

**AFRICAN DEVELOPMENT FUND**

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**REPUBLIC OF BURUNDI**

**THE WATERSHED MANAGEMENT PROJECT  
(PABV)**

**APPRAISAL REPORT**

**AGRICULTURE AND RURAL DEVELOPMENT DEPARTMENT  
CENTRAL-WEST REGION**

**OCAR  
DECEMBER 2005**

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## ACRONYMS AND ABBREVIATIONS

ADF	:	African Development Fund
APRODEC	:	Association for promotion and development
BD	:	Bidding Documents
BIF	:	Burundi franc
BNDE	:	National Economic Development Bank
BRB	:	Bank of the Republic of Burundi
CEFDHAC	:	Conférence des écosystèmes forestiers denses humides d’Afrique centrale (Conference on Central African Moist Forest Ecosystems)
COOPEC	:	Savings and Loans Cooperatives
CPELP	:	Centre for Environmental Protection and Poverty Reduction
EDF	:	European Development Fund
ERR	:	Economic Rate of Return
EU	:	European Union
FDC	:	Communal Development Fund
FOSA	:	Forestry Sector Outlook Studies
GDP	:	Gross Domestic Product
GVT	:	Government
HDI	:	Human Development Index
IFAD	:	International Fund for Agricultural Development
INCEN	:	National Institute for the Environment and Nature Conservation
I-PRSP	:	Interim Poverty Reduction Strategy Paper
ISABU	:	Burundi Institute of Agronomy
ISTEEBU	:	Burundi Institute of Statistics and Economic Studies
LC	:	Local Currency
LI	:	Labour Intensive
MFI	:	Micro-Finance Institutions
MIN	:	Micro finance Institutions Network
MINAGRIE	:	Ministry of Agriculture and Livestock
MINATET	:	Ministry of Regional Development, the Environment and Tourism
NGO	:	Non-Governmental Organization
OCIBU	:	Coffee Corporation
OPEC	:	Organization of Petroleum Exporting Countries
OTB	:	Tea Corporation
PAIBV	:	Integrated Watershed Management Project
PRASAB	:	Programme for the Rehabilitation and Development of the Agricultural Sector in Burundi
PRDMR	:	Rural Recovery and Development Programme
PRGF	:	Poverty Reduction and Growth Facility
RB	:	Regional Branches
RBCSP	:	Results-based Country Strategy Paper
RDC	:	Regional Development Corporation
SL	:	Short List
TOR	:	Terms of Reference
UA	:	Unit of Account
UCODE	:	Union for Corporation and Development
UNDP	:	United Nations Development Programme
USAID	:	United States Agency for International Development

## CURRENCY EQUIVALENTS

(November 2005)

Currency Unit = Burundian Franc (BIF)

UA 1 = BIF 1,5447.62

UA 1 = USD 1.4458

## FISCAL YEAR

1 January – 31 December

## UNITS OF MEASURE

Metric system

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## Working Documents

Detailed Project Costs by Component  
 Forestry and Agricultural Operating Accounts  
 Production, Surface Area and Yield.

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PROJECT INFORMATION SHEET

Date: December 2005

The information given hereunder is intended to provide some guidance to prospective suppliers, contractors, consultants and all persons interested in the procurement of works, goods and services for projects approved by the Board of Directors of the Bank Group. More detailed information and guidance should be obtained from the Executing Agency of the Donee.

1. COUNTRY : BURUNDI
2. PROJECT NAME : Watershed Management Project (PABV)
3. LOCATION : Gitega, Bururi, Rutana, Muyinga, Kirundo and Cankuzo provinces.
4. DONEE : Republic of Burundi :
5. EXECUTING AGENCY : Department of Forestry at the Ministry of Regional Development, the Environment and Tourism  
 Bujumbura (Burundi) –  
 Tel : (257) 22.49.79 Fax : (257) 22.89.02
6. PROJECT DESCRIPTION :
7. TOTAL COST : UA 10.44 million
  - Foreign Exchange : UA 5.65 million
  - Local Currency : UA 4.79 million
8. BANK GROUP GRANT
  - ADF Foreign Exchange : UA 5.41 million
  - Local Currency : UA 3.59 million
  - Total : UA 9.00 million
9. OTHER FINANCING SOURCES
  - Government : UA 1.07 million
  - Beneficiaries : UA 0.37 million
10. APPROVAL DATE : February 2006
11. ESTIMATED PROJECT START-UP DATE AND DURATION : May 2006; 5 years

## 12. PROCUREMENT OF GOODS AND SERVICES

Bank-financed goods, works and services will be procured according to the following procedures:

National competitive bidding (NCB): Construction of buildings; vehicles, motorcycles, and bicycles, office furniture and other equipment (computers, photocopiers, fax, telephone, communication equipment, etc.).

Community-based procurement procedures: Seedlings production, establishment of plantations, erosion-control ditches, opening and upkeep of fire breaks and forest tracks.

Miscellaneous: Supervision of associations and local populations and project officers will be based on agreements signed between the project and specialized institutions present in the country. The supply of seeds, fertilizers, forest and fruit seedlings will also be based on agreements signed between the project and suppliers approved at the national level. Miscellaneous supplies required for the functioning of the project will be procured according to procedures acceptable to the Bank.

## 13. CONSULTANCY SERVICES REQUIRED

Short Listing: Procurement of technical assistance services (forest management, administrative and financial management, and community development), service providers charged with specialized training, annual accounts auditing, procurement, short-term studies and consultancies (setting up of an accounting system, environmental monitoring mechanism, mid-term review and final evaluation)

## 14. ENVIRONMENTAL CATEGORY: The project is classified under category II.

## **EXECUTIVE SUMMARY**

### **1. PROJECT HISTORY**

1.1 The forest resources of Burundi have been seriously degraded since the beginning of the socio-political crisis which the country has been experiencing for one decade. Thus, more than 30,000 ha of woodlots and 10,000 ha of natural forests have been destroyed, reducing the country's forest cover rate from 8% to 5%. The overexploitation of arable lands, overgrazing, tilling of steep slopes and the phenomena of erosion in various forms account for the degradation of natural resources (soils, forests, etc). The lack of appropriate technologies for soil fertilization, watershed management, management of forests and woodlots, biomass production, the weakness of the structures charged with management and control of the resources and insufficient involvement of the populations constitute obstacles to the protection of the environmental resources of an over-populated country like Burundi. Furthermore, during the war, the country lost many of its managerial staff and much infrastructure, and its achievements in the area of resource protection and restoration of vegetation cover also suffered.

1.2 The absence of urgent interventions could affect the few remaining resources and will only heighten the phenomenon of erosion of watersheds, thus causing risks of landslides, significant losses of farmlands and soil fertility. The biodiversity which is already threatened will also be affected. Furthermore, bush fires will become rampant with the search for new arable lands and new pastures. The populations' fuelwood and lumber needs will grow significantly with refugees returning from neighbouring countries following the restoration of peace. To implement this strategy, the Government requested Bank support to finance the Watershed Management Project (PABV). The project was identified by a Bank mission to Burundi in June 2004 and was prepared in June 2005. This appraisal report was drawn up following a mission to Burundi from 14 to 31 October 2005, on the basis of information collected by identification, preparation and appraisal missions, the documents consulted and/or collected from financial partners and on-going projects as well as the discussions held with the country's Authorities, development partners, officials of technical Ministries, the Department of the Forestry and NGOs, as well as the rural populations of the provinces visited, through their associations and groups.

### **2. PURPOSE OF THE GRANT**

The grant of an amount of UA 9 million will be used to finance 96% of the costs in foreign exchange and 75% of the cost in local currency.

### **3. PROJECT GOAL AND OBJECTIVES**

The sector goal of the project is to contribute to food security by restoring the soil, which is the productive capital. More specifically, the project aims at protecting the watersheds, increasing forestry and agro-livestock production and increasing rural incomes in the project area, by planting forests (State, Community and private), promoting agro-forestry in order to improve soil fertility and diversifying production, training and sensitizing the populations, organizing and involving producer groups and associations in activities, as well as building the institutional capacities of the Department of Forestry.



#### **4. PROJECT OUTPUTS**

The key expected outputs of the project are: (i) training courses for 20 officials from the Department of Forestry, in forest inventory and management; (ii) training courses for 35 officials and technicians (including 20% women) of Forestry Inspectorates and provincial Directorates of agriculture and livestock in agro-forestry, soil and water conservation and planning; (iii) approximately 2,000 smallholders including 40% women trained in agro-forestry and erosion control; (iv) 50 smallholders and officers of the Department of the forestry, of which 25% women, will undertake study trips; (v) 46,800 smallholders including 35% women trained in agro-forestry activities, development of fodder species and diversification of production; (vi) finalization and validation of the forest policy document and the forest Code; (vii) ten simple community woodlot management plans developed and implemented with the rural populations; (viii) creation and upkeep of 15,000 ha State plantations; (ix) creation of approximately 5,550 ha of Community and/or private woodlots; (x) construction of 600,000 metres of erosion control works according to contour lines; (xi) improvement of 5,800 ha natural pastures; (xii) planting of 3,000 ha of multi-purpose fodder species and (xiii) creation of 600 ha of farms for food crop production, market gardening, fruit growing and bee-keeping.

#### **5. ESTIMATED COSTS OF THE PROJECT**

The total cost of the project is estimated at BIF 16.135 million, that is, UA 10.44 million, net of taxes and customs duties. This cost is broken down into BIF 8.741 million in foreign exchange, or UA 5.65 million and BIF 7.394 million in local currency, or UA 4.79 million.

#### **6. FINANCING SOURCES**

The project will be co-financed by an ADF grant of UA 9 million, that is 86%, and the Government of Burundi for UA 1.07 million (10%) and beneficiaries for UA 0.37 million (4%).

#### **7. PROJECT IMPLEMENTATION**

The project will be managed by the Department of Forestry which will have a team based in Mahwa, Gitega province. The team will be represented in the field by two branches located in Mahwa and Musinga. The Department of Forestry will be responsible for the implementation, general coordination of the project and internal monitoring and evaluation of its activities. The team will comprise qualified personnel including a project manager, an agro-forestry engineer, a monitoring and evaluation officer, an agricultural engineer, an accounts manager, an administrative management officer, a vehicles manager, two accountants and a cartographer.

#### **8. CONCLUSIONS AND RECOMMENDATIONS**

**8.1 Conclusions** Given the state of degradation of forest resources, environmental problems on nearly all of the country's hills and the level of poverty of the populations in these zones, the Watershed Management Project (PABV) is fully in keeping with the country's poverty reduction priorities. Without urgent interventions and adequate measures, the vegetation cover degradation on the hills could lead to the total disappearance of the

remaining natural forests with dire consequences on the climate, settlements, agricultural production and satisfaction of the populations' essential forest product needs. The project will promote national capacity building in sustainable management of forest and livestock resources through the training of 2,000 smallholders in agro-forestry and erosion control, study trips for 50 smallholders and officials, the sensitization and the supervision of 46,800 smallholders in agro-forestry activities, development of the fodder species and diversification of the production on their holdings. Besides environmental protection, the project will contribute to increased forestry production through the creation of 15,000 ha of State plantations, 1,800 ha of community woodlots and 3,750 ha private woodlots. It will contribute to increased annual incomes estimated at BIF 761,474 for the populations. At maximum output (5<sup>th</sup> year), 9,875 tonnes of additional food and market-gardening crops will be produced. The other project benefits lie in the creation of 28,600 jobs including 11,400 for the benefit of women, the protection and improvement of 5,800 ha of natural pastures through agro-silvo-pastoral integration. As designed, the project is technically feasible, and is financially, economically, socially and environmentally viable. The rate of return is 15%.

8.2        Recommendation In light of the foregoing, it is recommended that an ADF grant not exceeding UA 9 million be awarded to the Republic of Burundi for the purpose of implementing the project, subject to fulfilment of the conditions set forth in the Grant Memorandum of Understanding.

