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Report No: PAD2076

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

IN THE AMOUNT OF SDR18 MILLION  
(US\$ 25 MILLION EQUIVALENT)

TO THE

REPUBLIC OF BURUNDI

FOR THE

AGRO-PASTORAL PRODUCTIVITY AND MARKETS DEVELOPMENT PROJECT

November 17, 2016

Agriculture Global Practice  
AFRICA Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2016)

Currency Unit	=	United States Dollars (US\$)
Fbu1,800	=	US\$1
US\$0.71642989	=	SDR 1

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
CAADP	Comprehensive African Agricultural Development Program
CDD	Community Driven Development
CNTA	<i>Centre National de Technologies Agro-Alimentaire</i> (National Agro-Industry Center)
DA	Designated Account
DGAT	<i>Direction Générale de l'Administration Territoriale</i> (General Directorate of Territorial Administration)
DGE	<i>Direction Générale de l'Elevage</i> (General Directorate of Livestock)
DGMAVA	<i>Direction Générale de la Mobilisation pour l'Auto-développement et la Vulgarisation Agricole</i> (General Directorate of Agricultural Research and Extension)
DGPAE	<i>Direction Générale de la Planification de l'Agriculture et de l'Elevage</i> (General Directorate of Planning for Agriculture and Livestock)
DPAE	<i>Direction Provinciale de l'Agriculture et de l'Elevage</i> (Provincial Directorate of Agriculture and Livestock)
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
EU	European Union
FAO	Food and Agriculture Organization
FBu	Burundi Franc
FM	Financial management
FMIS	Financial Management Information System
GDP	Gross Domestic Product
GOB	Government of Burundi
ha	Hectare
ICB	International Competitive Bidding
IDA	International Development Association
IDPs	Internally Displaced People
IFAD	International Fund for Agricultural Development
IFR	Interim Financial Report
IITA	International Livestock Research Institute
ILRI	International Institute of Tropical Agriculture
IPDP	Indigenous Peoples Development Plan
IRR	Internal rate of return
IRRI	International Rice Research Institute

ISA	International Standard on Auditing
ISABU	<i>Institut des Sciences Agronomiques du Burundi</i> (Institute of Agronomic Sciences of Burundi)
LCS	Least Cost Selection
LSP	Local service provider ( <i>Prestataire de service local</i> )
M&E	Monitoring and Evaluation
MEEATU	<i>Ministère de l'Eau, de l'Environnement, de l'Aménagement du Territoire et de l'Urbanisme</i>
MINAGRIE	(Ministry of Water, Environment, Land Management, and Urbanization) <i>Ministère de l'Agriculture et de l'Elevage</i> (Ministry of Agriculture and Livestock)
MIS	Management Information System; Market Information System
NAS	National Agricultural Strategy
NCB	National Competitive Bidding
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental Organization
NPF	New Procurement Framework
NPV	Net Present Value
PCN	Project Concept Note
PCU	Project Coordination Unit
PDO	Project Development Objective
PIM	Project Implementation Manual
PMP	Pest Management Plan
PRASAB	<i>Projet de Réhabilitation et d'Appui au Secteur Agricole et de Gestion Durable des Terres du Burundi</i> (Agriculture Rehabilitation and Support and Sustainable Land Management Project for Burundi)
PRODEMA	<i>Projet de Productivité et de Développement des Marchés Agricoles</i> (Agro-Pastoral Productivity and Markets Development Project)
PSC	Project Steering Committee

Regional Vice President:	Makhtar Diop
Country Director:	Bella Bird
Country Manager:	Nestor Coffi
Senior Global Practice Director:	Juergen Voegelé
Practice Manager/Manager:	Mark E. Cackler
Task Team Leaders:	Chakib Jenane; Juvenal Nzambimana; Omar Lyasse

**BURUNDI**  
**AGRO-PASTORAL PRODUCTIVITY AND MARKETS DEVELOPMENT**  
**ADDITIONAL FINANCING (P161447)**

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# PROJECT PAPER DATA SHEET

*Burundi*

*Agro-Pastoral Productivity and Markets Development  
Additional Financing (P161447)*

Basic Information – Parent							
Parent Project ID:		P107343		Original EA Category: B - Partial Assessment			
Current Closing Date:		31-Dec-2016					
Basic Information – Additional Financing (AF)							
Project ID:		P161447		Additional Financing Type (from AUS):		Scale Up	
Regional Vice President:		Makhtar Diop		Proposed EA Category:		B - Partial Assessment	
Country Director:		Bella Bird		Expected Effectiveness Date:		01-Mar-2017	
Senior Global Practice Director:		Juergen Voegele		Expected Closing Date:		31-Jan-2020	
Practice Manager/Manager:		Mark E. Cackler		Report No:		PAD2076	
Team Leader(s):		Chakib Jenane, Juvenal Nzambimana, Omar Lyasse					
Borrower							
Organization Name		Contact	Title	Telephone	Email		
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PRODEMA		Salvator Nimubona	PRODEMA Coordinator	+257 7991 0412	coordepp@yahoo.fr		
Project Financing Data - Parent ( BI - Agro-Pastoral Productivity and Markets Development Project-P107343 ) (in USD Million)							
Key Dates							
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P107343	IDA-H5620	Effective	29-Apr-2010	22-Sep-2010	17-Dec-2010	30-Apr-2016	31-Dec-2016

Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P107343	IDA-H5620	Effective	XDR	28.10	28.10	0.00	28.10	0.00	100.00
Project Financing Data - Additional Financing Agro-Pastoral Productivity and Markets Development ( P161447 )(in USD Million)									
[ ]	Loan	[ ]	Grant	[X]	IDA Grant				
[ ]	Credit	[ ]	Guarantee	[ ]	Other				
Total Project Cost:		25.00			Total Bank Financing:		25.00		
Financing Gap:		0.00							
Financing Source – Additional Financing (AF)								Amount	
IDA Grant								25.00	
Total								25.00	
Policy Waivers									
Does the project depart from the CAS in content or in other significant respects?							No		
Explanation									
Does the project require any policy waiver(s)?							Yes		
Explanation									
The project team has requested and obtained a waiver to continue applying the Bank’s Procurement and Consultant Guidelines of 2010 editions as referred to in the Financing Agreement so that the AF can be processed in time and implemented in necessary synergies and continuity with the original project.									
Has the waiver(s) been endorsed or approved by Bank Management?							Yes		
Explanation									
On August 8, 2016, an exception to apply the Procurement and Consultant Guidelines to this additional financing was granted by the Procurement Manager.									
Team Composition									
Bank Staff									
Name		Role		Title		Specialization		Unit	
Chakib Jenane		Team Leader (ADM Responsible)		Senior Agribusiness Specialist		Agri-business specialist		GFA01	
Juvenal Nzambimana		Team Leader		Senior Operations Officer		Operations		GFA01	

Omar Lyasse	Team Leader	Senior Agriculture Economist	Agriculture	GFA12
Melance Ndikumasabo	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Operations	GGO07
Hugue Agossou	Financial Management Specialist	Senior Financial Management Specialist	Finance	GGO25
Alice Museri	Team Member	Team Assistant	Team Assistant	AFMBI
Antoine V. Lema	Safeguards Specialist	Senior Social Development Specialist	Social Development	GSU01
Christian Simbananiye	Team Member	Consultant	Operations	GGO19
Gayle Martin	Team Member	Program Leader	Program Leader	AFCE1
Issa Thiam	Team Member	Finance Officer	Finance	WFALA
Jean O Owino	Team Member	Finance Analyst	Finance	WFALA
Nneoma Veronica Nwogu	Counsel	Senior Counsel	Counsel	LEGAM
Paul-Jean Feno	Safeguards Specialist	Senior Environmental Specialist	Environmental Safeguards	GEN07

#### Extended Team

Name	Title	Location

#### Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Burundi	Makamba Province	Makamba Province			
Burundi	Bururi Province	Bururi Province			
Burundi	Muramvya Province	Muramvya Province			
Burundi	Cankuzo Province	Cankuzo Province			
Burundi	Bubanza Province	Bubanza Province			
Burundi	Ngozi Province	Ngozi Province			
Burundi	Muyinga Province	Muyinga Province			
Burundi	Kirundo Province	Kirundo Province			
Burundi	Rutana Province	Rutana Province			
Burundi	Mwaro Province	Mwaro Province			

<b>Institutional Data</b>	
<b>Parent: Agro-Pastoral Productivity and Markets Development Project (P107343)</b>	
<b>Practice Area (Lead)</b>	
Agriculture	
<b>Contributing Practice Areas</b>	
<b>Additional Financing: Agro-Pastoral Productivity and Markets Development Project (P161447)</b>	
<b>Practice Area (Lead)</b>	
Agriculture	
<b>Contributing Practice Areas</b>	
Environment and Natural Resources; Fragile, Conflict and Violence Group	
<b>Consultants (Will be disclosed in the Monthly Operational Summary)</b>	
Consultants Required? Consulting services to be determined	



# PROJECT PAPER

## I. INTRODUCTION

1. This Project Paper seeks the approval of the Executive Directors to provide an additional IDA grant in an amount of US\$25 million to the Republic of Burundi for the Agro-Pastoral Productivity and Markets Development Project (PRODEMA - P107343; IDA Grant #H5620) which is expected to close on December 31, 2016.

2. **The proposed Additional Financing (AF) would consolidate and scale-up the achievements attained to date under the original PRODEMA.** It will help smallholder and poor farmers preserve their assets by maintaining and expanding the investments made under the initial PRODEMA (and the Agriculture Rehabilitation and Support and Sustainable Land Management Project of Burundi (PRASAB<sup>1</sup>). This is particularly important under the current fragile circumstances of Burundi, when public investment in the agriculture sector has considerably dwindled due in part to the disengagement of several bilateral programs and the scarcity of the Government's own resources.

3. **The Government of Burundi (GoB) is facing serious budgetary constraints** – a situation which is attributed to the current political instability and substantial reduction of external development aid. This AF, would therefore, help smallholder farmers in sustaining their livelihoods that may otherwise crumble or even collapse during this period of socio-economic fragility. The AF will finance the costs associated with: (i) supporting increased agricultural productivity and market access through the promotion and adoption of improved technology packages by beneficiaries; technology investments will focus on selected value chains that are important for food security and nutritional value and also have potential to respond to market opportunities (milk, rice, bananas, cassava and vegetables); (ii) completing and expanding the rehabilitation, and development of rural infrastructure in the project area, especially marshland irrigation and feeder roads, as well as establishing the institutional set-up needed to manage this infrastructure sustainably; and (iii) management and coordination of project activities. Taking into consideration the current poor economic situation of Burundi, all construction work planned under this additional financing will be carried out to the extent possible through labor intensive methods, thereby generating employment for the rural communities, including youth and internally displaced people (IDPs).

4. **The proposed additional financing does not entail any change in the Project Development Objective (PDO), the project description, or the safeguard category.** The changes being made relate to the following: (i) up-scaling the promotion and adoption of improved agricultural technology packages, with a focus on post-harvest technology, climate-resilient

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<sup>1</sup> The development objective of the Agriculture Rehabilitation and Support and Sustainable Land Management Project of Burundi (PRASAB, P085981) was to restore the productive capacity of rural areas, through investments in production and sustainable land management, and through capacity building for producer organizations, and local communities. Beneficiaries also included war-distressed returnees and internally displaced persons. The project for a total cost of US\$55 million closed on October 31, 2010.

technologies, and nutrition-smart farming, as well as the consolidation and further rehabilitation/development of rural infrastructure to increase productivity and facilitate access to markets; (ii) adjusting the project's results framework to reflect the contribution of the AF activities, including the increase in the number of beneficiaries; and (iii) in terms of implementation, the project would continue using the existing Project Coordination Unit (PCU) and would rely on a number of strategic international development partners active in Burundi to strengthen technical support and ensure efficient and transparent implementation of project activities. These partners include the International Institute of Tropical Agriculture (IITA), the International Rice Research Institute (IRRI) and the International Livestock Research Institute (ILRI). The current closing date (December 31, 2016) of the original financing agreement for IDA Grant # H5620 will not be changed. The closing date for this AF will be January 31, 2020.

