



**REPUBLIC OF RWANDA**

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**THE BUGESERA AGRICULTURAL DEVELOPMENT SUPPORT PROJECT  
(PADAB)**

**APPRAISAL REPORT**

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**Extension 2036  
Extension 2086  
Extension 2495  
Extension 2580  
Extension 3308**

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**CURRENCY EQUIVALENTS**

April 2006

Currency Unit = Rwandan Franc

UA 1 = RWF 795.027

UA 1 = US\$ 1.44085

**FINANCIAL YEAR**

1 January – 31 December

**UNITS AND MEASURES**

Metric System

**LIST OF ACRONYMS AND ABBREVIATIONS**

AGF	:	Agricultural Guarantee Facility
APSP	:	Agricultural Processing Strategy Plan
BNR	:	National Bank of Rwanda
BRD	:	Rwanda Development Bank
CCPEC	:	Savings and Loans Cooperatives
CDC	:	Community Development Committee
CDF	:	Community Development Fund
CDP	:	Community Development Plan
CE	:	Executive Council and Committee
CEPES	:	Workers' Mutual Savings and Assistance Cooperative
CFE	:	Entrepreneurs' Financial Center
COOPEDU	:	Savings and Loans Cooperatives
CSS	:	Credit and Saving Scheme
DAEF	:	Directorate of Agriculture, Livestock and Forestry
ESMP	:	Environmental and Social Management Plan
FERWATHE	:	Tea Farmers Union
FRW	:	Rwandan Franc
GVT	:	Government
Ha	:	Hectare
IMBARAGA	:	Intergrouping of Farmers and Stock Raisers
IMN	:	Inter-diocese Microfinance Network
Inh.	:	Inhabitants
ISAR	:	Rwanda Agronomic Science Institute
KM <sup>2</sup>	:	Square Kilometer
L/s	:	Liter per Second
LC	:	Local Currency
LIW	:	Labor Intensive Work
Lux-Development	:	Luxembourg Development Cooperation
MFI	:	Micro-Finance Institution
MIGEPROF	:	Ministry of Gender and Women's Enhancement
MINAGRI	:	Ministry of Agriculture and Livestock Resources
MINALOC	:	Ministry of Local Government and Social Affairs
MINECOFIN	:	Ministry of Finance and Economic Planning
MINEDUC	:	Ministry of Education
MINICOM	:	Ministry of Trade
MININFRA	:	Ministry of Infrastructure
MINTERE	:	Ministry of Land, Environment, Forestry, Water Resources and Mines
Mm <sup>3</sup>	:	Million cubic meters
NAP	:	National Agricultural Policy
NES	:	National Extension Service

OCIR-Café	:	Coffee Marketing and Industry Agency
OCIR-Thé	:	Tea Marketing and Industry Agency
OP	:	Farmers' Cooperatives
PRSP	:	Poverty Reduction Strategy Paper
RADA	:	Rwanda Agricultural Development Agency
RARDA	:	Rwanda Animal Resources Development Agency
RBCSP	:	Results-Based Country Strategy Paper
REMA	:	Rwanda Environmental Management Agency
RPSF	:	Rwanda Private Sector Federation
SME	:	Small and Medium Scale Enterprises
SPU	:	Seed Production Unit
TOR	:	Terms of Reference
UBPR	:	Union of Rwandan Peoples' Bank (Union des Banques Populaires du Rwanda)
UCT	:	Workers' Fund Union (Union des caisses des travailleurs)
UNR	:	University of Rwanda

AFRICAN DEVELOPMENT FUND  
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PROJECT INFORMATION BRIEF

Date: May 2006

The following information aims to provide some general guidelines to all suppliers, contractors, consultants and any other persons interested in the procurement of goods and services for projects approved by the Board of Directors of the Bank Group. More detailed information can be obtained from the Borrower's executing agency.

1. COUNTRY : REPUBLIC OF RWANDA
2. PROJECT NAME : Bugesera Agricultural Development Support Project
3. LOCATION : Bugesera District
4. DONEE : Government of the Republic of Rwanda
5. EXECUTING AGENCY : Ministry of Agriculture and Livestock Resources  
BP 621 Kigali – Rwanda  
Tel.: (250) 58 46 44; Fax (250) 58 46 44
6. PROJECT DESCRIPTION : The project includes the following three components: (i) irrigation and catchment basin development; (ii) agricultural development; and (iii) project management.
7. TOTAL PROJECT COST : UA 13.00 million
  - Foreign exchange : UA 9.34 million
  - Local currency : UA 3.66 million
8. BANK GROUP GRANT
  - ADF : UA 10.00 million
  - Foreign exchange : UA 8.08 million
  - Local currency : UA 1.92 million
9. OTHER SOURCES OF FINANCING
  - Government and beneficiaries : UA 3.00 million
10. APPROVAL DATE : July 2006
11. PROBABLE START-UP DATE AND DURATION : January 2007 for 6 years
12. PROCUREMENT OF GOODS, SERVICES AND WORKS

Works, goods and services will be procured in accordance with the relevant rules of procedure of the African Development Bank Group (ADB).

A. International competitive bidding: irrigation development works.

B. Local competitive bidding: building construction works, rural markets, a rice hulling mill and drying floors. Procurement of office equipment, computer hardware and automotive equipment.

C- National shopping: supplies necessary for project operations.

D- Short list: procurement of the services of NGOs for the training and sensitization of beneficiaries, rural outreach, consulting firms for engineering studies and works supervision, technical assistance, special studies and auditing firms.

### 13. ENVIRONMENTAL CLASSIFICATION

The project is classified under Environmental Category II.

## **EXECUTIVE SUMMARY**

### **Origin and Background**

1. In the past, Bugesera Region was the country's breadbasket as far as the major foodcrops were concerned (beans, sorghum, cassava, etc.). In 1994, the genocide had a devastating effect on the region, worsened further by the exploding number of single-parent families (38% of women and several young orphans now head families). Worse still, the region has had to face prolonged and repeated drought since 1998, the direct consequences of which have been food insecurity and massive population movements. Although the region is blessed with considerable water resources (lakes and rivers), famine has been frequent following poor harvests due to drought and inadequate water control. Time and again, the Government has appealed for food aid for the region's malnourished. A total of 150 000 persons in need of food relief have been registered. In order to address the situation, the Government requested Bank support to finance the Bugesera Irrigation Development Support Project. The Project will allow for water control and through it contribute to sustainable food security in the region.

### **Project Objectives**

2. At sector level, the aim of the project is to strengthen food security. Specifically, the project aims at increasing agricultural production in Bugesera Region by setting up irrigation infrastructure in a 650 ha valley, protecting catchments and improving rain-fed farming on nearly 5 000 ha of hills, as well as building the capacity of farmers and supervisory institutions.

### **Project Description**

3. The project will comprise the following three components: (i) irrigation and catchment basin development; (ii) irrigation development; and (iii) project management. The purpose of the first component is to: (i) reduce the impact of drought in Bugesera Region by irrigating the Mwesa Valley (650 ha net area) on which rice and market-garden crops would be cultivated two seasons yearly; and (ii) water and soil protection (WSP) through erosion control facilities on nearly 5 000 ha of catchment basins.

4. The aim of the second component is to increase food production by: (i) building the capacity of the beneficiaries; (ii) extending new technology; (iii) distributing improved seeds and plants, and intensifying rain-fed crops and agro-forestry; (iv) conducting rural extension; (v) establishing marketing infrastructure; and (vi) intensifying rain-fed farming and agro-forestry around the Mwesa Valley.

5. The Ministry of Agriculture (MINAGRI) will be responsible for implementing the project. MINAGRI will appoint the team of technicians, attached to the General Secretariat, whose task will be to coordinate project activities. The team will comprise: (i) a manager and specialist in agricultural and rural development who will also serve as the Coordinator; (ii) a rural engineer in charge of the irrigation development component; (iii) an agronomist, in charge of the agricultural development component; (iv) a socio-economist in charge of monitoring and evaluation, credit and gender issues; (v) an environmentalist to oversee water and soil protection operations, agro-forestry and implementation of the Environmental and Social Management Plan (ESMP); (vi) an accountant to handle project financial management; and (vii) a procurement specialist.

### Project Cost and Financing

6 To project is estimated to cost a total of FRW 10 342 million (UA 13 million), excluding taxes and customs duty. The cost comprises FRW 7 428 million in foreign exchange and FRW 2 914 million in local currency, that is to say UA 9.34 million and UA 3.66 million, respectively. The project will be jointly financed with a UA 10 million ADF grant (77% of total cost) and a UA 3 million counterpart contribution (23%) from the Government of Rwanda and the beneficiaries.

7 The Government will cover the vehicle procurement and running cost, rice field development, half the water pumping cost for Project Years 4 and 5, the catchment basin protection cost and staff salaries. The beneficiaries will contribute to half the cost of agro-forestry and erosion control works on their fields. The ADF grant will cover 77% of the project cost (UA 10 million), of which UA 8.08 million in foreign exchange and UA 1.92 million in local currency. Thus, the grant will account for 87% and 52% of the foreign exchange and local currency costs, in that order.

### Conclusions and Recommendations

8 By mobilizing water for the irrigation of the Mwesa Valley and protecting neighboring catchment basins, the Bugesera Agricultural Development Support Project will contribute to sustainably reducing the negative impact of the drought. Thus, agricultural production will increase by 25 000 tons over time. In terms of the project impact area, household income for 13 500 rural households, 60% of which are managed by women, will significantly improve. Depending on the type of farm, the income range is estimated at FRW 139 000 to FRW 534 000, i.e. more than double the current level. With the irrigation development works, the intensification of the farming systems and the development of income-generating activities, the project will contribute to the creation of nearly 2 500 permanent jobs and 2 million working days generated by the development works.

9 It is recommended that a grant not exceeding UA 10 million be awarded to the Republic of Rwanda for use in implementing the project described in this report, subject to fulfillment of the specific conditions contained in the Grant Memorandum of Understanding:

A. Conditions Precedent to Entry into Force: the Grant Memorandum of Understanding shall enter into force only after its signing by the Donee and the Fund.

B. Conditions Precedent to Disbursement

The disbursement of the grant resources shall be subject to entry into force of the Grant Memorandum of Understanding and fulfillment by the Government of the following special condition:

i) Show to the Fund proof of appointing the project team (paragraph 4.5.17)

C. Other Condition

i) Show to the Fund proof of signing a performance contract with the Project Coordinator not later than six (6) months following entry into force of the Grant (paragraph 5.1.2).

**RWANDA: BUGESERA AGRICULTURAL DEVELOPMENT SUPPORT PROJECT (PADAB)**  
**PROJECT MATRIX**

<b>OBJECTIVES</b>	<b>EXPECTED OUTPUT</b>	<b>BENEFICIARIES</b>	<b>PERFORMANCE INDICATORS</b>	<b>TARGET INDICATORS</b>	<b>ASSUMPTIONS/ RISKS</b>
<b>I. SECTOR GOAL</b>					
1. Strengthen food security.	1.1 Increase agricultural production	1.1 – 13 500 households in the Bugesera Region with 60 750 individuals, of which 60% women.	1. 1 Agricultural production level	1.1 Reduction of food deficit in the project zone from 40% in 2006 to 30% in 2010 and 15% in 2012.	1.1 Vagaries of the weather (drought). <u>Mitigative Measures</u> The project includes provisions for irrigation facilities to mitigate the impact of drought and erosion
<b>II. PROJECT OBJECTIVES</b>					
1. Increase agricultural production in the Bugesera Region	1.1 Irrigation of crops 1.2 Improvement of soil fertility and protection of catchments	1.1 Bugesera districts, 60 750 inhabitants, of which 60% women	1.1 Farmland under irrigation 1.2 Areas protected 1.3. Areas under intensive farming on the hills 1.4 Agricultural production  1.5 Farming income	1.1 650 ha of newly developed rice fields and market garden plots set up and farmed in 2010 and 1 300 ha in 2012 1.2 – 2500 ha of catchment basins protected in 2010 and 5 000 ha in 2012 1.3 - 2 500 ha of intensified rain-fed crops in 2010 and 4 600 ha in 2012, of which 60% belong to women 1.4.1- Production of foodcrops increases from the current 3 170 T to 11 190 T in 2010 and 28 170 T in 2012 (see details on Table 4.1) 1.4.2 Fruit production increases from the current 700 T to 4 200 T in 2010 and 6 700 T in 2012 1.4.3 Milk production increases from the current 3 500 T to 5 340 T in 2010 and 10 800 T in 2012 1.5.1 Agricultural income increases from the current FRW 60 000 to FRW 120 000 in 2010 and FRW 200 000 in 2012 for rain-fed farms 1.5.2 Income per irrigated hectare will stand at FRW 220 000 in 2010 and FRW 534 000 in 2012.	1.1 Vagaries of the weather (drought), erosion (silting of works) <u>Mitigative Measures</u> The project includes provisions for irrigation facilities and a water conservation program to limit the impact of drought and erosion.
<b>III. ACHIEVEMENTS</b>					
1. Water controlled and developed	1.1 Installation of pump irrigation networks	1.1 Population of districts concerned, of which 60% women	1.1 Area of the scheme developed 1.2 Quantity of irrigation water mobilized	1.1 - 325 ha developed for irrigation in 2010 and 650 ha in 2012 1.2 – 8 million m <sup>3</sup> in 2010 and 13 million m <sup>3</sup> in 2012 mobilized for irrigation	1.1 Insufficient recovery of water charges due to the high cost of energy <u>Mitigative Measures</u> The prospect of using other source of energy (Lake Kivu Methane Project scheduled for end 2007 and energy from the Rusumu Hydro-Electric Station planned for end 2012) should reduce the current cost per KWh by 50%, thus facilitating payment of the irrigation charges by users. 2.1 Idem
2. Water and soil protected	2.1 Protection of catchment basins against erosion	2.1 Bugesera population concerned	2.1 Area reforested 2.2 Area equipped with retention works 3.1 Number of markets, processing facilities and warehouses built	2.1 – 1 000 ha of catchment basins reforested in 2010 and 2 000 in 2012 2.2 – 2 500 ha of catchment basins protected in 2010 and 5 000 ha in 2012. 3.1 - 2 markets, 3 warehouses and 1 rice husking mill in 2010; 3 markets and 6 warehouses in 2012.	
3. Marketing infrastructure set up	3.1 Construction of markets, warehouses and processing facilities 3.2 Construction of rice drying floors	3.1 Idem	3.2 Number of drying floors developed	3.2 - 15 rice drying floors built in 2010 and 30 in 2012.	3.2 Idem

4. Farmers structured, supervised and trained	4.1 Technical supervision and training of farmers	4.2 – 13 500 Bugesera farmers including 60 750 individuals, of which 60% women	4.1 Number of farmers sensitized and trained 4.2 Number of associations and cooperatives set up	4.1 – 6 500 farmers trained and organized in 2010, and 13 500 in 2012, of which 60% women.  4.2 – 415 associations, 30 intergroupings and 2 cooperatives (with 50% women membership) set up in 2010.	4.1 Idem
		5.1 Idem	5.1 Number of demonstrations put in place		
5. New farming methods identified and popularized	5.1 New varieties and new farming and processing methods identified 5.2 –New product processing and conservation processes identified	5.2 – 415 associations, 30 intergroupings and 2 cooperatives, half of whose membership are women	5.2 Number of technical packages distributed	5.1 - 75 various crop demonstrations conducted in 2010 and 150 in 2012 5.2 – 10 technical packages covering production methods, catchment basin development and water control adopted by farmers in 2010 and 20 in 2012.	5.1 Idem
	6.1 New disease-resistant varieties created	6.1 13 500 farms, of which 60% managed by women	6.1 Number of varieties created		
6. Pest control research/development program conducted				6.1 - 5 new cassava varieties resistant to African mosaic developed and distributed in 2010 6.2 – 12 000 ml of healthy cassava cuttings produced in 2010 and 25 000 ml in 2012	6.1 Idem
	7.1 Seed and plant multipliers trained and organized	7.1 Idem	7.1 Number of multipliers trained		
7. Improved seeds produced and distributed	7.1 Improved seeds and plants produced	7.2 Idem	7.2 Quantity of seeds and plants produced	7.1 – 20 seed multipliers trained in 2010 and 40 in 2012, of which 60% women 7.2 – 20 ha of foodcrop seed multiplication and 10 ha of cassava multiplication set up in 2010, and 20 ha in 2012. 7.3- 250 tons of foodcrop seeds, 0.5 million improved cassava cuttings distributed in 2010 and 500 tons of seeds and 0.5 million cassava cuttings in 2012. 7.4 20 000 improved fruit trees produced in 2010 and 40 000 in 2012. 8.1 – 650 ha of irrigated farming practised in 2010 and 1 300 ha in 2012 8.2 – 2 300 ha of intensified rain-fed farming in 2010 and 4 600 ha in 2012 8.3 – Foodcrop production increases from the current 3 170 T to 11 190 T in 2010 and 28 170 T in 2012 8.4 Fruit production increases from the current 700 T to 4 200 T in 2010 and 6 700 T in 2012 8.5 Milk production increases from the current 3 500 T to 5 340 T in 2010 and 10 800 T in 2012 1.5.1 Farming income increases from the current FRW 60 000 to FRW 220 000 in 2010 and FRW 290 000 in 2012 for rain-fed farms	7.1 Idem
	8.1 Larger areas cultivated	8.2 Idem	8.1 Number of hectares developed		8.1 Lack of competitive prices for rice <u>Mitigative Measures</u> Tax breaks for agricultural input; the planned improvements in farming methods will contribute to enhancing the competitiveness of rice
8. Agricultural production increased	8.2 Increased foodcrop, vegetable and fruit production		8.2 Quantity of additional production		8.2 Vagaries of the weather (drought), erosion (silting of works) <u>Mitigative Measures</u> The project includes provisions for irrigation facilities and a water conservation program to limit the impact of drought and erosion

9. Capacity of cooperatives and associations strengthened	9.1 Rural SMEs strengthened 9.2 Processing and conservation activities developed 9.3 The population's health improved	9.1 Idem	9.1 Number of SMEs strengthened 9.2 Number of STD and water-borne disease prevention messages disseminated 9.3 – Number of nutritional advice given and programs broadcast  10.1 Number of managers and workers trained and equipped.	9.1 – 150 rural extension workshops organized in 2010 and 300 in 2012. 9.2 – 10 technical packages (processing, conservation and storage) distributed and adopted in 2010 and 20 in 2012. 9.3 - 24 STD/malaria prevention messages and nutritional advice given yearly from Project Year 2. 9.4 – 30 training sessions conducted in 2010 and 60 in 2012, with women accounting for 60% of the beneficiaries
10. Capacity of the project team and the ministries concerned strengthened.	10.1 The project team and the relevant decentralized technical departments trained and equipped.	10.1 Districts and ministries concerned.		10.1- 75 managers and technicians trained in 2010, of which 30% women 10.2 75 batches of computer hardware, teaching aids, communication and office equipment procured in 2010.

#### IV. ACTIVITIES/INPUT

1. Recruitment of technical assistance
2. Preparation of bidding documents and procurement of equipment and automotive resources
3. Preparation of bidding documents, signing of agreements and recruitment of operators to implement the project (NGOs and others)
4. Preparation of engineering designs and bid invitation for construction of infrastructure
5. Sensitization and organization of the beneficiaries
6. Multiplication and distribution of improved seeds and plants.
7. Supervision and training of the beneficiaries
8. Construction of infrastructure and supervision of works
9. Rehabilitation of infrastructure and supervision of works
10. Programming and implementation of training sessions and workshops
11. Project mid-term review
12. Monitoring and supervision of project implementation activities
13. Project audit
14. Preparation of the PCR

#### AVAILABLE RESOURCES

Component A: UA 9.22 million  
Component B: UA 3.04 million  
Component C: UA 0.74 million

**Total UA 13 million**

#### SOURCES OF FINANCING

ADF : UA 10.00 million  
Gvt /Benef. : UA 3 million  
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**Total : UA 13 million**

#### MEANS OF VERIFICATION

- 1.1 Staff assignment orders
- 2.1 Employment contract
- 2.1 Bidding documents and procurement contracts
- 4.1 Agreements and cooperation contracts
- 5.1 Bid analysis reports, contracts
- 6.1 Work program and progress reports
- 7.1 Service contracts with ISAR, UPS, NGOs and nursery operators, contract minutes
- 7.2 Minutes on the reception of seeds and plants, number of beneficiaries
- 8.1 Training reports
- 9.1 Reception minutes
- 10.1 Reception minutes
11. 1 Progress project, monitoring/evaluation reports
- 12.1 Mid-term review
- 13.1 Monitoring/evaluation and supervision report
- 14.1 Audit report
- 15.1 PCR

## **1. PROJECT ORIGIN AND BACKGROUND**

1.1 Rwanda covers an area of 26 340 km<sup>2</sup>. It shares borders to the North with Uganda, to the South with Burundi, to the East with Tanzania and to the West with the Democratic Republic of Congo. Its population is estimated at 8.5 million, i.e. an average density of 323 inhabitants/km<sup>2</sup> which, in some provinces (e.g. Ruhengeri), can reach 540 inhabitants/km<sup>2</sup>. Until recently, extensive foodcrop cultivation on hill farmlands was enough for national consumption. Today, however, the country's food situation is more fragile, further worsened by the demographic pressure and vagaries of the weather.