## **BURUNDI - WATERSHED MANAGEMENT PROJECT (PABV)**

### **PROJECT MATRIX**

<b>OBJECTIVES</b>	<b>EXPECTED OUTCOMES</b>	<b>BENEFICIARIES</b>	<b>PERFORMANCE INDICATORS</b>	<b>TARGET INDICATORS</b>	<b>ASSUMPTIONS/ RISKS</b>
<b>SECTORAL GOAL</b>					
1. Contribute to promotion of food security	Increased agricultural production	Populations of Provinces of Gitega, Rutana, Bururi, Kirundo, Muyinga and Cankuzo 2.61 million inhabts of whom 58% women	1. Agricultural production level	Productions of banana, citrus fruits, maize, avocado, Irish potatoes, onions, tomatoes and beans increase from 7,500 tonnes to 11,500 tonnes in 2008 and to a total of 17,300 tonnes in 2010	Security in the project area
<b>PROJECT OBJECTIVES</b>					
1. Sustainably protect the watersheds, increase forest, agriculture and livestock productions and increase beneficiaries incomes	1.1 Improved soil fertility and watershed protection	150,000 households of covered provinces among which 58% are headed by women	1. Surface area of sown hills  2. Linear meters of erosion control works put in place  3. Surface area of farms restored and sown  4. Temporary jobs created	1.1 8,000 ha of watersheds sown in 2008 and a total of 15,000 ha in 2010  1.2 250 linear km of works constructed in 2008 and a total of 600 km in 2010  1.3 2,000 ha of farm lands restored in 2008 and a total of 5,000 ha in 2010 of which 45% belong to women  1.4 10,000 temporary jobs created in 2008 and a total of 28,600 in 2010 of which 60% for women	Climatic contingencies (drought)  Weakness of institutional capacities

OUTPUTS					
<p>1. Capacity building</p> <p>1.1 Enhanced capacities of beneficiary populations</p> <p>1.2 Enhanced capacities of the Forestry Department and DPAE</p>	<p>1.1 Bush fire cases are rare and farmers practice erosion control and agroforestry</p> <p>1.2 The Forestry Department is equipped and its officers and those of DPAE trained</p>	<p>Producers in the project area, of whom 60% women</p> <p>Forestry Department and DPAE</p>	<p>Number of persons sensitized and trained among beneficiary populations</p> <p>Number of officers, of whom 50% women trained and equipped</p>	<p>1.1 1,000 relay farmers trained in 2008 and a total of 2,000 in 2010 of whom 60% are women</p> <p>1.2 25,000 producers trained in 2008 and 46,800 in 2010 of whom 60% are women</p> <p>1.3 50 officials and members of associations participate in study tours in 2008, of whom 45% are women</p> <p>1.4 75 officers and technicians trained in 2008, of whom 40% are women</p> <p>1.5 Technical, computers, office, communication equipments and logistics means acquired in 2007</p> <p>1.6 24 officers recruited in 2006 of whom 50% are women</p>	
<p>2. Conservation and improvement of resources</p>	<p>2.1 Farmlands are fertile through the use of inputs and agroforestry technology</p>	<p>150,000 households of provinces covered of which 58% are of women</p>	<p>2.1 Surface area of seed production plots</p> <p>2.2 Surface area of restored natural pastures and paddock hedges created</p>	<p>2.1 250 ha of plots put in place in 2008 and 600 ha in 2010</p> <p>2.2 2,000 ha restored and 45 ha of hedges in 2008 and a total of 5,800 ha and 145 ha of hedges in 2010</p>	

3. Improvement of agro-silvo-pastoral production	3.1 Agroforestry is entrenched in the habits of the populations, notably women	Producers in the project area, of whom 60% women	3.1 Surface area of farms under agroforestry techniques	3.1 1,200 ha improved through agroforestry techniques in 2008 and a total of 3,000 ha in 2010  3.2 1,500 ha are sown with multipurpose species in 2008 and a total of 3,000 ha in 2010  3.3 250 ha of orchards created in 2008 and a total of 600 ha in 2010	
<b>4. ACTIVITIES/INPUTS</b>		<b>AVAILABLE RESOURCES</b>		<b>MEANS OF VERIFICATION</b>	
<ul style="list-style-type: none"> <li>- Production of seedlings</li> <li>- Planting</li> <li>- Training, training courses and study trips</li> <li>- Procurement of logistics and sundry equipment</li> <li>- Launching of competitive bidding for training</li> <li>- Preparation of study and exchange trips</li> <li>- Recruitment of personnel and technical assistance</li> <li>- Implementation of works and monitoring</li> </ul>		Capacity building	UA 2.04 million	Projet reports Supervision reports Mid-term review reports Training reports BD, contracts, acceptance Reports, recruitment decisions, audit reports and completion reports	
		Conservation and improvement of resources	UA 5.72 million		
		Improvement of agro-silvo-pastoral production	UA 1.72 million		
		Project management	UA 0.96 million		
		<b>Total</b>	<b>UA 10.44 million</b>		
		<b>FINANCING SOURCES</b>			
		ADF	UA 9.00 million		
		Government	UA 1.07 million		
		Beneficiaries	UA 0.37 million		
		<b>Total</b>	<b>UA 10.44 million</b>		

## **1. PROJECT ORIGIN AND HISTORY**

1.1 The forest resources of Burundi have been seriously degraded since the beginning of the socio-political crisis which the country has been experiencing for one decade. Thus, more than 30,000 ha of woodlots and 10,000 ha of natural forests have been destroyed, reducing the country's forest cover rate from 8% to 5%. The overexploitation of arable lands, overgrazing, tilling of steep slopes and the phenomena of erosion in various forms account for the degradation of natural resources (soils, forests, etc). The lack of appropriate technologies for soil fertilization, watershed management, management of forests and woodlots, biomass production, the weakness of the structures charged with management and control of the resources and insufficient involvement of the populations constitute obstacles to the protection of the environmental resources of an over-populated country like Burundi. Furthermore, during the war, the country lost many of its managerial staff and much infrastructure, and its achievements in the area of resource protection and restoration of vegetation cover have also suffered.

1.2 The populations are well aware of the state of degradation of their productive capital. They realize that the absence of urgent interventions could affect the few remaining resources and will only heighten the phenomenon of erosion of watersheds, thus causing risks of landslides, significant losses of farmlands and soil fertility. The biodiversity which is already threatened will also be affected. Furthermore, bush fires will become rampant with the search for new arable lands and new pastures. The populations' fuelwood and lumber needs will grow substantially with refugees returning from neighbouring countries following the restoration of peace. Accordingly, the protection and management of watersheds through tree planting and erosion control have become urgent and are among the priorities of the Interim Poverty Reduction Strategy Paper (I-PRSP). To implement this strategy, the Government requested Bank support to finance the Watershed Management Project (PABV). The project was identified by a Bank mission to Burundi in June 2004 and was prepared in June 2005. This appraisal report was drawn up following a mission to Burundi from 14 to 31 October 2005.

1.3 The PABV is based on information collected in the field by the identification, preparation and appraisal missions, documents consulted and/or collected from financial partners and on-going projects as well as discussions held with the country's Authorities, development partners, notably the World Bank, European Union, Belgian Technical Cooperation, German Cooperation, UNDP, FAO, IFAD, officials of technical Ministries, the Department of Forestry and NGOs, as well as the rural dwellers in the provinces visited, through their community forest management associations and producer groups. It is consistent with the country's current forestry policy and with its national poverty reduction strategy, whose priorities include, the reduction of plant and animal species losses, restoration of degraded areas and participatory management of forest stands. It is also consonant with the Bank's vision, its agricultural and rural development policy, as well as its intervention policy in Burundi for the period 2005-2007. Furthermore, it is in line with the objectives of ADF X, focused on poverty reduction.

## **2. THE AGRICULTURAL SECTOR**

### **2.1 Key features**

2.1.1 The rural and agricultural sector constitutes the basis of the national economy. It employs 94% of the country's labour force, provides 95% of the food supply and more than 90% of income in foreign exchange. In the period 2000-2004, this sector represented more than 50 % of the GDP at market prices. It is thus the principal source of growth of the economy, the guarantor of food security and the engine of the growth of the other economic sectors. It is characterized by subsistence farming practised by nearly 1.2 million low- income households each farming 0.5 ha of land on average. Prior to the crisis, the significant investments made in the sector yielded encouraging results in the various sub-sectors (food crops and industry). However, the performances obtained could not be sustained. Indeed, as a result of socio-political instability, many fields were destroyed and farms abandoned. The insufficiency and disorganization of growth and rural sector support services of the sector, such as the financing, research, extension and the technical supervision, constitute obstacles to the modernization of agriculture.

2.1.2 Agriculture is highly diversified thanks to a moderate tropical climate, with two rainy seasons and two dry seasons. It is dominated by food crops which occupy 90% of the cultivated land, destined primarily for home consumption. The lack of farmland, on the one hand, and the strong demographic pressure in rural areas, on the other hand, have led to intense land use resulting in severe soil impoverishment and insufficient fallowing and pastures. Farming methods are traditional and based almost exclusively on manual work. There is little use of agricultural inputs (fertilizers, improved seedlings, pesticides, livestock inputs, genetic improvement, etc.). Processing and post-harvest conservation are still in their infancy. Current outputs are 0.6 t/ha for beans, 1.4 t/ha for maize, 6.88 t/ha for potatoes, 20 t/ha for tomatoes, 4.5 t/ha for onions, 6 t/ha for bananas, 3.5 t/ha for citrus fruits and 8.25 t/ha for avocado.

2.1.3 Stock breeding is mainly extensive. It contributes up to 5% of the GDP. The effects of looting (theft and uncontrolled slaughtering), exacerbated by the situation of war, has severely damaged livestock. It is estimated that more than 20% of the cattle was lost and that there were even more substantial losses of smaller livestock. Stockbreeding is insufficiently integrated into agriculture. Priority will be given to the reconstitution of livestock and genetic improvement of animal species. An integrated livestock reconstitution programme would include the highly prolific small and short-cycle livestock to quickly obtain results likely to raise the living standard of rural households. For cattle, it would be a question of improving the local cows by crossing them with high -yield breeding stock. Herd management techniques, notably permanent stabling of cattle, pigs and poultry, will add value to harvest residues and increase productivity of the animals in terms of organic fertilizers and livestock products.

2.1.4 Natural and artificial forests, which are of vital importance in maintaining ecological and hydrological balances cover approximately 206,000 hectares. The forest stands bordering agglomerations and settlement sites of disaster victims were damaged by bush fires, during the quest for farmlands and new pastures and by uncontrolled felling meet households' fuelwood and lumber needs. As a result of the weakness of the structures charged with the day-to-day management of this resource and the lack of involvement of the local populations, annual deforestation continues at the rate of 2% per annum. Fuelwood represents 97% of the country's power consumption, that is approximately 6 million m<sup>3</sup> of the total volume consumed at the national level.

2.1.5 Fishing constitutes a significant element on account of its protein content in diet. Fish catches fell by 32% in 2000, before rising somewhat as a result of an improved security situation which enabled access to Lake Tanganyika. The major problem in this subsector is overfishing and the use of nets with small-mesh which adversely impact on the catches, biodiversity and genetic resources. Fish farming has gradually been established in the country and increasingly occupies wetlands and most of the water reservoirs. The first activity would consist in training fishermen, modernizing fishing equipment and facilitating access to credit. Long-term actions would aim at introducing food packaging and conservation techniques to reduce the losses incurred in periods of overproduction and during transportation. For areas distant from the coast, it would be necessary to revive fish farming by restoring abandoned ponds and creating new facilities.

## **2.2 Importance of the sector in the economy**

2.2.1 Agriculture is the leading economic activity. It employs more than 80 % of the population and the labour force and provides more than 40% of the GDP. The potentially arable land covers 2.35 million hectares. Subsistence farming produce which dominates agricultural production comprises bananas, tubers, leguminous plants and cereals. The food crops whose harvests are destined primarily for home consumption by the populations occupy 90% of land under cultivation as against 10% for industrial crops. The industrial crops, which are mainly coffee, tea and cotton, represent the major cash crops, the country's source of income as well as that of rural populations. Agricultural development was undermined by the problem of land management and uncontrolled land use. Demographic pressure caused the fragmentation and the overexploitation of the farms, leading to soil fertility and soil degradation. A revival plan for the sector was prepared with the objective of restoring and exceeding pre-crisis production levels. The sector's low level of production is due to food insecurity, quality seed shortages, strong pressures on the environment, weak development of the means of processing and conservation of the agro-food products and the rural-urban migration.

2.2.2 Food crops (cereals, leguminous plants, roots, tubers and plantains) account for approximately 80 % of agricultural GDP, with an estimated total production, in 2001, of 3.7 million tonnes. Before the 1993 crisis, this subsector covered 95 % of the food needs of the population. The total food deficit was evaluated, in 2000, at 325,000 tonnes of cereals including 148,000 non-covered tonnes. This drop is due to the reduction in sown areas, the destruction and/or abandonment of infrastructure and production units during the civil war. Similarly, the shortage of agricultural inputs (manure, seeds, pesticides, etc.) and the destabilization of production support services (research, extension, training) have greatly affected the performance of the agricultural subsector.

2.2.3 The industrial crops, notably coffee, tea, cotton, oil palm, occupy approximately 10% of the cultivated areas, provide over 80 % of the income in foreign exchange and account for 10% of the agricultural value-added on average. The principal export crop is coffee. It is grown by 600,000 farmers and national production, which recorded an annual average of 30,000 tonnes before 1993, fell to 15,000 tonnes in 2001. The coffee subsector is in the process of total liberalization. Tea is the second source of foreign exchange after coffee (10 % of revenue). Tea production which dropped between 1993 and 1997, from 6,000 tonnes in 1992, to approximately 4,000 tonnes in 1997, was able to rally and even exceed the 1992 level. It was estimated at 7,000 tonnes in 2000. Cotton lint production which reached 5,000 tonnes on average before the crisis, was only 2,600 tonnes in 2000. Palm oil production was estimated at 7,000 tonnes in 2000. The drop in production of most industrial crops is due notably to the destruction or abandonment of plantations and plundering of packaging factories. Similarly, the unavailability on the local market of agricultural inputs and the spare parts of the factories led to decreased output at all levels.



## **2.3 Agricultural institutions**

2.3.1 Agricultural activities come under the Ministry for Agriculture and Livestock (MINAGRIE). The Ministry of Regional Planning, Tourism and the Environment (MINATET), as well as the Ministry for Communal Development also play a role through actions such as reforestation for the former and rural water supply for the latter. MINAGRIE is organized in four Directorates-General (DG): (i) DG for agriculture, (ii) DG for livestock, (iii) DG for monitoring and evaluation, and (iv) DG for agricultural extension. There are fifteen provincial Directorates for agriculture and livestock (DPAE), established in each province of the country and on which the entire technical training and agricultural extension system is based. Each DPAE heads an agricultural engineering unit, a stockbreeding unit, an agro-forestry unit and an extension and training unit. The DPAEs replaced most of the regional development companies (SRD).