5. **The following outcomes are expected from the activities to be supported with the additional financing:** (i) enhanced productivity and production of smallholder farmers in the project areas, including climate-smart and nutrition-relevant production; (ii) increased value addition and access to markets achieved by beneficiary smallholder farmers as well as small-scale processors; and (iii) expanded demand-driven infrastructure for marshland irrigation and improved access to markets realized and sustainably managed by beneficiaries.

## **II. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING**

### **A. Country Context**

6. **The country has experienced decades of socio-economic instability and fragility.** Since the early 1990's, Burundi has endured several periods of repetitive socio-political tensions, characterized by violent conflicts within the population, placing the country not only as a fragile State but also as one of poorest in the world. While progress has been made toward economic recovery, and some improvements in households living conditions have been registered since the restoration of peace in 2006, the country continues to bear out the consequences of socio-economic fragility. A large proportion of the population experiences severe food insecurity, and remains deprived of basic consumption needs. Agriculture, which represents the main source of livelihood and jobs for around 85 percent of the population is faced with low productivity and acute structural problems. Moreover, the human capital base is low due to limited access to social services; a large majority of youth are under-employed because of a lack of opportunities; and only less than 5 percent of the population has access to electricity. These data explain why Burundi finds itself at the bottom of the list of countries for most development indicators. According to the 2015 Human Development Index, Burundi is ranked 184 out of 188 countries.

7. **The social and political situation remains fragile.** The intensification of political turmoil since April 2015 has greatly exacerbated the fragility of already weak structural drivers, in some cases to a critical point. It has also created new sources of fragility. The crisis' impact on the country has created fragility at three levels: (i) the overall political crisis at the national level, (ii) the resulting economic and social pressure experienced by the population at the local level, and (iii) the additional dimensions of fragility linked to the situation at the regional level<sup>2</sup>. The 2015 electoral period saw large-scale demonstrations and riots, leading to violence, loss of productive

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<sup>2</sup> *Burundi: Analysis of the Political Crisis and Portfolio Risk Assessment, FCV CCSA, World Bank, March 2016.*

assets and displacement. Some 260,000 refugees have fled the country and about 85,000 IDPs are in need of humanitarian assistance for shelter, access to water, hygiene and sanitation, access to food, health care and physical protection. The countryside is relatively calm, but structural fragility persists. In the current country context, the Government has to address numerous growing challenges of a diverse nature having to do *inter alia* with security, good governance, population vulnerability, economic diversification, and creation of productive jobs for a largely young population.

8. **High prevalence of poverty, food insecurity and inequality is prevalent across geographic regions.** About 95 percent of the poor people live in rural areas where the incidence of poverty is estimated at 69 percent, versus 21 percent in Bujumbura (the capital city) and 41 percent in the other urban areas<sup>3</sup>. Most of the poor are small-scale farmers. In rural Burundi, extreme poverty is estimated at 41.3 percent; it is four times higher than in the capital (10.4 percent) and about double compared to other urban areas (22.7 percent). Food insecurity is alarming with the country ranking at the bottom of the Global Food Security Index<sup>4</sup>. Overall household nutritional needs are generally not met. Almost one in two households (around 4.6 million people) is food insecure and over half of the children are stunted, the highest globally<sup>5</sup>. The situation is further exacerbated by poor dietary diversity, with high dependence on staples and limited intake of micronutrient-rich foods from both plant and animal sources.

9. While rural poverty and food security are prevalent throughout the country, their geographic distribution is uneven, being more pervasive in the Center-East and the North; poverty and food security are less prevalent in the West and South of Burundi, where corresponding rates are respectively estimated at 46 percent and 58 percent compared to a level of above 70 percent in the Northern and Center-Eastern regions. There are also wide spatial disparities within regions, with the largest differences being observed in the West and the South. **The proposed AF will focus on the poorest areas of the country; it will ensure that nutritional issues are taken into account while supporting agriculture production and increased productivity.**

10. **Recent developments bear evidence that Burundi's economy remains highly unstable and vulnerable to shocks.** In 2015, the national economy contracted by 2.5 percent; while domestic revenues declined by 0.3 percentage point of GDP and the fiscal deficit increased to close to 6 percent of GDP; this led to an increase of public debt to 41.5 percent of GDP. Owing to the current political instability, prospects for recovery are still uncertain. The economic and social costs of this protracted fragility are huge for this already impoverished nation.

11. **Agriculture is central to Burundi's economy; it is key for poverty reduction, mitigation of food insecurity and shared prosperity.** National development policies, including the country's Outlook 2025 and the second Poverty Reduction Strategy (PRSP-II), lay strong emphasis on reducing poverty and vulnerability, enhancing equity in education and health access, and promoting more inclusive growth. These policies have identified potential growth sectors with the highest potential impact for promoting sustainable and equitable economic growth; in this regard, they rightly focus on modernizing the agriculture sector since it accounts for more than 40

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<sup>3</sup> *Burundi Poverty Assessment, GPV01, Africa, World Bank, June, 2016.*

<sup>4</sup> *Global Food Security Index, 2015.*

<sup>5</sup> *World Food Program, 2016.*

percent of the GDP and about 85 percent of the current labor force. Agriculture has the potential to contribute even more to the economy by helping to lift people out of poverty and food insecurity, as well as expanding the country's small industrial base and generating employment.

## **B. Sector and Institutional Context**

12. **Despite the country's dependence on the primary sector, agriculture has not been modernized.** The agricultural sector is the mainstay of the Burundian economy, with coffee and tea being major exports. Agriculture accounted for more than 40 percent of GDP in 2015. Over the past decade, the annual growth rate of agricultural production (two percent) has been lower than the growth rate of the population (three percent). The sector continues to depend essentially on subsistence agriculture which is practiced by about 1.2 million rural households using traditional technology which is unreliable and inefficient. The farming systems are predicated after weather cycles and organized around multiple crops to mitigate climate related risks. A comparison of crop yields in the country with those in neighboring regions shows that Burundi's agriculture faces major productivity challenges<sup>6</sup>, as well as serious competitiveness and diversification issues.

13. **Recurring and long-lasting political instability and fragility have deeply affected agriculture productivity in Burundi.** The constraints in Burundi's agricultural productivity are structural, as well as linked to the recurring and current socio-economic fragility. These constraints can be summarized as follow:

- (a) *Socio-economic constraints*, linked particularly to land tenure issues; demographic pressure on land; insufficient number of off-farm income-generating activities; absence of mechanisms for sustainable financing of rural development initiatives<sup>7</sup>; limited market outlets for crop and livestock products; and poorly developed rural infrastructure.
- (b) *Institutional constraints*, characterized by the difficulty in carrying out the structural reforms and other changes required by the sector's development strategy; the limited number and poor quality of the human resources and the conditions under which these resources are used; the inadequate coverage of rural communities by extension and advisory services; and the poor organization of value-chain actors, including farmers, processors and traders.
- (c) *Agricultural production constraints*, including declining soil fertility and the degradation of natural ecosystems; low use of farm improved inputs (seeds, fertilizers, pesticides, mechanization, etc.)<sup>8</sup>; the upsurge in diseases and pests among crops (cassava mosaic, bacterial banana wilt, etc.) and livestock (tick-borne diseases in cattle, cross-border viral infections, etc.).

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<sup>6</sup>Cereal yields are estimated at 1320kg/ha compared to 1920kg/ha in Rwanda (WDI, 2014).

<sup>7</sup>Limited access to credit for value chain actors. The little that is accessible is accessed by informal and formal traders in urban areas involved in food production, distribution and marketing.

<sup>8</sup>Less than 3 percent of the plots planted with bean, maize, Irish potato, cassava, and banana use improved seeds and the use of fertilizers is estimated at 7.4kg/ha compared to an average of 120kg/ha in the world (WDI, 2013).

- (d) *Technological constraints*, associated with the inadequacy of technical innovations and appropriate production systems, including: the lack of knowledge of water resource management techniques for crop irrigation; and the dearth of processing and conservation technologies for agricultural and livestock products.
- (e) *Climate-related constraints*, which adversely impact the mostly rain-fed smallholder agricultural activities.

14. With the high population growth and the resulting continued fragmentation and scarcity of agricultural land, future growth in agriculture can only be generated from intensification and productivity gains, improved post-harvest technology and market access.

15. **Real and substantial prospects exist for successful agriculture intensification.** Burundi is endowed with valuable natural assets, in particular, abundant rainfall, a dense river network, fertile arable land and productive marshlands. However, current yields are extremely low as compared to potential yields. The products that people demand, and purchase in local markets to a modest degree, are largely the same that they produce (bananas, rice, cassava, vegetables and livestock products, particularly milk). Improving agricultural production and gradually increasing the proportion of marketed products will require public investments that enhance productivity, reduce post-harvest losses and provide better access to markets. Necessary changes in the short run include fostering the use of high quality seed and fertilizer, improving livestock management practices, tapping irrigation potential, and promoting efficient post-harvest technologies. Such activities should be linked to promoting producer associations, and to investments in infrastructure to ease market access. These are necessary to meet the ever increasing domestic demand by urban centers, and for fostering the competitiveness of Burundi's agricultural value chains. Finally, increasing agricultural yields may have a positive effect on diminishing tensions over land disputes in rural areas.

16. **Through the PRASAB and the initial PRODEMA projects, the World Bank helped Burundian small-scale farmers raise yields, access finance, improve food security, and increase revenues.** Both projects yielded positive outcomes: (i) rebuilding small infrastructure at the community level (irrigation and feeder roads); and (ii) helping rural households move beyond the recovery of subsistence production and food insecurity toward production for markets. The proposed Additional Financing will:

- (a) *Consolidate and scale-up the achievements attained to date under the PRASAB and PRODEMA.* It will, in particular, complete and expand the rural infrastructure component (irrigation and feeder roads) and promote investments related to improved technology for selected value chains that are important for food and nutritional security and have the potential to respond to market opportunities (milk, rice, bananas, cassava and vegetables); and
- (b) *Support higher agriculture production and strengthen food security*, especially for vulnerable groups (women, youth and IDPs), and the resilience of the rural economy in this period when public investment in the agriculture sector is very low due to the current economic crisis created in the aftermath of political upheaval. This AF will

therefore provide critical assistance to smallholder farmers who would otherwise be abandoned during this period of budget constraints.

### **C. Relationship to CPF**

17. The proposed Additional Financing is aligned with Burundi's FY13-FY16 Country Assistance Strategy (CAS) which was discussed by the Board of Executive Directors on September 18, 2012. The FY13-FY16 CAS aims at supporting the country's development as an increasingly stable, competitive and diversified economy with enhanced opportunities for productive employment and improved standards of living. The proposed AF is also aligned with the World Bank twin goals of eliminating extreme poverty and boosting shared prosperity. It will directly improve food security by increasing production and market access for products important to domestic consumption. It will also contribute to economic growth and job creation for the benefit of most vulnerable groups. This contribution is in line with the WBG's approach to Fragile- and Conflict Affected States (FCS), as it supports the resilience of vulnerable groups at risk in the potentially violent context of Burundi. The AF will also achieve results closely aligned with the UN Sustainable Development Goals, especially with respect to malnutrition and hunger.

18. The proposed Additional Financing is consistent with: (i) the Government's 2025 Development Outlook that emphasizes the development of agriculture as one of the main priority areas for economic recovery; (ii) the second Poverty Reduction Strategy Paper that addresses the root causes of rural poverty, and promotes equitable and sustainable growth; and (iii) the Comprehensive African Agricultural Development Program (CAADP) that aims at increasing the competitiveness of African agriculture; and

### **D. Rationale for Additional Financing**

19. The Bank will support the proposed Additional Financing for the following main reasons:

- (a) *To complete, consolidate and scale-up the achievements attained under the parent project, and cover the yet unserved communities.* Given the current socio-economic fragility and uncertainty prevailing in Burundi, a main concern of the government is how to sustain and expand the precious momentum of development generated by the PRODEMA and earlier PRASAB projects. The goal of the proposed AF is precisely to address this concern; it is timely. It will help smallholder and poor farmers preserve their assets by sustaining the gains, and expanding through upscaling, the investments made under PRODEMA. This is a crucial necessity particularly at this time when the public investment in the agriculture sector has seriously dwindled. The GoB is facing serious budgetary constraints due to both political instability and substantial reduction in external development aid. The AF will concentrate, therefore, on helping the smallholder farmers in maintaining their recently established livelihoods, which otherwise might crumble or even collapse during this period of serious economic stress;
- (b) *To continue strengthening the agriculture sector in view of its key role in poverty reduction, food security and shared prosperity.* The GoB has specifically requested the Bank to continue supporting agricultural intensification on hillsides (rainfed

agriculture) and marshlands (irrigated agriculture) along with emphasis on food security and nutrition, climate change impact mitigation, as well as market development. The Government's request is motivated by the successful results achieved under the PRODEMA (see para. 21 below). Furthermore, a large share of the AF investment is targeting the provinces of Burundi with the highest prevalence of poverty, including Kirondo, Muyinga and Cankuzo;

- (c) *To contribute to the Government's National Agriculture Investment Program (NAIP) and the Government's 2025 Development Outlook that emphasizes the development of agriculture as one of the main priority areas for economic recovery.* In particular, the proposed additional financing will support the NAIP following major programs: (i) sustainable growth in production and food security; (ii) professional training of farmers and promotion of innovation; and (iii) development of value chains and agribusiness.
- (d) *To support Burundi's stated climate change policies which prioritize:* (i) climate risks mitigation and relevant technology adaptation; (ii) enhanced access to and efficient use of water resources; (iii) promotion of intensive agriculture, including facilitation of access to the required farm inputs and agricultural equipment; (iv) development of agro-ecological practices (soil fertility management, use of manure and compost, and water and soil conservation); and (v) research and extension activities aimed at developing and diffusing drought-resistant varieties, and the promotion of climate-smart agricultural practices.