1.2 Bugesera Region, for which the project is intended, was the country's breadbasket with regard to the key foodcrops (beans, sorghum, cassava, etc.). In 1994, the region was severely affected by the genocide. As a result, the number of single-parent families exploded (38% of women and several young orphans now head families). In addition, Bugesera Region has had to live with prolonged and repeated drought since 1998, resulting in food insecurity and massive population movements. Although blessed with considerable water resources (lakes and rivers), the region has often recorded frequent famines due to poor harvest in the wake of drought and inadequate water control. On several occasions, the Government appealed for food aid for the region's malnourished. A total of 150 000 persons in need of food relief have been registered.

1.3 To address the situation, the Government decided to build water control infrastructure in order to irrigate the region's lowlands and valleys, with a view to guaranteeing sustainable food security. Within that framework, it forwarded a request for financing the Bugesera Agricultural Development Support Project to the Bank in May 2005. In response to the request, a Bank mission visited the country in June 2005 to prepare the project. In the course of the mission, the need to conduct a comprehensive study on Mwesa Valley Irrigation Development (on which no preliminary study had been conducted) arose. That study was subsequently undertaken by MINAGRI and the report forwarded to the Bank in January 2006. Several alternatives for developing the valley in question were reviewed in the study which served as the basis for the project appraisal conducted by the Bank in April 2006.

1.4 This project - prepared using the participatory approach – addresses the priority needs of farmers in Bugesera Region. Indeed, project activities were defined after consultations with the beneficiaries and various stakeholders during meetings and workshops organized in Kigali and the project zone. The project fits into the priorities and thrusts of various Government strategies, especially Vision 2020, the National Poverty Reduction Strategy, the Agricultural Processing Strategy Plan (APSP) of the Ministry of Agriculture and Livestock Resources (MINAGRI) as well as the strategies of the Ministry of Land, Environment, Forestry, Water Resources and Mining (MINTERE) with regard to rational resources management. The project is also in line with the Bank's RBCSP for the 2005-2007 period. It falls under Pillar 1 (improvement of rural living conditions through consolidated growth in the agricultural sector, increased agricultural productivity and income).

## **2. THE AGRICULTURAL SECTOR**

### **2.1 Principal Characteristics**

2.1.1 Rwanda is characterized by its relief, comprising a succession of relatively large hills and valleys. More than 40% of the country is located on an altitude of between 1500 m and 1 800 m. The temperature is moderate highland equatorial averaging 16° to 23°C. Annual rainfall ranges from 800 mm to above 1 600 mm, divided between two rainy seasons (March to May and September to December).

2.1.2 The agricultural sector is the backbone of the Rwandan economy. It averaged 45% of the GDP in the past decade (1995-2004) and generates nearly 75% of the foreign exchange earnings. Furthermore, the sector employs 90% of the active population. Rwanda has nearly 1.4 million farming families. As a result of the 1994 genocide, nearly 38% of households are currently headed by single women. Smallholdings dominate, with farms averaging 0.75 ha. Each farm comprises 5 to 6 members, half of them below 15 years of age.

2.1.3 Agricultural production is mostly for on-farm consumption. For most Rwandans, the food regime is 50% tubers, 30% banana and 20% legumes, cereals, vegetables, etc. Until the early nineties, foodcrop production largely covered domestic consumption. Currently, the country's food situation has been seriously compromised by the deteriorating natural resources due to demographic pressure (intensive farming, settlement of returnees in forest zones, fragmentation of farmlands, etc.) and frequent droughts. With arable land becoming rarer to find, the people have no other choice but to cultivate areas reclaimed from swamps and steep hillsides, often in an uncontrolled manner. The combination of these factors has speeded up soil degradation and falling productivity, thus putting the country's food security in jeopardy. In 2004, Rwanda spent more than USD 46 million on food imports<sup>1</sup>.

2.1.4 Currently, the country's main exports are tea and coffee and, to a lesser extent, pyrethrum extract (an insecticide product). Tea, the main cash crop, is cultivated by 28 000 farmers. Tea production has grown by 4% on yearly average, thanks to investments to rehabilitate infrastructure (mostly factories). In 2004, an estimated 11 300 tons of tea were exported. The tea network is managed by OCIR-Thé. Traditionally the main export crop, coffee production has declined by nearly 14% in the past decade, mostly on account of international price fluctuations and the drought. Coffee export was estimated at 19 000 tons in 2004. Most of the coffee produced is classified under the "ordinary" category – the least appreciated Arabica coffee on the international market. However, a few activities to produce "full-washed" coffee, of better commercial potential (e.g. The Maraba Coffee Cooperative in Butare), are being developed. For pyrethrum, the 2004 commercialized production is estimated at 1 250 tons.

2.1.5 In terms of livestock production, two systems co-exist – traditional and extensive. Intensive production is limited to the large dairy farms around Kigali, Umutara and Gishtawi regions where considerable progress has been made in terms of genetic improvement. The main species raised include cattle (1 079 200 heads, of which 7% improved)<sup>1</sup>, goats (2 663 550 heads), sheep (689 550 heads), pigs (456 040 heads), poultry (2 011 570 units) and rabbit (427 440 units). Most of the cattle rearing is concentrated around the Umutara, Gitarama and rural Kigali regions. Umutara is characterized by the intensive method, while the other two regions are better known for their semi-intensive dairy farming. Pig farming is largely concentrated in the Kibungo, Gitarama and Butare regions. Bee farming is more common in Kubango, Byumba and Gitarama.

2.1.6 Annual livestock production is estimated at 19.26 million liters of milk, 39 126 tons of meat, 7 612 tons of fish, 1 499 tons of skins and 6.89 million eggs. This production falls short of covering even half of the country's needs. Rwanda's annual consumption stands at 12 liters of milk and 4.8 kg of meat per capita, compared to 220 liters and 10 kg per capita per annum recommended by the FAO. Livestock contributes only marginally to the GDP (3.7%). Sub-sector exports (unprocessed skins) accounts for 2-4% of the country's total exports. The sub-sector faces several constraints, notably inadequate feeding both in terms of quantity and quality due to the limited and poor pasturage, lack of watering resources in some

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<sup>1</sup> MINAGRI Statistics, 2005.

farming zones and limited use of agricultural by-products. Moreover, epidemics which regularly strike the herd and poor performance of the local breed limit livestock productivity. Lacking human and material resources, the veterinary services are unable to meet the demands of livestock farmers.

2.1.7 Fishing, practised by nearly 5 500 artisanal fishermen, accounts for 0.3% of the GDP. The production potential is estimated at 7 400 tons, all resources combined. Lake productivity is estimated at nearly 40 kg/hectare/annum, compared to the African average of 150 kg. The fishing sub-sector is estimated to generate 35 500 jobs. The Rwandan forest covers 197 000 ha (about 7.5% of the territory) and comprises four natural forests: Nyungwe in the South-West (90 000 ha), Gishwati in the West (2 000 ha), Birunga in the North-West (15 000 ha) and Akagera in the East (90 000 ha). Forestry resources are constantly deteriorating, with the attendant impact on bio-diversity, soil and water conservation. Indeed, since the 1994 crisis, the national parks area has reduced from 417 000 ha to 105 000 ha. The Akagera Reserve has lost two-thirds of its size and the Gishwati Forest has almost completely disappeared (from 37 000 ha to 2 000 ha). Sylviculture comprises the production of fire wood and working wood, estimated at nearly 4 million m<sup>3</sup>/annum. The forestry sub-sector was estimated to account for 2% of the GDP in 2004.

## **2.2 Sector Institutions**

2.2.1 Several structures manage the agricultural and rural sector: (i) central government institutions; (ii) local decentralized institutions; and (iii) parastatals, private and community institutions. At the central level are the Ministry of Agriculture (MINAGRI), the Ministry of Land, Environment, Forestry, Water Resources and Mining (MINTERE), the Ministry of Local Government and Social Affairs (MINALOC), the Ministry of Infrastructure (MININFRA), the Ministry of Gender and Women's Enhancement (MIGEPROF) and the Ministry of Trade and Cooperatives (MINCOM). At the decentralized level, the Districts are responsible for implementing agricultural development policies and programs, with the Prefect coordinating at the provincial front.

2.2.2 In addition to the Minister's cabinet, the State Secretariat in charge of Agriculture and the General Secretariat, MINAGRI's new structure comprises three (3) central administrative units, two (2) development agencies and an Institute of Agronomic Sciences. The central units include: (i) the Financial and Internal Resources Management Unit; (ii) the Information and Communications Technology Unit; and (iii) the Planning, Sector Policy and Capacity Building Unit. The development agencies set up include: the Rwanda Agricultural Development Agency (RADA) and the Rwanda Livestock Resources Development Agency. The decrees establishing them were approved by MINAGRI in 2005 and have been submitted to Parliament. The agencies will be autonomous structures, comprising a seven-member board of directors appointed by the Prime Minister for a three-year term, a Managing Director, seven units (for RADA) and five units (for RARDA). The agencies should represent MINAGRI in the field by providing support for various missions and supervising the decentralized structures in charge of the agricultural and rural sector.

2.2.3 The Seed Production Unit (SPU) (formerly the National Seed Service - NSS), which comes under RADA, is charged with coordinating the production of improved seeds and supervising multipliers. The SPU operates in collaboration with the Rwanda Agronomic Science Institute (ISAR). It is currently assisted by Belgian Cooperation through the Seed Sector Support Project (2005-2009). In particular, the Seed Sector Support Project aims at creating an organizational framework, professionalizing sector operators and midwiving the emergence of an autonomous private sector capable of producing sufficient improved seeds

in quality and quantity. Although it started only recently, the Seed Sector Support Project has made considerable strides in organizing professional operators nationwide, rehabilitating thirteen seed multiplication stations and supporting seed production by private operators.

2.2.4 Scientific research in agriculture is primarily the brief of the Rwanda Agronomic Science Institute (ISAR). However, other structures also participate in that field, especially the Faculty of Agronomy of the University of Rwanda (UNR). ISAR employs 75 researchers and research assistants. It conducts research in various areas: genetic improvement and varietal selection, farming methods, sociology and agricultural economy. It is also responsible for centralizing information, publishing and making technological innovations accessible to the masses. It plays a key role in research and dissemination of technical innovations and, in collaboration with the Faculty of Agronomy of the University of Rwanda, conducts research programs and training workshops.

2.2.5 At the decentralized level, all technical departments depend administratively on Provincial Governors and District Mayors. Their tasks include: (i) conducting research-based extension services; (ii) conducting demonstration tests and training farmers; (iii) disseminating information; (iv) monitoring and coordinating activities and development projects; and (v) supporting elected officers and decentralized authorities. At each district, the agricultural department is coordinated by an agronomist or an animal husbandry specialist in collaboration with two technicians at the sector and administrative unit level. With regard to industrial crops and rice cultivation, the above staff are supported by OCIR-Thé and OCIR-Café, RADA, RARDA and agronomists working with the rice cooperatives.

2.2.6 Currently, the institutions mentioned above have limited operational capacity due specifically to inadequate human, material and financial resources. The recruitment program should fill the vacant positions created following the restructuring of various structures involved in the decentralization process. The current investment budget allocated is insufficient. At district level, disciplines covered under each sub-sector and network are not always available.

### **2.3 Agricultural Sector Support Services**

In addition to the above-mentioned agricultural institutions, the agricultural sector is also supported by several parastatals that provide a range of services, especially technical supervision, input supplies and marketing of export products by the agencies in charge of managing the tea and coffee sub-sectors (OCIR-Thé and OCIR-Café). Agricultural financing is supported by the National Bank of Rwanda (BNR) which is charged with supervising agricultural banking and loan financing services, the Rwanda Development Bank (BRD) which is the leading institution in agro-industry financing and the Union of Peoples' Banks (Union des Banques Populaires, UBPR), specialist in mobilizing rural savings and micro-credit. Furthermore, NGOs and IMFs (see paragraph 2.5 below) also play a key role in supervising farmers, disseminating new technology and implementing projects assigned to them by donors and districts.

### **2.4 Decentralization Program**

2.4.1 The purpose of the 2000 decentralization program implemented by the Government through MINALOC is to promote the political, economic, social, administrative and technical capacity of the local population to fight poverty through participatory district planning and development. It enables the Government to disengage from local development and management issues in order to focus on development policies, strategies and planning. Moreover, it puts the beneficiaries at the heart of all stages of the project development cycle.

2.4.2 Rwanda has gone a long way in the decentralization process. The country is divided into four provinces (North, West, East and South) and Kigali City, each of which is in turn sub-divided into districts, sectors and units. Each administrative level comprises a Council, an Executive Committee (EC) and a Community Development Committee (CDC) managed collegially by an assembly of representatives elected by the inhabitants. The Council is the decision-making organ. The unit and its Executive Committee constitute the core local government institution, each boasting 200 to 300 families. The CDCs are the focal point for local development-related issues. They consolidate needs expressed by the people in a five-year medium-term plan called “the Community Development Plan” (CDP), itself sub-divided into annual action plans. Planning, implementation, monitoring and evaluation activities are coordinated through MINALOC management.

2.4.3 The district structure (which is the region's decentralized and autonomous development entity) comprises a District Council, an Executive Committee (EC), an Executive Secretariat and seven Units, namely: (i) Human Resources and Administration; (ii) Finance; (iii) Land, Urbanization, Housing and Infrastructure; (iv) Planning, Economic Development and Employment Promotion; (v) Health, Women's Enhancement and Protection of the Rights of the Child; (vi) Education, Youth, Sports and Culture; and (vii) Administration and Good Governance. Agricultural activities at the provincial level are coordinated by the Director of Agriculture, Livestock and Forestry (DAEF). Activities at the district level are coordinated by an engineer, and at the sector and unit level by two technicians. Among other missions, the District is responsible for disseminating government policy, preparing development programs using the participatory approach, supervising and coordinating the implementation of development projects, and monitoring the operations of various service providers and works. To enable Districts to function, 10% of the national income is allocated to local development projects and 1.5% to operations. These resources are pooled into the “Community Development Fund” (CDF) managed by the districts. The districts open accounts in commercial banks into which the CDF resources are paid. In addition to government allocations, donor grants and loans are paid into the CDFs. An audit committee comprising three persons appointed by Edict of the Minister of Finance is charged with monitoring the use of FDC assets and their operations.

2.4.4 The decentralization of decision centers and the implementation of development activities have produced tangible results in the field, especially in terms of the population's involvement in planning, implementing and managing development activities. The people's support for development projects (participation in financing, implementing and subsequently managing works) is now a reality in many regions of the country. However, the effectiveness of the decentralized agencies is limited due to lack of qualified human resources and inadequate budgetary allocations compared to the responsibilities that they face. Field coordination is problematic when several ministries are involved. In order to give the decentralization a boost, there is need to: (i) increase financial resources at all administrative levels, especially those most decentralized (district and sector); (ii) strengthen human resources capacity (number and qualification) especially at the district level, since weaknesses in that area are major handicap to the self-management of development programs; and (iii) solve the coordination problem among various ministries. Conscious of these constraints, the Government and donors attach considerable importance to building the capacity of districts so as to enable them to fully play their role in supervising and channeling development activities.

## **2.5 Rural Financing**

2.5.1 The main agricultural credit institutions are the BRD and the UBPR. Also active are savings and loan cooperatives (COOPEC) and the BNR which, in addition to supervising bank savings and loan services, manages several lines of credit and an agricultural guarantee fund. Outstanding credit in the agricultural sector accounted for only 4.41% of total credit to the economy in 2004, due to the absence of institutions specifically dedicated to rural sector financing. The traditional banking sector is hesitant in committing funds into agriculture, given risks inherent to such activities. Micro-finance institutions are also poorly developed and insufficient. Their direct contribution to agriculture remains marginal.

2.5.2 The most active savings and loan structures include the Workers' Savings and Loan Cooperative (CEPES), the Workers' Fund Union (UCT), the Tsimbura Savings and Credit Cooperative (COOPEC-TSIMBURA), the Savings and Loan Cooperative (COOPEDU), the Credit and Savings Scheme (CSS), the Inter-Diocese Microfinance Network (RIM), the Vision Finance Company, MINZERO, DUTERIMBERE IMF and the Entrepreneurs Financial Center (CFE). The IMFs and CFEs operate various credit systems, including mutual credit and credit without prior savings for cooperatives. In addition to the IMFs, there are also credit components of agricultural development projects financed by donors. As at 30 June 2005, the IMFs had a combined membership of nearly one million, mobilized a total of FRW 50.8 million in deposits (26% of total savings) and extended loans worth FRW 45.2 million. Of all IMFs, the UPB with its network of 153 peoples' banks located in all of the country's provinces and a head office in Kigali seems to be the best placed to offer community financial services. The UPB occupies a central position and boasts an outstanding loan envelop of FRW 19.6 billion shared among 68 368 debtors (72% men, 20% women and 8% corporate entities). Agriculture and livestock account for 27% and 3% of the total outstanding loans.

2.5.3 Several financing institutions operating in the rural sector have not yet mastered the best micro-financing practices, nor do they emphasize savings mobilization with a view to financing viable income-generating investments for the underprivileged. Thus, out of the 230 requests for licensing received by the BNR, 39 were granted, including 31 to COOPECs (of which the UPB and its peoples' bank network, CLECAMs and COOPEDU). The micro-finance sector encounters difficulties related to weaknesses and constraints facing the beneficiaries, the IMFs and the Government. The major constraints facing the beneficiaries include the absence of a savings and loan culture, the diversion of loans to purposes other than those for which they were granted, the perception of loans granted for development projects as Government grants and the lack of capacity to identify financially feasible projects. Weaknesses facing the IMFs include the lack of professionalism on the part of operators, their inadequate technical and financial capacity and, in most cases, lack of legal status. At Government level, the foremost constraints related to the lack of rural infrastructure and the absence of a suitable judicial and legal environment.

2.5.4 The Government has manifested the desire to provide the rural financing sector with an adequate micro-financing policy. Furthermore, the sector has micro-financing institutions that are appropriately supervised by the BNR and considerable financing needs in line with demands in the agricultural sub-sectors. Thus, the IMFs in their capacity as the privileged instruments for reaching the rural population should continue to receive donor technical and financial support in order to improve their capacity to organize and mobilize savings that would subsequently be used in funding rural activities.

2.5.5 Aware of the key role that micro-financing plays in poverty control, the Government within the Vision 2020 and the Economic Development and Poverty Reduction Strategy framework crafted a national policy whose objectives include putting in place an enabling legal, institutional and economic environment for the development of IMFs, and facilitating access to financial services to the less privileged. Thus, the government set up an Agricultural Guarantee Facility (FGA) managed by the BNR. As at 31 March 2006, the FGA had a budget of FRW 3.86 billion, including FRW 1.1 billion allocated by the Government and FRW 1.76 billion provided by Dutch Cooperation. So far, the financial institutions that have signed cooperation agreements with the BNR for FGA management include the UBP, the RIM and the CSS. In the view of these operators, this initiative has successfully put microfinancing back on track and facilitated smallholder access to credit.

## **2.6 Rural Organization**

2.6.1 Rwanda's rural world comprises various forms of relatively institutionalized organizations: traditional and customary mutual assistance associations, collective work associations, tontines, cooperatives, intergroupings, cooperative unions or federations. The cooperative movement blossomed considerably in the eighties and was given further boost after the 1994 crisis, thanks to emergency operations by donors and local NGOs.