2.3.2 Agronomic research and food technology structures include the Institute of Agronomic Sciences of Burundi (ISABU), the Faculty of Agronomy, the National Centre for Food Technology (CNTA) and the Regional Institute of Agronomic and Zootechnical Research (IRRAZ). The Agronomic Institute of Burundi (ISABU) is the main national institution dealing with agronomic research and forestry research. Its role is to provide technologies for resource production or conservation but also to build its own capacities to provide to the Government technical and socio-economic information for defining policies and planning. Apart from these structures, other organizations also intervene in the agricultural sector in terms of supervising the population and marketing. They are semi-public corporations such as the Office du thé au Burundi (OTB), a tea corporation, Compagnie de gérance du coton (for cotton), (COGERCO) or the Office des cultures industrielles du Burundi (OCIBU) (for industrial crops).

2.3.3 These structures play a major role in the technical guidance of producers, the improvement of the means of production and the increase in operators' incomes, and consequently the value added of the agricultural sector. They have a core of staff who are highly experienced in rural development, environmental protection and project management. However, the Burundi crisis which has lasted several years has severely disrupted their programs of intervention, undermined the impact of their actions as well as their intervention capacity. This crisis has thus adversely affected the supervision of the population owing to the reduced staff complement and the lack of financial, material and logistic means. The country's return to peace and support from various partners will contribute to improve the working conditions and results of these various institutions.

These NGOs are specialized in the promotion of associations, guidance, environmental education and the training of the population in production activities. In general, they are well integrated in the local communities and have the adequate human and financial resources to pursue their objectives.

## **2.4 Land Tenure**

2.4.1 The land tenure issue is crucial in Burundi given the scarcity of arable land and demographic pressure. Land legislation is governed by the law of 1 September 1986 on the "Land code of Burundi". It recognises the right to own landed property as well as joint ownership, leasing, usufruct and mortgage. There are two regimes governing land tenure: State lands managed by the State and those coming under private ownership evidenced by a certificate of registration or recognized as belonging to holders by custom. The status of most farmlands is governed by customary proprietary law. Inheritance of ownership is shared among the sons during their father's lifetime and daughters are excluded. Regarding pasturelands, the land tenure code recognizes private individual as well as collective customary proprietary rights. In densely populated regions, there are virtually no more privately owned pasture lands. Land use is based on three modes of

development: (i) the owner-farmer system whereby the rightful claimant himself exploits his property; (ii) leasing, consisting in temporary assignment of usufruct right against payment, and (iii) land grant, comprising either inter vivos gifts often between relatives, or the transfer of undeveloped communal lands to private individuals.

2.4.2 The land tenure regime draws from several sources of law: customary law which is essentially oral, and substantive law which is based on several codes: the land tenure code, environment code and forestry code. These different codes are not harmonized and substantively grant only limited rights to beneficiaries. The result is insecurity of tenure heightened by population movements during the various civil strifes that the country has witnessed. This insecurity is a major impediment to the development of the land heritage and to agricultural development. To address this concern, a revised version of the land tenure code designed to modernize and harmonize the legal land management instruments is finalized and awaiting adoption. With the advent of democracy in the country, the return to peace and multiparty elections in 2005, the instruments must be revised once again. However, one important element to be noted in this bill concerns the participation of three representatives of associations and groups of farmers and stockbreeders, two representatives of NGOs and two representatives of women's organizations in the National Land Committee comprising 15 members (that is 47% of civil society representatives). This committee assists the Minister in charge of lands in formulating, implementing and monitoring and evaluating the national land policy and monitoring the proper implementation of land legislation. In each commune, there is a communal land committee comprising 10 members, three from associations, two women, a representative of the Communal Council, two representatives of technical services and two persons chosen by reason of their expertise in the domain. It is responsible for all land management-related issues.

## **2.5 Structure of the Rural Community**

2.5.1 Agricultural cooperatives and associations and groups have been formed according to opportunities, prompted by public projects and NGO activities. This has led to the creation of savings and loans associations, "Union pour la Coopération et la Développement (UCODE), management committees of the community solidarity chain and various associations of women, producers and stakeholders in agriculture-related activities. The root causes of their weakness stem from the manner in which they were established (opportunity-based) and managed. This organizational weakness impacts on the capacity of producers to become true interlocutors of public authorities and the private sector for the defence of their interests. It has also had an impact on their capacity to take over the functions abandoned by the public sector, notably the supply of inputs and mobilization of financing for the diversification or improvement of production and productivity.

2.5.2 The rural community is organized essentially into associations and cooperative movements of various collective interests (production, marketing, community development, land management, processing of products). Most of these organizations are organized as NGOs. The promotion and supervision of these groups come under the Ministry of Communal Development (MDC). The role of the MDC is to: (i) structure existing formal cooperatives and associations; (ii) create new viable and autonomous structures, (iii) promote production associations; (iv) support supply and marketing and (v) develop collection of savings and access to credit. Besides the MDC, other parastatal bodies intervene in structuring the rural community. In agriculture for instance, initiation and supervision of associations are supported by development projects, regional development corporations (SRD), provincial directorates for agriculture and livestock (DPAE) and specialized bodies (Office du thé du Burundi (tea Corporation), COGERCO, Office du café du Burundi (Coffee corporation), etc.). These different structures have contributed effectively to the

expansion of associations and groups. Regarding women's advancement, the actions in that domain are the responsibility of the Ministry of Social Action and Women's Advancement and the Ministry of Handicrafts, skills learning and adult literacy. There are over a thousand women's associations covering various domains of activity in the country. They have initiated several actions sponsored by various donors and covering trade, handicrafts, literacy, agriculture and stock breeding.

2.5.3 The national organizations identified in the rural sector are 35 (thirty-five) in number. In general, these structures cover one or more provinces and are taking an increasingly active part in rural development and environmental protection. Among these, there is 'Alliance burundaise pour la coopération et le développement' (ABCD), which intervenes in the provinces of Ngozi, Mwaro, Bururi, Gitega, Muyinga and Makamba; Association Burundaise pour l'évaluation des impacts environnementaux (environmental impact assessment) (ABEIE); present nationwide; Association pour la promotion et le développement communautaire (APRODEC) (community development) in Kirundo province; Centrale d'encadrement des Apiculteurs du Burundi (CEABU) (Bee keeping) present nationwide; centre pour la protection de l'environnement et de lutte contre la pauvreté (CPELP) (environmental protection and poverty reduction) which intervenes in the provinces of Bururi, Makamba and Rutana; Help Channel Burundi (HCB) in Kirundo province and Association pour la production des cultures vivrières (APRO CUVI) (food crop production) in Gitega and Bururi provinces.

2.5.4 The effectiveness of the above-mentioned structures remains mixed owing notably to weak technical guidance, financial support and coordination between stakeholders. Furthermore, the problems arising from the socio-political crisis have also affected the activities of these associations. Besides, they do not have sufficient means and their interventions are limited to resolving isolated problems on an ad hoc basis, with no possibility of follow-up and subsequent assistance to beneficiaries. Moreover, financing comes mainly from external donors. In spite of these constraints, the associations in Burundi represent the best vehicles for the popularization of technical themes, training, supervision and sensitization of the population. Also, through these structures, the specific needs of certain special groups notably women household heads can be targeted and satisfied.

2.5.5 Besides these national organizations, international NGOs also intervene, notably Action Aid International, Agro-action-allemande (AAA) and Catholic Relief Services (CRS) at Kirundo, Africare at Gitega, Conseil norvégien des réfugiés (CNR) at Makamba and Kirundo, Association française pour les volontaires du progrès (AFVP) in Bujumbura, NADES Formation at the national level, Tear Fund based in Kirundo, Australian Relief Program (ARP) in the provinces of Muyinga and Cankuzo and GTZ in Rutana province. These NGOs are specialized in the promotion of associations, guidance, environmental education and the training of the populations in production activities. In general, they are well integrated in the local communities and have the adequate human and financial resources to pursue their objectives.

## **2.6 Gender Issues**

2.6.1 The proportion of women in the population increased considerably during the crisis, and in 2002 represented roughly 58% of the population of Burundi. Burundian law does not discriminate against women and the new constitution recommends women's representation in politics of at least 30%. Moreover, Burundi ratified by Executive Order No. 1/6 of 4 April 1991, the Convention on the elimination of all forms of discrimination against women (CEDW). However in practice, women are victims of the traditional perception of their place in society which confines them solely to housework. Only approximately 1% of the female population earn a

salary. They are present in the Public Service where they represent 19%, 55%, and 85% of the senior, intermediate and subordinate staff positions respectively. In the institutions which marked the end of the transition in August 2005, the proportion of the women in decision-making clearly increased: 7 women ministers out of 20, i.e. 35%, 1 Vice-President of the Republic, 1 President of the National Assembly and 2 Vice-Presidents of the Senate. The percentage of women parliamentarians which has always varied between 13 and 20% rose to 30% within the new National Assembly, elected in July 2005.

2.6.2 Women constitute the segment of the population which suffered the most from the interethnic clashes and the socio-political crisis which ensued. According to a study led by UNFPA in the country more than one-third of the women living in camps were widowed. They generally have the responsibility of family head. This situation aggravates the vulnerability of households, more especially since, according to Burundian tradition women cannot own land and cannot inherit it either from their husbands or a relative. Conscious of the situation, the Government is making efforts to undertake major reforms of the family code for refugees, the Government is implementing projects of economic advancement of women integrating the topic of peace and national reconciliation.

2.6.3 In September 2003, the Government of Burundi adopted a national policy on gender (NPG), with objectives and actions to be carried out for gender mainstreaming in all policies, programs and projects of the various ministries. In the field of agriculture, the objectives of the national policy are centred on: (i) the promotion of women's access to the factors of production of which land, agricultural and stock-breeding inputs and new farming techniques and (ii) facilitation of women's access to credit, information and appropriate agri-food processing technologies. Concerning education and health, the Government aims at education for all by 2015, the reduction of the illiteracy rate to 10% by 2015 and of the infant mortality rate by 50% in 2010, as well as the improvement of reproductive health. Efforts are underway to improve the legal and institutional framework of women's economic activities (revision of the persona and family code, approval of the law of succession and matrimonial regimes. The Government plans to reinforce its action in order to improve woman's access to formal education, to disseminate and enforce laws supporting gender equality, strengthen family planning and promote a credit system tailored to women's needs.

2.6.4 Women play a significant role in the country's agro-silvo-pastoral production (97% of the labour force). They take part in farmwork and are responsible for market-gardening production and small-scale livestock activities. As regards forestry production, they take part, as well as the men, in the production of seedlings, planting them and maintenance of the plantations. The increase in women's incomes will contribute to improve food security and the wellbeing of households, insofar as they devote the essential part of their incomes to the family, in particular to children. Traditional division of labour entrusts most of the self-sufficing farm work to them, in addition to the drudgeries of fetching wood and water, maintaining their dwelling, caring for children and the exhausting and painful task work of grinding grain.

## 2.7 **Poverty profile**

2.7.1 According to available data, the proportion of people living below the poverty line rose from 35.3% in 1993 to 68% in 2002. The deepening of poverty results from the fall in production, in particular that of the agricultural sector with the persistence of insecurity, the mass destruction of production infrastructures with the reduction in soil fertility and the disorganization of marketing channels. The low level of domestic investment and the drops in external assistance worsened unemployment and rural-urban migration. The unemployment and marginalization which resulted

from it were exacerbated by the arrival on the labour market of young graduates and laid off workers from certain public and private companies facing the difficulties of the crisis..

2.7.2 The incidence of poverty was more pronounced in rural areas (68.7%) than in urban areas (66%) in 2002. More than 40% of rural dwellers live in extreme poverty, their incomes are derived from food crop farming against only 7.9% of households whose head works in the public or parapublic sector. This situation shows the clear link between poverty and demographic pressure on the availability of cultivable land. Land management and the current inheritance systems favour the parcelling out of properties and lower outputs. The socio-political crisis severely destabilized families and created even more difficulties for households, thus strengthening existing gender imbalances in terms of access to and control of resources. Moreover, it increased the number of women household heads resulting in an increase in poverty owing to the fact that women are disadvantaged in terms of access to means of production, notably land. The incidence of poverty is higher among women household heads, who account for 22% of all households, while war widows are estimated at 26.3% (I-PRSP). Indeed, in 2002, approximately 97% of the women household heads were occupied in agricultural and stockbreeding activities. The literacy rate of women is 27% compared with that of men which was 48% in 2001. It is noteworthy also that the HIV/AIDS pandemic which spread rapidly with the crisis, constitutes a significant vector for impoverishment. The situation is even more alarming as the disease affects people of working age more, resulting in a significant increase in deaths before 40 years of age. According to the 2<sup>nd</sup> survey on HIV/AIDS conducted in 2002, seroprevalence is respectively 9.4%; 10.5% and 2.5% in urban, semi-urban and rural areas.

2.7.3 Substantial efforts must be made to ensure women's advancement through multifaceted interventions concerning at the same time the improvement of access to basic social services, training, access to employment and information, as well as reform of the legal framework. The fight against poverty and women's advancement feature among the priorities of the Government's Interim Poverty Reduction Strategy Programme (I-PRSP).