## **E. Original Project Description and Performance**

20. The original Project (PRODEMA) is expected to be completed by December 31, 2016. The original IDA Grant of US\$43 million equivalent was approved by the Board on April 29, 2010. Project implementation has been consistently rated Satisfactory both for the Development Objective and Implementation Progress. Since approval, there has been no change in the project's original development objective and design. The only adjustments to project implementation so far relate to a Level 2 Restructuring for reallocation of funds between categories, and extension of the project closing date from April 31, 2016 to December 31, 2016. These adjustments were necessitated by the political instability in the country which had delayed completion of some activities.

21. **The PRODEMA development objective is to increase small producers' productivity and market access for targeted commodities in the project area.** The project is structured around the following main components:

- (a) *Component 1: Support to agricultural productivity and access to markets.* This component provides matching grants to improve productivity of agricultural investments and access to markets of targeted commodities. It promotes the adoption of technology packages by small producers so that they can increase their yields and marketed surpluses. It also finances programs to build the capacity of beneficiaries and

public institutions<sup>9</sup> through support for advisory services and training for professional associations and cooperatives.

- (b) *Component 2: Irrigation development and feeder road rehabilitation.* This component finances the rehabilitation and development of: (i) marshland irrigation; (ii) protection and conservation of watersheds adjacent to the irrigation schemes; and (iii) tracks within marshlands and rural roads linking marshlands to the communal road network. It also supports the establishment and capacity building of Water User Associations (WUA) to manage and maintain the irrigation systems.
- (c) *Component 3: Management and coordination of project activities.* Component 3 finances the expenditures related to the coordination, planning, management, monitoring and evaluation, audit, and other operating costs of the PCU.

22. **The PRODEMA is on target to achieving its development objective.** The project has successfully supported local communities and small-scale farmers in ten provinces of Burundi. With the project's assistance, the farmers were able to increase their agricultural production through access to improved seeds, fertilizers, finance, technology and irrigation, as well as improve their food security and access to markets. Two thousand four hundred and sixty four sub-projects have received financing, representing about 94 percent of the targeted number of sub-projects during the project's lifetime. The total number of beneficiaries is about 129,000 households (of whom approximately 50 percent are women), with indirect beneficiaries (assuming 5 members per household/ direct beneficiary) estimated to be 645,000 people. The Project Coordination Unit (PCU) is currently in the process of assessing the project impact on vulnerable groups, an exercise that will continue under the additional financing and contribute to establishing the project baseline. In terms of irrigation development, 1,386 hectares of marshlands were rehabilitated. In addition, 43 km of feeder roads were restored and 11,898 ha of hillside areas were protected. In terms of productivity, it is estimated that, in the project areas, rice production increased from 2.5 t/ha to 4.1 t/ha, bananas production from 9 t/ha to 22.90 t/ha, and milk production from 360 l/year to 1,260 l/year. The following table presents the results realized against the planned project targets.

*Table 1. Achievements under the original project (PRODEMA)*

<b>Results</b>	<b>Planned in 2010</b>	<b>Achieved to date</b>	<b>Realization, %</b>
Direct project beneficiaries (households)	92,000	129,041	140
Rice yield (t/ha)	4	4.1	102
Banana yield (t/ha)	16	22.9	143
Milk production (l/year)	950	1,260	132
Number of sub-projects	2,630	2,464	94
Producers groups having contractual arrangements with marketing agents	20	23	115
Areas of marshland rehabilitated	2,000	1,386	69
Areas of hillside protected	10,000	11,898	118
Rural roads rehabilitated	100	43	43

<sup>9</sup> Agricultural research and extension, seed certification, veterinary services, trade standards, etc.



23. The relative low performance of the indicators related to irrigated marshland and rural roads is mostly due to: (i) a price escalation associated with an increase in the cost of building material compared to what was estimated in the initial feasibility studies; (ii) the use of higher technical specifications for the rehabilitation work of the rural roads as compared to the project design phase. These specifications, adopted as a standard by other development partners in Burundi, included improved material for the rehabilitation/replacement of existing culverts and concrete side road drainage canals to convey surface water. These improvements allowed for significant benefits in terms of ease of maintenance and reduction of frequency of repair of the roads; and (iii) fluctuation in exchange rates which led to a loss of about US\$0.5 million of the project planned budget.

24. **The initial PRODEMA's achievements underline the significant benefits of scaling up activities in the ten target provinces**, in particular as regards: (i) achievement and expansion of rural infrastructure (feeder roads and small-scale irrigation); and (ii) development and diversification of the rural economy, and improved food security through the promotion of post-harvest interventions such as the collection, processing and marketing of targeted commodities (milk, rice, bananas, cassava and vegetables), and support for obtaining nutritionally important agricultural production from home gardens through improved vegetable production, iron fortified beans and nutritionally enhance sweet potatoes.

25. **Alternative funding has been considered, but was not considered feasible.** The alternate funding sources including the Government budget and external development partners, were not considered feasible due to: (i) the current political instability in Burundi, which has placed the GoB under significant economic and social pressure, along with dwindling public resources, largely due to the precipitous slowdown of economic activities in the country; and (ii) other financiers, supporting the agriculture sector and rural development, have drastically reduced their development aid, and/or have committed their resources to ongoing programs.

### III. PROPOSED CHANGES

#### Summary of Proposed Changes

The proposed additional financing does not entail any change in the project development objective, description, or safeguard category. The AF will complete, consolidate and expand project activities as follows:

- (a) Component 1 "*Support to agricultural productivity and access to markets*" will up-scale activities related to the promotion and adoption of improved technology packages by beneficiaries through the implementation of productive sub-projects. The focus will be on post-harvest technology, climate-resilient technologies and nutritionally-enhanced crops based on the demand-driven approach pioneered under the initial PRODEMA;
- (b) Component 2 "*Irrigation development and feeder road rehabilitation*" will be expanded to accommodate activities related to: (i) completing and consolidating rural infrastructure rehabilitation work, and (ii) further developing rural infrastructure to increase productivity and facilitate access to markets.

Change in Implementing Agency	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Project's Development Objectives	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Results Framework	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ]
Change in Safeguard Policies Triggered	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change of EA category	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Other Changes to Safeguards	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Legal Covenants	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Loan Closing Date(s)	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ]
Cancellations Proposed	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Disbursement Arrangements	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Reallocation between Disbursement Categories	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Disbursement Estimates	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ]
Change to Components and Cost	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ]
Change in Institutional Arrangements	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Financial Management	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Procurement	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
Change in Implementation Schedule	Yes [ <input checked="" type="checkbox"/> ] No [ <input type="checkbox"/> ]
Other Change(s)	Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]
<b>Development Objective/Results</b>	
<b>Project's Development Objective</b>	
Original PDO	
The Project Development Objective is to “increase small producers' productivity and market access for targeted commodities in the project Area”. This PDO will remain the same.	
<b>Change in Results Framework</b>	
The change in the Results Framework are as follow (see details in annex 1):	
(a) PDO indicators for which the targets were revised:	
<ul style="list-style-type: none"> <li>• Number of direct beneficiaries of which female.</li> <li>• Productivity increases in selected value chains supported by the additional financing.</li> <li>• Production of commodity in targeted value chains marketed by participating producers.</li> </ul>	
(b) New PDO indicators:	
<ul style="list-style-type: none"> <li>• Increased volume of processed produce marketed.</li> <li>• Targeted beneficiaries are satisfied with project intervention.</li> </ul>	

**Explanation:**

At PDO level, the targets of the project's results indicators were adjusted to capture the contribution of the AF activities (increase in the number of beneficiaries, agricultural productivity and marketed commodities). Also, new intermediate results indicators were added to reflect the contribution of the AF activities related to the introduction of post-harvest technology (increased volume of processed produce marketed); and to measure the satisfaction of the beneficiaries as far as related to project activities (beneficiaries feedback).

The intermediate results indicators were also revised by adjusting the target indicators and adding new indicators related to the AF activities (see annex 1 Results Framework): (i) nutrition improvement; (ii) farmer groups' development; and (iii) promotion of climate –resilient technologies.

<b>Compliance</b>
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<b>Covenants - Additional Financing (Agro-Pastoral Productivity and Markets Development - P161447 )</b>
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Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
				<input type="checkbox"/>		

<b>Conditions</b>
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No conditions

Source Of Fund	Name	Type
IDA		
Description of Condition		

<b>RISKS</b>
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Risk Category	Rating
1. Political and Governance	High
2. Macroeconomic	High
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other: Climate change	Substantial
OVERALL	High

Finance									
Grant Closing Date - Additional Financing ( Agro-Pastoral Productivity and Markets Development - P161447 )									
Source of Funds			Proposed Additional Financing Grant Closing Date						
International Development Association (IDA)			January 31, 2020						
Grant Closing Date(s) - Parent ( BI - Agro-Pastoral Productivity and Markets Development Project - P107343 )									
Explanation:									
The current project closing date of December 31, 2016 will not be changed.									
Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)				
IDA-H5620	Effective	30-Apr-2016	31-Dec-2016	31-Dec-2016	-				
Change in Disbursement Estimates (including all sources of Financing)									
Explanation:									
The change in disbursement estimates is made to account for the Additional Financing cost.									
Expected Disbursements (in USD Million)(including all Sources of Financing)									
Fiscal Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annual	2.70	7.50	14.00	8.00	8.80	1.50	5.00	14.00	6.50
Cumulative	2.70	10.20	24.20	32.20	41.00	42.50	47.50	61.50	68.00
Allocations - Additional Financing ( Agro-Pastoral Productivity and Markets Development - P161447 )									
Source of Fund	Currency	Category of Expenditure	Allocation		Disbursement % (Type Total)				
			Proposed		Proposed				
IDA	USD		25,000,000.00		100				
		Total:	25,000,000.00		100				
Components									
Change to Components and Cost									
Explanation:									
The activities of the components are still relevant for the proposed Additional Financing (cf. Annex 2 for a detailed description of AF project activities). Only the scope of components 1 and 2 will be expanded with the activities related to the Additional Financing, namely:									

- (a) As part of Component 1 "*Support to agricultural productivity and access to markets*", the AF will further support the promotion and adoption of improved technology packages by beneficiaries through the implementation of productive sub-projects (US\$10.97 million). Planned investments will focus on selected value chains that are important in terms of food security and nutritional value, and also have sufficient potential to respond to market opportunities (rice, bananas, cassava, vegetables<sup>10</sup> and livestock/milk). All of these crop and livestock activities contribute to smallholder farmers' household food security, nutrition, and income.

The AF will finance the costs associated with: (i) specific stages of the targeted value chains at the production, post-harvest, processing, and marketing stages, including: establishment of nurseries, access to improved seeds/plants and other inputs (such as small-scale equipment), post-harvest technology, and other facilities such as storage, processing and packaging; (ii) watershed management through the provision of improved seeds and seedlings for fodder plants and trees to control erosion; (iii) associated extension advisory support, particularly in the technical areas of post-harvest technology, climate resilient technology, and nutrition-smart agriculture; and (iv) training of producer associations/cooperatives' members in the value chains (group dynamics, good governance, group management, business development, M&E, functional literacy, and conflicts management).