2.6.2 There are more than 20 000 cooperatives, above 70% of which are active in the agricultural sector. Women membership of the cooperatives ranges from 40 to 60%. These associations are mostly engaged in farming and stockraising, trade, art and craft, construction materials (making of bricks and roof tiles), tontines and mutual assistance schemes. In the Kigali-Rural Region, the number of cooperatives identified range from 50 to 150 per district. The cooperative movement is especially developed in the Northern provinces. For instance, Ruhengeri Region is estimated to have about 4 000 cooperatives.

2.6.3 Cooperatives vary in dynamism and effectiveness, depending on the natural potential of zones and the level of external technical and financial assistance. In regions with high production potential and easy access, activities conducted by cooperatives are generally profitable and enable them to invest further to diversify their sources of income, thus generating vitality within the group. In regions covered by development projects, especially the North and the North-West, cooperatives receive close technical supervision (generally from NGOs). They are well structured and trained, and accede easily to credit to finance their activities. Currently, some of the highly-structured associations include KAIGA, ABADACOGORA, ISUKA IZAHORA IMBERE and JYAMBERE. In regions with low production potential and little donor/NGO support, most cooperatives are poorly structured specifically due to the low number and poor quality of supervisors at the district level. Where supervisors exist, they either lack the requisite qualifications or are not enough to successfully fulfill their mission.

2.6.4 In 2004, nearly 52 local NGOs operating in the agricultural sector were registered by MINALOC. These NGOs play an increasingly active role in rural development. The largest include the 5 000 strong IWACU Center (specialized in promoting cooperatives and associations) and the 40 000 member INAGBO which covers several districts and for that reason plays a mobilizing role in farmers' participation. INAGBO's services (training and credit) essentially target women customers. Equally in 2004, MINALOC also listed 22 international NGOs operating in the agricultural sector, including World Vision, Agro-Action Germany (AAG), CARE, Catholic Relief Services (CRS), Handicap International and Caritas International – all specialized in the promotion of cooperatives, training, environmental education and micro-financing. These NGOs are generally well integrated into the local environment and have adequate human and financial resources to meet their objectives, especially by promoting farmers' participation.

2.6.5 The local NGOs usually lack the human capacity and the necessary financial resources to fill the gap left by administrative structures and provide cooperatives with effective supervision. In terms of management of cooperative assets, ignorance of the basic principles of rational financial organization and management is a major obstacle to profitable operations. Furthermore, inefficient management and lack of transparency negatively affect the confidence of members, at times leading to the dissolution of the cooperative. The financial difficulties facing cooperatives result from the non-availability of accessible credit to their members. This limits the possibilities of implementing substantial activities capable of generating significant income.

2.6.6 Several other professional structures and cooperatives play a key role in the rural area, not only as beneficiaries of development projects and programs but also as suppliers of support services up- and downstream. These include professional farmers' organizations such as the Rwanda Private Sector Federation (PRSF) which regroups seventeen (17) vocational and sector cooperatives and six (6) provincial cooperatives, the Tea Farmers' Union (FERWATHE), the Coffee Farmers' Cooperative and the Rice Farmers' Association. Some organizations (e.g. the IMBARAGA Association – an agro-pastoral intergrouping) present in six regions of the country, are becoming gradually national in their community operations. Most of these structures are affiliated to such international organizations as EAFPE (East African Farmers' Federation), REFON (Regional Farmers' Network), IFAP (International Federation of Agricultural Producers), CCFD (France), AGRITERRA (the Netherlands). These agencies collaborate with agricultural research structures (ISAR, UNR), training structures (INADES) and decentralization and grassroots organization support projects.

## **2.7 Land Use System**

2.7.1 MINTERE is in charge of land management in Rwanda. The land use system was reviewed within the framework of the bill passed in May 2005. The purpose of the new law is to end the ambiguity between the customary law and the written law, protect property ownership and encourage private agricultural investment. This organic law equitably protects land rights, irrespective of whether they emanate from customary law or the written law. According to the legislation, catchment area lands (hills) belong to the indigenous population and are managed customarily by lineage. In contrast, valley marshlands, lands bordering lakes and forests belong to the State. Their classification and allocation after development is the responsibility of the Ministry under which such lands and environment are assigned. The authorities have encountered no specific problems in distributing developed marshlands.

2.7.2 All citizens can own land. With regard to access to land ownership and tenure rights, the new law prohibits all forms of discrimination (gender, origin, etc.). Both men and women have equal rights to land ownership. As encouragement to attract foreign investment, foreigners are entitled to long lease and may even own property.

2.7.3 The decentralization policy gives decision-making powers to the decentralized structures, including powers to manage marshlands and catchment basins. Currently, the districts and the community development committees are responsible for organizing farming on state-owned lands. Each district has a land registry. The registry works in liaison with the district land committee and maintains title deeds on lands under its jurisdiction. To be valid, all transactions must be registered with the registry. Lessees are required to develop land allocated to them in line with the purpose of the lease, protect and conserve the soil, respect public passage and pay fees as directed by the relevant authorities.

## **2.8 Gender**

2.8.1 Women represent nearly 54% of Rwanda's population; 38% of them head households. The genocide and the war are at the root of this situation. Widows account for 80% of households headed by women. Tradition continues to put women at a disadvantage in terms of their access to land, credit, healthcare and participation in local development decision-making bodies. It is estimated that 52.3% and 41.9% of women are illiterate, although there is little gender disparity in education at the primary and secondary level. The disparity is more pronounced at the income and age-group level. Access to healthcare varies according to income and gender. The cost of healthcare is particularly discouraging to the poor. The genocide also left a mark on the family composition. Hundreds of thousands of children became orphans after 2004, with the problem further aggravated by the AIDS pandemic. Estimates put at 613 000 the number of Rwandan orphans below the age of fourteen.

2.8.2 A degree of gender-based division of labor is also remarkable, depending on the agricultural activity. Most tasks involving ploughing, irrigation, seed planting and weeding are undertaken jointly by men and women, whereas other operations (storage, processing, etc.) are largely conducted by women. Some studies have revealed that between the 15 to 60 year age group, women devote 30% of their time to domestic chores and 33% to agriculture, compared to men (20% to agriculture and 4% to domestic chores). Men devote 54% of their time to miscellaneous activities and remunerated labor, compared to 18% for women.

2.8.3 The Government has included among its priorities the pursuit of economic and social development, based on equality and accountability of all sections of the society. A Gender Action Plan was adopted in 2000. Concrete measures were taken to eliminate the social and legal constraints that prevent women from participating in the country's political, social and economic life. The country's legislative texts have been revised to open the way to equal rights in all areas. The law establishes constitutional equality for both men and women. Moreover, it is mandatory under the Constitution that women occupy 30% of seats in Parliament. Considerable progress has been made in terms of girls' enrolment (85% in 2002) and women's participation in governmental bodies (32.3% of ministries in 2006). Official statistics confirm a 42% women representation at the policy-making level, thus improving women's participation in decision-making.

## **2.9 Poverty**

2.9.1 The proportion of poor households stood at 53% in 1993. The number of poor households increased sharply between 1994 and 1998 to reach 78% before reversing gradually to 60% in 2002. Poverty is worse in the rural area (68% rural, 23% urban). The per capita income averaged USD 230 in 2004. According to Rwanda's poverty profile, most malnourished persons live in the rural area. Households practicing subsistence agriculture in general, and those headed by women and orphans, in particular, are severely hit by poverty. Two-thirds of the rural population live below the poverty threshold. Only 13% of the population has access to health services. The rural literacy rate stands at 56% for men and 51% for women. Rural access to potable water stands at 60%. Agricultural production falls short of covering the food needs. It is estimated that 45% of children suffer chronic malnutrition.

2.9.2 Within the Vision 2020 context, the Government prepared a Poverty Reduction Strategy Paper (PRSP) between June 2000 and June 2002, via a national consultative process.

The core objectives of the strategy include: improving the people's living conditions, reducing to 25% by 2015 the percentage of the population living below the poverty threshold (compared to 60% in 2002) and increasing the per capita income from USD 230 in 2004 to USD 1000 by 2020. This performance would largely come from agricultural development and processing, and the creation of additional jobs in the sector. The PRSP identified the following areas, classified by order of priority: rural development and agricultural processing; human development; economic infrastructure; governance; private sector development; and institutional capacity building.

## **2.10 Sector Constraints and Potential**

2.10.1 In general, the agricultural sector faces several constraints that hinder its development, notably farming on very steep slopes (50% of fields have a slope gradient above 35%), uncontrolled deforestation and irrational development of catchment basins which exposes them to serious erosion. Rapid population growth and shortage of arable land are the causes of overfarming. The population density has increased from 143 inh./km<sup>2</sup> in 1970 to the current 323 inh./km<sup>2</sup>.

2.10.2 The use of mineral fertilizers, lime and other fertilizing agents is very limited. Current fertilizer consumption stands at 3 500 tons yearly, representing less than 2 kg/farmed hectare, compared to an African average of 11 kg, an Asian average of 51 kg and the recommended average of 150 kg. Very limited use is also made of pesticides, veterinary products and feeds. Agricultural implements remain rudimentary. All tasks are manual, without the use of animal or mechanical energy. Another major constraint to increased agricultural production concerns the shortage of quality seeds. A mere 6% of farmers use certified seeds. Although there is a high demand especially for rice, cassava, beans, sorghum, potatoes, maize and vegetables, supply is very limited.

2.10.3 Furthermore, following the loss of lives during the 1994 war and genocide, all government departments are in dire need of skilled manpower. Worker replacements are slow and vocational training is still inadequate. In addition, agronomic research is for now unable to provide the necessary support to the development of the agricultural sector. Agricultural development is handicapped by weak sectoral organization, inadequate skilled human resources, the inexperience of young researchers and limited financial resources.

2.10.4 Other major constraints to the development of the sector include the inadequate transport, storage and preservation infrastructure. Several production zones are isolated. The storage and processing capacities are also undeveloped. In addition, the country lacks marketing infrastructure, especially in the rural area. Moreover, in the absence of an effective information network, traders and other private operators are not well-informed about existing rural marketing opportunities.

2.10.5 Agriculture is mostly rain-fed and, as such, highly dependent on vagaries of the weather. Although endowed with abundant water resources, water is not always available in enough quantity and at the right time for farming purposes. This issue is of more critical importance to lands on hills which, unlike the marshlands, lack water storage and for which reason can harbor very limited farming during the dry season. Regions in the country's East where rainfall is the lowest are the most affected. Water control is limited to a few marshlands on which the population have built mostly makeshift structures. Some marshland areas are completely flooded during the rainy season, rendering them inappropriate for farming. Currently, only 5 000 hectares of land have been developed.

2.10.6 Despite the many constraints to its development, the agricultural sector has a number of potentials which, if adequately tapped, should lead to production intensification and improved value added. Such potentials include the favorable climatic conditions that are conducive to agricultural activities in most regions of the country and thanks to which a wide variety of crops (foodcrops, tree crops, cash crops, etc.) can be produced year round, even as stocks can be raised. The political will to modernize and professionalize agriculture as clearly expressed in the Vision 2020 document, the PRSP and the National Agricultural Policy, encourages the private sector to invest in agriculture, through which production will increase. The dynamic self-organization demonstrated by farmers and their desire to take over the development of the agricultural sub-sectors and manage the marshlands developed, offer guarantees for the advancement of the sector and the sustainability of achievements. Furthermore, the establishment of an agricultural sector financing mechanism (e.g. the Agricultural Guarantee Facility) will help put agricultural financing back on track.

2.10.7 Marshlands cover 165 000 hectares, i.e. nearly 12% of the useful farm area – today a major potential to the Rwandan economy and whose development would contribute to: increasing the areas under crop, enhancing output through water control and natural soil fertility, and introducing new high output crops. Moreover, they offer large possibilities for intensified productivity per surface unit. Farming and stockraising remain largely extensive. The use of adequate crop and livestock factors of production at a larger scale will contribute to significantly increasing land and livestock productivity.

## **2.11 Sector Policy and Strategy**

2.11.1 After projecting the future in the Vision 2020 document, the Government prepared a National Poverty Reduction Strategy whose implementation is based on the preparation of plans for the core economic sectors. Thus, MINAGRI crafted a National Agricultural Policy (NAP) and an Agricultural Processing Strategy Plan (APSP) in 2004 (validated in January 2005) which offers clear guidelines for the development of the agricultural sector in the years ahead.

2.11.2 The overall goal of the NAP is to contribute to reducing rural poverty. Its priority thrusts which derive from the PRSP include: poverty reduction, economic growth, agricultural modernization within a context of sustainable growth and food security. The NAP retains five strategic pillars, namely: (i) agricultural processing and modernization; (ii) sub-sector development; (iii) promotion of agricultural product competitiveness; (iv) development of the entrepreneurial spirit; and (v) gender and vulnerability management.

2.11.3 The overall goal of the APSP - which shares in fulfilling Vision 2020 and follows the main thrust of the National Poverty Reduction Strategy - is to sustainably contribute to economic growth and poverty reduction. The following actions are necessary to attain these objectives: increase in productivity, full development of production, diversification of income-generating opportunities and natural resources/environmental protection. Six specific objectives are defined in the APSP: (i) provide adequate supply of agricultural products and food security to the population; (ii) increase family income and diversify its sources; (iii) maintain, protect and improve water resources and land management; (iv) contribute to macro-economic balance and growth; (v) contribute to finding solutions to social issues related to gender, youths, the landless/other vulnerable groups and AIDS; and (vi) transform the mission and role of various actors (the Government, farmers, the civil society and the private sector) to enable them to adapt to the new vision.

## **2.12 Donor Operations in the Sector**

2.12.1 Rwanda has benefited from steady donor assistance. Its key donors in 2003 included the World Bank (27% of financing), the ADB (19%), IFAD (15%), the United States (10%), Holland (6%), Belgium (5%) and China (2%)<sup>2</sup>. Agricultural sector financing stood at USD 173 million or 8.33% of total foreign assistance to national programs<sup>3</sup>. In view of the important role that the sector should play in the country's economic growth and the mission assigned to it in Vision 2020 and the PRSP, the level of support remains inadequate. Major ongoing donor operations are in agricultural and rural development, livestock, fishing, forestry development, marshlands development and capacity building.

2.12.2 Due to food insecurity in the Bugesera Region, many development partners, especially international NGOs, conducted several operations in the area. Emergency programs mounted after the war (especially operations run by ACCOR, WORLD VISION and ZAO Refugee Care, Handicap International and Caritas International) have been winded up. There is no denying the fact that the operations of the above NGOs and Lux-Development were successful in terms of providing emergency assistance (input and foodstuff) during drought, supporting the cattle sub-sector, distributing drought-resistant species, training young farmers and developing bee-farming and agro-forestry. However, although of interest, the impact of these activities remains very limited due to inadequate resources to conduct a larger operation covering the whole region.

2.12.3 The only major integrated development projects in Bugesera are financed by Luxembourg Cooperation (Lux-Development), the World Bank and Japanese Cooperation. Lux-Development is financing the Bugesera Rural Economic Development Project which started in December 2004 for a five-year implementation period. Within the framework of the Rural Sector Support Project, the World Bank is financing the development of three marshlands. For its part, Japanese Cooperation is financing the recently initiated operation for the sustainable development of agriculture in Bugesera.

2.12.4 The ADF agricultural sector portfolio in the country comprises four operations: (i) the Dairy Cattle Development Support Project; (ii) the Inland Lakes Integrated Development Support and Management Project (PAGELAC); (iii) the Forestry Development Project; and (iv) the Environmental Management Institution Building Project. The total portfolio amounts to UA 38 million. These projects are following the normal phase of implementation except for PAGELAC which started recently. All are regularly audited. The average disbursement rate for active projects is 32%. The results and impact of these projects are beginning to be felt in the field. The projects have contributed to addressing the earlier mentioned constraints facing the agricultural sector and the attainment of the PRSP objectives. However, some weaknesses have been noted and pertain mainly to delays in procurements and the inadequate management capacity.

2.12.5 The main lessons drawn from various operations mostly relate to the project implementation approach. Centralized decision-making strongly affected the sustainability of achievements. Project implementation units should work with grassroots communities and the decentralized technical departments during the project implementation phase. In that regard, beneficiaries should be sensitized and organized into associations and intergroupings with a view to establishing cooperatives at project entry. That would train members of those structures and ensure their involvement in implementing projects.

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<sup>2</sup> APSP

<sup>3</sup> List of External Aid to Rwanda – CEPEX – April 2004.

2.12.6 The use of labor-intensive work (LIW) to develop marshlands has proven its mettle in the country. It has strengthened the effective participation by the beneficiaries and their ownership of the facilities put in place. This approach should be encouraged in future Bank operations. The Emergency Agricultural Production Recovery Project financed by the ADF obtained remarkable results in terms of impact, sustainability, ownership and participation by the beneficiaries in managing the marshlands developed. That success is the result of enhanced capacity of cooperatives born out of beneficiary associations, and their involvement in all phases of project implementation. Although the project was completed in 2004, the cooperatives put in place continue to satisfactorily manage and maintain the marshlands developed.

2.12.7 Furthermore, project implementation units should work in concert with district technical departments which will, in the end, take over the supervision of the above structures. Project financing should necessarily include provisions to build the capacity of the technical departments.

2.12.8 Difficulties were also noted at the procurement level, leading to considerable delays in project implementation. To overcome this problem, the Government has simplified the domestic procurement procedures under the new public procurement code. To that end, it set up a National Public Procurements Committee to speed up procedures and ensure compliance with Rwandan rules and donor regulations. In addition, it drew up a program to train officials involved in project implementation. Furthermore, the Government has reduced the number of signatories to public procurement approvals and set up a “desk office” to monitor Bank Group projects.

2.12.9 Delays are sometimes associated with the actual implementation of projects by government departments. Indeed, overlapping responsibilities leave such departments little time to properly coordinate projects. To avoid that risk, project coordination should be assigned solely to persons dedicated to such tasks and not to persons occupying positions of responsibility within MINAGRI. A system for conducting a yearly performance evaluation of project coordinators and staff should be put in place at project start-up to further motivate such workers.

### **3. THE SUB-SECTOR**

#### **3.1 The Foodcrop Sub-Sector**

3.1.1 Foodcrop production dominates Rwandan agriculture. Such production is the main source of income for rural dwellers. The main foodcrops farmed are cereals (maize, sorghum, rice), tubers (potato, sweet potato), leguminous grain crops (peanuts, beans), roots (cassava) and banana. The foodcrop sub-sector provides subsistence to nearly 1.4 million farmers. Annual area under cereal per farm stands at about 0.75 ha. Output is poor. There are three main farm types (two mixed and one exclusive to livestock). The first farm type comprises farms under 0.75 ha, mostly producing foodcrops for on-farm consumption. Seventy per cent (70%) of farms fall under this category. Labor in such fields is fully supplied by the family. Considerable pressure is brought to bear on natural resources in order to maintain the production level. The near disappearance of fallowing and the fall in the herd size could, in the medium term, compromise the productivity of the system. Since the family cannot feed from the fruits of the land in some cases, its active members resort to local trading or any other non-agricultural profit-making activity. The second production system with more than 1 ha under crops yearly, represents nearly 20% of farmlands. This system uses paid labor. Crops cultivated (foodcrops and cash crops) are highly diversified.

Moreover, the farmers make additional income from other non-agricultural activities (as civil servants, traders, etc.). The third system mainly comprises extensive cattle rearing and represents 10% of operations.

3.1.2 The total area under crops was estimated at nearly 1.3 million hectares in 2004, broken down as follows: 300 000 ha of banana, 250 000 of leguminous crops, 250 000 ha of cassava, 160 000 ha of sorghum, 135 000 ha of maize, 100 000 ha of sweet potato, 100 000 ha of market garden crops (mostly potato) and 5 000 ha of rice. Total production amounted to 6.75 million tons, including 3.03 million tons of tubers (sweet potato, cassava, potato), 2.47 million tons of banana, 0.31 tons of cereals (sorghum, maize, paddy rice), 0.24 million tons of leguminous crops (beans, soya, peas) and 0.70 million tons of vegetables and miscellaneous fruits.

3.1.3 Farmers are increasingly cultivating maize, especially following the involvement of the private sector in its production, processing and marketing. The MINIMEX Company is among the most active private operators. It has installed a new factory with capacity to process 300 tons of maize daily (i.e. an average annual capacity of 60 000 tons). This represents nearly 75% of the current national production. Maize is cultivated in all the country's agro-ecologic zones, although the greatest potential lies in the North-West regions (Ruhengeri, Gisenyi) and in the developed marshlands.