## **2.8 Financing of the Rural Community**

2.8.1 The rural sector, with a concentration of over 90% of the population still living on subsistence farming, is marked by the absence of financing which undermines any prospect for long-term investment in technologies and the access to land. The lack of credit which results in weak use of the modern production tools coupled with the poor organization of the rural community and lack of agricultural inputs, makes the transition from subsistence farming to market-oriented agriculture difficult. Currently, less than 5% of the rural population have access to credit or other financial services. With the high risks inherent in the rural sector which make it unattractive for commercial banks, initiatives are underway by Microfinance Institutions (MFI), such as Savings and Loan Co-operatives (COOPEC), the Non-profit-making association (ASBL), certain financial establishments and the NGOs which provide outreach services to the poorest segments of the population. In 2004, these MFIs collected approximately 4.5% of the deposits of the banking system, granted 8.9% of the loans and they have 157 windows or cash points spread countrywide.

2.8.2 The major MFIs are grouped within the Network of Microfinance Institutions (RIM) which aims at the development of financial services for the needy. The RIM, supported by the National Economic Development (BNDE), which accounts for 90% of the volume of activities of the sector mobilized in 2004, nearly BIF 2.5 billion and granted approximately BIF 9.5 billion to 52,955 recipients. The minimum amount of average credit granted is BIF 30,000 and the maximum BIF 500,000. The recovery rate of these MFI is approximately 95%, with wide disparities between them. Among these MFI, are notably the savings and loans co-operative mutual (CECM) in the

provinces of Bujumbura and Citibank ; (ii) the Council for education and development (COPED) in the provinces of Buriri, Rutana and Makamba ; (iii) TWITEZIMBERE (self-development) operating in all the provinces of the country ; (iv) Mutual Aid of Education Workers (FSTE); (v) Union for Co-operation and Development (UCODE) in the provinces of Ngozi, Kayanza, Muyinga and Kirundo ; (vi) Savings and Loans Solidarity Co-operatives (COSPEC) in the province of Cibikote; (vii) the National Federation of Savings and Loans Co-operatives of Burundi FENACOBV bringing together a hundred COOPEC; and (viii) Communal Development Fund (FDC) in the provinces of Ruyigi and Cibitoke. The most active structures intervene in the training of their members with the support of certain partners.

2.8.3 Besides these MFI, there are agricultural development project loans. Several projects, financed by certain financial partners, in particular FAO, IFAD, UNDP and the World Bank envisage loan activities in their operation plans. However, the crisis situation has led to a slowdown or stoppage of the execution of the majority of these projects. In addition, the national Bank for economic development which is a financial credit institution, is increasingly active in the microfinance sector.

2.8.4 The microfinance sector is young and has problems related to the lack of professionalism of the actors, the absence of a legal framework and weakness of the mobilization of financial resources. The dynamism of microfinance is reinforced by the prospect of emergence from the crisis, which has rocked the country for one decade, but also by the will of the population to acquire their own means of production to reduce poverty which continues to gain ground. The sector nevertheless faces several constraints, notably: (i) the absence of laws and regulations, which constitutes a major obstacle to the development of activities; (ii) weakness of the financial resources, and (iii) the lack of human resources and logistics.

2.8.5 However the sector has significant potential including, in particular: (i) the Government's determination to have a microfinance policy ; (ii) the existence of a fabric of microfinance institutions which is being organized around the initiatives of the RIM ; (iii) a significant financing potential in view of the needs of the agricultural sub-sectors and (iv) the presence of strong MFIs with a strong sense of initiative and in the search of profitability. The MFIs which constitute key relays to the rural populations must continue to receive technical and financial support from some donors to improve their capacity of organization and mobilization of savings, which will be used subsequently to finance the activities of the rural community.

2.8.6 The Government, conscious of the significant role that microfinance plays in the fight against poverty, undertook to formulate a national policy whose objective is to contribute sustainably to the improvement of the living conditions of those excluded from the traditional banking systems and improve their incomes, through a sustainable supply of quality products and financial services. To this end, six guiding principles classified under three lines of action and three operational thrusts were defined. The lines of action are (i) the mobilization of local internal resources; (ii) support to the ongoing policy of decentralization (iii) development and financing of the agricultural subsector. The operational thrusts stress the need to entrust the management of loans to specialized agencies, to apply market rates to loans and withdraw the State services from microfinance technical operations. To regulate the sector, the Government has drafted a decree to regulate microfinance activities in Burundi.

## **2.9 Potential and constraints of agricultural sector**

2.9.1 Burundi has many climatic advantages, with its abundant hydrological resources which are untapped to mitigate the climatic hazards and the effects of the seasonal droughts. The other potentialities of the sector are, notably an abundant and hardworking labour force, a significant biodiversity and very fertile soils in certain areas (West and Centre) and good rainfall that can allow two farming seasons. The availability of land for expansion in certain areas and the wetlands, management of industrial cropping, the willingness of farmers to adopt modern production technologies are all factors of increased production, agricultural productivity and the maintenance of biological balance.

2.9.2 However, under demographic pressure, the farms are dwindling increasingly. The soil is becoming increasingly less fertile, as a result of physicochemical and biological degradation, in particular through erosion and inappropriate farming methods. The adjustment of production systems to demographic pressure and new needs is being done to the detriment of fallowing, pastures and woodlots. The key constraints of the sector are: (i) strong pressure on natural resources (Imbo plains and rural Bujumbura) resulting in a reduction of forest cover; (ii) massive deforestation and weak protection of the protected areas and natural reserves, severe erosion of the slopes causing accelerated degradation of arable land and the reduction in soil fertility; (iv) lack of infrastructure for the collection and mobilization of water resources for irrigation purposes (v) poor use of intensification inputs due to their scarcity and high costs, insufficiency of means of storage and processing of agricultural produce; (vii) a real lack of professionalisation of agriculture; (viii) weak performance of the services in charge of the sector, notably the agronomic research and supervision and extension systems; (ix) insecurity of land tenure and (xi) difficulties of access to credit.

## **2.10 Rural Development Policy and Strategy**

2.10.1 To revive economic growth, the Government centred its poverty reduction strategy on the rehabilitation of the productive primary sector which is the agricultural sector. To this end, a sectoral policy was adopted in April 1999 in order to better direct the interventions over an eleven-year period (1999-2011). To concretize this policy, three-year rolling action plans (1999-2001, 2002-2004 and 2005-2007) were drawn up to guide the revival of production. However, the persistence of the conflict, insecurity and the insufficiency of financial and material resources did not allow their implementation. The major challenge will be to increase the local saleable and exportable output as well as the incomes of the populations.

2.10.2 The overall objective set is to undertake actions rapidly to cope with the adverse effects of the crisis, by reviving production and laying the foundations of sustainable growth of agriculture for the medium and long terms. The actions to be carried out in the short term relate to the revival of the seed centres, the strengthening of measures of mobilization and training of the populations on modern farming methods, the revival of stock breeding by the reconstitution of the livestock decimated during the crisis. Also retained is the reconstitution of soil fertility, environmental protection and the forest resources management, the strategy of integration of stockbreeding, agriculture and agro-forestry activities, the revival and diversification of the production of cash crops (coffee, tea, cotton, rice) and others (fruit, vegetables, flowers, etc.). Coupled with these actions, are access to agricultural credit and strengthening of support to producers through the dissemination of innovations and research results. The expected outcomes are: (i) food security achieved in terms of availability, accessibility and stability; (ii) rural and urban poverty reduced through improved purchasing power of the populations and living conditions of households and (iii) rehabilitated, better protected rationally exploited natural resources.

## **2.11 Donor interventions in the agricultural sector**

2.11.1 Burundi receives aid from bilateral and multilateral donors for agricultural sector development (WB, ADB, IFAD, FAO, UNDP, USAID, French Cooperation, Belgian Technical Cooperation, German Cooperation, etc.). The main donor interventions being implemented concern agricultural development, stockbreeding, fishing, watershed and wetlands management, environmental protection and capacity building.

2.11.2 Within the framework of PRASAB of the World Bank which covers 10 of the country's 16 provinces, the Global Environment Facility (GEF) is financing environmental protection activities for an amount of USD 5 million for sustainable land management through producer organizations and associations. This component is being implemented at the same time as an IDA financing of USD 35 million aimed at supporting production investments and sustainable management of land, a support to disaster victims and grassroots Community organizations, the capacity building and an institutional support to the Ministry for regional planning and the environment and that of Agricultural and livestock with special focus on agricultural research.

2.11.3 Through the IFAD Rural Recovery and Development Programme (PRDMR), the activities of regional planning and environmental protection are financed in the provinces of Cicitoke, Gitega Kauri and Kayanza with a wetland management component. In addition to these action, there is the restocking of livestock through a Community solidarity chain. In a new program co-financed by the IFAD, OPEC and the Belgian Survival Fund for a total package of USD 33 million entitled Transitional Programme of Post-Conflict Reconstruction (PTRPC) ratified by the Government in May 2005, actions of rehabilitation and development of agriculture and conservation of the rural environment in the provinces of rural Bujumbura, Bururi and Ruyigi are envisaged for a 7-year period.

2.11.4 As for the European Union, its assistance to Burundi falls within the post-conflict context and aims at supporting economic recovery and poverty reduction. Since the resumption of its co-operation with the country in 2000, European aid has represented a financial volume of €285 million, to which €15 million envisaged under the 9<sup>th</sup> EDF will be added. The areas of concentration of its assistance concern, inter alia, rural development which envisages, in addition to the projects of direct support to agricultural production for sustainably food security, technical aid to support State divestiture from the key agricultural sub-sectors. Integrated rural development is also envisaged for the reintegration of refugees and support to private initiatives in all the agricultural sub-sectors proposed.

2.11.5 FAO has for some years financed a watershed protection and wetlands conservation project in the provinces of Kirundo, Gitega and Karuzi. This project developed actions and strategies of community management of woodlots by associations which implemented them through labour intensive works. It financed agro-silvo-pastoral integration activities and trained 7,000 rural households in the watershed management upstream and wetlands downstream in three provinces. FAO took part in the development of the national policies on food security, preliminary work on the revision of the forest Code and the land Code and the development of a national agricultural extension system. The UNDP will finance soil degradation control activities and the strengthening of agro-pastoral systems in collaboration with FAO.

2.11.6 The Belgian Technical Co-operation has a €5 million programme of support to disaster victims for the development and management of 6 wetlands in Ruyigi province. A new watershed and wetlands management project with a special emphasis on forestry and agro-forestry is being developed. As for German co-operation, through GTZ, it intervenes in Rutana province within the framework of a food security project for a total amount of € 10 million. French assistance is concentrated on supporting the process of emergence from crisis by supporting the peace process, the



rule of law, the rehabilitation of infrastructure and the strengthening of the financial services within the framework of the Government's post- conflict and emergency social program.

2.11.7 With a view to the resumption of activities of the Bank in Burundi, following the settlement of the country's arrears in October 2004, the portfolio has been cleansed. Thus seven (7) old projects which were non-performing for five years corresponding to the period of the sanctions, were cancelled and only one project in the rural sector, namely the Bututsi Agro-Pastoral Project, was not cancelled because of its socio-economic importance for the area and the massive return of refugees to the zone. This project was reformulated in 2005 in a bid to gradually reconstitute a new performing portfolio in conformity with the country's efforts toward economic revival and poverty reduction. Currently, the portfolio includes 5 projects, of which 3 (three) were approved in the second half of 2004 and 2 (two) in June and December 2005, for an amount of UA 32.5 million. These operations concern the institutional support project for capacity building in economic management, the economic reforms and governance support program including governance promotion structures support, a multi-sector infrastructure rehabilitation and socio-economic reintegration project, an emergency operation, following the drought which hit the country's northern part in 2005 and one rural water infrastructure rehabilitation and extension project. Burundi also benefited from support under the Regional Lake Tanganyika Management Programme in an amount of UA 4.96 million.

2.11.8 The Bukirasazi reforestation project activities, which were completed in December 2000, were maintained thanks to the extraordinary investment budget which enabled the monitoring, upkeep of the plantations created, and protection of the vegetation cover in its zone of intervention. In spite of the effects of the crisis, the project outputs were to some extent sustained and these actions deserve to be strengthened. This project yielded convincing results as regards watershed protection, reconstitution of vegetation cover, promotion of Community and private forestry, agro-forestry and bush fire control. Safeguarding these gains constitutes a vital aspect of the new project.

2.11.9 Prior to the 1993 crisis, overall project implementation was satisfactory with higher disbursement rates of 60% on average. It is clear that national project management and monitoring capacities eroded with the crisis- induced resource gap. This situation will affect the new portfolio if capacity building measures are not taken. Indeed, the slippage on effectiveness of approved projects, in December 2004, are due mainly to the problems of coordination within the administration and the weak capacities. In addition to these two factors, the performance of the new portfolio could be limited by: (i) poor supervision and understanding of Bank procedures by project managers; (ii) slowness in setting up project implementation units; and (iii) absence of a structure of the Bank on the spot, permitting close monitoring of the projects. Accordingly, the Bank will have to ensure a sustained presence in the field through frequent supervision missions, with special emphasis on institutional capacity building, while training project management personnel and sensitizing them to Bank procedures in order to improve the portfolio monitoring and performance.

2.11.10 The main lessons learnt from implementing projects financed by the Bank and other partners can be summarized as follows: (i) the need for all the projects to have personnel qualified to implement the activities; (ii) the need to build the capacities of the population and all actors involved; (iii) the need to set up effective financial management and monitoring and evaluation systems (iv) the importance of involving the populations in the process of developing action plans and in implementing activities.