As part of the production and processing technology packages, the AF will also promote nutrition-smart-agriculture with a focus on increasing nutrient intake and diversifying diet sources (especially for children) by promoting nutritionally-smart plant production (e.g., selected fruits and vegetables in home gardens).

Finally, building on the PRASAB and PRODEMA's approach and taking into consideration the limited investment capital available to targeted beneficiaries, the technology investments will be implemented through a matching grant scheme which would be limited to US\$120,000 per investment<sup>11</sup>. This increase in the matching grant size will allow investment in much needed collective storage, processing, and packing units for reduced post-harvest losses and increased value-added.

- (b) As part of component 2 "*Irrigation development and feeder road rehabilitation*", the AF will finance for a total amount of US\$10.67 million: (i) Completion of the remaining rural infrastructure development work initiated under the parent project (see map in annex 7); and the construction, rehabilitation or expansion of additional small rural infrastructure in project targeted areas. As was the case under PRODEMA, eligible expenditure will consist of developing marshland irrigation, including the watersheds adjacent to the marshlands, as well as the tracks within marshlands and the feeder roads linking marshlands to the communal road network. Specific marshland areas have been already selected based on technical and socio-economic studies focusing on the basic soil and other characteristics of the marshland; the corresponding upstream watershed characteristics; the economic and financial viability of marshland production; and the environmental and social features of the area being developed. These total nine marshlands located in the provinces of Makamba, Rutana, Cankuzo, Kirundo and Ngozi, cover a total area of 1,530 hectares; and (ii) Support for establishing the structures needed to manage this infrastructure sustainably. A community-based road and irrigation maintenance strategy will be developed and

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<sup>10</sup> Including nutritionally fruits (e.g., avocados), as well as fortified beans and nutritionally enhanced 'orange flesh' sweet potatoes, in home gardens.

<sup>11</sup> Under PRODEMA, the matching grant has been limited to US\$50,000.

related maintenance associations will be formed/strengthened at community level. They will be provided with low-cost hand tools and equipment needed to undertake routine maintenance.

Taking into consideration the current fragility of Burundi, to the extent possible, all project-related construction work will be carried out through intensive labor techniques, thereby generating employment for local people and IDPs.

- (c) Component 3 “*Management and coordination of project activities*” will be funded to cover the incremental PCU staff, audit and other operating costs (US\$3.36 million).

The table below presents a summary of current and proposed project costs per component.

Component	Current Cost (US\$M)	Proposed Additional Cost (US\$M)	Proposed Cost (US\$M)	Action
<i>Component 1:</i> Support to agricultural productivity and access to markets	30.08	10.97	41.05	Revised
<i>Component 2:</i> Irrigation development and feeder road rehabilitation	9.58	10.67	20.25	Revised
<i>Component 3:</i> Management and coordination of project activities	5.54	3.36	8.90	Revised
<b>Total:</b>	45.20	25.00	70.20	
<b>Other Change(s)</b>				
	<b>Change in Institutional Arrangements</b>			
	Explanation:			
	<p>The institutional arrangements established under the original PRODEMA are still relevant and will continue being used to govern the AF implementation. The proposed AF does not foresee any changes in terms of implementing agency.</p> <p>The AF will be placed under the technical responsibility of the Ministry of Agriculture and Livestock (MINAGRIE). Whilst implementation at the provincial level will receive oversight and guidance from the PRODEMA Steering Committee, MINAGRIE as the lead implementing agency, will delegate the function and day-to-day implementation and coordination responsibility to the PRODEMA PCU, which has demonstrated a solid track record for procurement and financial management (rated satisfactory). All audit reports are current and there are no pending audit issues to be resolved.</p> <p>In addition to providing technical support and coordination of the AF activities, and consolidating the project Annual Work Program Budget (AWPB) and progress reports from participating provinces, the PRODEMA PCU will be responsible for fiduciary and safeguard management, and will ensure regular supervision and monitoring. Nevertheless, taking into consideration the fragile situation of the country and the need for an efficient implementation of the AF activities and to enhance transparency, the PCU will be supported by strategic institutional and technical partners active in Burundi.</p>			

	These include IITA, IRRI and ILRI. The PCU will also be supported by service providers (other agencies, NGOs, etc.) which will be recruited on a competitive basis with performance-based contracts.
<b>Change in Implementation Schedule</b>	
	Explanation: The AF closing date will be January 31, 2020 to enable the completion of the newly added activities.

26. **Lessons learned and reflected in the AF design.** Taking into consideration the current fragile situation of Burundi and the experience gained from the implementation of PRASAB and PRODEMA, several specific lessons learned were considered in designing the proposed AF. These include lessons regarding the following key principles:

- (a) *Demand-driven approach and ownership.* The AF will build on grassroots organizations, particularly farmer groups and cooperatives which are adequately supported by service providers, and can substantially improve their performance to serve local priorities and achieve tangible results. This approach will be further promoted to enable farmers 'groups to prepare sub-projects for matching grants and to ask for extension and advisory support. The bulk of the AF resources will be earmarked for productive technology investments; a minimum co-financing of 10 percent of total sub-project costs will be required from beneficiaries;
- (b) *Governance and social cohesion.* The organization of farmers' groups and implementation of sub-projects investments led by these farmers contributed to the structuring (strengthening of cooperatives and associations) and social cohesion in the rural areas. The number of associations has increased sharply in the project area, helping also to ensure transparent implementation of activities and avoiding elite capture. One example of success is the support to the community solidarity chain for dairy sub-projects which has contributed to strengthen social cohesion;
- (c) *Farmers' groups targeting and development.* The selection of the farmers' groups to be covered by the AF activities will be based on the characteristics of the groups and/or cooperatives that received assistance under PRODEMA, and performed successfully thereafter. In addition, it will be useful to consider additional criteria drawn from best practices of functioning of farmers' groups in other developing countries. Some of these criteria are: (i) smallholder farmers' groups function better when the maximum number of farmers is between 20 and 30; (ii) homogenous groups consisting of members with similar socio-economic status, are more efficient than the groups with heterogeneous membership; (iii) farmers' groups formed around one or a few common interests of members have greater performance; (iv) gender-mixed farmers' groups function better when concerns and opinions of both male and female members are respected equally; (v) all farmers' groups need capacity building in human development and skill areas like leadership, group dynamics, decision-making, problem-solving, book-keeping, meeting organization, program planning, value chain

- concept, marketing, value addition, preparation of simple project profiles, and simple monitoring and evaluation; (vi) farmers' groups' performance is adversely affected by political interventions; (vii) farmers' groups function better under informal leaders elected, or selected directly by the membership; and (viii) farmers' groups with at least one or two literate or semi-literate members display higher performance;
- (d) *Service provision by the private sector has proven more efficient than public sector service provision.* The proposed AF will therefore rely on private service providers while continuing to reinforce the capacity of the government administration for those public services falling under its mandate, such as planning, research and extension, sanitary control, and monitoring and evaluation. Furthermore, in terms of implementation, the PCU will rely on the technical support of a number of strategic international development partners active in Burundi, including IITA, IRRI and ILRI;
- (e) *Focus not only on improving on-farm productivity, but also on facilitating market access and increasing local processing for value-addition.* To this end, the AF will further expand the rural infrastructure component (rehabilitation of feeder roads), and will also promote demand-driven post-harvest investments to increase shelf-life, and add value to products for income generation and diversification. Investment related to post-harvest technology will be based on well-established demand both for local and regional markets. For rice, for example, the AF will consider financing drying areas and storage facilities for each marshland. Improved storage systems will be introduced so that farmers can store their seeds safely for longer periods. Milling machines and parboiling systems will be also promoted. Other post-harvest technologies being considered include: drying and preservation of fruits and vegetables; cassava processing into starch and flour; and banana processing into chips and flour;
- (f) *Strengthening resilience and enhancing sustainability.* The AF will place specific emphasis on building resilience to climate change through the promotion of climate resilient technologies and climate-smart farming systems. The AF will assist farmers to cope with the season-to-season and within season rainfall variability to improve the current level of production, and build livelihood resilience and adaptive capacity. To this end, it will promote proven sustainable land management practices that can provide the basis for climate resilience, maintaining and improving soil health, and enhancing sustainable natural resources management. Some practices, such as intercropping, agroforestry and mulching, are already being used in the project area, reflecting the willingness of some households to adapt to changing circumstances. Other practices to be introduced include: techniques for integrated soil fertility management, including composting of crop residues; incorporation of nitrogen fixing legumes into the cropping system; crop rotations to improve soil resilience and reduce risks; use of improved varieties; judicious use of pesticides, fungicides and herbicides; efficient use of irrigation water in marshlands; and use of improved livestock husbandry and animal health management; and biological pest control. These measures are considered as stand-alone good agronomic practices; and when combined they considerably increase the adaptive capacity/resilience of the agricultural system to cope with climate extremes (both drought and flood conditions) and greatly enhance the productivity and



profitability of the farming system. These techniques will underpin the AF approach for promoting enhanced productivity, together with infrastructure development;

Finally, all AF investments will include capacity strengthening activities to re-ensure project sustainability. For instance, beneficiary farmers will be organized in associations in targeted marshlands and will be trained in planning, management and business practices. Production, postharvest and business modules will guide project actions so that associations gradually become cooperatives around each marshland managing all rice production and marketing;

- (g) *Access to rural finance.* PRASAB's and PRODEMA's experience has revealed that, where farmer credit is limited or nonexistent (which is still the case in Burundi); a properly targeted matching grant scheme is effective in assisting small-scale farmers and processors build their initial assets and develop their production base. In this context, matching grants do not create unfair competition with weak or nonexistent micro-finance services. On the contrary, they help farmers and processors establish the production base required to access these financial services wherever they exist; and
- (h) *Gender and youth.* The roles of women and youth along the selected value chains are particularly visible and important; they provide a credible opportunity to adopt a comprehensive strategy that includes facilitating women and youth access to assets, finance and decent jobs to improve their well-being. The AF will promote a higher level of employment of young people (both men and women) in rural areas through the promotion of post-harvest technology (small agro-processing enterprises) and develop entrepreneurial skills among the rural youth. It will also provide seed grant capital investments to selected projects.

27. **Geographic scope and beneficiaries.** The AF will cover the ten rural provinces currently included as a part of PRODEMA, but the emphasis will be on scaling-up and extending project activities to those communities and villages with the highest prevalence of poverty, and which have not yet been served under the parent project. These areas include: (i) the Northern Zone (Ngozi, Kirundo, Muyinga, and Cankuzo Provinces); (ii) the Central Zone (Mwaro, Muramvya, and Bubanza Provinces); and (iii) the Southern Zone (Bururi, Makamba, and Rutana Provinces)<sup>12</sup>.

28. As in the original project, the AF beneficiaries will be mostly poor rural households engaged in targeted value-chains, including smallholder farmers, small-scale processors and traders. It is estimated that about 27,000 households will benefit from the activities of this AF (135,000 people of which 50 percent are women). The entry point will be through organized groups of producers and processors, with particular attention given to vulnerable groups like women, youth and IDPs. To ensure that project interventions will be demand-driven and respond effectively to needs, an institutional mapping of these organizations, particularly farmers' organizations, will be undertaken to determine their maturity levels and needs, and make provision for their strengthening. The emphasis will be on the consolidation of existing groups, but the creation of new ones will be considered under specific eligibility criteria.

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<sup>12</sup> Burundi has 16 rural provinces and 1 urban province corresponding to the capital city, Bujumbura.

**29. Links with other initiatives.** The AF will establish close linkages with ongoing projects and organizations which have adopted the value chain approach in their operations. These include: (i) the World Bank financed Coffee Sector Competiveness Project (P151869) which has as objective to increase coffee productivity and improve its quality among small-scale coffee growers in Burundi; (ii) the IFAD funded Value Chain Development Program and Agricultural Intensification and Value-enhancing Support Project; and (iii) the EU and the Netherlands funded Fertilizer Support Program. Furthermore, the AF will seek appropriate coordination and collaboration with relevant complementary operations in targeted provinces (e.g., in the areas of infrastructure development, support to agro-based economic activities in rural areas, support to smallholder productivity enhancement, and rural finance).