3.1.4 Rice is cultivated in the ricefields located in Cyangugu, Butare, Gitarama, Kigali-Rural, Umutara and Kibungo regions. A Marshland Development Masterplan Study helped to identify 48 000 ha of marshlands on which rice could be farmed. The national production in 2004 (46 191 tons) covered 60% of needs, compared to 28% in 2001. Rice importation costs an average USD 7 million yearly. MINAGRI plans to increase the areas developed for rice farming with a view to attaining self-sufficiency in rice production by 2009. Current average output ranges from 5 to 7 tons per hectare in the developed and supervised marshlands. In the Rwamagana and Bugarama marshlands which received ADF support under the Emergency Agricultural Production Recovery Project, output varies between 5 to 8 t/hectare.

3.1.5 The key constraints to the development of foodcrop production include: (i) the predominance of rain-fed subsistence farming, geared towards on-farm consumption; (ii) the extreme land fragmentation and overfarming without restitution of elements taken away by crops and/or erosion; (iii) the lack of irrigation infrastructure; (iv) the weak support services (research, extension, financing, etc.); and (v) the inadequate marketing, processing and packaging infrastructure. Factors that limit fertilizer use include the weak extension programs, the high cost of fertilizers compared to farmers' financial capacity and difficulties in sourcing supply from the local market. In view of that, the Government has taken measures to encourage the marketing and use of fertilizers by abolishing import duties on them since May 2000. Furthermore, the Government through World Bank funding set up a USD 1.28 million line of credit for the importation of fertilizer within the framework of the Agricultural and Rural Markets Development Project.

## **3.2 The Irrigation Sub-Sector**

3.2.1 Most of the existing irrigation works are located in marshlands. The marshlands cover an estimated area of 165 000 ha, of which 70 000 ha are currently farmed primarily using traditional methods. Only 5 000 ha are equipped for total water control (basically gravitational irrigation for rice farming). The works generally comprise hillside barriers ranging in volume between 30 000 to 1 500 000m<sup>3</sup>, principal canals and a network of irrigation and drainage canals. The rest of the marshlands currently farmed are developed

rudimentarily (without prior technical studies) by farmers grouped into associations or cooperative groups and supported by local and/or foreign NGOs.

3.2.2 Irrigation is relatively common in the country, especially as back-up in several marshlands, even in those with rudimentary works. There are no official statistics on water consumption on irrigated farms. Based on a consumption of 1 liter/s/ha over a 250-day crop period per year (two seasons), annual consumption would stand at 108 mm<sup>3</sup> for 5 000 irrigated hectares in 2005 and projected at 432 mm<sup>3</sup> for 20 000 ha in 2020. These figures exclude small fields with rudimentary infrastructure.

3.2.3 Given the annual water flow in the country's major catchment basins (nearly 5 billion m<sup>3</sup> for the Nyabarongo, 1 billion m<sup>3</sup> for Mwogo-Nyabarongo), the quantity of irrigation water needed in future is not a limiting factor to the development of irrigation in Rwanda nor for users located on these basins' downstream. However, for the smallest catchments and secondary rivers (e.g. at Byumba and Umutara), limitations rapidly emerge with regard to developing existing marshlands. Water availability varies in time and space. In contrast, although water is permanently available in the Bugesera zone (Nyabarongo, Akagera, Southern and Northern Lake Cyohoha), it can only be mobilized by pumping. Even though the country has major quantities of water for irrigation purposes, there is a gap between the availability of water and the possibility of using it easily and at least cost. This paradox is one of the major constraints to the development of irrigation in the country.

3.2.4 Current issues facing irrigated farming differ from one region to another. The lowland region of the West (Cyangugu, Bugarama) has enough water resources to meet its overall irrigation needs. Successful farming in that region is primarily contingent on the rehabilitation and suitable design of irrigation systems within a marshland environment. The agro-climatic conditions are conducive to rice farming. The Congo-Nile region also has enough water resources to cover its irrigation needs.

3.2.5 The agricultural development potential is greater in the Central Plateau (Butare and Gitarama) and Eastern Plateau regions (Bugesera, Kibungo, Mayaga). However, the water needs are also very high. The use of hillside barriers to mobilize water resources for agriculture might soon reach its limits in both regions. In the Eastern savannah region (Umutara), the area's water needs can be met in line with the 2020 objectives. The hillside barrier system is projected to record a deficit of 100 mm<sup>3</sup> for the Central Plateau and 185 mm<sup>3</sup> for the Eastern Plateau. In the light of this assumption (yet to be confirmed by a field study), another water supply system must be found for these zones at region-wide level.

3.2.6 Marshlands developed for total water control are managed by beneficiary associations and cooperatives. Set up and trained in the course of developing or rehabilitating the marshlands, these structures are responsible for collecting water fees, maintaining farm roads, procuring input and distributing them to the farmers, negotiating loans with the IMFs and participating in loan recovery. For instance, in the case of the Rwamagana and Bugarama marshlands (rehabilitated with ADF financing within the framework of the Emergency Agricultural Production Recovery Project and considered a *success story*), cooperatives manage the husking mills and have reached a level of financial autonomy which enables them to hire agronomists to conduct technical supervision and extension services. In these marshlands irrigated by gravity, the water charge recovery rate is 100%.

## **4. THE PROJECT**

### **4.1 Design and Rationale**

4.1.1 The population of Bugesera Region – the project impact area – depend on the weather and its impact on agricultural output. Cyclical drought which regularly affects the region has had dramatic consequences on the food situation and the population's income, notwithstanding the fact that one of the country's major rivers (the Nyabarongo) flows through it. In response to the 1998-2004 drought, the region's farmers adopted survival strategies (moving to other regions, selling their livestock and assets). Due to lack of water and pasture, livestock farmers left the region to less affected areas. Most youths emigrated to towns to search for jobs. Nearly 150 000 persons in the region found themselves in urgent need of food aid. Over the past four years, nearly 17% of the food aid distributed by the WFP in the country was reserved for the Bugesera Region which accounts for 3% of Rwanda's population.

4.1.2 The only alternative for sustainably increasing agricultural production is to modernize farming and secure production by introducing more productive new technologies and developing irrigation schemes. Such an approach will contribute to extending arable lands and providing a lasting solution to the recurrent drought problem. Furthermore, the rational planning of development programs, their implementation and monitoring require appropriately equipped skilled workers and farmers who are well organized and supervised. Therefore, building the human resources capacity of government departments responsible for production development and support services, providing farmers with training and putting quality input at their disposal constitute the pre-requisites to any successful development operation. Moreover, the recovery of the agricultural sector cannot become a reality without the development and rehabilitation of the production, processing and marketing infrastructure. The Bugesera Agricultural Development Support Project will primarily target activities that address these challenges.

4.1.3 The Bugesera zone is awash with water resources (Akagera, Nyabarongo, North and South Cyohoha Lakes, Mugesera Lake, etc.). However, the resources can only be mobilized through pumping. For the irrigation of the Mwesa Valley, the feasibility study considered two water resources options: the existing lake around the valley and the Nyabarongo River. The first option was not retained since it could end up drying up the lakes, thus harming the environment. The second option poses no problem whatsoever. Indeed, the volume of water to be pumped from the lake yearly for irrigation purposes is estimated at 14 million m<sup>3</sup> – which is insignificant when compared to the estimated 5 billion m<sup>3</sup> mobilized by the Nyabarongo River every year.

4.1.4 In order to pump water from the Nyabarongo River and the irrigation works, several options were considered as part of the feasibility study by MINAGRI to determine the location of the intake structure and the type of supply and irrigation network facilities. The pumping station option corresponds to the lowest manometric height for pumping, in order to keep the cost of pumping to the barest minimum. Several supply options (open canals, underground ducts and a combination of both) were also considered. The option retained by the study will use gravity-driven supply on a 3.2 km principal canal and subsequently underground ducts in which the water will flow up to the head of the valley. Options are retained on the basis of the following key criteria: investment cost, maintenance cost and ease, the beneficiaries' ability to adequately manage the infrastructure and the impact on the environment.

4.1.5 The technical innovations introduced will draw from success stories from other countries, and will be geared towards facilitating the transition from subsistence to market-oriented agriculture that not only generates consistent income but is tailored to meet growth objectives assigned to the agricultural sector. Actions planned are in line with the objectives of the food security strategy contained in the PRSP and MINAGRI's APSP for the 2005-2008 period in which rice is given prominence. The project will contribute to the sustainable development of the Bugesera Region by reducing the impact of drought. Moreover, the introduction of irrigation and intensive farming methods which will add value to future farming investments (e.g. rice and market garden crops), will give a fillip to increased production and rational resources exploitation. The location of Bugesera some 40 odd kilometers from Kigali where the main outlets and processing factories are situated, and its proximity to the Burundi border should increase the market for the expected agricultural output.

4.1.6 The project has been designed using the participatory approach and based on a number of principles, specifically: lessons drawn from past experiences, development needs and planning at the community level, beneficiary accountability in setting up and managing the facilities, sub-contracting by using private operators and specialized government agencies to implement project operations. The project covers water control, the protection of catchment basins and agricultural intensification, all of which constitute the priority needs of the beneficiaries as reflected in the Community Development Plans (CDP). It is worth noting that the CDPs are prepared following grassroots consultations. Since Rwandan women are increasingly involved in decision-making, they are better represented in bodies in charge of designing national and local development programs. Furthermore, the project will enable the related technical ministries, the decentralized authorities and farmers' associations to implement new labor and collaborative relations, adapted to the imperatives of decentralization, while remaining gender-focused. The project will pay close attention to gender issues, the environment and the control of HIV/AIDS and water-borne diseases.

4.1.7 The project plans to make considerable use of private operators in implementing various activities. Its operations will draw from local initiatives and institutions that have proven their mettle on the ground - NGOs, rice associations and cooperatives, people's banks and IMFs - to restart microfinancing. For the construction of irrigation works and marketing infrastructure, the project will favor community participation and labor-intensive work which will be carried out by local operators. Thanks to such an approach, the infrastructure will be built at lower cost, employment generated and local small businesses set up. Indeed, donors in Rwanda (the ADF, the World Bank, the UNDP, Belgian, German and Luxembourg Cooperation, etc.) have successfully followed the same approach in their projects.

## **4.2 Project Zone and Beneficiaries**

4.2.1 The project zone is located in Rwanda's South-East. It comes under the administrative supervision of the Bugesera District (part of the Eastern Province) and covers four sectors: Nyamata, Rilima, Mayange and Mwogo. Its total area covers 131 000 hectares, of which 33 000 comprising lakes and marshlands. The zone's climate makes it one of the country's driest (900 mm/annum), hottest (20.3°) and poorest regions. Bugesera District is bounded to the West by the Akanyaru River, to the North and East by the Nyabarongo River, and to the South by the Rweru Lake. In the past, the area has known prolonged and repeated drought, leading to food insecurity and massive population movements.

4.2.2 Bugesera District is a recent immigration region (the population began to settle in the region towards the end of the sixties). Seriously affected by the 1994 genocide, the population reconstituted notably following the return of former refugees. The current population is estimated at 264 000. Agriculture is the main economic activity in the project zone (97%). It is practised by nearly 45 000 farmers, most of who cultivate foodcrops. Average farm size is in the region of 0.75 hectares. The total area cultivated yearly is estimated at 24 000 ha, broken down as follows: sorghum and maize (30%), leguminous crops (25%), cassava (15%), banana (15%) and other crops (15%). Rice is cultivated on about 400 ha. Foodcrop production was estimated at 167 000 tons in 2004. Market garden crops and tree crops are cultivated on very limited areas on fields close to major towns where sales are guaranteed. Details on the land occupation are given in the working document. Crops cultivated generally depend on family needs due to the predominance of on-farm consumption.

4.2.3 The crop production systems are characterized by the preponderance of manual labor and the limited use of organic and mineral fertilizers. Most of the seeds used are degenerated. Only farmers in project impact areas receive acceptable plant materials and minimum technical supervision. The following average output was recorded in 2005: 15 T/ha for cassava, 1.5 T/ha for sorghum, 2 T/ha for maize, 0.6 T/ha for peanut, 0.6 T/ha for beans, 12 T/ha for plantain/banana, 10 T/ha for sweet potato and 4-5 T/ha for rice at the developed marshlands. This output is low in comparison with those recorded at the ISAR research station - 60 T/ha for cassava, 4 T/ha for maize, 10 T/ha for rice, 3 T/ha for beans and 35 T/ha for banana, i.e. thrice the current output. Were farmers to employ appropriate methods derived from those applied at the research station, it should be possible to reach 60% of such output. The low output recorded is attributable to the poor soil, erosion, insufficient rain and inadequate crop rotation which, if appropriately done, would regenerate soil fertility and control diseases. In addition, mineral fertilizers are barely used. In contrast, farm manure is widely used. Average annual income per typical farm (0.75 ha) is currently estimated at FRW 60 000 (nearly USD 110).

4.2.4 Livestock farming is the second economic activity in the project zone. The traditional system (in which livestock is raised in small flocks) dominates. Most of the animals raised are of local stock (*Ankolé*). Livestock, generally associated with agriculture, plays a key role in the household budget and is also considered a safety net for the family. The livestock/farming integration mostly concerns the use of crop residue as feeds and soil fertilization with organic manure. In 2004, the total herd was estimated at 91 000 heads, including 37 000 cattle, 45 000 goats, 5 000 sheep and 4 000 pigs. The poultry size is estimated at more than 40 000 units and rabbits at 4 000 units. The project zone also counts nearly 2 000 beehives mostly for traditional bee-keeping.

4.2.5 Several associations and cooperatives exist in the region: agricultural producers, livestock farmers and rice farmers' associations, collective labor groupings, craftsmen associations, traders' associations, etc. Most of these structures are at an embryonic stage, poorly organized with limited financial resources and know-how. Their dynamism generally depends on the profitability of the activity practised. These structures could serve as the foundation for organizing the farmers in future, provided their capacity is strengthened.

4.2.6 Farm work is shared between men and women, depending on the nature of the task. Land clearing, tree felling and brush burning are done by men. Women join with men in all other activities – from soil preparation, planting, harvesting and product marketing. Women spend nearly twenty days every month on farm work (4 to 5 hours every day). In addition, they are responsible for fetching water, processing products (cassava, cereals) and other household chores. Through these tasks, women play an important role in food security.

4.2.7 The District's socio-economic infrastructure comprises a hospital, 11 health centers and 63 schools. Each District Sector has a school and a health center. The road network comprises nearly 478 km of communal roads. All Sectors and Units are linked either to a secondary or primary road. Bugesera District is currently the recipient of socio-economic infrastructure rehabilitation support projects either ongoing or on the drawing boards, especially in the area of roads and marketing infrastructure (ongoing Lux-Development, World Bank and ADF projects). When completed, this infrastructure should be in a position to meet the people's needs.

4.2.8 The Mwesa Valley, which will be developed for irrigation with water from the Nyabarongo River, covers a net arable area of around 650 ha. The surrounding catchment basins concerned by water and soil conservation works, intensified rain-fed foodcrop cultivation and agro-forestry cover nearly 5 000 hectares. The project will have a direct impact on an estimated 60 750 inhabitants (about 13 500 households). The main beneficiaries will be women and young heads of households, as well as landless farmers. Other structures will also benefit from the project facilities, including decentralized administrative entities, service providers and other development actors.

### **4.3. Strategic Context**

4.3.1 Vision 2020 – the long-term development policy framework – seeks to reduce population growth to 2.2%, bring the population subsisting on agriculture down to 50% and reduce poverty to 25% of the population by 2015, while increasing the annual GNP per capita to USD 1 000. The Government has set up a decentralized community planning process. Within that framework, all Districts and Provinces in the country currently have a participatory-driven Community Development Plan (CDP).

4.3.2 The PRSP is the country's comprehensive economic development framework since it is the Vision 2020 operational instrument. The PRSP was prepared in 2002 with actual population participation. It provides the basic thrusts for various sector policies and strategies in the fight against poverty in general, and for the agricultural sector in particular, against the backdrop of general rural poverty. The population mostly depends on subsistence farming which neither produces enough food nor generates sufficient jobs.

4.3.3 Aware of the importance of agriculture to the country's economy and the need to guarantee Rwanda's food security, the Government in 2004 designed a National Agricultural Policy and an Agricultural Processing Strategy Program (APSP) validated in January 2005, which makes agriculture the engine of economic growth. In view of the need to secure agricultural production in a context of chronic rainfall shortage, the Government put together an ambitious catchment basin management, forestry development and water control program. The Bugesera Agricultural Development Support Program whose propelling objective is to support Government's poverty control efforts, will contribute to the attainment of the Millennium Development Goals (MDG). It comes within the first pillar of the RBCSP to improve the economic and social conditions for rural dwellers by consolidating growth in the agricultural sector.

### **4.4 Project Objectives**

4.4.1 The project's sector objective is to strengthen food security. In particular, the project aims at increasing agricultural production in the Bugesera region through the irrigation of a 650 ha valley, protecting catchment basins, improving rain-fed farming on nearly 5 000 ha of hills and strengthening the capacity of farmers and supervision institutions.

## **4.5. Project Description**

4.5.1 The project is based on the three following components: (i) irrigation and catchment basin development; (ii) agricultural development; and (iii) project management. Gender and environmental protection are incorporated into all three components as cross-cutting issues. Activities scheduled under the different components are summarized below.

### **Component A: Irrigation and Catchment Basin Development**

4.5.2 The purpose of this component is to limit the impact of drought in Bugesera Region through the irrigation of the Mwesa Valley which covers a net area of 650 ha. This development should permit the cultivation of rice and market-garden crops twice yearly, as well as water and soil conservation (WSC) through erosion control works on nearly 5 000 ha within the catchment basins.

4.5.3 The irrigation of the Mwesa Valley will require the pumping of water from the Nyabarongo River and its channeling through canals and supply ducts up to the head of the valley. The amount of water to be pumped from the river varies from 235 l/s in November to 716 l/s in September, depending on the needs of crops cultivated. The September figures represent a mere 1.2% and 0.25 % of the average minimum and maximum flow of the Nyabarongo, respectively. The variant retained during the feasibility study comprises an intake work on the river, an intake channel of nearly 750 m, a pumping station equipped with five electric pumps and an emergency generator, a 700 meter reverse conduit, a main canal running over nearly 3.2 km, grounded ducts for a total 22.4 km, ring canals and secondary canals covering 75 km, valley planing works and thirty rice threshing and drying floors. The project also includes provisions to supply the pumping station with electricity tapped from Nyamata (7 km away).

4.5.4 The land developed (650 ha) will be distributed, with each household granted 10 ares. Priority will be given to farmers currently cultivating the valley, women (60% of the land) and landless households. In that regard, the project will assist the Bugesera District to compile an inventory of current farms and potential eligible beneficiaries by gender.

4.5.5 Water and land conservation works will concern 5 000 ha in the valley's catchment basins. The integrated development approach will be adopted and used in appropriate combinations with erosion control methods that stabilize the soil and restore its fertility. Furthermore, the approach will favor the infiltration of runoff water, thus facilitating farming and guaranteeing the sustainability of works. In addition to the agro-forestry operations planned under the agricultural development component, the project will undertake other water and soil conservation works: diversion pit, stabilization of banks, crests, terraces, absorption pits, etc. These facilities will be built using labor-intensive work.

4.5.6 The project will hire the services of a consulting firm to conduct engineering studies and monitor the above works. It will also hire the services of a rural engineer for a thirty-six month period to assist the project team (PT) in planning, preparing bidding documents, awarding contracts, controlling the quality of the engineering studies, coordinating and supervising various works, as well as training persons assigned to such works. To guarantee the sustainability of the works planned, the project also includes accommodating measures aimed at organizing and improving the capacity of farmers to manage and maintain the above infrastructure. Those measures are described under the agricultural development component below.

## **Component B: Agricultural Development**

4.5.7 The purpose of this component is to increase food production by: (i) strengthening beneficiary capacity; (ii) popularizing new technologies; (iii) distributing improved seeds and plants; (iv) conducting rural outreach activities; and (v) building marketing infrastructure.