### 3. **FORESTRY SUBSECTOR**

#### 3.1 **Key characteristics**

3.1.1 The geographical distribution of the forests varies considerably across the national territory. The vegetation is presented under various types of forest stands, namely the Congo basin forests and the Nile Ridge, highland and shrubby savannas, steppes and gallery forests, man-made forest stands or buffer plantations and isolated trees which have replaced the degraded natural stands on the hills. These forests currently cover 50,000 ha as against a surface area of 104,000 ha some 30 years back.

3.1.2 The ombrophilous mountain forests play a fundamental role in regulating the water regime and protecting watersheds on steep slopes against erosion. Mountain forests are the sources of many rivers : Kibira is the source of the Ruhwa, Kaburantwa, Gitenge, Ruvubu, Mpanda and Nyabihondo, while the Bururi forest is the source of the Jiji and Siguvyaye. To protect the watersheds, mountain forests slow down erosion on the steep slopes. These stands permit water supply to most of the arable lands, soil conservation and above all, the regulation of the rivers, in order to increase the irrigated surface areas in Imbo plain. They then prevent the silting of the rivers and consequently, the pollution of Lake Tanganyika.

3.1.3 The tree-covered and shrubby savannas of the East carpet the ground composed of lateritic slabs, found both on the slopes and hilltops. The various types of savannas, unfortunately subjected to repeated bush fires, play a key role in the conservation of forest soils. They protect valley soils that are suitable for wetland farming. Like the Ruvubu National park, the Eastern savannas are ecosystems, which have been able to protect a diversified and rich wildlife. Regarding big game, the savannas of the Ruvubu National park are some of the last places in Burundi where certain animals are still found. Their current surface would be 90,800 ha including 52,800 ha protected at the Ruvubu and Rusizi national parks. The gallery forests are not-so-broad wooded fringes, distributed along the rivers. They are found almost everywhere in Burundi. In the savannah of the East, they occupy the bottom of valleys and even the slopes. They are found on more or less humid soils, from the bottom of the wetlands to the higher parts of the slopes.

3.1.4 Public artificial woodlots existing in Burundi differ both in species and age. They include semi-industrial stands created since 1980 and comprising species like *Callitris* (24,000 ha) *Eucalyptus* (16,000 ha) and *Pinus* (15,000 ha). The total surface of these woodlots covered 7,280 ha in 2000, that is 2.8% of the national territory. Efforts have been made for the creation of communal plantations, private woodlots and the promotion of agro-forestry. These different types of plantation have contributed substantially to satisfying the populations' wood and non-wood product needs and to the maintenance of soil fertility in farmlands. Hence in 2000, approximately 31,000 ha of private micro-woodlots, 7,600 ha under private agro-forestry and 3,400 ha of hedgerows were inventoried. The total number of woodlots was estimated at 4,800 of which 611 woodlots made up of eucalyptus having more than 10 hectares and occupying 60% of the total surface.

3.1.5 The natural and artificial forests are of paramount importance in the maintenance of ecological and hydrological balances. These stands have evolved greatly over time. Indeed, in the colonial era, protection measures had made it possible to slow down the degradation of natural forests as a result of wood collection and quest for farmland. In order to meet the population's wood needs and at the same time preserve communal woodlots and natural stands, the colonial authorities forced the populations to create so-called economic woodlots near administrative centres and of the major mining centres. In the eighties, the Government made new forest and

natural space conservation and restoration efforts, with the opening of the National Institute for the Nature conservation (I.N.C.N) and the creation of national parks and natural reserves, which are the forests of the Congo-Nile Ridge, Rumonge, Kigwena and Bururi.

### **3.2 Importance of the Subsector in the Economy**

3.2.1 Fuelwood represents 97% of energy consumption, that is, approximately 6,115,000m<sup>3</sup> of the total volume consumed at the national level. While forests play a socio-economic role, they also play the role of regulating water resources and protecting the soils on the slopes. Yet, these forests are currently under strong human pressure threatening their existence and affecting farmlands. Approximately 30,000 ha of woodlots and 10,000 ha of natural forests were destroyed, reducing the country's forest cover rate from 8% to 5%. In addition to their exploitation for energy needs, these forests also constitute the country's reservoir for agricultural and pastoral activities which form the basis of its economy. Tourism in the reserves and national parks is a source of some income for the population. The forest sector provides 2 % of the GDP and 6 % of employment according to the outlook study on the forests of Africa FOSA-FAO 2001.

3.2.2 According to the results of this same study, the forest resources will represent more than 600,000 ha in 2020, that is, 16 million m<sup>3</sup> of standing volume, provided that the country continues to finance reafforestation. The FAO's wood demand projections by the year 2020 indicate that Burundi's firewood needs will be about 15 million m<sup>3</sup> and those of lumber 959 thousand m<sup>3</sup>. Wood should thus continue to be at the centre of any domestic energy strategy. Regarding wood processing, exploitation capacity remains limited and the products are of low quality. By 2020, the forest sector will respond to social expectations as follows: 208,000 additional jobs will be created by the forest industry. The latter will provide a livelihood for nearly 1,250,000 people, that is, more than 20% of the Burundian population. To that end, the country must take strategic measures aimed at improving technology. Local market furniture manufacturing units have personnel of 40 to 150 persons on average. Second-level processing employs contractually approximately 220 people and approximately 145,000 craftsmen intervene in the sector. The forest industry's share in the country socio-economic development of is moderate. However, with the Government's new economic policy of liberalization, this contribution is likely to increase in the near future.

### **3.3 Institutions of the sub-sector**

3.3.1 The responsibility of preserving and managing forest and environmental resources lies with the Ministry for Regional Planning, the Environment and Tourism. However, this responsibility is shared at certain levels with the Ministries for Agriculture and Livestock, communal development and handicrafts, Trade and Industry, Energy and the Mines, Public Works, National Education and, very recently, national and international NGOs. With decree n°100/186 of 20 December 2002 to reorganize the Ministry for Regional Planning, the Environment and Tourism, the Directorate-General of Regional Planning, Environment and Tourism is charged with formulating the government's policy on regional planning and the environment and to ensure the monitoring of its implementation in collaboration with the other partners for sustainable development. To that end, it coordinates, controls and evaluates the activities of the directorates and services which are attached to it, notably the Department of the Environment, the Department of Agricultural Engineering and the Protection of Lands, the Department of Forestry and that of Regional Planning.

3.3.2 The Department of the Environment and Tourism is charged with taking part in the formulation of national policy on the environment, the development of environmental standards and the environmental action plan and its promotion, as well as monitoring the implementation of

international conventions. The directorate for agricultural engineering and protection of lands is charged with developing techniques of management of irrigable lands, wetlands and swamps, and those of land protection and restoration. It is also charged with designing and disseminating water and soil conservation methods through participatory and integrated watershed management, as well as the control of their implementation.

3.3.3 The Department of Forestry is charged with implementing the Government's policy on the development and management of natural and artificial forests and environmental protection. At field level, the Department is represented by the Regional Forestry Inspectorates and Provincial Foresters. At the local level, the action of MINATET is extended to farms by the Forestry Inspectorates and the Provincial Directorates for agriculture and livestock within the framework of agro-silvo-pastoral integration. Other structures intervene in the sector, notably with financing from the country's financial partners and the intervention of several national and international NGOs, associations and women's groups etc.

3.3.4 However with the crisis, all the development planning and management services of the Ministry, just like all other institutions in the country, lost the majority of their managers due to death or departure to other countries or institutions). These services lack human, material and financial resources. Their experienced staff do not stay on for long before leaving for more lucrative institutions. Those that have stayed on are not enough in number and lack the required capacities and means to implement government policy. The weak capacity of these institutions is also due to lack of staff motivation due to low wage levels, lack of training, poor knowledge of the participatory approach and lack of coordination among the various sub-sector actors. The financial resources available to them are, in most cases, funding for development project activities from external partners. Owing to the crisis which the country experienced, the Government is unable to meet the substantial resource needs for the normal operation of the institutions in spite of the presence of a core of qualified staff with proven experience in their fields of competence.

### **3.4 Potential and Constraints of Sub- sector**

3.4.1 Besides the general constraints of the agricultural sector, there are certain constraints specific to the sub-sector, notably excessive pressure on the forest resources having resulted in uncontrolled exploitation and consequently, forest ecosystem degradation. One may also mention the lack of human resources, and of material and financial resources for better monitoring of resource protection activities, as well as the lack of appropriate and updated forestry and environmental laws. The weak performance of forestry research, of extension systems and of the other services in charge of the sub-sector and inadequate inter-sector coordination, which is essential as regards protection of natural resources are also cited. The overexploitation of arable lands, overgrazing, tilling on the steep slopes and the resultant erosion, account for the degradation of the forest resources and the environment causing the accelerated degradation of farmlands and declining soil fertility. Repeated clearing, constant bush fires, farming on marginal lands, abusive harvesting of wood for various uses and uncontrolled land occupancy also constitute factors of environmental degradation. The absence of appropriate soil fertilization technologies and poor watershed management, forest and woodlot management techniques have led to a drop in agricultural and forestry outputs.

3.4.2 In spite of these constraints, the sub-sector has high potential, namely: (i) a population steeped in agro-forestry practices and private woodlot management; (ii) promotion of associations and groupings, notably in the production of the seedlings, the establishment and upkeep of forest plantations, and (iii) a favourable climatic environment permitting intensive agriculture and stockbreeding through the practice agro-forestry. The existence of policies and instruments under revision, the government's political will as expressed in the I-PRSP, whose main objective is the promotion of strong growth and poverty reduction focused on watershed management and environmental protection, as well as the implementation of several initiatives of Burundi's financial partners as regards management also constitute the sub-sector's potential.

### **3.5 National Sub-Sector Development Strategy**

3.5.1 The government's strategy as regards natural resources management and environmental protection stresses involvement of the populations in the management of the forest heritage, promotion of agro-forestry and private forestry and the protection of bare hillsides. Burundi's current forestry policy aims at eradicating the phenomenon of resource degradation as part of an overall plan of preservation and conservation. Accordingly, the set objectives are to: (i) reduce losses of plant and animal species (ii) restore degraded spaces; (iii) ensure participatory management of natural and artificial stands and (iv) develop ecotourism. Protection and conservation of these resources that are henceforth channelled through this policy must be marked by the constant concern to direct the resources to the present and future beneficiaries of the project.

3.5.2 Three specific objectives emerge from this orientation, namely: reconstitution of destroyed vegetation cover and development of the forest cover to 15 % of the national territory in 2012, strengthening of forest management and structuring of the wood sub-sector. Regarding natural stands, the idea is to develop agro-forestry around natural forests in order to limit pressure on plant species, and to design and implement income-generating projects. This calls for involvement of the population and local authorities in the management of natural resources in general, and forest resources in particular. Concerning the artificial stands, the following strategies will be adopted: planning of the extension of wooded areas on still vacant lands, adaptation of silviculture to the real needs of the population, promotion of agro-forestry and forest research, decentralization of woodlots management and reduction at all the stages of the sub-sector of losses due to organizational deficiencies and unprofitable techniques.

3.5.3 The legal framework governing forest resources management comprises legal instruments under national law and the International Conventions ratified by Burundi. Concerning national law, there are several instruments to modify anthropic forest- threatening practices by enshrining conservation and management aspects. These legal instruments are: (i) executive order n° 1/6 of 3 March 1980 on the establishment of national parks and natural reserves in Burundi; (ii) executive order N° 01 / 02 of 25 March 1985 on the forest code; (iii) executive order N° 01 / 08 of 1 September 1986 on the land code of Burundi; (iv) decree N° 100/47 of 3 March 1980 on the creation and organization of the National Institute for Nature Conservation (INCN) which became the National Institute for the Environment and Nature Conservation (INECN) following decree 100/188 of October 5 1989 and (v) the environment code. For each of these legal instruments, measures enabling conservation and sustainable use of the forest resources are indicated.

3.5.4 The national strategy for biodiversity conservation put in place as part of the implementation of the Convention on Biological Diversity and Climate Change aims at: (i) the implementation of a programme of sensitisation to and education on environmental protection (ii) the implementation of a biodiversity conservation strategy through the protection and restoration of

vegetation cover, protection of natural forests and extension of artificial woodlots and (iii) implementation of an action plan against soil degradation and desertification. In addition to these actions, there is the protection and conservation of water and water resources. Generally, the most significant gaps and constraints concerning the application and effectiveness of the legal instruments can be summarized as follows: (i) several laws lack instruments of implementation (forest policy, land code and forestry code); (ii) the majority of these laws do not sufficiently take into account the need for a participatory approach, which is indispensable for the development of an effective environmental legislation and (iii) the ineffectiveness of certain instruments owing to the fact that the human and material resources required for their implementation are lacking. It should be noted that the Land Code, Forestry Code and Environment Code are being revised to adapt them to the current socio-political, economic and ecological contexts.

