • Irish potato 3,883 ha • Climbing beans 1,294 ha • Vegetables and fruits 579 ha 	11,580 ha under improved agronomic practices: <ul style="list-style-type: none"> • Maize 6,131 ha • Irish potato 1,942 ha • Climbing beans 1,886 ha • Vegetables and fruits 1,665 ha 								
Irrigation (vegetable and fruit production, drip and sprinklers).		1500 ha of irrigation, using improved irrigation techniques was taken into account.								
Transportation of crops		Additional annual production: 60000 T Additional fuel consumption: 110 m3 per annum								
Post-harvest processing and other uses along the value chain		The energy consumption for transport was doubled to take into account energy need for processing, cold rooms and other uses (total 110 m3 of diesel)								
Consumption of fertilizer and agro-chemicals (insecticides, herbicides)		Additional use (kg/annum): <table style="margin-left: 20px;"> <tr> <td>urea</td> <td>147,500 kg</td> </tr> <tr> <td>DAP</td> <td>558,200 kg</td> </tr> <tr> <td>NPK</td> <td>399,100 kg</td> </tr> <tr> <td>Insecticides/herbicides</td> <td>7,959 kg</td> </tr> </table>	urea	147,500 kg	DAP	558,200 kg	NPK	399,100 kg	Insecticides/herbicides	7,959 kg
urea	147,500 kg									
DAP	558,200 kg									
NPK	399,100 kg									
Insecticides/herbicides	7,959 kg									

6. **Results** show that the project can constitute a sizeable net carbon sink of -522,549 tCO₂ eq over 20 years, thus -26,127tCO₂ eq annually, due to the introduction of improved crop management practices and technologies, the increase. The cropping activities constitute an absolute carbon sink with a carbon balance of -571,747 tCO₂ eq in the with-project scenario. Increased transportation, processing due to improved market access lead to an increase of 10,666 tCO₂ eq, the increased use of fertilizer and insecticides/herbicides to an increase of 38,412 tCO₂ eq, the use of advanced irrigation systems only 119 tCO₂ eq.



Table 2. Balance GHG in tCO2 eq.

Activities	Balance GHG in tCO2 eq.
Cropping activities	-571,747 tCO2
1500 ha of irrigation (sprinklers, etc..)	119 tCO2
Additional fuel for transportation of crops	5,051 tCO2
Additional energy for processing, cold rooms, etc.	5,616 tCO2
Additional fertilizer and agro-chemicals use	38,412 tCO2
Total (20 years)	--522,549 tCO2
Total (per annum)	-26,127 tCO2

7. The monetary value of the GHG balance has been estimated and considered as economic benefit of the project in the Economic and Financial Analysis. The recent draft Guidance Note on Shadow Price of Carbon in Economic Analysis (September 2017) recommends “projects’ economic analysis use a low and high estimate of the carbon price starting at US\$40 and 80, respectively, in 2020 and increasing to US\$50 and 100 by 2030”. Marginal abatement costs are designed to reflect the carbon price necessary to achieve various climate change targets. Carbon market prices are the market value of CO2e emission reductions or sequestration (offsets) that are registered and sold through various market structures. Carbon market prices currently average USD 8 per ton. Following the World Bank guidelines, this analysis presents three scenarios: using the low and high range social cost of carbon and at market prices.



ANNEX 5: PROJECT SITES MAP

COUNTRY : Rwanda

Sustainable Agricultural Intensification and Food Security Project