4.5.8 Strengthening Beneficiary Capacity: these activities will form the foundation of the project and include plans to supervise and assist the beneficiaries, organize existing associations and set up new associations. In all, 215 associations, 15 intergroupings and one multi-association cooperative in the valley, 200 associations, 15 intergroupings and one cooperative on the hills will be organized and supported. These structures will have 60% women membership. In that regard, the project will finance the services of qualified private operators who will be responsible for organizing the participatory workshops, undertaking the necessary sensitization and providing training for the establishment of associations and building their capacity. The project will systematize the representation of women and the landless poor in all consultative and decision-making levels, thus fully empowering them to defend their interests, gradually improving their status and consolidating their power. Nearly 300 participatory workshops will be organized to sensitive and train the beneficiaries. The workshops will focus on the cooperative system, infrastructure sustainability, beneficiary commitments within the associative framework, conditions for granting credit, the billing system, etc. Elected members of these structures will be trained on financial and accounts management, communication, infrastructure management and maintenance, water fee collection and management, and sensitization to environmental and health issues.

4.5.9 As soon as they are organized and put in place, the associations will be closely involved in implementing the project, and will subsequently be held accountable for managing the developed valley infrastructure. The cooperatives established will manage and maintain the infrastructure set up, including the collection of irrigation water and membership fees, conducting negotiations for the procurement of input and marketing agricultural products. Furthermore, such cooperatives will be responsible for mobilizing financing from people's banks and the local IMFs, community development funds and donors. The project will ensure that at least 60% of the training beneficiaries and members of various structures created are women and young heads of families. The project includes provision to build the capacity of staff of the Rwanda Agricultural Development Agency (RADA) and the Directorate responsible for supervising the farmers. On project completion, both RADA and the Directorate will take over the supervision of farmers and management of the scheme.

4.5.10 Popularization of New Technologies: the project will promote the dissemination of cropping methods geared towards improving agricultural productivity in the valley and the hills in the wake of tests conducted under local farming conditions. In that regard, provision has been made to undertake several demonstrations. In addition, the project will finance the services of private operators to train extension workers and cover the cost of supervising farmers on the ground. Themes to share with the farmers will, among other things, focus on: (i) the use of fertilizers and improved seeds; (ii) phytosanitary protection for crops; (iii) livestock health, especially bird flu sensitization; (iv) application of adequate crop rotation; (v) crop irrigation; (vi) water-saving irrigation; (vii) post-harvest conservation, etc. Other extension topics will include proven water and soil biological conservation methods, production system diversification, farming/livestock integration, fodder crop farming and agro-pastoral activities. The project will lay particular emphasis on initiating the beneficiaries, especially women, on farm management, irrigation infrastructure maintenance and rational utilization of credit.

4.5.11 Extension activities will be accompanied by a research/development program to promote new technologies aimed at productivity improvement and natural resources conservation, both *sine qua non* to sustainable food security. The program will largely emphasize the fine-tuning and dissemination of production system intensification and diversification methods, the introduction of new high-output varieties especially for rice within the framework of the Intensive Rice-farming System (IRS), soil fertilization methods, rain water control on the catchment basins, reduction of onerous tasks particularly for women and conservation of agricultural products. Contracted to implement the program, ISAR will have rice and market garden farming demonstration plots in the valley as well as plots for other foodcrops on the hills. It will also set up water and soil conservation, agro-forestry and pastoral facilities. To facilitate the adoption by farmers of these methods and the procurement of input, a cooperation agreement will be signed between the project and the Union of Peoples' Banks to grant the beneficiaries (especially women and youths organized into associations) access to credit on a mutual guarantee basis. Loans granted will be guaranteed by the Agricultural Guarantee Facility Fund set up by the Government for that purpose. To ensure sustainable financing, the project will sensitize and train farmers on the rational utilization of credit, as well as help cooperatives to establish mechanisms for repayments during harvest marketing.

4.5.12 Distribution of Improved Seeds and Plants: intensified production will be conducted on 650 hectares under irrigation and 4 600 ha under rain-fed farming. The irrigated area will be reserved for rice farming and market gardening (especially tomato which can be processed in a factory close to the project zone) with two-season yearly production cycles, i.e. 1 040 ha for rice and 260 ha for market garden crops. The rain-fed crops will mostly comprise sorghum, cassava, maize, beans and other crops demanded by the farmers. In order to supply the farmers with various types of top quality seeds and plants, the project will sign a cooperation agreement with the Seed Production Unit (SPU, formerly National Seeds Department) within the Rwanda Agricultural Development Agency (RADA) for the production of 500 tons of foodcrop seeds (rice, maize, sorghum, beans), 1 million ml of cassava cuttings and 40 000 fruit tree plants. These activities will target farmers supervised by the project, of which 60% women. At the same time, the UPS will sign a contract with ISAR for the procurement of pre-foundation and foundation seeds to multiply on farms and among certified multipliers. Seeds produced by the multipliers will first be certified by the UPS prior to their distribution to farmers. In order to facilitate the distribution of these seeds to farmers, the project will conduct demonstrations *in situ*. Furthermore, it will provide technical support to farmers and farmers' organizations desiring to engage in seed multiplication activities. The UPS will also be required to train project supervisors on management of seed multiplication plots and multipliers.

5.4.13 The project will conduct a program to promote agro-forestry at the Mwesa Valley catchment basins and protect them from erosion. In all, 2 000 hectares will be planted, including 1 500 hectares of agro-forestry and pastoral plantations, and 500 hectares of various fruit trees (citrus, mango, avocado, Japanese prune, etc.). In addition to water and soil conservation, agro-forestry will play a key role in improving the quality of nutrition for the beneficiaries, meeting the domestic energy needs, feeding livestock and diversifying income. The program will be conducted in collaboration with the Forestry Development Support Project financed by the ADF.

4.5.14 Rural Extension: the project will conduct a rural extension program focused on agricultural product processing, packaging and marketing, and promotion of non-agricultural income generating activities. The program will be of special interest to women since they are largely involved in product processing and marketing. Furthermore, the program will support

Government efforts to provide health and nutrition education to the people, widely spread the new land and environmental laws, promote gender-related issues and sensitize the masses in its fight to control water-borne diseases, malaria and HIV/AIDS. The rural extension program will be contracted to a structure specialized in that field (NGOs or other structures) and active in the Bugesera District.

4.5.15 Construction of Marketing Infrastructure: to facilitate agricultural product marketing and give a lease of life to trade in areas where other donors have not conducted operations, the project includes plans to build three markets, set up and equip a rice husking mill and six warehouses to manage foodstuff, especially during harvest and lean periods. In line with current practice, infrastructure management and maintenance will be contracted to private authorities under the supervision of the beneficiary districts and communities. It is worth noting that the rural roads by which the project zone will be connected to the main road and Nyamata will be built as part of operations under the Lux-Development Project and the first phase of the Kicukiro-Nyamata-Nemba Road Project financed by ABEDA, the Saudi Fund and the Government of Rwanda. The ADF will finance the second phase of the latter project.

4.5.16 The implementation of activities under this component will be contracted to qualified service providers. Such providers will extend the new technologies, organize and supervise the farmers. They will also be responsible for training the district technicians. An agronomist (technical assistance) will be recruited for 18 man/months. S/he will coordinate the implementation of all activities under the “Agricultural Development” component, support production intensification and help farmers improve their technical level. Furthermore, the agronomist will assist the project in research/development, extension and multiplication of selected seeds. S/he will collaborate with ISAR, MINAGRI engineers and district technicians in identifying, developing and testing methods that could be of advantage to farmers, as well as provide training to the local project and district staff concerned. The terms of reference of the agronomist (technical assistance) is given in Annex 7.

### **Component C: Project Management**

4.5.17 The project will be managed by a team of technicians assigned by MINAGRI. Based in Nyamata in the Bugesera District, the team will comprise: (i) an agricultural and rural development specialist/Coordinator; (ii) a rural engineer to oversee the irrigation development component; (iii) an agronomist charged with the agricultural development component; (iv) a socio-economist for monitoring/evaluation and gender issues; (v) an environmentalist responsible for water and soil conservation, agro-forestry and implementation of the Environmental and Social Management Plan [ESMP]; (vi) an accountant to oversee the financial management; and (vii) a procurement specialist. Provision has also been made for the following support staff: a secretary, three drivers, one messenger and two watchmen. From Project Year IV, the project team will be strengthened with an electromechanical technician who will manage the pumping station.

4.5.18 Under this component, short-term consultancies will be financed to prepare the administrative, financial and accounting management procedures manual, conduct a preliminary survey to define a gender-specific reference situation, undertake the annual auditing of accounts, prepare the mid-term review and the project’s socio-economic impact analyses, introduce the ESMP, prepare the project completion report, train project staff and offer all other services considered necessary and contributory to the successful implementation of the project. Two technical assistance staff mentioned above (an irrigation specialist and an agronomist) will support the project during the implementation phase.

4.5.19 The following material resources required for project management and implementation will be procured: three (3) pick-up utility vehicles, four (4) motorcycles, six (6) batches of office furniture, office equipment and computer hardware. The ADF will also finance the project operating expenses, including the cost of project start-up seminars, periodic information workshops for the beneficiaries, allowances, the running of the steering committee and technical supervision. The Government will put the necessary premises for accommodating the implementation team at the project disposal.

#### **4.6 Production, Market and Prices**

4.6.1 **Production:** project activities will lead to increased productivity, enhanced output and substantially improved production. At full development, output is estimated as follows: 2.2 T/ha for sorghum, 2.60 T/ha for maize, 1.8T/ha for beans, 6T/ha for rice, 40T/ha for market garden crops (tomato), 12T/ha for fruit trees (citrus) and 1 100l/cow for milk. Additional production at full development will stand at 3 500 T for sorghum, 3 500 T for maize, 1 000 T for beans, 6 500 T for paddy rice, 10 500 T for market garden crops, 6 000 T for fruits (citrus, mango, *maracouja*, Japanese prunes, avocado, etc.) and 7 300 T for milk. The additional production will substantially increase coverage of the people's basic food needs and raise beneficiary family earnings.

**Table 4.1:**  
**Trend of Additional Production in the Project Zone (in tons)**

Products	No- Project	Additional Production with the Project (in tons)				
		2008	2009	2010	2011	2012
Sorghum	1 152	40	840	1 680	2 315	3 500
Maize	1 440	360	900	1 470	2 070	3 500
Beans	576	120	240	430	570	1000
Paddy rice	-	-	-	1 440	3 240	6 500
Market garden products	-	-	-	3 000	5 400	10 500
Miscellaneous fruits	700	900	2000	3500	6000	6000
Dairy products	3500	459	912	1836	4300	7300

4.6.2 **Market:** available agricultural statistics for 2005 indicate that nationwide, current production levels fall short of covering the consumption needs. Each year, the country imports 130 000 tons of foodstuff, mostly rice, beans, sorghum, cereal flour and palm oil, from the Democratic Republic of Congo, Uganda, Tanzania and Burundi. Agricultural products are marketed at various levels: the permanent rural markets, the temporary rural markets, the inter-provincial markets (Kigali, Kibungo, Nyamata, Gashora, Ngenda) and the border markets. Various operators participate in the marketing chain: wholesalers, collecting traders, itinerant traders, agro-industrial actors and retail traders. However, due to the constraints highlighted in paragraph 3.1.5, farmers are obliged to sell their products at low prices to intermediaries.

4.6.3 For the major agricultural products, demand projections were based on the 40% or thereabout deficit recorded in the project zone, the population growth and the trend of demand at Kigali, the capital. During full development, demand is estimated at 297 500 T for sorghum, 124 100 T for maize, 567 000 T for beans, 40 200 T for paddy rice and 75 000 T for market garden crops. Production from the project will cover between 30 to 88% of the demand, depending on the crop. Therefore, there will be no marketing problems.

4.6.4 Prices: prior to liberalization, agricultural prices were regulated and controlled by floor price mechanisms for foodcrops and livestock, and floor prices linked to world prices for coffee and tea. Price liberalization led to a significant increase in producer prices. However, that increase was counter-balanced by a concomitant rise in the prices of essential products. However, there is a wide gap between floor prices and consumer prices due to the number of market intermediaries. In April 2006, average prices stood at FRW 100/kg for sorghum, FRW 80/kg for maize, FRW 110/kg for beans, FRW 250 for broken rice and FRW for long grain rice, FRW 50/kg for market garden produce (e.g. tomato), FRW 150/kg for citrus and FRW 150/l for milk.

4.6.5 The frequent drought which negatively affected agricultural production and the inadequate marketing infrastructure led to significant increases in consumer prices in recent years (25% to 35%). It is hoped that the project would bring about relative stability to prices, thanks to the increase in production and the improvement of the marketing circuits. The prices used in conducting the economic analysis for rice, sorghum, maize and beans are import substitution prices. For market garden crops which are not subject to international transactions, the economic prices are the same as the market prices. The taxation rate for agricultural products marketed in informal distribution circuits is estimated at about 5% of the retail prices. Agricultural products marketed through more formal circuits are subject to an 18% value added tax.

## **4.7 Impact on the Environment**

4.7.1 The project was classified under Environmental Category II, meaning that the potential negative impacts identified will be limited. Such impacts could be reduced through the systematic application of mitigative/optimization measures and adequate environmental monitoring. The summary of the Environmental and Social Management Plan (ESMP) is given as annex to this report.

4.7.2 Positive Impacts: this project makes no provision for mechanized agriculture or animal traction, nor would it introduce new crops unfamiliar to the population. The introduction of intensive farming methods will unfailingly make further solicitations on soil fertility. However, the promotion of organic fertilizers, combined with erosion control and agro-forestry activities will not only support the development of rain-fed farming in the basins but also protect crops in the valley. Soil and water protection activities will contribute to effective soil erosion control. Indeed, erosion control methods will be used on nearly 5 000 ha and will consist in gradual earthworks combining live hedges with construction of erosion control troughs and introducing perennial crops into the crop rotation system. Farmers' sensitization over the collective maintenance of the irrigation networks and the rational utilization of inputs will produce a positive impact on the biophysical environment. The implementation of the project in the Bugesera region will significantly contribute to enhancing food security, improving farmers' income and creating rural jobs.

4.7.3 Negative Impacts: the potential negative impacts could result from the construction of a water supply system that combines an open canal and grounded ducts with plot irrigation networks, not only in the course of the development works but also during operations. Moreover, accelerated erosion on hills surrounding the valley could nullify stabilization and soil fertility maintenance efforts, the topographic situation notwithstanding. The construction of works will require the lifting of materials (earth, rubble, sand and gravel) in quantities enough to modify the physiognomy of the environment, thus increasing the risk of erosion (especially of ravines) and loss of arable land, perhaps even becoming obstacles to the movement of people and livestock in the area.

4.7.4 The risk of surface water pollution is currently limited in the District, given the low utilization of inputs. However, more inputs will be used following the introduction of intensive farming methods to match the irrigation potential offered. Larger farmed areas combined with approximate crop treatment methods could present surface water pollution and contamination risks. Farmers' sensitization on the appropriate use of chemical fertilizers and pesticides will be an integral part of the extension program. The program will also treat other topics, including the prevention of water-borne diseases inherent in irrigated rice farming (e.g. malaria, schistosomiasis and diarrheal diseases), in view of the fact that most of the population will come into direct contact with stagnant water.

4.7.5 Mitigative Measures: environmental measures will be taken to protect the irrigation canals against sedimentation and silting that runoff water from the adjacent plateaux could cause. In that regard, it would be reasonable to build a perpendicular dyke on the outer banks of the ring canal in the direction in which the water flows, accompanied by a protection/stabilization buffer of planted species of agro-ecological use (source of fodder for stalled livestock). Erosion control activities on the surrounding plateaux will contribute to consolidating this irrigation infrastructure protection measure. In addition, special attention will be given to cleaning out the Nyabarongo intake canal up to the pumping station, given the fact that a minimum depth is required for the gravity flow system to function normally, especially during periods of decrease in the water level. Moreover, it will be necessary to secure with concrete bottom lining the 3.2 km reverse canal that moves water to the valley, as well as full or partial surfacing.

4.7.6 Provision should be made to provide the project beneficiaries with potable water supply sources so as to reduce the risk of contamination by water-borne diseases engendered by the presence of bodies of water following the construction of the irrigation works. In that regard, it is worth noting that an ongoing water supply project in the District includes plans to build several water points, (nearly one every 500 meters). In the same vein, mitigative measures will be taken both within the framework of development works and during extension meetings to prevent all risk of exposure to fecal matter. The project will support the district health structures and develop health awareness, especially among women and children, on the prophylactic measures to take to control water-borne diseases or those caused by the presence of bodies of water.

4.7.7 Close attention will be given to monitoring the conditions for producing and distributing improved seeds, in order to guard against the risk of genetic erosion. Mineral fertilizers will be managed in a way that would prevent the potential negative impacts generally associated with their use: concentration of nitrates in field drainage canals and neighboring bodies of water (e.g. lakes), dependence on such fertilizers and, as a result, lack of interest in conserving soil fertility through agro-forestry methods, organic manure and crop rotation. In terms of the agricultural product marketing and storage infrastructure, the ESMP provides for specific measures to strictly enforce hygienic standards in markets, rigorously manage food product pollutants and contaminants, promote and popularize domestic latrines. Environmental sanitation training/sensitization activities will target the local potable water and market infrastructure management committees.

4.7.8 Environmental Monitoring: the project team will be responsible for project environmental monitoring. The team will include an environmental expert charged, among other things, with implementing the Environmental and Social Management Plan (ESMP). The Rwandan Environmental Management Agency (REMA) will exercise environmental oversight. To that end, REMA will receive logistic support from the project. In terms of monitoring the specific indicators relating to the quality of water and soils, epidemiological and health surveys, the project will sign memoranda of understanding and/or agreements with service providers with the required expertise. A budget of nearly FRW 220 million (USD 400 000) has been allocated for the implementation and monitoring of the ESMP.

#### 4.8 Project Cost

4.8.1 The project is estimated to cost FRW 10 342 million (i.e. UA 13 million), excluding taxes and customs duty. The cost comprises FRW 7 428 million (UA 9.34 million) in foreign exchange and FRW 2 914 million (UA 3.66 million) in local currency. Tables 4.2 and 4.3 below show the project cost summary by component and category. The detailed cost breakdown is annexed to this report.

Table 4.2  
Summary of Project Cost by Component

Components	FRW Million			UA Million			F.E. %
	L.C.	F.E.	Total	L.C.	F.E.	Total	
Irrigation development	1 243	5 217	6 460	1.56	6.56	8.12	81
Agricultural development	977	1 216	2 193	1.23	1.53	2.76	55
Project management	377	164	541	0.48	0.21	0.69	30
<b>Base cost</b>	<b>2 597</b>	<b>6 597</b>	<b>9 194</b>	<b>3.27</b>	<b>8.30</b>	<b>11.57</b>	<b>72</b>
Physical contingencies	100	529	629	0.12	0.66	0.78	85
Price escalation	217	302	519	0.27	0.38	0.65	58
<b>Total</b>	<b>2 914</b>	<b>7 428</b>	<b>10 342</b>	<b>3.66</b>	<b>9.34</b>	<b>13.00</b>	<b>72</b>

4.8.2 The cost estimates were based on April 2006 current prices, including a 10% provision for physical contingencies on works and equipment. All components factored in 2% and 3% of the costs to cover price escalation in local currency and foreign exchange, respectively. The combined envelop for contingencies (FRW 629 million) and price escalation (FRW 519 million) amounts to UA 1.43 million, i.e. nearly 11% of total project cost.

Table 4.3  
Summary of Project Cost by Expenditure Category

Categories	FRW Million			UA Million			F.E. %
	L.C.	F.E.	Total	L.C.	F.E.	Total	
I. Investment							
1. Works	957	5 042	5 999	1.20	6.34	7.54	84
2. Goods	48	246	294	0.06	0.31	0.37	84
3. Services							
3.1 Training and sensitization	258	387	645	0.33	0.50	0.83	60
3.2 Studies/Consultants/Audit	288	450	738	0.35	0.55	0.90	61
3.3 Technical assistance	0	411	411	0.00	0.52	0.52	100
II. Recurrent expenditure							
4. Staffing	124	0	124	0.16	0.00	0.16	0
5. Operations	922	61	983	1.17	0.08	1.25	6
<b>Project base cost</b>	<b>2 597</b>	<b>6 597</b>	<b>9 194</b>	<b>3.27</b>	<b>8.30</b>	<b>11.57</b>	<b>72</b>
Physical contingencies	100	529	629	0.12	0.66	0.78	85
Price escalation	217	302	519	0.27	0.38	0.65	58
<b>Total project cost</b>	<b>2 914</b>	<b>7 428</b>	<b>10 341</b>	<b>3.66</b>	<b>9.34</b>	<b>13.00</b>	<b>72</b>

#### 4.9. Sources of Financing and Expenditure Schedule

4.9.1 The project will be jointly financed with a UA 10 million ADF grant (77%) and a UA 3 million contribution from the Government of Rwanda and the beneficiaries (23%) as shown on Tables 4.4 and 4.5 below. The Government will cover the vehicle procurement and operating cost, the cost of developing the ricefields and protecting the catchment basins, half the water pumping cost for Project Years 4 and 5, and the salaries of staff assigned to the project. The beneficiaries will cover the cost of agro-forestry and erosion control works on their farms.