#### **4. THE PROJECT**

##### **4.1 Project Design and Rationale**

4.1.1 The Watershed Management Project (PABV) is based on the strategic actions of the Interim Poverty Reduction Strategy Paper (I-PRSP) of Burundi. It constitutes one of the priority sectors of pillar 1 of the Results-Based Country Strategy Paper for Burundi prepared by the Bank for the period 2005-2007, which consists in contributing to improve the living conditions of rural dwellers. The project does so through the promotion of food security in the country, rural sector contribution to national economic growth, job creation and the general improvement of the living conditions of the rural populations. More specifically, the project is designed to remove the constraints on the sub-sectors (paragraphs 2.9 and 3.4). The State plantations envisaged will protect bare hillsides against erosion, while the community plantations and agro-forestry will permit the restoration of soil fertility, the supply of forest products to the populations and increased agricultural, pastoral and forest productions. The use of labour-intensive works for the plantations and fire-breaks will create job opportunities and increase rural incomes. It also favours the training of the populations and their participation in the implementation of technical works. The soil and water conservation actions, supply of improved seedlings and agricultural inputs to the populations will permit increased productivity and production.

4.1.2 The project is of a specific character with its impacts on poverty reduction through increased agricultural and livestock production, satisfaction of the population's timber and non-timber forest product needs, job creation, increased incomes and environmental protection through increased soil fertility, protection of watersheds against erosion, and capacity building for better forest resources management. The training programmes envisaged will enable the forestry authorities, technical services, NGOs and groups and associations involved to acquire the skills necessary for sustainable management of the resources and environment.

4.1.3 The project design is based on lessons learnt from the implementation of previous projects financed by the Bank (Bukirasazi Reafforestation Project and Bututsi Agro-pastoral Project) and other partners such as FAO, IFAD, German Co-operation and Belgian Co-operation. These projects had stressed the training of smallholders in rural forestry and agro-forestry. Their activities in their zones of intervention have brought about a change in the attitudes of village communities towards the management of forest resources, environmental protection, soil fertilization, erosion control and crop diversification. Close monitoring of these projects encouraged women to engage in agro-forestry activities, production of seedlings and fruit growing which helped them to improve their diet and increase their incomes. The project activities by creating and maintaining fire-breaks and forest tracks contributed to reduce the negative impacts of fires in the plantations and to facilitate movement within the country.

4.1.4 The design of the Watershed Management Project results from the analysis with the population of the forest and environmental problems, exacerbated by the drought which has hit the North-eastern part of the country for some time now. These problems concern a broad range of issues related to the major population movements, their settlement in the forest areas and plantations throughout the crisis period and the continuous degradation of resources which ensued. The road infrastructure, especially the service tracks, continued to deteriorate due to irregular maintenance and they became increasingly impassable. To this end, the project aims at developing the strategic options of sustainable use of land and rational management of community-based resources to decrease the phenomenon of erosion, reduce pressure on the resources and make the population benefit from the incomes which it could draw from the implementation of the activities. The choice of species to be planted and the water and soil conservation techniques to be promoted was based on experience acquired in Burundi, in neighbouring countries and in the Sahel through similar projects, according to soil types, state of soil degradation and specific needs of the population (firewood, lumber or timber, fodder species, fruit-bearing species, soil protection and fertilization species, etc).

4.1.5 The actions of the PABV will support those under way within the framework of the Bututsi Agro-Pastoral Project (2005-2007), reformulated in April 2005 and which stresses the increase in small producer incomes, notably through: (i) support for agricultural and animal production through livestock reconstitution; (ii) protection of land; and (iii) development of women's income-generating activities. This project will also reinforce the actions envisaged within the framework of emergency aid to drought victims in the provinces of Kirundo and Muyinga awarded to Burundi in 2005 by the Bank. The project design is based on lessons learnt from the implementation of projects financed by the Bank and partners in Burundi and Rwanda, notably as part of capacity building for the population and technical services, involvement of beneficiaries and technical partners (NGOs, associations, producer groups) in the choice of project intervention sites and in the implementation of planting and water and soil conservation activities. That is why all the works will be carried out at the request of beneficiaries and using simple techniques that are adapted and easily understood by the populations. Moreover, the preparation of community accounting and procurement procedures manuals and the establishment of an enhanced monitoring and evaluation mechanism will contribute to better financial and technical management of the project.

4.1.6 Lastly, the project design is based on consultations with all stakeholders, including the financial and technical partners that expressed their opinions on the project during its preparation and appraisal. These consultations were held through field visits, discussions and workshops. Through them, it was possible to measure the level of degradation of the watersheds, determine the technical actions to undertake and better target the project intervention zone. The project uses the participatory approach and places a premium on the experience, motivation and commitment of the population for their implementation of project activities. During its implementation, the project will pursue this participatory approach, by taking into account every stage, the opinions and concerns of the population, while prioritizing the partnership between all stakeholders.

## **4.2 Project Area and Beneficiaries**

4.2.1 The Watershed Management Project will be carried out in the provinces of the country, affected by the phenomenon of degradation of soil resources and vegetation cover and where drought has prevailed for many years (North-eastern part). These watersheds are major areas of agricultural, pastoral and forest production. At the administrative level, the project area covers the provinces of Bururi, Rutana, Gitega, Kirundo, Muyinga and Cankuzo, which total a population of approximately 2.61 million inhabitants, that is 36% of the country's total population, estimated at

7.3 million inhabitants in 2004. These provinces were selected by taking into account the severity of environmental problems, the endemic drought in parts of the North-East, achievements of the Bukirasazi Reafforestation Project and of the intervention of other partners. With an essentially rural population, a high population growth rate, an average per capita smallholder farm of 0.80 ha and an average energy consumption of 2.93 kg of wood per person and per annum, this area was severely affected by drought and the effects of the war. In the zone, the rainy season (October to May) alternates with the dry season (June to September). Average annual rainfall is between 500 mm and 1.200 mm. The rainy season, starting in September, lasts 6 to 9 months, interrupted by a minor dry season in January. Its hilly relief gives it a tropical highland climate, which is hot and humid on lowlands, and humid and temperate on the mountains. The soils of these provinces are generally poor.

4.2.2 These provinces were adversely affected by the conflict and are currently facing increased poverty. Certain provinces such as Rutana, which had a high percentage of poor even prior to the crisis (over 50%), reached even more disturbing levels, with over 70% of the people living below the poverty line. With no erosion control facilities in the farms or watershed management, soil degradation and the loss of its fertility constitute serious threats to the agricultural, pastoral and forest productions. The exploitation of this land (absence of fallow, reduction and/or disappearance in certain cases of organic matter supply and lack of mineral fertilizers) is worsening the phenomena of soil degradation and impoverishment.

4.2.3 The project beneficiaries are the rural dwellers, in particular women in the provinces covered, generally made up of producer groups and associations working in State and community plantations or individual smallholders working on their farms. These groups and associations, with the support of the projects and the NGOs, will be organized gradually. The target groups need training, information and technical, financial and organisational support to carry through community projects. The population that would be directly affected by the activities of the project is approximately 150,000 households. However, the actions of the project will indirectly affect almost the entire population of the project area, in particular through the protection of bare hillsides, the various plantations, the opening and maintenance of tracks and fire-breaks, the restoration of the pastures, the intensification of agriculture by diversifying production, the promotion of agro-forestry, market-gardening and bee-keeping.

4.2.4 Those targeted by the project are generally poor, with annual average incomes of below USD 100 and are disadvantaged in terms of access to basic social services. In general, the households are vulnerable, but more particularly the 58% which are headed by women. The latter, who constitute the majority in these provinces, are active in market-gardening, production of seedlings and marketing of wood and charcoal. The incidence of poverty in the provinces concerned by the project reaches 68.7% of the population. Similarly, the proportion of the population without access to drinking water is 57% as against a national average of 47%, and that of the population without access to health services is 30% as against a national average of 23%.

4.2.5 The supervision, training, sensitization and microfinance activities, undertaken in the project area, fall under development projects, national outreach structures (DPAE) and national and international NGOs (cf. para. 2.5.2, 2.5.3, 2.5.5 and 2.8.2). These organizations play a significant role in promoting community development, supervising smallholders and developing socio-professional organizations. However, their intervention capacities must be strengthened through training in community development, planning and management.



### **4.3 Strategic context**

4.3.1 Burundi is classified among the poorest countries in the world with a per capita annual income estimated at approximately USD 83 and a very low human development level whose index (HDI) has never exceeded 0.341. Poverty is a cause for concern, with over 68% of the population living below the poverty line in 2002. To ensure sustainable and constant economic growth, the Government focused its strategic actions on poverty reduction, while preserving the environment. The Burundi Watershed Management Project is fully in keeping with the Bank's operations strategy for Burundi set out in Pillar 1 of the Country Strategy Paper (CSP) for the 2005-2007 period, and with the Government's Interim Poverty Reduction Strategy Paper (I-PRSP) which aim at promoting good governance, ensuring sustained economic growth, improving the human capital and the living conditions of the populations, and restoring and safeguarding the ecosystems. It is consonant with the Bank's vision, its strategic plan and the objectives of ADF X focused on poverty reduction.

4.3.2 Within the framework of rural development, the I-PRSP aims at the revival of the sector to ensure food security for all, universal access to social services and rehabilitated, better protected and rationally exploited natural resources. The implementation of the project will contribute to achieve the goals set within the framework of the national food security and agricultural sector development policy, as well as environmental protection, which constitute priorities of the Government. The PABV is the second operation of the Bank in the field of the forestry and the environment after that of the reforestation of Bukirasazi. For this reason, it plans to remove the institutional, technical, socio-economic and environmental constraints. It responds to the Government's concern of managing the resources sustainably and protecting the environment in order to improve the incomes of the populations, strengthen food security, protect the soil capital, strengthen the capacities of the forestry authorities and those of local communities.

### **4.4 Project Objectives**

The project sector goal is to contribute to food security by restoring the productive capital, which is the soil. More specifically, the project aims at protecting the watersheds, increasing agricultural, pastoral and forestry production and raising rural incomes in the project area, by creating forest plantations (State, community and private), promoting agro-forestry and the dissemination of appropriate technologies to improve soil fertility and diversify production, training and sensitizing the population, organizing and involving producer groups and associations in the activities, as well as building the institutional capacities of the Department of Forestry.

### **4.5 Project Description**

4.5.1 The Watershed Management Project focuses on four components, namely: capacity building, conservation and improvement of resources, improvement of agro-silvo-pastoral production and the management of the project.

#### **Capacity Building Component**

4.5.2 The implementation of the Watershed Management Project and the environmental protection activities requires major training and sensitization actions concerning all stakeholders involved in the process. This component seeks to build the capacities of officials of the Department of Forestry as well as those of the local population for better management of State and community plantations and sustainable management of family farms. With the technical support of the Provincial Agriculture and Livestock Delegations and the Regional Forestry Inspectorates, the project will set up a programme of sensitisation of smallholders to improved farming techniques, water and soil conservation techniques and plantation management. In addition, the project will

organize training courses for mixed farmers on the improvement of pastures and the production of fodder.

4.5.3 Training and Technical Guidance: About twenty staff of the Department of Forestry will receive short-term local training in forest inventory and management in specialized institutions and 35 forestry officers and technicians and DPAE, of which 40% women will take part in national training courses in agro-forestry, water and soil conservation and planning. These training courses will be conducted by specialized agencies, such as ICRAF. In all, 16 staff of MINATET and MINAGRIE will take part in regional or international conferences and seminars. The project will build the capacities of the Department of Forestry and the DPAE for the implementation, monitoring and evaluation and supervision of project activities by training their personnel. Staff of the department will also be trained in the collection and packaging of the seeds and resources necessary for sensitizing the populations to the fight against forest fires and promoting improved stoves.

4.5.4 A total of 2000 smallholders will be trained in agro-forestry, erosion control, community-based procurement procedures, management and supervision of these contracts and labour-intensive techniques. Study trips will be organized for 50 smallholders and staff of the Ministry and the Department of Forestry, including 45% women, in West Africa and in the sub-region in order to see the experiences of these countries in soil conservation, watershed protection and wetlands management. Approximately 46,800 smallholders, of whom 40% women, in associations, will be trained in agro-forestry, development of fodder species and diversification of production in their farms and wood marketing. The project will finance sensitization and training programmes for associations of smallholders and producer groups, notably those of women, as part of capacity building through their organizations. These activities will be coordinated by a gender-sensitive community development expert, who will be recruited on project resources. The supervision of beneficiaries and their training will be conducted by service providers (NGO and other institutions), with which the project will sign agreements. Micro-finance institutions of the project area will benefit from training courses in management and will be equipped with various materials to enable them to assist beneficiaries in setting up savings and loan funds.

4.5.5 Equipment and construction: Given the under-equipment of the Department of forestry and its weak capacity to implement activities, the project will provide it with data-processing and office automation equipment, forest inventory software and communication equipment, as well as technical forest inventory equipment and equipment for forest and fruit seed collection and processing. The project will support it for monitoring and evaluation with an all-terrain vehicle and 18 motorcycles for foresters in the provinces. Following the FAO study on wood and charcoal supply to urban centres two multipurpose centres for the marketing of wood will be created and equipped on a purely pilot basis in Bujumbura, under the responsibility of the Department of forestry. These centres will be managed by associations of wood traders, trained by the project.

4.5.6 Technical assistance : The project will recruit a consulting firm providing the services of a forest management expert for 24 (twenty- four) staff-months, an expert in administrative and financial management for 12 ( twelve) staff-months duration and a community development expert for (12) twelve staff-months. This consulting firm will also provide the services of a consultant for the revision of the forest policy and the forest code for 4 (four) staff-months. The consulting firm will be charged with developing simplified participatory management plans for community woodlots in collaboration with the Department of forestry.

### Conservation and Improvement of Resources Component

4.5.7 This component consists in restoring vegetation cover on bare hillsides, protecting the soil against erosion, as well as rehabilitating and maintaining forest tracks.