**30. Citizen engagement.** The AF design, preparation, and implementation are based on citizen engagement. Consultations with stakeholders have been and will continue to be carried out throughout the project cycle, from preparation to project completion. The identification of the AF activities were based on extensive consultations with various stakeholders including: local communities, civil society, provincial and national administrations, national and international research institutes, and other development partners active in Burundi (IFAD, EU, USAID and the Netherlands). Project implementation will particularly involve farmers associations; local communities; provincial, and national administrations; national and international research institutes; and the private sector (traders, agro-processors and service providers). Conflict prevention activities rely firmly on citizen engagement. Recurrent consultations with civil society and direct beneficiaries will be part of the proposed project's M&E strategy; the same is true for the beneficiary assessment. The preparation and implementation of safeguards instruments has been and will be part of the consultation process. Citizen engagement and beneficiary feedback will be monitored through the measurement of beneficiaries' satisfaction in relation to project interventions.

## IV. APPRAISAL SUMMARY

Appraisal Summary
<b>Economic and Financial Analysis</b>
<p>Explanation:</p> <p>The financial analysis was conducted based on planned productive activities as part of investment sub-projects. The computations were based on on-farm investments in the value chains covered by the initial PRODEMA (rice, milk and banana production and rice processing) as well as the new value chains to be covered by AF activities (cassava, fruits and vegetables) and new processing activities (cassava processing into starch and flour and banana processing into flour), taking into account the potential for yield increase and scaling of operations in all value chains during the AF period.</p> <p>The financial analysis of sub-projects shows that the proposed AF project will be highly profitable at farmer/enterprise level. The individual sub-project generates the following financial Internal Rate of Return (IRR): (i) for production activities: 51 percent for swamp rice, 93 percent for milk and 71 percent for cassava; and (ii) for processing activities: 57 percent for cassava flour and starch, and 50 percent for banana flour.</p> <p>The economic analysis shows that the AF project is economically viable for the country as a whole. The Economic Rate of Return (ERR) taking into account all project activities is estimated at 20.7 percent with a Net Present Value (NPV) of consolidated investments of approximately US\$11.8 million computed at the opportunity cost of capital for Burundi.</p> <p>The sensitivity analysis shows the economic profitability is quite robust in the face of adverse changes. Indeed, if costs were to respectively increase by 30 percent, benefits decrease by 30 percent and if a two-year delay in project implementation (and hence generation of benefits) was incurred, the corresponding ERRs would decrease respectively to 15.7 percent, 14.0 percent and 11.6 percent, and the NPV would drop to US\$8.9 million, US\$5.4 million and US\$4.5 million.</p> <p>This Economic and Financial Analysis is conservative since the improvement in rural infrastructure is bound to further increase the profitability of rural enterprises as a whole in the project areas.</p>
<b>Technical Analysis</b>
<p>Explanation:</p> <p>The proposed AF technical soundness is based on a successful implementation and concrete results of the PRODEMA. It is also based on a rigorous technical and economic analysis and on its focus on supporting comprehensive, demand-driven investment proposals linked to existing markets. The AF blends technology promotion and adoption with improvements in rural infrastructure to raise agricultural productivity and facilitate market access. Emphasis on beneficiary participation will offer stakeholders an array of instruments and tailor-made solutions to overcome the main constraints to increased competitiveness. Successful activities under PRODEMA benefitted a large number of people in 10 specific provinces. However, it is only logical and ethical that certain communities and villages, left out, should also benefit from such activities, hence this particular AF.</p> <p>The capacity of presently active producers' groups will be built further to enable them not only to sustain their achievements but also to be more knowledgeable in enhancing farm production, storing produce, initiating or strengthening agri-businesses, expand agro-processing SMEs, and marketing the produce and value-added products. Technical emphasis of capacity building programs for the extension staff and</p>

members of farmers' groups will be on three main areas, i.e. post-harvest technology, climate-resilient agriculture, and nutrition-smart farming. In addition, the farmers' groups will be trained in human development subjects such as group dynamics, leadership, book-keeping, organization of meetings, functional literacy, problem-solving, decision making, program planning, simple evaluation, and possibly other such areas.

The producers' groups, extension staff, private extension advisory service providers, subject-matter specialist, and any other stakeholders will be further trained in adopting a demand-driven, bottom-up, planning process, leading to a grassroots mechanism empowering rural men, women and youth to participate in the preparation of extension programs and sub-projects for matching grants. The extension staff and subject-matter specialist will provide technical support to the farmers in preparing technically sound extension service demands and sub-projects.

The PCU and concerned departments of the Ministry of Agriculture and Livestock will be assisted in forging partnerships with the Consultative Group on International Agricultural Research (CGIAR) institutions (IITA, IRRI, ILRI, etc.), active in the region, to identify and align with research initiatives and activities of common interest—a sensible technical approach to utilize human and limited financial resources in an optimum way. Similarly, the AF activities will be aligned with relevant ongoing projects in Burundi that are financed by donors like the International Fund for Agricultural Development (IFAD), and the European Union (EU). Finally, matching grants modality will motivate producers and processors to come up with feasible sub-projects for possible financing thus indirectly compensating for the lack of Government resources for this purpose. The improvement in rural infrastructure will substantially alleviate the classic constraint faced by producers in marketing the produce or value-added products.

## **Social Analysis**

### **Explanation:**

The AF's overall activities are expected to provide positive socio-economic benefits to a large number of small-scale farmers in provinces of Burundi with the highest prevalence of poverty. These benefits include: (i) increased productivity for various commodities essential for their food security (rice, milk, cassava, bananas and vegetables); (ii) improved access to market through investment in rural roads and organization of farmers; (iii) increased income through local processing for value-addition; and (iv) promotion of nutrition smart-farming and climate resilient technologies. Similarly to the initial Project, youth and women, in particular, are expected to significantly benefit from the AF because they are heavily involved in most of the activities and processes within targeted food crop supply chains. Taking into consideration the current fragility of Burundi, project-related construction work will be carried out through intensive labor techniques, thereby generating employment for local people and IDPs.

Consultations have been conducted during the AF preparation with key stakeholders including the private sector, the public sector, civil society, and the most vulnerable groups (indigenous groups such as the Batwa). Key actors have been involved in defining the scope of activities, and will be engaged throughout the AF implementation and evaluation.

## **Environmental Analysis**

### **Explanation:**

The PRODEMA project has been satisfactorily and consistently implementing World Bank Group operational policies, guidelines and procedures on environmental and social safeguards. The proposed AF is neither expected to change the PDO nor add a new component. It will rather consolidate the achievements accomplished to date under the PRODEMA, and scale-up its activities. The AF will, therefore, maintain the same category B rating as the parent project.

The scope and nature of activities foreseen under the AF are similar to those already implemented under the parent project, namely feeder road rehabilitation, small-scale irrigation development, and community/farmers cooperatives sub-projects (agriculture/livestock production and post-harvest technology). These may have adverse environmental and social impacts and thus, the existing six safeguard policies remain triggered: Environmental Assessment (OP/BP 4.01); Pest Management (OP 4.09); Involuntary Resettlement (OP/BP 4.12); Indigenous People (OP/BP 4.10); Safety of Dams (OPBP 4.37); and Projects on International Waterways (OP/BP 7.50).

The PRODEMA's existing safeguard instruments, namely Environmental and Social Management Framework (ESMF), Pest Management Plan (PMP), Resettlement Framework Policy (RFP), and Indigenous People Development Plan (IPDP) were used by the borrower in a satisfactory manner for all sub-projects financed under the parent project. The project hired qualified environmental consultants to carry out, among others, ESIA's for sub-projects dealing with marshland management and small-scale irrigation infrastructure. Specific Environmental and Social Impacts Assessment (ESIA) with Environmental and Social Management Plan (ESMP) have been prepared with relevant mitigation measures, which have been included in the building documents of financed infrastructures and correctly implemented by the enterprises. The project also hired an operational national consultant to monitor implementation of identified mitigation measures proposed in the ESMPs by the contractors and safeguards compliance.

In lights of the above, the PRODEMA's existing safeguard instrument were slightly updated and applied to the AF. Furthermore, as the proposed AF does not foresee any changes in terms of implementing agency, the current operational safeguard institutional arrangement will be maintained under this AF. These safeguard instruments have been re-disclosed in the country on September 26, 2016 and in the Infoshop on September 30, 2016.

## **Risk**

### **Explanation:**

The overall risk rating for the proposed Additional Financing is considered as High. The key factors for the High rating are related to the following issues:

- (a) *Political and governance risks which are rated High.* Since May 2015, Burundi stands at crossroads, with violence in the capital city and concerns that the situation may spiral further out of control. This will make it difficult to implement effective development interventions. The international community is pressing for political negotiations to end or at least appease the violent political crisis. This process is on-going with concerted efforts to reduce the likelihood of resumption of any civil conflict in Burundi. The Bank will continue to work closely with the United Nations (UN) and other development partners to monitor the political situation. Taking into consideration the fragile context of the country, the Bank will also promote a transparent and inclusive dialogue with independent civil society organizations and the farmers to prevent elite capture of resources by private interests, and to support local mechanisms that could mediate in any tensions that could come up around the project. A political economy risk analysis will be undertaken through the WBG's Great Lakes Region Conflict facility (GLRCF);
- (b) *Macroeconomic risks are also rated High.* Over the past decade, Burundi's GDP growth has been stable and moderately positive. Since 2005 the Government of Burundi has managed to stabilize the country's economy in a fragile environment with real GDP and GDP per capita growth averaging 4.1 and 1.1 percent per annum, respectively. However, the current political instability in the country is slowing down economic activities, leading to a deteriorating macro-economic situation and an increase in public debt. This is further exasperated by a substantial reduction in

international development aid. These factors may have a negative impact on the sectoral reforms and a slowdown of the project implementation. The project will monitor closely the macro-economic risks and take appropriate mitigation measures as needed;

- (c) *Institutional capacity for implementation and sustainability are rated Substantial.* Burundi is a post-conflict country with weak technical and institutional capacity at all levels. Administrative and fiduciary capacity also remain limited in MINAGRIE. However, project implementation will rely on a strong PCU and strategic institutional and technical partners active in Burundi. These include IITA, IRRI and ILRI. The involvement of these technical institutions will support the implementation of the project in an efficient and transparent manner, and will also contribute to ensuring the sustainability of project activities;
- (d) *Fiduciary risks are rated Substantial.* FM risks are due to the large number of transactions and a significant number of agreements with technical agencies (IITA, IRRI, etc.). To manage fiduciary risks, the Bank will continue relying on PRODEMA's strong Project Coordination Unit. The AF will benefit greatly from PRODEMA's management experience. Furthermore, regular training and supervision will be provided to strengthen capacities of all project actors; and
- (e) *Other risks include climate change risks which are rated Substantial.* Burundi has a history of extreme climate-related events. Based on data from the past 60 years, Burundi has experienced alternating cycles of excess and deficit rainfall nearly every decade, as well as overall increased mean temperature, with the dry season getting longer. Moreover, since September 2015, Burundi has been severely affected by the El Niño climate phenomenon. While highly exposed, Burundi has extremely low capacity to respond in the case of severe climate shock. As part of the mitigation measure to climate change risks, the proposed AF will promote the adoption of drought-resistant varieties of crops and adapted irrigation system. It will also prioritize relevant investments and financing for climate-focused initiatives such as watershed management.

## V. WORLD BANK GRIEVANCE REDRESS

31. 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/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).

## ANNEX 1. RESULTS FRAMEWORK

Project Name: Agro-Pastoral Productivity and Markets Development (P161447)				Project Stage: Additional Financing		Status: Final	
Team Leader(s): Chakib Jenane; Juvenal Nzambimana; Omar Lyasse		Requesting Unit: AFCE1		Created by: Juvenal Nzambimana on 12-Aug-2016			
Product Line: IBRD/IDA		Responsible Unit: GFA13		Modified by: Chakib Jenane on 28-Aug-2016			
Country: Burundi		Approval FY: 2017					
Region: Africa		Lending Instrument: Investment Project Financing					
Parent Project ID: P107343		Parent Project Name: Agro-Pastoral Productivity and Markets Development Project (P107343)					
Project Development Objectives							
Original Project Development Objective - Parent:							
The Project Development Objective is to increase small producers' productivity and market access for Targeted Commodities in the Project Area.							
Results							
Core sector indicators are considered: Yes				Results reporting level: Project Level			
Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised*	Direct project beneficiaries	<input checked="" type="checkbox"/>	Number	Value	0.00	129000.00	156000.00
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
Revised	Female beneficiaries	<input checked="" type="checkbox"/>	Percentage Sub Type Supplemental	Value	0.00	49.50	50.00

\* The targets of the project's results indicators were adjusted to capture the contribution of the AF activities: increase in the number of beneficiaries, agricultural productivity and marketed commodities.