Table 4.4  
Sources of Financing

Sources	FRW Million			UA Million			%
	L.C.	F.E.	Total	L.C.	F.E.	Total	
ADF grant	1 529	6 427	7 956	1.92	8.08	10.00	77
Government and beneficiaries	1 385	1 001	2 386	1.74	1.26	3.00	23
<b>Total project cost</b>	<b>2 914</b>	<b>7 428</b>	<b>10 342</b>	<b>3.66</b>	<b>9.34</b>	<b>13.00</b>	<b>100</b>

4.9.2 The ADF grant will cover 77% of total project cost (i.e. UA 10 million), including UA 8.08 million in foreign exchange and UA 1.92 million in local currency. It will account for 87% and 52% of the foreign exchange and local currency costs, in that order.

Table 4.5  
Expenditure by Category and Source of Financing (UA Million)

Sources of Financing	ADF Grant			Govt. & Beneficiaries			Total		
	L.C.	F.E.	Total	L.C.	F.E.	Total	L.C.	F.E.	Total
<b>CATEGORIES</b>									
<b>I. Investment</b>									
1. Works	0.50	5.39	5.89	0.70	0.95	1.65	1.20	6.34	7.54
2. Goods	0.06	0.22	0.28	0.00	0.09	0.09	0.06	0.31	0.37
3. Services									
3.1. Training/sensitization	0.33	0.50	0.83	0.00	0.00	0.00	0.33	0.50	0.83
3.2. Studies/Consultation/Audit	0.35	0.55	0.90	0.00	0.00	0.00	0.35	0.55	0.90
3.3 Technical assistance	0.00	0.52	0.52	0.00	0.00	0.00	0.00	0.52	0.52
<b>II. Recurrent expenditure</b>									
4. Staffing	0.00	0.00	0.00	0.16	0.00	0.16	0.16	0.00	0.16
5. Operating expenses	0.49	0.08	0.57	0.68	0.00	0.68	1.17	0.08	1.25
<b>Project base cost</b>	<b>1.73</b>	<b>7.26</b>	<b>8.99</b>	<b>1.54</b>	<b>1.04</b>	<b>2.58</b>	<b>3.27</b>	<b>8.30</b>	<b>11.57</b>
Physical contingencies	0.07	0.53	0.60	0.05	0.13	0.18	0.12	0.66	0.78
Inflation	0.12	0.29	0.41	0.15	0.09	0.24	0.27	0.38	0.65
<b>Total project cost</b>	<b>1.92</b>	<b>8.08</b>	<b>10.00</b>	<b>1.74</b>	<b>1.26</b>	<b>3.00</b>	<b>3.66</b>	<b>9.34</b>	<b>13.00</b>

4.9.3 Project expenditure will be committed according to the schedule on the following two tables (both include provisions for physical contingencies and price escalation).

Table 4.6:  
Expenditure Schedule by Component (in UA million)

Component	2007	2008	2009	2010	2011	2012	Total
Irrigation development	0.07	4.08	4.29	0.38	0.35	0.05	9.22
Agricultural development	0.18	1.34	0.66	0.43	0.36	0.07	3.04
Project management	0.11	0.26	0.11	0.09	0.09	0.08	0.74
<b>Total</b>	<b>0.36</b>	<b>5.68</b>	<b>5.06</b>	<b>0.90</b>	<b>0.80</b>	<b>0.20</b>	<b>13.00</b>

Table 4.7  
Expenditure Schedule by Source of Financing (in UA million)

Sources of Financing	2007	2008	2009	2010	2011	2012	Total
ADF grant	0.18	4.53	4.16	0.60	0.42	0.11	10.00
Government and beneficiaries	0.18	1.15	0.90	0.30	0.38	0.09	3.00
<b>Total</b>	<b>0.36</b>	<b>5.68</b>	<b>5.06</b>	<b>0.90</b>	<b>0.80</b>	<b>0.20</b>	<b>13.00</b>

## **5. PROJECT IMPLEMENTATION**

### **5.1 Executing Agency**

5.1.1 The Ministry of Agriculture (MINAGRI) will be responsible for implementing the project. The Ministry will appoint a team of technicians attached to its General Secretariat to coordinate project activities. The team (see paragraph 4.5.17 for the composition of the team) will work closely with the district departments in charge of rural development which will be involved in implementing, monitoring and maintaining the facilities developed. The project team will be charged with the routine management of activities during the implementation phase, including the preparation of the work programs, preparation of bidding documents, terms of reference and letters of invitation, supervision of service providers, award of contracts, control and reception of goods, services and works procured under the project, preparation of requests for payment, consolidation and management of accounts, preparation of financial statements and inventories.

5.1.2 On behalf of the project implementation team, the project coordinator will sign a performance contract with the Government, the terms of reference of which the ADF shall approve beforehand. The said contract will include such performance indicators as the physical implementation rate, the disbursement rate, the timely submission of activity and audit reports, the implementation of recommendations of supervision and audit missions, etc. The project implementation quality will also be a performance indicator. The continued payment of allowances provided for under the project shall be contingent on overall staff performance.

### **5.2 Institutional Arrangements**

5.2.1 At the national level, the Steering Committee will be responsible for project orientation and management, while the Technical Monitoring Committee will perform a similar role at the Bugesera District level. The Steering Committee will comprise representatives from MINAGRI, MINTERE, MINECOFIN, MIGEPROF, MININFRA and MINALOC, and four representatives (including at least two women) of farmers associations and NGOs. It will approve the project working programs and budget. The Steering Committee will also monitor the project's strategic choices in the light of Government priorities as set forth in the Agricultural Transformation Strategy Plan (ATSP) even as it will work to ensure that the project's intermediate and final performance indicators are reached. Presided by the MINECOFIN representative (Central Public Investment Agency), the Committee will meet twice yearly.

5.2.2 At the Bugesera District level, the Technical Monitoring Committee will comprise managers from RADA (the rural engineering, seed production and rice development units), the MINTERE directorates in charge of land, environment and water, MIGEPROF's gender directorate (a woman), the REMA and the Deputy Mayor of the District in charge of finance and economic development, four representatives of farmers' associations and groupings (including at least two women) and two representatives of NGOs (one woman at least). The Committee will be chaired by the Bugesera District Mayor or his/her representative. Its main

mission is to ensure that activity programs approved are well implemented on the ground and that the beneficiaries participate in the decision-making process. The Committee will ensure that synergy exists between project activities and operations carried out by other partners. It will receive periodic project activity, audit and monitoring/evaluation reports. It will meet at least four times yearly and could solicit all persons whose skills would contribute to the successful implementation of the project.

5.2.3 Activities under the irrigation and catchment basin development component will be managed by a rural engineer, supported by one technical assistance staff (see ¶ 4.5.6). A consulting firm will be assigned the engineering studies and works supervision. The irrigation works will be implemented by qualified contractors. The RADA rural engineering unit and the technical departments of MINTERE will participate in implementing this component. The protection of the catchment basins and the internal development of the valley will be undertaken through labor-intensive work.

5.2.4 Activities under the agricultural development component will be managed by an agronomist, supported by one technical assistance staff (also an agronomist, see ¶ 4.5.16). RADA's technical departments (the seed production and rice development units) and district technicians will participate in supervising various sub-components, each in its field. REMA will provide environmental oversight for all works. ISAR will be contracted to provide foundation seeds to the project. Specialized private operators will be hired to handle the rural organization, extension and outreach components.

### 5.3 Implementation and Supervision Schedules

5.3.1 In view of the need to conduct engineering studies on the facilities and the scope of the irrigation works planned, the project will be implemented over six (6) years, as shown on the projected schedule below. A start-up workshop will be organized immediately on project inception. The first year of the project will be devoted to the following activities: (i) putting in place of the implementation team; (ii) procurement of logistic resources (vehicles, motorcycles and office equipment); (iii) recruitment of a consulting firm to conduct engineering studies and works supervision, technical assistance and NGOs, and signing of cooperation agreements with partners selected to participate in implementing the project. The second year will focus mostly on sensitizing and organizing the beneficiaries, conducting engineering studies on various works and launching catchment basin protection activities.

Table 5.1  
Project Implementation Schedule

Activity	Responsibility	Start	Duration
Board approval	ADF	July 2006	-
Signing of loan agreements and entry into force	GVT./ADF	Sept 2006	-
Assignment of the project team	GVT.	Oct. 2006	1 month
Project start-up	GVT./ADF	Nov. 2006	1 week
Preparation of the first bidding documents, bid invitation, terms of reference and agreements	MINAGRI/ADF	Jan. 2007	6 months
Award of contracts for the procurement of vehicles and office equipment	MINAGRI /ADF/NTB	Feb. 2007	6 months
Award of contracts for the procurement of technical assistance, consulting firms and NGOs	MINAGRI /ADF/NTB	March 2007	8 months
Agreements with partners (ISAR, UPS, UBP etc.)	MINAGRI /ADF/NTB	April 2007	3 months
Preparation of engineering studies	MINAGRI /TA/BE	Nov. 2007	10 months
Beneficiary sensitization, organization and training	MINAGRI /TA/NGO	Nov. 2007	12 months
Award of contracts for development works	MINAGRI /ADF/TA/NTB	Sep. 2008	8 months
Implementation of development works	MINAGRI/TA/Benef./Cont.	June 2009	24 months
Seed multiplication and distribution	MINAGRI /TA/ISAR/RADA	April 2007	60 months
Supervision and development activities on the hills	MINAGRI /TA/ISAR	April 2007	60 months
Supervision and development activities in the valley	MINAGRI /TA/ISAR	Jan. 2012	36 months

## 5.4. Procurement Arrangements

5.4.1 The procurement arrangements are summarized on Table 5.2 below. All goods, works and services financed by the ADF will be procured in accordance with Bank rules of procedure for the procurement of goods and works or the rules of procedure for the use of consultants, as the case may be, using the appropriate standard Bank document.

Table 5.2  
Provisions for the Procurement of Works, Goods and Services (in UA million)

Categories	ICB	LCB	Other	Short List	Non-ADF Financing	Total
<b>1. WORKS</b>						
Irrigation infrastructure	5.83 (5.83)					5.83 (5.83)
Construction of buildings and trading infrastructure		0.88 (0.88)				0.88 (0.88)
Ricefield development					1.24	1.24
Agro-forestry					0.15	0.15
Protection of catchment basins					0.36	0.36
ESMP measures					0.18	0.18
<b>2. GOODS</b>						
Automotive equipment		0.07 (0.07)			0.11	0.18 (0.07)
Office equipment and computer hardware		0.11 (0.11)				0.11 (0.11)
<b>3. SERVICES</b>						
Training and sensitization, rural extension and outreach				0.87 (0.87)		0.87 (0.87)
Engineering studies and works supervision				0.53 (0.53)		0.53 (0.53)
Special studies				0.17 (0.17)		0.17 (0.17)
Technical assistance				0.54 (0.54)		0.54 (0.54)
Audit				0.05 (0.05)		0.05 (0.05)
Short-term consultancy			0.04 (0.04)			0.04 (0.04)
<b>4. Miscellaneous</b>						
Seeds			0.15 (0.15)			0.15 (0.15)
Research and development			0.11 (0.11)			0.11 (0.11)
Environmental surveillance			0.08 (0.08)			0.08 (0.08)
Staffing					0.17	0.17
Operations			0.68 (0.57)		0.68	1.36 (0.57)
Total	5.83 (5.83)	1.06 (1.06)	1.06 (0.95)	2.16 (2.16)	2.89	13.00 (10.00)

Note:

- The short list is solely restricted to the use of consultants.
- "Other" includes directly negotiated contracts, national shopping and allowances to pay to project staff.
- Figures in parentheses indicate amounts financed by the ADF.

5.4.2 **Works:** irrigation development works amounting to UA 5.83 million will be procured through international competitive bidding. Building and rural market construction works, the rice hulling mill and the drying floors valued at below UA 200 000 per contract, will be procured through local competitive bidding (LCB). Five contracts will be awarded for the construction of markets within the project zone (total estimated value: UA 0.88 million). Given the type, location and scope of works, foreign bidders will most likely not be interested.

5.4.3 **Goods:** office equipment, computer hardware (UA 0.11 million) and automotive equipment (UA 0.07 million) will be procured through local competitive bidding. Given the value and quantity of goods, foreign suppliers will most likely not be interested. Moreover, there are enough qualified local suppliers to guarantee competition.

5.4.4 **Services:** the services of private operators for sensitizing, training and organizing the beneficiaries, rural extension and outreach (UA 0.87 million), consulting firms for conducting engineering studies and works supervision (UA 0.53 million), technical assistance (UA 0.54 million), special studies (UA 0.17 million) and the services of an auditing firm (UA 0.05 million) will be procured on the basis of a short list (see table below for details). The services of individual consultants amounting to UA 0.04 million for a period not exceeding two months for each consultation, will be procured through direct negotiation. The above service providers will be selected on the basis of technical evaluation with price as a factor, except in the case of consulting firms whose selection will solely depend on technical evaluation and audited accounts (the selection will be based on a comparison of the technical bids, taking into consideration the least costly financial bid).

5.4.5 **Miscellaneous:** the project will finance the cost of seed and foundation seed production (UA 0.15 million), research and development (UA 0.11 million) contracted to ISAR and environmental monitoring (UA 0.08 million) to be conducted by REMA. Cooperation agreements will be signed between the project and the above Institutions for the implementation of the activities mentioned. Various supplies required for the project operations (costing above UA 500 but below UA 10 000) will be procured through local shopping. The procurement of supplies costing below UA 500 will be directly negotiated. Total procurements for project operations are estimated at UA 0.68 million and will cover the recurrent expenditures (electricity, water, fuel, vehicle maintenance, office supplies, communications, staff allowances, cost of organizing the inception workshop, steering committee meetings, external monitoring, etc.).

5.4.6 For the procurement of services estimated to cost UA 350 000 and above, an announcement shall be published in United Nations *Development Business* and the local press. For the procurement of services below UA 350 000, the announcement shall be published in local or regional newspapers.

5.4.7 **General Information Note on Procurements:** the text of the General Information Note on Procurements approved by the Government shall be issued for publication in *Development Business* following the approval of the Grant proposal by the Board of Directors.

5.4.8 **National Laws and Regulations:** national procurement laws and regulations were reviewed and considered acceptable.

5.4.9 **Executing Agency:** the project team and the [National Tender Board](#) (NTB) will be responsible for awarding all works, goods and services contracts. Established in 1997, the NTB organizes and manages public procurements in Rwanda. It has adequate capacity, expertise and experience to successfully conduct the procurement process. The project team, which will comprise a procurement specialist, will also receive technical assistance support (a rural engineering) during the preparation of various procurement documents (see Annex 6 for the related TOR).

5.4.10 **Review Procedures:** the following documents will be submitted to the Bank for consideration and approval prior to publication: (i) special procurement information note; (ii) pre-selection notices; (iii) bidding documents or letters of invitation to consultants; (iv) reports analyzing contractors' or suppliers' bids or consultants' proposals, including contract award recommendations; and (v) draft contracts where the model contracts contained in the bidding documents had been modified. The Bank's opinion on the technical analysis of consultancy bids is not required. The Bank's no-objection notices following the technical and financial evaluation of consultancy bids will be required.

## **5.5 Disbursement Arrangements**

The financial management of the Grant will be conducted in accordance with ADF rules of procedure. Resources for managing the project will be paid into a special account opened at the BNR. The account will receive rolling capital payments based on a four-month activity program prepared by the project team and approved beforehand by the Bank. The account will be replenished periodically on request, after full justification of all previous transfers and at least 50% of the latest rolling capital released. Disbursements on goods, services and works procurements will be made directly to suppliers, services providers and contractors concerned. Furthermore, the executing agency shall open an auxiliary account into which the counterpart contribution for the project will be paid.

## **5.6 Monitoring and Evaluation**

5.6.1 The project team member assigned for the purpose will oversee project monitoring and evaluation. In that regard, activities and achievements will be monitored vis-à-vis the contents of the project matrix. Special emphasis will be given to monitoring the environmental impacts and the related mitigative measures, as well as the socio-economic impacts on target groups, especially women and child orphans. From inception, the project will conduct a reference socio-economic survey and specify the gender-specific performance indicators. Thus, the impact of the project on the biophysical and human environment will be monitored continuously through the constitution of representative beneficiary samples. Two other surveys will be undertaken (during Project Years 4 and 6) to assess performance and impact based on various indicators retained.

5.6.2 Furthermore, monitoring and evaluation will cover the infrastructure and works implementation rate, the effective involvement of NGOs and grassroots and utilization of the project's human, financial and material resources. A detailed schedule of procurements will be drawn up immediately following project start-up and regularly reviewed as part of the quarterly reports submitted to the Bank.

5.6.3 To manage monitoring/evaluation information, an information management system will be put in place. The system will comprise: (i) a database which will include the indicators contained in the project logical framework, details on activities of various components, details on achievements, information on the beneficiaries, procurement of goods and services, socio-economic data, the environmental situation, etc.; and (ii) a management chart to monitor the key project performance indicators with a view to better activity planning. The project will be connected to the internet; it will have its own website that allows for real time access to the range of information mentioned above, including procurement announcements. The monitoring and evaluation unit will prepare quarterly reports on the project status (comprising relevant data from the information system) and forward them to the various stakeholders (the Bank, the Steering Committee, the Project Technical Monitoring Committee, the ministries concerned, the PRSP monitoring unit and the development partners).

5.6.4 The MINAGRI planning unit and RADA will be responsible for external monitoring and evaluation. These structures have the technical resources in the project's diverse fields. Both monitoring organs will ensure the quality of works and coordinate different operations in the sector. In addition, they will match the project goals with national objectives and, if necessary, propose necessary adjustments. Furthermore, provision has been made for two Bank supervision missions every year. The Bank's field office in Kigali will constantly monitor project operations, assisting the project team in preparing procurement dossiers and disbursement requests. A mid-term evaluation to pit project achievements against the set objectives is scheduled at the start of the fourth year. Project achievement restitution workshops will also be organized.

5.6.5 The implementation team will submit the following reports to the Bank: quarterly progress reports, annual activity reports, financial audit reports, mid-term evaluation report, activity reports from various operators involved in project implementation and the completion report at the end of the project. In addition, the team will prepare a half-yearly report on environmental monitoring, cross-cutting issues and social impact assessment.

## **5.7. Financial and Audit Reports**

The project accounting will follow generally accepted account management principles. In that regard, professional software will be procured and installed immediately after project start-up. The software will keep all ledgers, presenting expenditures by component, expenditure category and source of financing. The project accounts will be audited yearly by an external and independent accounting firm, recruited on the basis of a short list. The auditing will be financed with ADF resources. The audit reports will be submitted to the ADF not later than six months following the end of each financial year, failure of which disbursements will be suspended.

## **5.8. Aid Coordination**

5.8.1 Aid coordination improved considerably following Government's adoption of the PRSP in June 2002, the preparation of different sector strategies to facilitate the implementation of orientations contained in the document and the establishment of sector groups comprising various donor representatives. The Ministry of Economic Planning is in charge of aid coordination through the Central Public Investment and External Finance Bureau (CEPEX). CEPEX plays a key role in defining and implementing economic and financial cooperation strategies with various development partners, and in programming public investments. Rwanda's agricultural sector so far has no sector program. Donor operations are conducted within the APSP framework by way of traditional projects. A lead manager has been named for each sector, among donors represented in Kigali (the World Bank in the agricultural sector, the ADB in the water and sanitation sector).