4.5.8 State and Community Plantations The project will finance the creation of 15,000 ha State plantations already identified by the Department of Forestry to protect the bare hillsides against erosion. It will also finance, at the request of the population, the creation of 1,800 ha of community woodlots. The production of the seedlings for the various plantations will be undertaken by producer groups and associations, in particular those of women, already having an experience in the domain and will be covered by contracts following community-based procurement procedures. The seedlings produced will be bought by the project and sown using labour-intensive works. All the plantations of the project will be mapped for future woodlot development and management needs. The community plantations will be covered by management contracts between the forest authorities and the local communities.

4.5.9 Water and Soil Conservation The project will finance the construction of 600,000 linear metres of erosion control works (contour bunds, erosion control hedges, stoneworks, vegetated ditches, etc.) on the slopes and farmland threatened by erosion. These works will help slow down runoff and consequently curb soil erosion, favour sedimentation of fine particles to increase water retention and improve water infiltration and consequently the refilling of the water table. The combination of woodlots with these works and the planting of binding grass will protect farmlands against erosion and improve their fertility. Other biological and agronomic actions also aimed at soil conservation and increased agricultural production are envisaged under the project. Work will be carried out by the populations through their associations, including those of women who will receive training as part of their capacity building

4.5.10 Forest tracks: Approximately 35 km of old tracks in a state of degradation will be rehabilitated and 100 km of new tracks will be opened in the new plantations. About 250 km of tracks and fire-breaks will be maintained throughout the project. These activities will be implemented using labour-intensive works by people with experience in the domain, acquired from the Bukirasazi reforestation, FAO and World Bank projects.

4.5.11 The plantation works will be technically monitored at the level of each province by the project, which for this purpose will recruit 3 engineers and 6 technicians for the implementation of this component. The producer groups and associations, including 40% of women's groups, will be supervised by NGOs. The engineers and the technicians will be provided with 9 motorcycles. Given the manpower shortage in the public service, the required personnel will be recruited by the project on a contractual basis. The Government will place at the disposal of the project the two trucks and two tractors acquired under the Bukirasazi reforestation project for the implementation of the works. The project will finance the cost of making these vehicles operational.

### Improvement of Agro-Silvo-Pastoral Production Component

4.5.12 This component aims at increasing forest, agricultural and livestock production through activities of restoration of soil fertility, diversification of production and restoration of vegetation cover. The actions envisaged will enable beneficiaries to increase their incomes and ensure the food security in the provinces covered by the project. To diversify the sources of income and satisfy the population's food needs, the project will promote income-generating activities such as bee-keeping, market gardening and fruit-growing. Given the shortage of technical staff to cover the zone of intervention and the need to train the populations in agro-forestry, the project will

recruit 6 technicians, including at least 2 women, who will be equipped with motor bikes and the services of an NGO for the implementation of the activities of this component.

4.5.13 Forest production In addition to State and Community Plantations, the project will contribute to the creation of 3,750 ha of private plantations to satisfy the population's forest product needs. The forest seeds, intended for producer groups and associations, will be bought by the project near the seed multiplication centres of the Department of Forestry and other seed centres approved on the basis of agreements which they will sign with the project. Work on nurseries and plantations will be carried out by beneficiary associations/groups.

4.5.14 Food and Market-Gardening Products : This program will include the creation of soil fertilization demonstration plots, farming in alternate strips on the terraces and erosion control works on family holdings. The project will provide the farmers with food crop seeds and quality seedlings meeting their needs. To that end, an agreement will be concluded between ISABU and the project for the supply of 83,400 citrus seedlings and 83,400 avocado seedlings and 5,000 tonnes of improved basic seeds (corn, bean, potato, onion and tomato). The project will contribute to the dissemination of appropriate technologies to farms, the supply of improved hives and the supply agricultural and market-gardening seeds, especially to the groups of women/widows who are household heads. Organic fertilizer, liming material to improve soil pH and urea will be used on the demonstration plots.

4.5.15 Livestock production : Agro-silvo-pastoral integration will consist in creating 145 ha of hedgerows and the sowing of 3 ,000 ha multi-purpose fodder species enabling the improve 5,800 ha of natural pastures in the project area. These activities aim to reduce soil degradation along cattle tracks, increase in the availability of fodder for cattle so as to reduce livestock pressure on woodlots, improve soil fertility and production systems. To that end, associations of stockbreeders will be charged with sowing the seedlings and their upkeep.

#### Project Management Component

4.5.16 This will be handled by the Department of Forestry which will have a team based in Mahwa in Gitega province. The Department of Forestry will also be responsible for the general coordination of the project and monitoring of its activities. The team will be headed by a project manager, who must be an experienced Forestry Engineer provided by the Ministry throughout the duration of the project. It will include, inter alia, an agroforestry engineer - head of the technical team, a monitoring and evaluation officer, an agricultural engineer, officers in charge of finance, administrative management and vehicles, two assistant-accountants and a cartographer. The team will also have support staff comprising two secretaries, five drivers and a messenger. It will be represented by two branches, located in Mahwa for the provinces of Bururi, Rutana and Gitega and in Muyinga for the provinces of Kirundo, Muyinga and Cankuzo. At the provincial level, the project will work in close cooperation with the Provincial Directorates for Agriculture and Livestock, NGOs and producer associations. Each branch will include a Forestry Engineer acting as Branch Head, a monitoring and evaluation officer, a secretary, a driver and a messenger/security guard. The project will recruit all the contractual personnel necessary for its implementation, including a procurement expert for 11(eleven) months.

4.5.17 A financial and accounting management software will be acquired and a consultant recruited for two staff-months, in order to set up this software and to train the accounting and financial personnel. Short-term consultancies will also be financed by the project for the development of manuals of administrative, financial and accounting procedures (two staff months).

The Project's Management and the branches will be equipped with office furniture, computer equipment and office automation. The project will finance the acquisition of two twin cab pick-up trucks for the supervision of activities, as well as the acquisition of 20 (twenty) batches of computers, 3 (three) laptop computers, 5 (five) photocopiers, and equipment and office furniture for the entire team of the project. The project will finance the costs of operating all the equipment, means of transport and infrastructure of the project.

4.5.18 The Government will provide to the project, the infrastructure (offices and housing) to accommodate the project implementation team. The Government will also provide functional offices for the Muyinga branch. The project will finance the costs of rehabilitation of these buildings. The Government will hand over to the project, six vehicles in new condition acquired on the resources of previous projects for the purposes for this operation. It will also place at the disposal of the project, the civil service staff necessary for its normal implementation (a national project manager, two Branch Heads, an agro-forestry engineer, a cartographer and two assistant-accountants). This personnel will be paid by the Government and will receive productivity bonuses paid by the project.

4.5.19 The project will finance the operating costs which include various elements such as the maintenance of the building, logistics and the various items of equipment, the purchase of fuel, insurance, the acquisition of office supplies and miscellaneous supplies, incidental management expenses, travel allowances, meeting expenses, and monitoring (external monitoring, project impact, etc). A project launching workshop and decentralized activity planning sessions will be organized

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

4.6.1 Production Productive woodlots are estimated at 6,250 ha and consist primarily of leafy species like the Eucalyptus. For the latter, the off-take rate at the various clearings is as follows: 50% at the first clearing in the seventh year; 50% of the remainder at the second clearing in the fourteenth year; 50% of the remainder at the third clearing in the twenty-fifth year and the remainder at the final cutting in the twenty-eighth year. The average annual increase is 15m<sup>3</sup>/ha/year for the first clearing, 30m<sup>3</sup>/ha/year for the 2<sup>nd</sup> and 3<sup>rd</sup> clearings and 25 m<sup>3</sup>/ha/year for the final cutting.

4.6.2 The estimated production of Eucalyptus is 404,688m<sup>3</sup>/year over 5 years, that is, in all 2.02 million m<sup>3</sup>. For agro-forestry which consists in planting 450 ha of *Grevillia* and 150 ha *Cedrela*, the outputs of these two species are estimated respectively at 20 m<sup>3</sup>/ha/yr and 15m<sup>3</sup>/ha/yr. The expected production is 225,000 m<sup>3</sup>/yr over 5 years for *Grevillia*, or 1.12 million m<sup>3</sup> and 63,000 m<sup>3</sup>/yr over 5 years for *Cedrela*, or 0.3 million m<sup>3</sup>. This production will be sold as lumber.

4.6.3 With a 600 ha surface area of farms, the project will produce, in the peak year (5<sup>th</sup> year), 9,875 additional tonnes, including 2,800 of bananas, 1,700 of citrus fruits, 1,350 of avocado, 116 of corn, 954 of potatoes, 480 of onions, 2,400 of tomatoes and 75 of beans. It will carry out agricultural extension activities on 750 farms.

4.6.4 Market The forest products market is free, supply is fluid and difficult to estimate due to substantial self-consumption. To date, firewood constitutes the principal fuel for low and average-income rural and urban dwellers. Furthermore, it is virtually the only possible source of energy for several types of industries such as brickyards and/or tile kilns, tea factories, bakeries-pastry shops, restaurants etc. Firewood, which accounts for approximately 86% of annual wood consumption, is used by over 92% of the population.

4.6.5 As regards outlets for forest products, Bujumbura is by far the biggest compared to the cities of the hinterland. Lumber is generally sawn longitudinally by private professional sawyers who work on behalf of the traders that are able to negotiate felling licences from government services for public woodlots. The lumber produced is sold mainly at the Bujumbura wood market. This wood comes mainly from the Northern provinces (Ngozi and Muyinga). There are also many small processing joineries which work on their own account, mainly around the Bujumbura wood market.

4.6.6 Charcoal comes mainly from the Eucalyptus and constitutes the principal source of energy for rural and urban households. Wood is burnt on the spot in the plantations by specialized charcoal burners, then sold to wholesalers who transport it to distribution points in urban centres where it is bought by retailers who supply the households. Firewood or lumber is normally marketed by small private enterprises which employ loggers. Where the wood is on State land, it is generally necessary to obtain a felling licence for the equivalent of 5% of the purchase price of the product, from the Department of Forestry and to pay a communal tax of BIF 100 per bag as well as a municipal tax of BIF 100 per bag. The management of State woodlots and forests is governed by a ministerial ordinance and wood sales are regulated. Woodlots and forests of communes are jointly managed by the communes and the Department of Forestry, the latter carrying out the wood sales on behalf of the communes. Similarly, private woodlots of over 10 ha are subject to a management plan.

4.6.7 Daily consumption of forest products in Burundi is estimated at 2.93 kg per head for wood, at 0.68 kg for charcoal and 1.32 kg for plant wastes. This represents a total annual consumption of 7.2 million tonnes of wood, 1.7 million tonnes of charcoal and 3.3 million tonnes of plant wastes. This demand grows regularly each year at the price of an increasingly pronounced deforestation of the hills. Similarly, according to FAO wood demand projections, by the year 2020, firewood needs in Burundi will reach 15,220 thousand m<sup>3</sup>, and those of lumber, 959 thousand m<sup>3</sup>. From all these projections, one may say that the forest products output induced by the project will have a ready market. This will not only relieve pressure on the country's forest resources, but also satisfy part of the population's needs countrywide.

4.6.8 Agricultural production induced by the project will be mainly for self-consumption. The marketable surplus will be sold on local markets, in the closest urban centres, and possibly in Bujumbura for greater quantities, especially as concerns dealers in Gitega province, who indeed export food products to Bujumbura and other neighbouring provinces. Gitega is a major outlet for food products the province and neighbouring provinces to the East (such as Ruyigi and Rutana).

4.6.9 Prices : In Burundi, apart from export products such as coffee and tea whose prices are fixed annually, the prices of the other agricultural and wood products are liberalized and are negotiated freely. However the prices of standing lumber and the m<sup>3</sup> of forest products from State plantations and sold by the Department of Forestry are fixed by Ministerial Ordinance at BIF 4,350 m<sup>3</sup> for lumber, BIF 1,400 for firewood BIF 6,400 for poles and BIF 2,950 for timber. The lumber and the other forest products once transported to Bujumbura are negotiated at BIF 8,000 for a bag of charcoal of 30 to 40 kg, BIF 3,600 for a *Grevillia* plank, BIF 4,000 for a Eucalyptus plank and BIF 3,000 for a *Cedrela* plank. An analysis of forest product price trends over the last five last years shows an annual rise of approximately 20%. It is expected that this rise will be maintained in the coming years owing to population increase and the return of refugees following the restoration of peace. Regarding agricultural production, the average prices of the different crops on the markets are as follows: BIF 121 / kg for bananas (green), BIF 290 /kg for citrus fruits, BIF 206 /kg for avocado, BIF 241 /kg for corn (dry grains), BIF 424 /kg for beans (dry), BIF 257 /kg for potatoes, BIF 697 /kg for onions and 371 BIF/kg for tomatoes.

## 4.7 Environmental Impact

4.7.1 The project is classified under environmental category II and listed under the headings "*Afforestation and small scale forest plantations* " and "*watershed development* " Its potential impacts on the biophysical and human environment will be mitigated and/or optimized within the framework of the implementation of the Environmental and Social Management Plan (PGES) which is summarized in Annex 7.