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
	Productivity increases in selected value chains supported by the AF						
Revised	Rice (tons/ha)	<input type="checkbox"/>	Number	Value	2.50	4.10	4.50
			Sub Type	Date	17-Dec-2010	30-Jun-2016	31-Jan-2020
			Breakdown	Comment			
Revised	Banana (tons/ha)	<input type="checkbox"/>	Number	Value	9.00	22.90	22.90
			Sub Type	Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
			Breakdown	Comment			
Revised	Coffee (ton cherries/ha)	<input type="checkbox"/>	Number	Value	0.40	1.20	1.20
			Sub Type	Date	27-Dec-2010	30-Jun-2016	30-Apr-2016
			Breakdown	Comment			
Revised	Milk (l/yr)	<input type="checkbox"/>	Number	Value	360.00	1,260	1,350
			Sub Type	Date	27-Dec-2010	30-Jun-2016	31-Jan-2020
			Breakdown	Comment			
Revised	Production of commodity in targeted value chains marketed by participating producers	<input type="checkbox"/>	Percentage	Value	10.00	62.99	63.00
				Date	27-Dec-2010	30-Jun-2016	31-Jan-2020
				Comment			
New	Increased volume of processed produce marketed (disaggregated by commodity - average)	<input type="checkbox"/>	Percentage	Value	5.00		10.00
				Date	15-Oct-2016		31-Jan-2020
				Comment			
New	Targeted beneficiaries are satisfied with project intervention (disaggregated by type of intervention).	<input type="checkbox"/>	Percentage	Value	0.00		75.00
				Date	15-Oct-2016		31-Jan-2020
				Comment			



Intermediate Results Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Sub-projects financed	<input type="checkbox"/>	Number	Value	0.00	2,464	2,786
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
No Change	Participating farmers (male/female) adopting new technology packages (for production, post-harvest, processing, etc.)	<input type="checkbox"/>	Percentage	Value	10.00	75.00	75.00
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
New	Lead mothers trained in production of bio-fortified crops and production of home gardens	<input type="checkbox"/>	Number	Value	0.00		1,500.00
				Date	15-Oct-2016		31-Jan-2020
				Comment			
No Change	Producers adopting animal breeds and husbandry practices for milk production	<input type="checkbox"/>	Percentage	Value	10.00	70.00	70.00
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
Revised	Participating producer groups / associations/ cooperatives having contractual arrangements with marketing agents	<input type="checkbox"/>	Percentage	Value	0.00	23.00	30.00
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
Revised	Area of marshlands rehabilitated	<input type="checkbox"/>	Hectare (ha)	Value	0.00	1,386	2,300
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
Revised	Area of hillside areas protected	<input type="checkbox"/>	Hectare (ha)	Value	0.00	11,898	15,000
				Date	29-Apr-2010	29-Dec-2011	31-Jan-2020
				Comment			

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Roads rehabilitated, Rural	<input checked="" type="checkbox"/>	Kilometers	Value	0.00	43.00	123.00
				Date	29-Apr-2010	30-Sep-2014	31-Jan-2020
				Comment			
New	Number of farmer group leaders trained in group dynamics/management and business development issues (by gender).	<input type="checkbox"/>	Number	Value	0.00		120.00
				Date	15-Oct-2016		31-Jan-2020
				Comment			
New	Increased adoption of climate-resilient technologies (number of beneficiaries)	<input type="checkbox"/>	Percentage	Value	0.00		25
				Date	15-Oct-2016		31-Jan-2020
				Comment			
Revised	Indirect project beneficiaries	<input type="checkbox"/>	Number	Value	0.00	645,205	782,805
				Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
				Comment			
Revised	Indirect project beneficiaries - female	<input type="checkbox"/>	Number	Value	0.00	319,675	391,402
			Sub Type	Date	29-Apr-2010	30-Jun-2016	31-Jan-2020
			Breakdown	Comment			

## ANNEX 2. DETAILED DESCRIPTION OF AF ACTIVITIES

1. **Component 1: Support to agricultural productivity and access to market (US\$ 10.97 million).** Component 1's development objectives are the same as PRODEMA's objectives, that is: (i) to promote the adoption of improved technology packages through the implementation of productive investments (sub-projects) by beneficiaries. Under the AF, emphasis will be on promoting demand-driven post-harvest technologies, climate-resilient technologies, and nutrition-smart farming; and (ii) to improve the organization, management and performance of targeted value chain institutions, through technical support and training.

- (a) *Sub-component 1.1: Support to productive investments (US\$7.77 million).* Building on PRODEMA's successes, this sub-component will finance additional matching grants for sub-projects to be implemented at all stages of the selected value-chains (rice, bananas, milk, cassava and vegetables). The AF investments will focus on sub-projects that have not only significant potential for marketing but can also contribute to ensuring food security and nutrition for smallholder rural families, especially for children. The AF will scale-up technology packages such as: (i) production (improved inputs, like seed, pesticide and small equipment for marshland rehabilitation and water management); (ii) post-harvest technologies related to improved storage and small-scale processing facilities, drying equipment, small-scale packaging and pasteurizing unit; and (iii) watershed management (improved seed and seedlings for fodder plants and trees that can bear fruits and control erosion at the same time).

The AF will also promote proven sustainable land management (SLM) practices that can provide the basis for climate resilience, and maintain and improve soil health. These SLM practices will include the diffusion of techniques for integrated soil fertility management, including composting crop residues, incorporation of nitrogen fixing legumes into the cropping system, crop rotations to improve soil resilience and reduce risks, scaled home gardens, use of improved varieties, judicious use of pesticides, fungicides and herbicides, efficient use of irrigation water in marshlands, and use of improved livestock husbandry and health management.

In addition, as part of sub-component 1.1, the AF will promote the development, adaptation and diffusion of nutrition-smart farming. A preliminary survey will be conducted in the project areas to identify the communities and villages where malnutrition, especially among children, is highly prevalent. The identified areas will be targeted for introducing nutrition-smart farming. Nutrition-smart technology packages will be prepared and promoted in these areas, including related training materials such as manuals, charts, posters, pictures, videos and pamphlets, which will be prepared by subject-matter specialists. Rural schools and informal leaders will be also involved in an extension campaign, focused on making rural men and women aware of the damaging results of malnutrition, especially among pregnant mothers and children, and the actions needed to alleviate the risk in households (by concentrating on appropriate diet), on farms and in backyard home gardens (by growing vitamin rich vegetables, fruits and crops; preparing food without losing nutritious value, etc.).

Overall it is expected that about 300 sub-projects will be financed by the project-supported matching grant scheme for up to US\$120,000 per sub-project. The beneficiary eligibility criteria for the matching grants, as well as expected level of contribution will be the same as PRODEMA's (except for post-harvest and processing sub-projects which will be 10 percent instead of 15). Also, to facilitate women and youth access to assets, finance and to improve their well-being, the AF will support seed grant capital investments to selected projects for this category of beneficiaries. The amount of seed capital investments will depend on the type of initiative supported; it could reach up to US\$50,000 for group grants.

In implementing these investment sub-projects, the PCU will form partnership with CGIAR institutions active in Burundi (IITA, IRRI and ILRI) to strengthen technical support and ensure efficient and transparency implementation of project activities.

- (b) *Sub-component 1.2: Capacity building, institutional support, and facilitation of access to markets (US\$3.20 million).* Under this sub-component, the AF will support activities for further strengthening of farmers' and processors' groups in the project area. The entry point will be through organized groups of producers and processors, with particular attention to vulnerable groups like women, youth and IDPs. To ensure that project interventions will be demand-driven and respond effectively to needs, an institutional mapping of these organizations will be undertaken to determine their maturity levels and needs, and to make provision for their strengthening. The emphasis will be on the consolidation of existing groups; but the creation of new ones will be considered under specific eligibility criteria.

The active capacity of producers' groups will be built further to enable them not only to sustain their achievements but also to be more knowledgeable in enhancing farm production, storing produce, initiating or strengthening agri-businesses, expanding agro-processing SMEs, and marketing production and value-added products. Technical capacity building emphasis will be on theme such as post-harvest technology, climate-resilient agriculture, and nutrition-smart farming. In addition, the groups will be trained in human development subjects such as group dynamics, leadership, book-keeping, business development, good governance, functional literacy, problem-solving, decision-making, program planning, and operations evaluation. Farmers' groups in targeted marshlands will be trained in appropriate planning, management and business practices. Production, postharvest and business modules will guide project training activities so that groups gradually evolve into cooperatives around each marshland for rice production and marketing.

AF activities will typically engage farmers' groups with extension staff from the Ministry of Agriculture and Livestock<sup>13</sup> and researchers from ISABU. To facilitate such an engagement, a grassroots demand-driven participatory planning mechanism will be introduced among the farmers' groups to enable them to participate in decision

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<sup>13</sup> DGMVA - Direction Générale de la Mobilisation, de l'Auto-développement et de la Vulgarisation Agricole  
(General Directorate for Ag Mobilization, Self-Development and Extension)

making, in particular request the needed extension services and technical assistance in preparing sub-projects for matching grants. Necessary training materials will be prepared, and farmers' group facilitators, extension workers, and subject-matter specialists will be provided training in following the demand-driven planning process.

**2. Component 2: Irrigation development and feeder road rehabilitation (US\$10.67 million).** The AF will cover the completion and development of additional rural infrastructure to enhance productivity and facilitate farmers' access to markets. As such, marshland irrigation will be developed, feeder roads will be rehabilitated, and appropriate institutional structures will be established to sustainably manage the infrastructure.

(a) *Sub-component 2.1: Irrigation development (US\$5.23 million).* The AF will finance the cost of developing irrigation systems in marshlands for intensive rice cultivation, in rotation with minor-season vegetables, pulses, and potatoes. Specific marshland sites have been already selected based on technical and socio-economic studies. These sites cover a total area of about 914 ha (Cankuzo 262 ha; Ngozi 495 ha; and Kirundo 157 ha – see annex 7). As currently done under PRODEMA, eligible expenditure will include: (i) the technical, economic and environmental studies; and (ii) the basic infrastructure for developing marshland irrigation, such as development of the watersheds adjacent to the marshlands, as well as the tracks within marshlands and the feeder roads linking marshlands to the communal road network.

The AF will support the formulation and implementation of a community-based road and irrigation maintenance strategy. This strategy will be based on Water User Associations which will be established and provided with low-cost hand tools and equipment to undertake routine maintenance.

All construction work, to the extent possible, will be carried out through labor intensive methods that could generate employment for local people and IDPs.

(b) *Sub-component 2.2: Upgrading and rehabilitating feeder roads (US\$5.44 million).* The AF will upgrade and rehabilitate the feeder roads identified under PRODEMA and extend such construction work to other villages/communities, which are yet to be served. This will have positive effects on productivity, reduce costs of transporting goods and services, and raise the farm-gate prices of crops. Approximately 80 km of feeder roads are expected to be rehabilitated under the proposed AF.

**3. Component 3: Management and coordination of project activities (US\$3.36 million).** The AF will cover the incremental cost of the PCU staff, operating and audit costs, including: salaries; planning, programming and budget preparation at the national and local levels; fiduciary management (financial and accounting management, procurement); implementation of the M&E system; environmental and social safeguard management and related impact assessments; operation of the PSC and communication.

## ANNEX 3. IMPLEMENTATION ARRANGEMENTS AND SUPPORT

### Implementation arrangements

1. The proposed AF does not foresee any changes in terms of implementation arrangements. The AF will be placed under the technical responsibility of the Ministry of Agriculture and Livestock (MINAGRIE). Whilst implementation at the provincial level will receive oversight and guidance from the PRODEMA Steering Committee, MINAGRIE as the lead implementing agency, will delegate the function and day-to-day implementation and coordination responsibility to the PRODEMA PCU. The PCU has had a solid track record for procurement and financial management; it has been rated continuously satisfactory during the project implementation period. In addition to providing technical support and coordination of the AF activities, and consolidating the project Annual Work Program Budget (AWPB) and progress reports from participating provinces, the PCU will be responsible for fiduciary management, and will ensure regular supervision and monitoring. Implementation of Additional Financing activities will also be supported by strategic institutional and technical partners, as well as service providers (other agencies, NGOs, etc.). Service providers will be recruited on a competitive basis with performance-based contracts.