5.8.2 During the project preparation and appraisal phases, aid coordination meetings were organized with the representatives of donors and NGOs operating in the agricultural sector, especially: Belgian, Canadian, American, British, Chinese, Japanese, German and Luxembourg Cooperation, the World Bank, the UNDP, the FAO and the following NGOs: Caritas, Handicap International, World Vision, German Agro Action and CRS. The need to complement and synergize the project with operations by other partners in the Bugesera Region considerably dictated the choice of project activities and locations. Such operations include: the Bugesera Rural Development Project financed by the Luxembourg Development Cooperation Agency, the Rural Sector Support Project financed by the World Bank, the Sustainable Agricultural Development Project financed by Japanese Cooperation, and

operations by CRS, Caritas and World Vision. The project team, the Bank's field office and the supervision missions will conduct coordination meetings with various partners during the project implementation phase.

## **6. PROJECT SUSTAINABILITY AND RISKS**

### **6.1 Recurrent Expenditure**

The recurrent expenditures are estimated at UA 1.11 million, of which UA 0.57 million will be financed by the ADF and UA 0.54 million by the Government over the project's six years. The expenditures will comprise staff salaries, maintenance of buildings, equipment, hardware and automotive equipment, and travel expenses. On project completion, the Government will only bear the equipment maintenance cost. The national budget will easily fund the post-project recurrent expenditures (estimated to cost UA 0.08 million yearly). It is worth noting that the Government of Rwanda receives more than USD 200 million (i.e. nearly 50% of its recurrent budget and 17% of its GNP) as budgetary support every year. The trend of the recurrent expenditures during the six years of the project is shown on the table below:

Table 6.1  
Trend of the Recurrent Expenditure by Source of Financing (UA Million)

Sources of Financing	2007	2008	2009	2010	2011	2012	Total
ADF	0.11	0.11	0.10	0.09	0.08	0.08	0.57
Government and beneficiaries	0.07	0.07	0.08	0.09	0.11	0.12	0.54
Total recurrent expenditure	0.18	0.18	0.18	0.18	0.19	0.20	1.11

### **6.2 Project Sustainability**

6.2.1 To guarantee the sustainability of operations described earlier, the project was designed on a participatory basis and contains measures aimed at holding the beneficiaries accountable. Grassroots and district department representatives were associated with the project design from the preparatory phase. Project activities were designed to meet the priority needs of the beneficiaries as contained in the Community Development Plans (CDP). The project provides for campaigns to sensitize, organize and train the beneficiaries. As with the marshlands developed for rice farming under the Rwamagana and Bugarama schemes, a cooperative to manage the valley will be set up and charged with managing the irrigation infrastructure, collecting water fees, overseeing the rice hulling mill, procuring input and recovering the related loans granted by the UBP to the farmers.

6.2.2 The water charges will gradually be covered by the beneficiaries. Given the current high kWh cost, the Government will cover 50% of the water pumping cost (estimated at USD 0.043/m<sup>3</sup>) during the first two years of farming the valley. On the third year of operation which will coincide with full development and the expected fall in the cost of energy when energy projects in the works would have come on stream, the beneficiaries will be able to bear the full water pumping and infrastructure maintenance costs.

6.2.3 The simplicity of works planned and the capacity building offered to farmers' associations, the district technical departments and MINAGRI are all part of an approach aimed at providing the right conditions that would enable the beneficiaries to manage and maintain the Mwesa valley infrastructure as well as protect the catchment basins. During the first two years of operation, the Bugesera District and MINAGRI technical departments will manage the pumping station. Subsequently, the station will be transferred to the Rice Cooperative planned for the scheme. In that regard, the project includes provision for training

an electro-mechanic who will be responsible for managing and operating the pumping station, and a rural engineer who will manage water distribution.

6.2.4 As is currently the practice in Rwanda, the Bugesera Mayor's Office will contract the maintenance of markets to private operators selected by competition. The project will provide the mayor's office with support in setting up the management transfer mechanisms. The foregoing pre-requisites offer guarantees for the sustainability of project achievements and the effective commitment of the beneficiaries.

### **6.3 Major Risks and Mitigative Measures**

6.3.1 The main exogenous risks relate to the competitiveness of local rice and the climatic conditions. Risks inherent to the project include: the silting of the Mwesa Valley following serious erosion common in Rwanda's catchment basins, and failure by the beneficiaries to pay their water fees. In its design, the project paid close attention to these risks, with a view to mitigating them.

6.3.2 The importation of rice from Asia could render less competitive the rice produced locally. To limit that risk, the Government has put in place mechanisms to encourage local production by granting waivers on agricultural inputs, promoting the introduction of high-yield varieties and providing technical supervision for farmers, all of which should further improve return on the crop and its competitiveness down the road. Furthermore, with the expected fall in the cost of energy (see ¶ 6.3.4), local rice will cost nearly FRW 200/kg, compared to the FRW 216/kg CIF price for imported rice. Risks related to climatic conditions will be reduced by controlling water on the Mwesa Valley, thus guaranteeing double-season rice production every year.

6.3.3 The integrated catchment basin development approach adopted by the project involves the construction of erosion protection at the head of the basin with a view to protecting the works downstream. In that regard, a total of 5 000 ha on the hills that make up the Mwesa Valley will be covered with water and soil conservation works that will also offer protection to the valley and its infrastructure.

6.3.4 The risk of non-recovery of water fees is related to the high pumping cost which could increase the rice production cost, rendering it less competitive compared with rice produced in marshlands irrigated by gravity. Based on the current electricity cost (FRW 132/kWh), the irrigation water is estimated to cost USD 860/season/hectare, i.e. USD 86 per 10 ares plot allocated to each beneficiary. This risk is reduced by the prospect of using other sources of energy, especially the Lake Kivu Methane Gas Project scheduled for end 2007 and the Rusumu Hydro-Electric Station planned for end 2012. According to MININFRA projections, these projects should bring the kWh cost down by at least 50%.

## **7. PROJECT BENEFITS**

### **7.1 Financial Analysis**

7.1.1 The financial analysis concerns two farming models, the main characteristics of which are presented as annex to the working document. Model 1, based on rain-fed farming, is practised on hills on an area which increases from 0.75 ha in a no-project situation to 1 ha with the project, thanks to intensified land use. The major crops considered include sorghum, maize and beans (covering 43%, 39% and 17% of the area under crop, respectively). Model 2 is principally under rice (80% of the area) and market garden crops, especially tomato. The

analysis of these models illustrates the productivity of various crops and the diverse situations encountered in the project zone. Thanks to irrigation, the introduction of technological packages adapted to improved productivity and improvement of feeds, crop and livestock production will increase significantly.

7.1.2 It can be concluded on analyzing the with-project performance situation that farmers' income would increase, from FRW 60 000 to FRW 200 000 at full development for farms on the hills (rain-fed), i.e. FRW 140 000 of additional income per farming season. For irrigated rice and market garden crops (Model 2), income would stand at FRW 534 000 per hectare at full development.

## **7.2 Economic Analysis**

7.2.1 To evaluate the project's economic viability, the economic rate of return was calculated on the basis of April 2006 conditions. The economic analysis makes a general assessment of the project's direct economic benefits. Those benefits are quantified by comparing the "no-project" and "with project" situations, with a view to determining the gains accruing from the implementation of project activities. The benefits considered mostly comprise the value from additional crop production (maize, cassava) following the use of significant quantities of improved seeds, rice, leguminous crop and market garden crop production.

7.2.2 The evaluation of the project's contribution to the national economy is based on the following hypotheses: (i) the project's net benefits are estimated over a thirty-year period; (ii) the charges comprise the investment cost, the infrastructure maintenance and operating expenses, the cost of equipment replacements and the additional variable cost of the model farm retained; (iii) agricultural products maintain constant prices (excluding taxes, import duties and inflation); (iv) the economic prices used reflect the import substitute price for rice, sorghum, maize and beans; financial prices apply to market garden crops, fruits and milk; and (v) the project's economic cost excludes financial contingencies and subsidies.

7.2.3 At full development, the project will contribute to increased production, generating additional substantial income as a result. The total additional net income solely from agricultural production is estimated at nearly FRW 2.3 billion at full development. Based on the above assumption, the project's economic rate of return (ERR) is estimated at nearly 15.2%. In addition, the project will create close to 2 500 permanent jobs; the use of the labor-intensive work in implementing the development works will generate two million work days.

## **7.3 Social Impact Analysis**

7.3.1 The project will innovate by introducing new technologies, especially: (i) training on the local planning process; (ii) water and soil protection; (iii) introduction of the irrigated rice farming system; (iv) improving herd nutrition through fodder crop farming and use of rice bran; (v) setting up a rice hulling mill which will play a key role in transferring knowledge; and (vi) developing an advisory support system based on partnership between farmers, training departments and agricultural research institutions.

7.3.2 The implementation of supervision and extension activities among farmers, the extension of the areas developed, the introduction of new land preparation and agricultural processing methods, the improvement of the marketing circuits, product preservation and storage planned under the project will contribute to food security and improve the income of farmers in the Bugesera Region. Nearly 13 500 rural farmers, (i.e. 60 750 persons) will be directly or indirectly touched by project activities. Farming will become a more profitable endeavor, thanks to improvement in soil fertility. Crops will yield more and livestock productivity will improve following thanks to the diversification of fodder resources.

7.3.3 Thanks to farmers' training and extension of cropping methods under the project, 25 000 individuals will be trained, of which 60% women and youths. Farmers' organization through the establishment and training of 415 associations, 30 inter-groupings, groupings and two cooperatives will inject a lease of life into farmers' structures which will gradually contribute to the sustainable development of their respective communities.

7.3.4 With project activities, farmers will see their income increase by between FRW 139 000 to FRW 534 000, depending on the farm model. Indeed, the project will put in place a program to extend the areas prepared through the introduction of irrigation, the distribution of improved seeds and the application of modern production methods that would contribute to generating additional 250 000 tons of food and market garden produce yearly. Furthermore, the marketing infrastructure (drying floors, markets and processing units) set up by the project will revitalize trade between the region's various districts and ensure the movement of products to the capital, Kigali. The rural extension program planned will be a factor in developing non-agricultural income-generating activities, improving the people's diet and sensitizing them to health and disease-related issues (HIV/AIDS, malaria, water-borne diseases, etc.).

7.3.5 Nearly 2 000 000 work days will be created during the works implementation phase. The farm roads will facilitate population movement and transportation of products from the inner recesses of the valley. The intensified farming resulting from the development will lead to the creation of nearly 2 500 permanent jobs. Moreover, the use of labor-intensive work during the works implementation phase will contribute to the emergence of local SMEs. Plans under the project to undertake catchment basin protection works on 5 000 hectares will help control erosion and, as a result, contribute to water and soil conservation.

7.3.6 Furthermore, the project will enhance gender impact by promoting the effective representation of women and their respective groups in decision-making bodies and development committees (at least 60% of members). Thus, women will be in a position to express their points of view and make demands with regard to the types of productive investments financed by the project. Given women's strong involvement in economic activities in the project zone, most project activities specifically concern them. Indeed, 60% of the land to be developed will be allocated to women; most of the market garden crops that the project will support will also be cultivated by women. In addition, the program to promote income-generating activities directly targets women. Therefore, research and development activities will zero-in on women by promoting technologies that help them to reduce chore and save time.

## **7.4. Sensitivity Analysis**

7.4.1 The sensitivity analysis was based on a number of assumptions: (i) increase in the project cost due to rising cost of infrastructure, equipment and operations; (ii) reduction of additional benefits from the project due either to the fall in the outputs considered, or to the decrease in the prices of products; (iii) occurrence of both assumptions above, i.e. reduction of additional benefits and increase in cost; and (iv) increase in the maintenance/operating costs of the structures and additional costs of the major crops selected. From the sensitivity tests carried out, the following results were obtained:

<u>Situation</u>	<u>IRR</u>
10% increase in project cost	14.6%
Fall in output, leading to a 10% drop in benefits	12.3%
10% increase in cost and reduction of benefits	12 %
Two-year delay in project implementation	14.4%

## **8. CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 Conclusions**

8.1.1 Bugesera Region was severely affected by the genocide which, among other things, increased the number of single-parent families (38% of women, several young orphans/heads of family). Moreover, it has since 1998 had to face food security problems and famine due to prolonged and repeated drought. The implementation of the Bugesera Agricultural Development Support Program will help to sustainably limit the negative impact of drought and famine in the region by mobilizing water for the irrigation of Mwesa Valley, protecting the surrounding catchment basins and improving cropping methods. As a result, agricultural production will increase sustainably by 25 000 tons. In the area directly targeted by the project, the income of 13 500 rural households (of which 60% headed by women and young heads of family) will significantly improve. The additional income is projected at between FRW 139 000 and FRW 534 000, depending on the farm model (rain-fed or irrigated). With the irrigation development works, intensified production systems and the development of income-generating activities, the project will permit the creation of 2 500 permanent jobs. Two million work days will also be generated through labor-intensive work.

8.1.2 The Bugesera Agricultural Development Support Project lies within the framework of the Government poverty control strategy and its ongoing Agricultural Processing Strategy Plan (APSP). The mobilization of water resources for irrigation purposes is the Government's key priority. The project is also in phase with the Bank's 2005-2007 RBCSP for Rwanda which aims at supporting rural food security and poverty reduction.

### **8.2 Recommendations and Grant Conditions**

It is recommended that a grant not exceeding UA 10 million be awarded the Republic of Rwanda for use in implementing the project, subject to the following conditions:

A. Conditions Precedent to Entry into Force: entry into force of the grant memorandum of understanding shall be subject to its being signed by the Donee and the Fund.

B. Conditions Precedent to First Disbursement

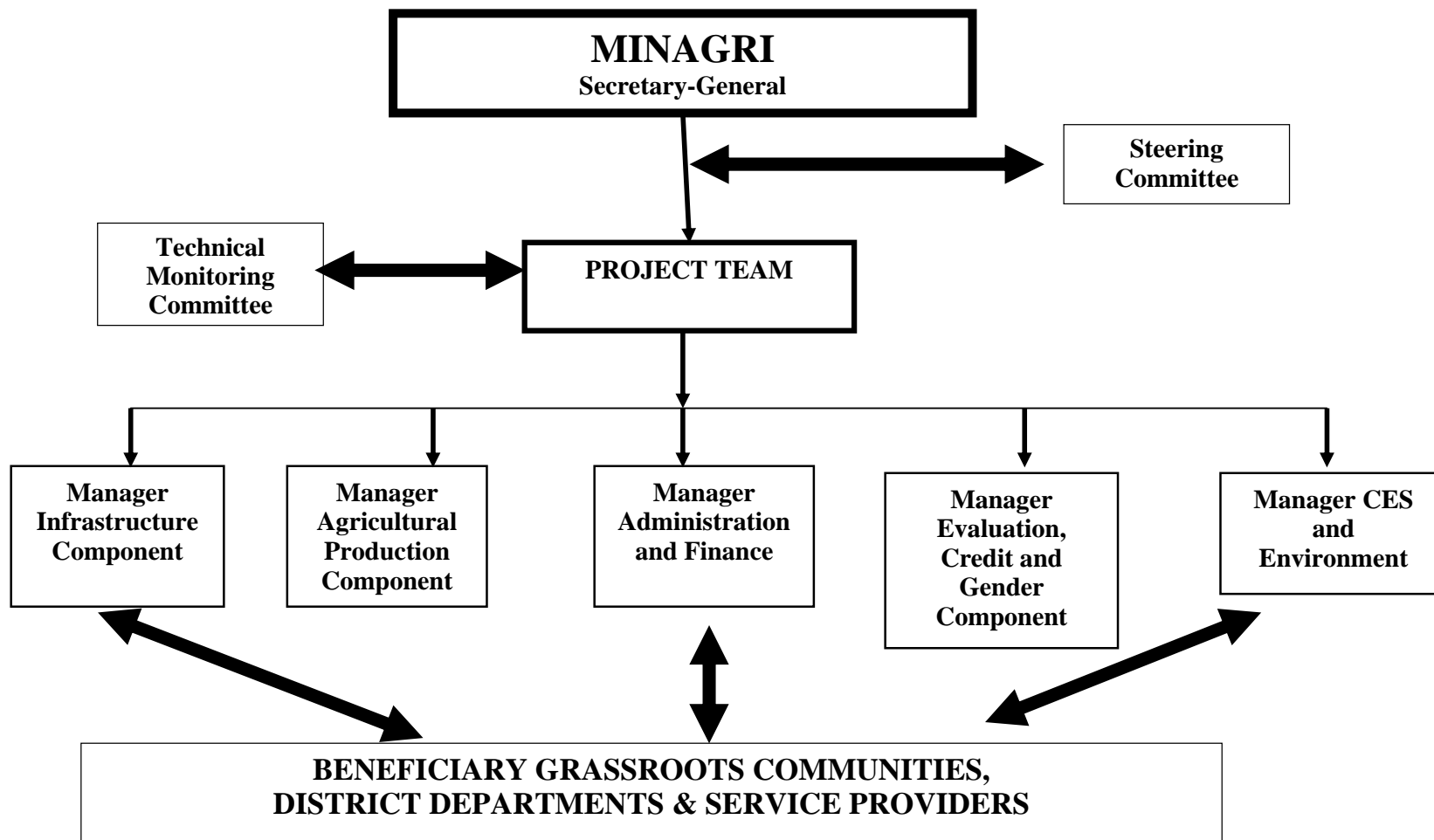
The first disbursement of the grant resources shall be subject to entry into force of the grant memorandum of understanding and fulfillment by Government of the following special condition:

- i) Show proof to the Fund of appointing members of the project team (see 4.5.17).

C. Other Condition

- i) Show proof to the Fund of signing a performance contract with the Coordinator not later than six (6) months following entry into force of the grant (see 5.1.2).

ORGANIZATION CHART OF TEH PROJECT TEAM



**PROVISIONAL LIST OF GOODS AND SERVICES**  
**(in UA Million)**

Categories	L.C.	ADF F.E.	Total
<b>I. Investment</b>			
1. Works	0.50	5.39	5.89
2. Goods	0.06	0.22	0.28
3. Services			
3.1. Training and sensitization	0.33	0.50	0.83
3.2 Studies/Consultants/Audit	0.35	0.55	0.90
3.3 Technical assistance	0.00	0.52	0.52
<b>II. Recurrent expenditure</b>			
4. Staffing	0.00	0.00	0.00
5. Operating expenses	0.49	0.08	0.57
<b>Project base cost</b>	1.73	7.26	8.99
Physical contingencies	0.07	0.53	0.60
Price escalation	0.12	0.29	0.41
<b>Total project cost</b>	1.92	8.08	10.00

**ECONOMIC RATE OF RETURN**

Years	Investment	Operating Expenses	Equipment Replacement	Additional Operating Expenses	Additional Net Income
1	282.00	0	0	0	-282
2	4 368.00	280	0	339	-4 309
3	3 800.00	398	0	621	-3 577
4	542.00	955	0	1 432	-65
5	451.00	1 619	0	2 630	560
6	152	2 365	0	4 183	1 666
7	0	2 365	0	4 183	1 818
8	0	2 365	0	4 183	1 818
9	0	2 365	0	4 183	1 818
10	0	2 365	150	4 183	1 668
11	0	2 365	0	4 183	1 818
12	0	2 365	0	4 183	1 818
13	0	2 365	0	4 183	1 818
14	0	2 365	0	4 183	1 818
15	0	2 365	0	4 183	1 818
16	0	2 365	0	4 183	1 818
17	0	2 365	0	4 183	1 818
18	0	2 365	0	4 183	1 818
19	0	2 365	0	4 183	1 818
20	0	2 365	150	4 183	1 668
21	0	2 365	0	4 183	1 818
22	0	2 365	0	4 183	1 818
23	0	2 365	0	4 183	1 818
24	0	2 365	0	4 183	1 818
25	0	2 365	0	4 183	1 818
26	0	2 365	0	4 183	1 818
27	0	2 365	0	4 183	1 818
28	0	2 365	0	4 183	1 818
29	0	2 365	0	4 183	1 818
30	0	2 365	150	4 183	1 668
<b>ERR</b>					<b>15.2%</b>

## **SUMMARY OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

### **1. The Project in Brief**

1.1 The main activities of the project revolve around two components: “Irrigation and Catchment Basin Development” which aims at reducing the impact of drought on Bugesera Region through the irrigation of 650 ha in the Mwesa Valley, as well as water and soil conservation through erosion control works on nearly 5 000 ha of hill land around the valley. The main irrigation construction works include a water intake facility on the Nyabarongo River, an intake channel of nearly 750 m up to the pumping station, a 700 m reverse conduit, a main canal running over nearly 3.2 km, grounded ducts totaling 22.4 km, ring and secondary canals totaling 75 km, valley planing works and thirty rice threshing and drying floors.