### Financial Management

2. The FM system and performance of the PCU under the original Project are acceptable to IDA. The same PCU will be responsible for the AF FM activities. It is familiar with the Bank FM requirements and is currently managing the ongoing phase of PRODEMA. The AF FM activities will follow the same approach as the implementation arrangements in place for the ongoing project managed by the PCU. The current FM staffing is adequate. The FM performance was rated Satisfactory (S) following the last supervision mission undertaken in April 2016.

3. *Budgeting arrangements.* The budgeting and monitoring process are clearly defined in the existing administrative and accounting manual of procedures which has been updated. Periodic reports of budget monitoring and variance analysis will continue to be prepared by the FM team on a quarterly basis.

4. *Accounting arrangements.* The current accounting standards and software TOM2PRO used for the ongoing project will be applicable for the AF.

5. *Internal control arrangements.* The existing manual of administrative financial and accounting procedures is adequate and has been updated. It will be used for AF implementation. It clearly defines FM procedures and operations documentation.

6. *Financial reporting.* The interim (un-audited) financial reports (IFR) will be prepared quarterly and submitted to the Bank 45 days after the end of each quarter. The periodicity of IFR preparation, as well as its format and content, will remain unchanged.

7. *External audit.* Audited financial statements for the project will be submitted to IDA within six months after year-end. It is to be noted that PRODEMA has no overdue audit report. The project audit report covering the period ending on December 31, 2015 was submitted on time; the external auditor expressed an unqualified opinion.

8. *Disbursement arrangements and flow of funds.* Disbursement for the AF will follow the existing disbursement arrangements established for the original financing. Under the Additional Financing, disbursements will continue to be made using the Advance, Reimbursement, Direct payment and Special Commitment methods. A new segregated designated account (DA) will be opened at the Central bank “BRB”. The DA will be managed by the same PCU. The Ceiling of the DA has been set at US\$2.5 million. Upon effectiveness of the AF and receipt of a withdrawal application, an initial advance up to the ceiling amount will be disbursed into the DA and subsequent replenishments will be made upon receipt of Statements of Expenditures (SOEs) reporting on the use of the previous replenishment for eligible project expenditures.

9. *Fraud and corruption.* The AF will follow the existing Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants dated October 15, 2006 and as revised in January 2011. None of the audit reports and evaluation missions have uncovered any cases of fraud or corruption regarding the ongoing project implementation.

10. *Supervision plan.* Since the current overall project FM risk rating is High for the AF, a minimum of two on-site supervision visits will be conducted each year, which commensurate with the risk levels. The objective of the supervision missions will be to ensure that strong financial management systems are maintained for the Grant throughout the life of the project. However, due to the fragility context, reviews will be carried out regularly to ensure that expenditures incurred by the PCU remain eligible for IDA funding.

## **Procurement**

11. *Procurement regime.* Procurement activities under the original project were carried out in accordance with the World Bank’s “*Guidelines: Procurement under IBRD Loans and IDA Credits*” published in May 2004 and as revised in October 2006 and May 2010; and “*Guidelines: Selection and Employment of Consultants by World Bank Borrowers*” published in May 2004 and as revised in October 2006 and May 2010, and the provisions stipulated in the Financing Agreement. The same guidelines will continue governing the additional financing as approved by the Bank management as a waiver to the New Procurement Framework (including Procurement Regulations for Borrowers) that apply to projects with PCN held after July 1<sup>st</sup>, 2016 was granted by the Procurement Manager on August 8, 2016.

12. *Procurement capacity and risk.* The PCU has conducted procurement activities for the parent project in a satisfactory manner. Since there are no changes being proposed to the institutional arrangements, the AF will take advantage of the existing PCU capacity in implementation of the new procurement activities. With regard to risk, given the country fragile context, procurement risk is rated Substantial.

13. *Scope of procurement and selection under the AF.* The major contracts will consist of works for rehabilitation of marshlands and feed roads as well as their associated technical studies and supervision. Based on their estimated small amounts (max. \$1 million per contract) and manageable risks (previous procurement processes have shown acceptable competition), they will be procured by approaching the local market.

14. *Procurement plan.* The procurement plan for the first 18 months of the project has been agreed with the Bank (see tables below). During implementation, the procurement plan will be updated in agreement with the project team as required - at least annually - to reflect actual project implementation needs and improvements in institutional capacity. It will be available in the project's database and a summary will be disclosed on the Bank's external website once the project is approved by the Bank's Board of Directors.

### **Policy exceptions and readiness**

15. Waiver to continue applying the Bank's *Guidelines: Procurement under IBRD Loans and IDA Credits* published in May 2004 and as revised in October 2006 and May 2010; and *"Guidelines: Selection and Employment of Consultants by World Bank Borrowers"* published in May 2004 and as revised in October 2006 and May 2010, and the provisions stipulated in the Financing Agreement was granted on August 8, 2016. This waiver to use the New Procurement Framework (including Procurement Regulations for Borrowers) that apply to projects with PCN held after July 1, 2016 was sought so that the AF can be processed in time and implemented in necessary synergies and continuity for existing contracts under the original project.

16. The parent project is fully operational and all conditions are in place to ensure that the implementation of proposed activities can be scale-up as soon as the Grant is declared effective.



Table 1. Summary of the major procurement packages planned during the first 18 months after project effectiveness the first 18 months after project effectiveness

<i>a. Procurement of works, goods, IT systems and non-consultant services</i>								
1	2	3	4	5	6	7	8	9
Ref. No.	Description	Estimated cost (US \$)	Procurement Method	P-Q	Domestic Preference	Review by WB Prior/Post	Expected bid-opening date	Comments
<b>Works</b>								
1	Rehabilitation of Nyamuswaga marchland (Ngozi) (285 ha))	1 154 250	NCB	No	N/A	Post	April 2017	
2	Rehabilitation of Ndurumu Marshland (Ngozi) (210 ha)	850 500	NCB	No	N/A	Post	May 2017	
3	Rehabilitation of Kinywamagana and Ruhohera Marshland (Kirundo) (157 ha)	635 850	NCB	No	N/A	Post	May 2017	
4	Rehabilitation of Mwambu (179 ha) and Nyanzari extension 2 (83 ha) marshland	470 790	NCB	No	N/A	Post	Done	Price adjustment to be shared with the Bank as due diligence
5	Rehabilitation of rural roads - Kirundo-Muyinga (8.273 km)	455 015	NCB	No	N/A	Post	Done	
6	Rehabilitation of rural roads - Cankuzo (6.714) km	369 270	NCB	No	N/A	Post	Done	
7	Rehabilitation of rural roads (lot No1 - 45 km )	2 475 000	NCB	No	N/A	Post	May 2018	
8	Rehabilitation of ISABU Invitro laboratory	31 000	Shopping	No	N/A	Post	July 2017	
9	Maintenance work of selected irrigation schemes	263 900	NCB	No	N/A	Post	September 2017	
10	Maintenance work of selected damaged rural roads	158 300	NCB	No	N/A	Post	September 2017	

Ref. No.	Description	Estimated cost (US \$)	Procurement Method	P-Q	Domestic Preference	Review by WB Prior/Post	Expected bid-opening date	Comments
<b>Goods and IT systems</b>								
11	PCU vehicles (3)	108 400	UNOPS	No	N/A	Prior	August 2017	
12	Computers/scanners/photocopiers	31 000	Shopping	No	N/A	Post	May 2017	
13	Office furniture	23 200	Shopping	No	N/A	Post	May 2017	
14	New version of Tompro software and training	51 600	SS	No	N/A	Post	March 2017	
<b>b. Consultant services, including core staff of the PCU</b>								
1	2	3	4	5	6	7		
Ref. No.	Description of Assignment	Estimated cost (US \$)	Selection Method	Review by WB (Prior / Post)	Expected Proposals Submission Date	Comments		
1	TA to be provided by IRRI: Rice technology (2017-2018)	298 400	SS	Prior	Feb 2017			
2	TA to be provided by IITA/ILRI: Livestock/dairy production (2017-2018)	224 200	SS	Prior	Feb 2017			
3	TA to be provided by IITA: Nurseries and processing technology for cassava, bananas and other fruits (2017-2018)	414 600	SS	Prior	Feb 2017			
4	Engineering studies and supervision of rehabilitation work related to the rural roads (65 km)	370 500	QCBS	Post	June 2017			
5	Engineering studies and supervision of work related maintenance/rehabilitation of the irrigation schemes	80 000	SS	Post	April 2017	The justification for single source as well as for the reasonableness of the cost should be agreed with the TTL during the procurement process.		
6	Engineering studies and supervision of work for the maintenance of rural roads	45 000	SS	Post	April 2017			
7	Environmental and social safeguard supervision	15 000	SS	Post	June 2017			
8	Renewal or recruitment of new staff for the PCU	Per contract	SS / IC	Prior	-	Hiring strategy to be agreed between the WB and the client		
9	TA for the Batwa program/support	50 000	SS	Post	Feb 2017			
10	Financial audit for 2017, 2018 and 2019	76 500	LCS	Post	Dec 2017			

## ANNEX 4. PROJECT ECONOMIC AND FINANCIAL ANALYSIS

### 1. Methodology and Assumptions

1. **Methodology and Assumptions used for the Initial PRODEMA.** PRODEMA was approved in 2007 and will close on December 31, 2016. It was designed to support socio-economic development through (i) producer-driven interventions for income-generating activities in selected value chains (rice, banana, cassava, milk, as well as fruits and vegetables); and (ii) rehabilitation and expansion of rural infrastructure (irrigation facilities in marshlands and field tracks linking production areas) to facilitate the production and transport of agriculture commodities.

2. The initial economic and financial analysis was performed with a focus on productive activities (related to investment sub-projects) supported by PRODEMA. The infrastructure facilities were not the object of the quantitative analysis. The assumption was that these facilities would have a positive effect on the viability of productive activities; they would enhance the results of these activities; and, as a result, the quantitative analysis based solely on productive sub-project activities would be conservative. The analysis was based on an incremental approach, i.e., on a comparison of the situation without project (*ex-ante* situation) with the situation expected to prevail with the project (*ex-post* situation) to estimate the benefits generated by the project.

3. **Methodology and Assumption used for the AF.** The analysis performed for the AF project uses the same methodology as the one performed for the original project. It uses the above-describe *ex-ante* situation as benchmark on which to assess benefits for AF supported activities. The analysis uses the initial project data, and the data from various sector and impact studies (including the August 2016 Impact Study) to assess the original situation; it uses the data from the project M&E unit to assess the current situation; these data were supplemented by field interviews with beneficiaries and resource persons conducted during the appraisal mission to gauge the qualitative aspects of changes already in motion and those expected to be achieved under the project. The above data were used in particular as basis to make projections regarding yield potential for the specific production and processing activities identified.

4. The financial prices used in the analysis are those collected during the July to August 2016 appraisal mission. In Burundi, the economic costs are not markedly different from the financial costs, as taxes are virtually absent. Economic prices have been calculated from wholesale prices, net of the intermediate costs of transport, packaging/processing, and storage losses. They account for about 85 percent of financial prices. The differences between financial and economic farm-gate prices to producers are due to margins taken by intermediaries, and not to distortions relating to import duties.

### 2. Investment Analysis at Farm/ Enterprise level

5. **Improved farm models.** The farm/ enterprise level analysis is based on six improved model enterprises: (i) three production enterprises: rice, cassava and milk production; and (ii) three agro-processing enterprises: cassava into chips, cassava into gari, and bananas into flour. These enterprises cover the bulk of the productive interventions planned under the proposed additional financing. The improved enterprises are based on new operating methods which translate into additional capital and recurring costs as compared to traditional methods. On the positive side,

they yield greater benefits than traditional enterprises. The result is that the net incremental benefits generated are positive, meaning that the new enterprises are much more profitable than the traditional ones.