1.2 The “Agricultural Development” component aims at increasing food production through farmers’ organization and training, extension services, distribution of improved seeds, development of farming on the Mwesa valley and the surrounding hills, agro-forestry and construction of marketing infrastructure (three markets and six warehouses). The training dispensed to the extension workers and the themes discussed with farmers will focus on the use of fertilizers and improved seeds, phytosanitary crop protection, seed production methods, application of adequate crop rotation, crop irrigation methods, irrigation water saving, time-tested water and soil conservation methods, combination of stockraising and farming, fodder crop cultivation and agro-forestry, management and maintenance of irrigation infrastructure, and rational use of credit.

### **Main Environmental and Social Impact**

1.3 Soil and water conservation activities will contribute to effective soil erosion control. Indeed, erosion control practices will be applied to nearly 5 000 ha and will involve gradual earthworks combining live hedges with the construction of erosion control troughs and the cultivation of perennial crops on rotation plots. Compost production and livestock stalling for manure production will contribute to improving soil fertility. Regarding the planting of trees and shrubs in farms, better results are more likely with the *Calliandra* specie spaced out at 5 m intervals. The results of research conducted by ISAR demonstrate that such a method is capable of producing up to 17 tons of biomass per hectare every year, including 9.5 tons of leaves that provides excellent fodder which, in addition, can contain up to 105 kg of N, 47 kg of P<sub>2</sub>O<sub>5</sub> and 26 kg of K<sub>2</sub>O per ha. Farmers’ supervision and their sensitization over the collective maintenance of the irrigation networks and the rational use of inputs will generate a positive impact on the bio-physical environment.

1.4 Project activities in the Bugesera Region will contribute significantly to food security, improve farmers’ income and create rural jobs. Indeed, the project will benefit the rural poor who already undertake extensive farming on some sections of the marshlands. Activities planned will contribute to sustainable agricultural development. The increase in production will not only generate additional income through the marketing of additional production and the development of related activities, but will also enhance nutritional quality for the beneficiaries. The project will have several positive socio-economic impacts: offer of employment to people in the District in general and those in areas surrounding the Mwesa Valley in particular, and the possibility of additional earnings through the intensive production of rice and other crops on hills adjacent to the scheme.

1.5 In principle, the development of the Mwesa Valley should cause little disruption to the hydrographic network of which the Nyabarongo River is part. Data compiled by the Kanzenze Station (3 km on the upstream of the future water intake facility) puts the lowest and highest recorded flow of the Nyabarongo at 41 m<sup>3</sup>/s and 324.98 m<sup>3</sup>/s, respectively. Thus, the water resources are sufficient since the flow needed to irrigate the scheme is below 1 m<sup>3</sup>/s. Therefore, the maximum quantity of water taken would account for 2.4% and 0.3% of the minimum and maximum flow, in that order, demonstrating full coverage of the water resources needs. The concentration of chemical input residue resulting from intensified farming could increase the risk of canal eutrophication. The concentration of nitrogen in water bodies could favor the propagation of nitrophile species. The water intake

channel of the pumping station will have to be regularly cleaned out since it draws its supply from the Nyabarongo River whose waters often carry water hyacinth (*Eichhornia crassipes*).

### **Impact Optimization and Mitigative Measures**

1.6 Appropriate environmental management measures will contribute to mitigating the negative impact of various works. All solid and liquid wastes generated by the work site (packaging, food waste) will be collected and disposed of appropriately. Borrowing areas will be rehabilitated on completion, with a view to restoring the morphology of the natural environment as much as possible by filling up excavations and re-planting the vegetation cover. Recruitment of unskilled labor for the construction works should favor the inhabitants of the zone. These general site specifications should be included in the bidding documents, to enable contractors to take them into account during the works implementation phase.

1.7 Environmental measures (e.g. construction of a dyke on the bank or perpendicular to the direction of flow from the adjacent hills) will also be taken to protect the irrigation canals against sedimentation and silting that runoff water could cause, preventing such waters from flowing directly into the canals. In that regard, a bank stabilization and lake protection buffer comprising agro-ecologically useful species will be planted (these species will also provide fodder for semi-stalled livestock). Erosion control activities on the surrounding hills will consolidate this measure to protect the irrigation facilities in Mwesa Valley. Furthermore, the Nyabarongo intake canal up to the pumping station will be regularly cleaned out, since a minimum depth is necessary for the gravity flow system to function normally, especially during low water. It will also be indispensable to secure the nearly 3.2 km main canal with concrete bottom lining and partial or total surfacing.

1.8 The introduction of more intensive agricultural production following the irrigation of the marshlands will certainly task soil fertility more than ever. In that regard, the promotion of organic fertilizers combined with erosion control and agro-forestry will not only accompany the development of rain-fed crops on the catchment basins but will also protect crops in the valley. The dangers of surface water contamination with chemical fertilizer and phytosanitary products are currently limited in the District, given the low utilization of such inputs. However, the introduction of more intensive farming following the irrigation possibilities offered could lead to an increase in the use of phytosanitary products. Larger farmed areas combined with approximate crop treatment methods could increase the risks of surface water pollution.

1.9 It will be necessary to guarantee the project beneficiaries potable water supply sources so as to reduce the risk of contamination by water-borne diseases engendered by the multiplication of bodies of water in the wake of construction of irrigation works. In that regard, it is worth noting that an ongoing water supply project in the District includes a provision to build several water points, (nearly one every 500 meters). In the same vein, mitigative measures will be taken both within the framework of development works and during extension meetings to prevent all risk of exposure to fecal matter. To remedy eventual public health problems, the project will support the district health structures and develop health awareness especially among women and children on the prophylactic measures to take to control malaria and bilharzia.

1.10 For greater effectiveness, the gradual earthworks will be combined with the planting of live hedges comprising species such as *Senna spectabilis* and *Leucaena diversifolia* not only because they are well suited to the zone, but also because they provide firewood and fodder resources to the population. Furthermore, the two species provide a non-negligible quantity of organic matter to the soil (nearly 2 to 7 tons/ha/annum). The digging of small erosion control troughs at short intervals (10 – 15 m) and their consolidation with fixative herbs appears to be the most suitable method. Apart from the fact that such a method is well-known by the population, it also joins least cost with effectiveness. Combined with perpendicular ploughing on the slopes, the method will at the end of two years result in the gradual formation of terraces capable of conserving water and soil.

1.11 The contribution of agro-forestry to soil fertility management through the use of biomass will be further amplified. It has indeed been demonstrated that cover crops *Calliandra calothyrsus*, *Leucaena diversifolia* and *Sesbania sesban* combined with animal manure have helped to increase foodcrop yield in several regions of the country. The agro-forestry species currently used include: *Callitris robusta*, *Acacia melanoxylon*, *A. Mearnsi*, *Grevillea robusta*, *Cassia spectabilis*, *Senna spectabilis*, *Calliandra calothyrsus*, *Cedrela serata*, *Albizia spp.*, *Casuarina equisetifolia*, *Moringa oleifera*, *Euphorbia terrucari*, *Maesopsis eminii*, *Gliricidia sepium*, *Jacaranda mimosaeifolia*, *Leucaena diversifolia*, *Sesbania sesban*, *Tephrosia vogelii*, *Lantana camara*.

1.12 Conditions for the production and distribution of improved seeds will be closely supervised, with a view to limiting the risk of genetic erosion. Mineral fertilizers will be managed in a manner that avoids the generally associated potential negative impact: concentration of nitrates in the drainage canals of farm plots and surrounding water bodies (e.g. lakes), and the associated risk of water eutrophication, dependence on fertilizers and, consequently, lack of interest in soil fertility conservation through agro-forestry and crop rotation methods. Regarding agricultural product marketing and storage infrastructure, the ESMP includes measures for the strict application of health regulations in public markets, strict control of food product pollutants or contaminants, regular maintenance of effluent treatment and evacuation facilities, promotion and popularization of household latrines, etc. Environmental sanitation training/sensitization will focus on local potable water supply and market infrastructure management committees. In order to address the public health problems likely to arise with the multiplication of water bodies, the project will support the district health structures and develop health outreach activities targeted mostly at women and children, during which information will be shared on the prophylactic measures to take against malaria and bilharzia.

### **Environmental Control and Monitoring Program**

1.13 Project environmental and social monitoring activities will be planned and coordinated by the project team which will have an environmentalist as a member. The environmentalist will oversee the successful implementation of the environmental measures in liaison with the Rwanda Environmental Management Agency (REMA). His/her task will consist in reviewing the environmental provisions contained in the works execution documents and ensuring that all mitigative measures are taken as required. The project may use consultants to conduct some of the ESMP activities, define and monitor a number of impact indicators.

### **Capacity and Institution Building**

1.14 Capacity building will primarily focus on the scheme's farmers and village elders. In order to guarantee the sustainability of works put up under the project, the beneficiaries will be involved in works maintenance and management through sensitization and training at all levels. The decentralized government technical departments (MINAGRI, MINTERE and MINALOC) will also benefit from capacity and institution building. The project will provide logistic support to REMA to enable it to successfully undertake the supervision mission assigned to it. The successful application of measures aimed at adequately mitigating the impact of the project on the environment will provide the occasion for improving skills and raising awareness over the environmental issues connected with the country's irrigation infrastructure. The project will support the Land Directorate in applying the new Land Use Law, thanks to which potential redistribution conflicts will be resolved.

### **Public Consultation**

1.15 As with various preparatory stages of the project, the implementation strategy will follow a participatory approach whereby all activities are undertaken in consultation with the beneficiaries, thus not only maximizing their sense of partnership but also winning their approval. The project team will initiate formal public information sessions prior to the start of construction work. The sessions will be organized in each district in the presence of local administrative and traditional authorities. They will also be opened to all physical or moral persons desiring information on project activities. During the information sessions, environmental measures will be presented and subjected to discussion with all partners. NGOs operating in the Bugesera District will be closely involved, with a view to harmonizing operations and benefiting from their field knowledge.

### **Cost Estimate**

1.16 An envelop of USD 400 000 has been earmarked for the implementation of the ESMP - principally environmental supervision by REMA, project impact monitoring (water quality, soil quality, epidemiological and health surveillance) by service providers and implementation of measures under the project's operational phase.

Activity	Responsibility	Budgetary Implication	Cost (in USD)
Environmental monitoring	ORGE	Logistic support	100 000
Preparation of the implementation program	ESMP Project team	Short-term consultancy	10 000
Impact monitoring	Project team	Services providers/agreements	60 000
Mitigative measures (operating phase)	Project team	Miscl. procurements	230 000
<b>TOTAL</b>			<b>400 000</b>

NB: The cost of mitigative and enhancement measures related to the development works, sensitization and training are included in the cost of project components.

### **Implementation Schedule**

1.17 An implementation plan that takes into account all the ESMP activities listed above, especially the range of mitigative/enhancement measures and environmental monitoring, and concomitant with the project implementation schedule (since all activities proposed must fit into project planning and implementation) will be put in place. Quarterly reports from the project team will provide indices for monitoring the status of implementation of environmental measures. Furthermore, REMA will produce and validate half-yearly progress reports on ESMP activities (whose implementation plan is hinged on the project implementation schedule). The half-yearly report will subsequently be distributed to the Bank, agencies and NGOs concerned.

**SUMMARY OF BANK GROUP OPERATIONS IN RWANDA AS AT 12/05/2006**

Operations	Date of Approval	Date of Signature	Date of Entry into Force	Completion Date	Loan or Grant Amount (UA Million)	Amount Disbursed (UA Million)
<u>Agriculture and Rural Development</u>						
Inland Lakes Integrated Development and Management Support Project	06/10/2004	17/11/2004	10/05/2005	30/06/2011	14.76	0.00
Livestock Development Support Project	31/10/2000	16/01/2001	04/07/2001	31/12/2006	13.5	4.68
Forestry Development Support Project	14/11/2001	20/12/2001	01/07/2002	31/12/2007	8.90	2.65
Environmental Management Institution Building Project	09/07/2003	24/09/2003	02/06/2004	31/12/2007	1.00	0.32
<u>Banking</u>						
Third Line of Credit to BRD	16/11/2000	16/01/2001	17/07/2001	30/06/2006	6.00	5.99
<u>Public Utilities</u>						
PWSS and Electricity Program	09/07/2003	24/09/2003	30/08/2004	31/12/2007	18.77	0.26
Road Infrastructure Project (Loan)	08/10/2003	06/11/2003	06/11/2003	31/12/2007	13.50	4.20
Road Infrastructure Project (Grant)	08/10/2003	06/11/2003	12/10/2004	31/12/2007	1.50	0.28
Gitarama-Ngororero-Mukamira Road Project	20/12/2004	25/02/2005	08/09/2005	31/12/2009	15.20	0.00
<u>Social</u>						
Primary School Rehabilitation and Construction Project	02/12/1998	18/01/1999	20/07/2000	31/12/2006	20.78	4.58
Women's Poverty Reduction	17/06/1998	18/01/1999	10/05/2000	31/12/2005	9.54	6.10
AIDS Control Support Project	22/07/2003	24/09/2003	01/06/2004	31/12/2010	2.00	0.52
<u>Multi-sector</u>						
CEPEX Institution Building Project	14/11/2001	20/12/2001	21/12/2001	31/12/2005	2.00	1.49
Poverty Reduction Strategy Support Project (PASRP I)	27/10/2004	17/11/2004	12/04/2005	30/06/2006	21.90	16.56

### **TERMS OF REFERENCE OF THE PROJECT COORDINATOR**

1. **Qualification and Experience:** Rural/civil engineer or agronomist, the Coordinator should have a minimum of ten years of experience in rural development. He should also be experienced in managing a multi-discipline team.
2. **Duties:** the Coordinator is responsible for the project's routine administration. In that regard s/he:
  - (i) organizes annual planning sessions;
  - (ii) controls and monitors the implementation of the annual work program and the related budget;
  - (iii) prepares a schedule of procurements and bidding documents;
  - (iv) manages the social account and supervises the preparation of annual financial statements;
  - (v) coordinates internal monitoring and evaluation. In that regard, s/he sets out the specific quantifiable technical and organizational indicators for the whole project, using the indicators on the project matrix as reference. The evaluation will mainly cover the implementation rate of various activities, the effective involvement of Associations, NGOs, operators and professional organizations, and efficient use of the project's human and material resources;
  - (vi) prepares quarterly and annual activity reports on the project status, submitting them to the Government and the ADF not later than 15 and 30 days, respectively, following the end of the quarter and year concerned. S/he ensures that various partners participating as operators in implementing project activities prepare their respective activity reports;
  - (viii) on project completion, prepares a completion report based on the Bank's format;
  - (ix) ensures that the project's administrative and financial services maintain an accounting system for the whole project, and that the following are prepared: administrative, accounting and financial procedures manuals; (ii) the computerized financial management system; and (iii) the technical implementation manual;
  - (x) ensures that external auditing firms are recruited to check and validate the project accounts and rolling fund yearly;
  - (xii) ensures that the audit reports are submitted to the Government and the ADF not later than six months following the end of the audited financial year; and
  - (xiii) ensures that project operations harmonize with those of other donors in the sector.

### **TERMS OF REFERENCE OF THE ACCOUNTANT**

1. **Qualification and Experience:** at least a certificate in accounting. S/he must have a minimum of five years of relevant experience in the financial management of development projects and knowledge of ADB disbursement procedures. Excellent knowledge of IT tools (accounting software, MS Word, MS Excel, MS Project, databases, etc.) is required.
2. **Duties:** under the supervision of the Coordinator, the accountant will be responsible for:
  - i) managing the cashflow;
  - ii) processing accounting information and keeping ledgers;
  - iii) preparing the annual financial statements; and
  - iv) keeping a physical inventory of physical assets.

### **TERMS OF REFERENCE OF THE AGRONOMIST (TECHNICAL ASSISTANCE)**

1. **Qualification and Experience:** a degree in agriculture and specialist in crops and extension services. S/he should have at least ten years of professional experience, including five in a developing country in rural development projects. S/he should also have practical experience in research and development, collection and analysis of socio-economic data, and rural extension. Excellent knowledge of spoken and written French is required. Knowledge of English will be an advantage. The position requires excellent knowledge of IT tools (MS Word, MS Excel, MS Project, MS Power Point, databases and technical software).

2. Duties: the agronomist will assist the project in research and development, extension and selected seed multiplication. S/he will work closely with MINAGRI engineers and other ministries participating in the project to identify, develop and test technologies that could hold advantages to farmers supervised under the project. S/he will also ensure the wide-spread dissemination of such technologies, in addition to coordinating research, extension and financing activities with the relevant national agencies and other partners. Specifically, s/he will be responsible for:

- i) Coordinating the implementation of all activities under the “Agricultural Development” component in collaboration with national technicians;
- ii) Assisting in creating and managing activity programs to intensify and protect production, introduce new farming methods (selected seeds, farming calendar, etc.) and improve the technical level of farmers;
- iii) Putting in place experimental procedures and protocols for on-site research and development;
- iv) Interpret the results of background studies and socio-economic surveys on population organization, biological control, product conservation, farming method improvement, etc.;
- v) Based on background studies and in collaboration with the staff concerned, developing appropriate research/development themes and rural extension messages that address the development priorities and constraint facing the target population;
- vi) Planning an integrated training and extension program for farmers and extension workers; providing training courses and proposing the recruitment of consulting specialists and/or NGOs to cover training in specific areas (processing, petty jobs, storage, marketing, etc.);
- vii) Providing training for groupings/development associations and national staff involved in project implementation; and contributing to the implementation of viable micro-projects.

#### **TERMS OF REFERENCE OF THE RURAL ENGINEER (TECHNICAL ASSISTANCE)**

1. Qualification and Experience: rural engineer with 15 years of experience, including a minimum of 10 years in irrigation development; specific experience in designing and operating pumping stations, reverse conduits, open canals, conduits, internal ricefield infrastructure, rural construction works, water and soil conservation is indispensable; experience in implementing works engineering studies, works supervision and procurements; experience in rural development project management and considerable understanding of environmental issues, rural extension, village organization, training and participatory approach.

In addition, the candidate should have a minimum of five years working experience in Africa and excellent knowledge of IT tools (MS Word, MS Excel, MS Project, Access MS Power Point, databases and technical software on canal sizing, pumping stations, etc.).

2. Duties: the technical assistance worker will form part of the core project supervision team. He will participate in managing and implementing project activities, and will specifically be responsible for the irrigation and catchment basin development component. In that capacity, s/he will be charged with:

- i) Coordinating the implementation of activities under the irrigation and catchment basin development component, and assisting in the procurement process;
- ii) Preparing terms of reference and letters of invitation for the recruitment of consulting firms to conduct the engineering studies and supervising works;
- iii) Monitoring and overseeing the preparation of project engineering studies;
- iv) Participating in preparing the terms of reference and letters of invitation for the recruitment of the NGO responsible for providing extension and beneficiary supervision services;
- v) Monitoring and overseeing the services of the consulting firm responsible for works supervision;
- vi) Participating in the contract award process within the project framework (preparation of bidding documents and technical specifications, evaluation of bids and preparation of contracts, etc.);
- vii) Providing training to the national counterpart;
- viii) Participating in setting up and training the cooperative that will be established to manage and maintain the developed valley;
- ix) Defining mechanisms for managing various irrigation infrastructure, the rice hulling mill and markets to be built, with a view to guaranteeing their sustainable operation;
- x) Undertaking all other tasks assigned by the project coordinator and geared towards improving the operation and performance of the project executing agency.

**AUDIT STATUS OF AGRICULTURAL SECTOR PROJECTS**

Operations	Date of Approval	Date of Signature	Date of Entry into Force	Date of First Disbursement	Reports Submitted	Remarks
Inland Lakes Integrated Development and Management Support Project	06/10/2004	17/11/20/04	10/05/2005			The first disbursement is ongoing
Livestock Development Support Project	31/10/2000	16/01/2001	04/07/2001	13/12/2001	2002, 2003 and 2004	The process to recruit the auditor for the 2005 is underway
Forestry Development Support Project	14/11/2001	20/12/2001	01/07/2002	10/01/2003	2003, 2004	The process to recruit the auditor for the 2005 is underway
Environmental Management Institution Support Project	09/07/2003	24/09/2003	02/06/2004	30/07/2004	2004 and 2005	The audit is up to date