6. **Internal Rate of Return (IRR) and Net Present Value (NPV).** The IRR of improved enterprises in financial terms for the producer under the AF project is as follows: (i) for production activities: 51 percent for swamp rice, 93 percent for cow milk and 71 percent for cassava; and (ii) for processing/ storage activities: 57 percent for cassava chips, 57.2 percent for cassava, and 50.4 percent for the banana flour. The net present value for these operating models at 6 percent discount rate (the opportunity cost of capital for Burundi) and a 10-year analysis period are US\$1,730 for cassava, US\$333 for milk, US\$141 for swamp rice, US\$2,614 for cassava chips, US\$6,827 for gari, US\$20,482 for banana flour.

7. **Cost-Benefit Ratio.** The profitability of the business models promoted under the AF is also confirmed by the Cost-Benefit (CB) ratio. In the AF project situation, the CB ratio is smaller than 1 for all farm models (e.g., 0.93 for gari, 0.83 for cassava chips, 0.77 swamp rice, and 0.67 for banana flour), except for milk due to the price level practiced which is very close to the production cost.

8. **Risks.** The above results are robust as compared to traditional enterprises in Burundi. In the AF case, the 'switching values' for costs and benefits are 36 percent increase in cost (average across project-supported enterprises) and 56% decrease in benefits respectively to cancel out any net profit; this is to be compared with the traditional situation without project where switching values are generally much lower: e.g., + 1 and -1 percent for swamp rice, 31 percent and 45 percent for cassava, 22 and 29 percent for cassava chips, 7 and 7 percent for gari and tapioca, 50 and 33 percent for banana flour, and 39 and 63 percent for milk. This said, in extremely adverse years, the risk associated with the new enterprises, if not mitigated, may well be above the traditional ones, as the latter have features that help reduce crop yield fluctuations and revenues, in particular the practice of cultivating crops in mixtures and rotations, as opposed to practicing sole cropping. The project will devise measures so that the new enterprises contribute to strengthening the resilience of beneficiaries in the face of difficult situations such as declining profits or rising costs. To the extent possible, the positive features of traditional farming will be preserved in designing new enterprises, and farmers will be appropriately trained to manage risk during severe climate-related or other adverse cropping situations.

9. The above financial results at the producer level are underestimated since they do not take into account the project matching grant. The results increase considerably if the analysis considers the grant (60 percent of the participating farms business plan). The matching grant is required at the start of the enterprise for producers to have a positive cash flow. Also the results are underestimated to the extent that they do not take into account the indirect impact of activities under component 2 (marshland and rural tracks) which will greatly strengthen the smallholder farmers' production environment.

### **3. Project Profitability for Burundi as Whole**

10. The economic analysis was conducted on the basis of (i) a 6 percent discount rate equal to the opportunity cost of capital for Burundi, and (ii) a 10-year timeframe corresponding to the life

of the irrigation facilities rehabilitated. The analysis takes into account (i) the cost of the project grant not considered in the farms budget, (ii) 100 percent of the quantifiable benefits of Sub-Component 1 ‘Support for productive investments’, and (iii) 10 percent of the product price increase considered to reflect the benefits due to the enhanced capabilities of the producers and their organizations as a result of the implementation of Component 2 ‘Capacity Building, Institutional Support and Facilitating access to Markets’, as well as easier access to the rehabilitated marshland under Component 2 ‘Rehabilitation of access roads to managed marshland’. The financial conversion factor from financial to economic price is estimated at 85 percent; it corresponds to the wholesale price of supported products (net of transfers between the agents involved).

11. Taking into account, the rate of adoption of new technologies promoted by the project, the results of the above analysis show that the Additional Financing project is economically viable.

12. The Net Present Value (NPV) of consolidated investments at project level, is approximately US\$11.8 million against a projected investment cost of US\$25 million. The Economic Internal Rate of Return (EIRR) for the entire project is estimated at 20.7 percent. This rate is higher than for the *ex-ante* analysis of the initial project, estimated at 12 percent over a period of 20 years for an initial cost of US\$43 million. The results are robust. If costs increase by 30 percent, benefits decrease by 30 percent and two-year delay in the generation of benefits is incurred, the corresponding EIRR is respectively 15.7 percent, 14.0 percent and 11.6 percent, and the NPV is US\$8.9 million, US\$5.4 million and US\$4.5 million.

#### **4. Rationale for public financing**

13. Public funding for the additional financing that primarily supports investment and other expenses for the development of selected value chains is justified by the fact that the agriculture sector is of paramount importance to Burundi in the light of the overall poverty situation of the country and its economic impact and employment generation. The current political instability in Burundi offers little alternative of private investment in agriculture. In addition, foreign assistance has dwindled making public funding for the agriculture project a more than an urgent and must activity to alleviate the vulnerabilities of small farmers who are Burundi’s poorest and most vulnerable segments of the population. The project will fund a mixture of public infrastructures such as rehabilitation of irrigated marchlands, rural roads to increase productivity and facilitate access to markets as well as fund the promotion of the use of new technologies such post-harvest technology, climate-resilient technologies, and nutrition-smart farming.

## **ANNEX 5. GREENHOUSE GAS ACCOUNTING FOR THE AGRO-PASTORAL PRODUCTIVITY AND MARKETS DEVELOPMENT PROJECT - AF**

1. **Baseline.** The AF will cover the same areas as the parent Project, i.e.: (i) the Northern Zone (Ngozi, Kirundo, Muyinga, and Cankuzo Provinces); (ii) the Central Zone (Mwaro, Muramvya, and Bubanza Provinces); and (iii) the Southern Zone (Bururi, Makamba, and Rutana Provinces). It will focus on a limited number of value chains that are important for food security and nutrition and have sufficient market opportunities (rice, bananas, cassava, milk and vegetables).

- *Rice (and crops grown in the minor season after rice).* In the irrigated lowlands to be rehabilitated under the AF, rice is the main crop, followed during the minor season by food crops (beans and sweet potatoes) and vegetables (such as cabbage, tomatoes, onions, carrots). The AF will rehabilitate 914 ha for marshland irrigation and will introduce improved technology on an additional 616 ha. The technology package includes: inputs (improved seed and pesticide), small equipment (such as manual pumps) for marshland rehabilitation and water management, storage facilities and small-scale processing.
- *Bananas.* Ubiquitous in smallholders' fields, bananas are the base of food security in rural Burundi as they grow across a large array of agro-ecological conditions. The AF will promote the use of “vitroplants” (special disease-free planting material), manure, fertilizer, banana herbicides and pesticides, storage facilities and processing of bananas into chips and flour.
- *Milk.* Practices for milk and manure production will be supported by the project, which will also promote the use of improved livestock breeds (980 cows). The AF will support (i) improved breed multiplication, housing for semi-intensive livestock activities, vaccination, tick control, seed and other inputs for high-yielding forage crops (such as *Desmodium*, *Stylosanthes*, and *Gliricidia* spp., *Leucaena leucocephala*), to be supplemented with improved feed, use of balanced feed, and artificial insemination. In addition, it will support more hygienic and efficient milk collection and distribution networks (bicycles, containers, and improved sale points), small-scale packaging-pasteurization units, and development of collection centers.
- *Cassava and potato.* The AF will support specific interventions to improve the productivity of these commodities through improved planting materials and storage facilities.

2. **Results of Carbon Balance Analysis.** Burundi’s climate is tropical moist with low activity clay soils. The EX-ACT modules used included land use change, crop production, livestock, and inputs and investments, with a project implementation phase of 3 years and capitalization phase of 20 years. A summary of the analysis is presented in the table below.

	Gross fluxes		
	Business as usual	Project scenario	GHG Balance
	All GHG in tCO <sub>2</sub> eq		
	Positive = source ; negative = sink		
<b>Land use changes</b>			
Other LUC	0	89,935	89,935
<b>Agriculture</b>			
Annual		-723,335	-723,335
Rice	4,033	61,844	57,810
<b>Livestock</b>			
Livestock	0	32,113	32,113
<b>Inputs &amp; Investments</b>	0	24,948	24,948
<b>Total</b>	<b>4,033</b>	<b>-514,496</b>	<b><u>-518,529</u></b>
			-
<b>Per hectare</b>	<b>2</b>	<b>-205</b>	<b><u>-207</u></b>
<b>Per hectare per year</b>	<b>0.1</b>	<b>-8.9</b>	<b><u>-9.0</u></b>

3. The planned project intervention will result in Net GHG sink of 514,443 tons of CO<sub>2</sub> equivalent (tCO<sub>2</sub>eq), corresponding to 9 tCO<sub>2</sub>eq per hectare per year. The sink results largely from improved agronomic practices, improved nutrient and water management, as well as improved manure application. The increase in carbon sequestration will lead to other co-benefits including improved biodiversity, reduced soil erosion and enhanced agro-ecosystem resilience.

## **ANNEX 6: CLIMATE AND DISASTER RISK SCREENING RESULTS REPORT FOR THE AGRO-PASTORAL PRODUCTIVITY AND MARKETS DEVELOPMENT PROJECT - AF**

1. **Burundi is a small, landlocked country of which only 36 percent is arable.** The country has two main rainy seasons, which run from September to November and from February to May, as well as a short rain period of about 2-4 weeks in January. The rainfall varies from 2,000 mm in higher altitudes to 1,000 mm in low-lying areas.
2. **Climate vulnerability.** Burundi is exposed to a number of climate hazards which have disrupted and disorganized mostly rain-fed agricultural activities. The country is currently at risk for sporadic extreme flood events in the lower plains. A cyclic character of rainfall has been observed. It alternates between periods of rainfall surplus and periods of deficits. Inter-decadal variability operates on periods of around 10 years. Observations from 1999-2006 show also a shortening of the rainy season coupled with an extension of the dry season in the northeastern regions of Burundi. Since 1999, the region of Bugesera has experienced a delayed onset of rainfall and the water levels in all of the lakes have decreased. The Imbo region has experienced excessive dryness that has caused a decrease in water resources and in the water level of Lake Tanganyika. Additionally, there is a tendency towards desertification in this region. In the future, these risks will remain moderate to high with sporadic extreme flood events in the lower plains and recurrent drought all over the country.
3. **Sensitivity.** High reliance on rainfed agriculture increases the sensitivity of Burundi agriculture to climate change and variability. The combination of steep slopes and high rainfall predisposes many parts of the landscape to high soil erosion rates. Extreme temperatures, flooding, and increased dryness increase the chances of certain breakouts of diseases. More specifically: (i) Burundi's tropical humid climate implies that as the temperature increases, there will be high evapo-transpiration rates, which will result in reduction of the water available for plant growth and other uses; (ii) the shortening of the rainy season in the northeastern provinces leads to torrential rains, lightning and thunder during the rainy season, increasing their vulnerability to loss of livestock, food insufficiency, decreased agricultural output, bush fires, and loss of human life; (iii) prolonged and more intense dry periods favor diseases such as meningitis or those associated with deficits in food production, i.e. malnutrition, or lack of water for people to use. In addition to climate, these effects worsen due to a lack of knowledge of prevention, inadequate hygiene and sanitation, and poverty; and (iv) floods threaten to over-silt the lower valleys, increase soil erosion, decrease agricultural productivity, lead to famine, loss of human life, etc.
4. **Adaptive capacity and resilience measures.** The AF will assist farmers to cope with the season-to-season and within season rainfall variability to improve the current level of production, and build livelihood resilience and adaptive capacity. To this end, it will promote proven sustainable land management practices that can provide the basis for climate resilience, maintaining and improving soil health, and enhancing sustainable natural resources management. Some practices, such as intercropping, agroforestry and mulching, are already being used in the project area, reflecting the willingness of some households to adapt to changing circumstances. Other practices to be introduced include: techniques for integrated soil fertility management, including composting of crop residues; incorporation of nitrogen fixing legumes into the cropping system; crop rotations to improve soil resilience and reduce risks; use of improved varieties;



judicious use of pesticides, fungicides and herbicides; efficient use of irrigation water in marshlands; and use of improved livestock husbandry and animal health management; and biological pest control. These measures are considered as stand-alone good agronomic practices; and when combined they considerably increase the adaptive capacity/resilience of the agricultural system to cope with climate extremes (both drought and flood conditions) and greatly enhance the productivity and profitability of the farming system. These techniques will underpin the AF approach for promoting enhanced productivity, together with infrastructure development which will facilitate access to markets.

## ANNEX 7. MAP OF MARSHLANDS REHABILITATED UNDER PRODEMA AND NEW MARSHLAND TO BE DEVELOPED UNDER THE AF