4.7.2 Positive Impacts : The project essentially aims at stopping and reversing the process of degradation of forest resources to ensure protection of watersheds. The watershed development and natural resource management activities will restore degraded ecosystems and create enabling conditions for the development of agricultural production. Indeed, the reafforestation techniques combining quickset hedges, erosion control terraces, planting of perennial crops and rotation cropping will effectively combat soil erosion. The promotion of composting and the stalling of the animals for manure production will contribute to improve soil fertility and increase agricultural production. The training and the sensitisation of producers in collective maintenance of woodlots and rational use of inputs will positively impact the biophysical environment. The development of simplified village forest management plans will enable rural communities of the project area to actually take charge of the management of the natural resources in their localities. The adoption of systems enabling better management of bush fires and reduction of their scope will have beneficial effects on the resources of the environment.

4.7.3 The setting up of plantations for the protection of bare hillsides and erosion control works will play a significant role in watershed protection, the reconstitution of forest resources and biodiversity, while contributing to the increase in the country's vegetation cover rate. Other attendant actions such as fruit-growing, bee-keeping and market gardening will provide the population with intermediate sources of incomes. From the socio-economic perspective, the improved outputs of the production systems, crop diversification and promotion of agro-forestry will guarantee sustainable farming and will have beneficial effects on the living conditions of the populations, while ensuring a better management of resources. In addition to the incomes, the project will, through its labour-intensive works, provide to as many as possible, training opportunities in the various techniques of production of seedlings and reafforestation, and will contribute to raising their level of knowledge as regards natural resources management.

4.7.4 Potential Impacts and Mitigative/Optimisation Measures: The fire break maintenance and track rehabilitation works could have various adverse effects (spreading of dust and fumes, opening of borrow pits, etc). Appropriate mitigative measures will be taken during the works to prevent any degradation or nuisances. Training in the techniques of production of seedlings, the setting up of plantations and other diversification activities will permit further involvement of the population in the management of the watersheds. In order to guarantee continuity of afforestation activities and prevent any shortages, the project will support the Seed Centre with equipment and the latter will regularly supply quality seeds to seedling production structures. The use of agro-forestry multi-purpose species will be encouraged (eg: Australian Macadamia, *Moringa will oleifera* *Leucaena leucocephala* and Neem). The establishment of community woodlots could create considerable initial enthusiasm. In practice, however, the communes, in a bid to ensure success of the plantation programme, might tend to make increasing demands at the beginning of season, but would be unable to meet their commitments at the time of planting. Hence, the need to advise them to reforest each year a moderate surface area (5 to 10 ha maximum) in order to be able to carry out the essential maintenance (surveillance, clearing and cleaning of the plantations, fire breaks). Within the framework of State plantations, the use of the labour-intensive works approach

will facilitate the importation of labour from one hill to another for planting on bare hillsides without excessively affecting reforestation costs.

4.7.5 The introduction of fruit-bearing species, in a participatory manner as part of the implementation of the agroforestry aspect of the project, will make it possible to increase the wooded areas in the project zone and improve incomes.. It will be necessary to encourage the multiplication of private micro-woodlots and the planting of multi-purpose fruit trees with high economic value. The judicious choice of afforestation species is important, as it has been observed that species, such as *Pinus patula*, will tend to choke the undergrowth, and reduce the microbiological activity necessary for the evolution of the pedological profile of the soil. They can however turn out to be effective for the protection of the already bare hillsides with rocky outcrops. The soils generally suffer from aluminic acidity (pH of 2 to 4), hence, the need for their improvement through liming and/or the supply of organic fertilizer. In this regard, the integration of stockbreeding in the agricultural production systems will be stepped up. Fast-growing and nitrogen-fixing species will also be given priority in order to protect and improve soil fertility which could also benefit from the promotion of composting and manure pits designed to increase the availability of organic fertilizer. The use of fires in the regeneration of pastures within hedgerows must be strictly circumscribed in order to prevent the fires getting out of control. The adoption and dissemination of simple forest management plans should contribute to reduce the practices of early exploitation of woodlots and the non-observance of the rules of silviculture. The dangers of large -scale monoculture and the reduction of biodiversity will be avoided by increasing the number of species planted.

4.7.6 Community woodlots will be created near State plantations and will be subject to the participatory management system known as " co-management " or contractual management, characterized by the existence of a concerted simple woodlot management plan and showing annual off-take quotas which set a maximum margin of maintenance and restoration of the productive potential for a period of 7-10 years. It is recommended to start in parallel, the initiatives to reduce wood consumption and energy saving by revitalizing the use of improved stoves, promoting the use of wood substitutes (solar energy, gas, briquettes, etc.) through close collaboration with the relevant services.

4.7.7 Environmental monitoring : Environmental monitoring will be carried out by the Directorate for the Environment, which will ensure that the effective implementation of measures produces the expected effects, based on monitoring indicators previously defined by means of a short -term consultancy. These will be specific indicators, such as soil quality, erosion phenomena, maturing of the forest stands, etc. Another service provider having the necessary tools and competency will be required to assess the impact of the project mitigating measures as part of the project monitoring and evaluation activities. A budget appropriation of BIF 110 million was earmarked for environmental and social monitoring activities.

## **4.8 Social Impact**

4.8.1 The actions envisaged under the project will lead to an increase in average net income of BIF 63,456 at full development (5<sup>th</sup> year). The project will generate wages of approximately BIF 5.6 billion for the population (men and women) involved in the labour-intensive works. This increase in the incomes will relieve the poorest in the project zone, notably the women household heads and widows who are war victims, who would be able to meet certain expenses on food, health and education. The project will induce 28,600 temporary jobs for all of its activities. It will enable the population to be more involved in watershed management and to satisfy their daily wood product needs without interfering with the natural stands and State plantations. The



promotion of private nursery gardeners and the training of groups and associations of growers will be benefits of the project. The sowing of fodder plants will provide feed for cattle and small livestock which will benefit the populations. The training of 2,000 smallholders, of whom 40% women, the supervision of 46,800 producers including 58% women and experience sharing which will reach 50 members of associations, including 40% women, will make it possible to build their capacities and better structure the rural community.

4.8.2 The project will grant a significant place to women who will benefit from most of the activities, notably agro-forestry, market gardening, bee-keeping and production of forest, agro-forestry and fruit seedlings. It will enable them to increase their agricultural production by supervising their associations and groups in the use of water and soil conservation techniques. The extension of improved stoves will reduce the time spent searching for firewood, which is one of their principal chores. The erosion control works will permit the control of water and its effective use in the farms.

4.8.3 Project activities will contribute to poverty reduction in its zone of intervention by an increase in production following development of the watersheds, which will have a positive impact on soil fertility and water retention. The involvement of the population in the implementation of labour-intensive works will provide people with the financial resources to improve their living conditions. The opening of tracks and fire-breaks will contribute to open up the zone and will facilitate the evacuation of the agricultural produce.

## 4.9 Project Cost

4.9.1 Total project cost is estimated at BIF 16,135 million, that is UA10.44 million, net of taxes and customs duties. This cost is broken down into BIF 8,741 million in foreign exchange, or 5.65 million and BIF 7,394 million in local currency, or UA 4.79 million. Tables 4.1 and 4.2 below, give a summary of the costs of the project by component and category of expenditure.

**Table 4.1**  
**Summary of Estimated Project Cost by Component**

Component	BIF million			UA million			%
	LC	FE.	Total	LC	FE.	Total	
Capacity building	945	2,002	2,947	0.61	1.30	1.91	68
Conservation and improvement of resources	3,125	4,316	7,441	2.02	2.79	4.81	58
Improvement of agro-silvo-pastoral productions	1,268	1,155	2,423	0.82	0.75	1.57	48
Management of the project	1,033	344	1,377	0.67	0.22	0.89	25
<b>Basic cost</b>	6,371	7,817	14,188	4.12	5.06	9.18	55
Physical Contingencies	379	546	925	0.25	0.35	0.60	58
Price Contingency	644	378	1,022	0.42	0.24	0.66	36
<b>Total</b>	7,394	8,741	16,135	4.79	5.65	10.44	54

**Table 4.2**  
**Summary of Project Cost by Expenditure Category**

Categories	BIF million			UA million			%
	LC	FE	Total	LC	FE	Total	
<b>I. Investment</b>							
1. Works	3,728	4,497	8,225	2.42	2.91	5.33	55
2. Goods	421	961	1,382	0.27	0.62	0.89	70
3. Services							
3.1 Training and sensitization	423	519	942	0.27	0.34	0.61	56
3.2 Supervision by NGOs	368	316	684	0.24	0.21	0.45	47
3.3. Studies	20	20	40	0.01	0.01	0.02	50
3.4 Short term consultancy	98	213	311	0.06	0.14	0.20	70
3.5 Audit	62	62	124	0.04	0.04	0.08	50
3.6 Technical assistance	0	590	590	0.00	0.38	0.38	100
<b>II. Recurrent costs</b>							
4. Personnel	423	0	423	0.27	0.00	0.27	0
5. Operating	828	640	1,468	0.54	0.41	0.95	43
<b>Basic cost of the project</b>			14,18				
	6,371	7,818	9	4.12	5.06	9.18	55
Physical contingencies	379	546	925	0.25	0.35	0.60	58
Price Contingency	644	377	1,021	0.42	0.24	0.66	36
<b>Total project cost</b>			16,13				
	7,394	8,741	5	4.79	5.65	10.44	54

4.9.2 The costs were estimated on the basis of current prices in Burundi as at October 2005. A physical contingencies rate of 10% was applied to work and equipment. A price contingency of 4% on the costs in local currency and of 2% on the costs in foreign exchange was applied to all the categories. The total package for physical contingencies (BIF 925 millions) and price contingencies (BIF 1.021 millions), amounts to UA 1.26 millions that is approximately 12% of total project cost.

#### **4.10 Financing Sources and Expenditure Schedule**

4.10.1 The project will be co-financed by an ADF grant of UA 9.00 million or 86% and by the Government of Burundi for UA 1.07 million or 10% and the recipients for UA 0.37 million, or 4% in accordance with tables 4.3 and 4.4 below. The Government will finance the cost of the project premises, six 4X4 vehicles, two trucks and two tractors acquired under previous projects. It will also finance the wages of seconded staff and part of operating expenses of the project implementation team. The beneficiaries will finance part of the cost of works relating to private plantations, agroforestry and water conservation and their maintenance.

**Table 4.3**  
**Financing Sources**

Sources	BIF million FC			UA million			%
	L.C.	FC	Total	L.C.	FC	Total	
ADF Grant	5.551	8.352	13.903	3.59	5.41	9.00	86
Government	1.275	389	1.664	0.83	0.24	1.07	10
Beneficiaries	568	0	568	0.37	0.00	0.37	4
<b>Total Project Cost</b>	7.394	8.741	16.135	4.79	5.65	10.44	100

**Table 4.4**  
**Expenditure by Category and by Financing Source (UA million)**

Financing sources	ADF Grant			GVT			BNF	Total		
	L.C	F.E	Total	L.C	F.E	Total	LC	LC	FE	Total
<b>CATEGORIES</b>										
<b>I. Investment</b>										
1. Works	1.59	2.91	4.50	0.57	0.00	0.57	0.26	2.42	2.91	5.33
2. Goods	0.27	0.43	0.70	0.00	0.19	0.19	0.00	0.27	0.62	0.89
3. Services										
3.1 Training and sensitization	0.27	0.34	0.61	0.00	0.00	0.00	0.00	0.27	0.34	0.61
3.2 Supervision by NGOs	0.24	0.21	0.45	0.00	0.00	0.00	0.00	0.24	0.21	0.45
3.3. Studies	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.02
3.4 Short-term consultancy	0.06	0.14	0.20	0.00	0.00	0.00	0.00	0.06	0.14	0.20
3.5 Audit	0.04	0.04	0.08	0.00	0.00	0.00	0.00	0.04	0.04	0.08
3.6 Technical Assistance	0.00	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.38	0.38
<b>II. Recurrent Costs</b>										
4. Personnel	0.22	0.00	0.22	0.05	0.00	0.05	0.00	0.27	0.00	0.27
5. Operating	0.30	0.41	0.71	0.18	0.00	0.18	0.06	0.54	0.41	0.95
<b>Basic cost of project</b>	3.00	4.87	7.87	0.80	0.19	0.99	0.32	4.12	5.06	9.18
Physical contingencies	0.26	0.29	0.55	0.01	0.02	0.03	0.02	0.29	0.31	0.60
Price contingency	0.33	0.25	0.58	0.02	0.03	0.05	0.03	0.38	0.28	0.66
<b>Total project cost</b>	3.59	5.41	9.00	0.83	0.24	1.07	0.37	479	5.65	10.44

4.10.2 The ADF grant will cover 84 % of the total project cost, that is UA 9.00 million of which UA 5.41 million in foreign exchange and UA 3.59 million in local currency. It will cover 96% of the costs in foreign exchange and 75% of the costs in local currency.

4.10.3 Project expenditure will be executed in accordance with the expenditure schedules in the tables below (including the provisions for physical and price contingencies).

**Table 4.5**  
**Expenditure Schedule by Category (in UA million)**

Components	2006	2007	2008	2009	2010	Total
Capacity Building	0.74	0.70	0.22	0.24	0.15	2.05
Conservation and Improvement of Resources	0.83	1.14	1.23	1.19	1.21	5.60
Improvement of agro-silvo-pastoral productions	0.43	0.33	0.33	0.34	0.37	1.80
Project Management	0.65	0.10	0.08	0.08	0.08	0.99
<b>Total</b>	2.65	2.27	1.86	1.85	1.81	10.44

**Table 4.6**  
**Expenditure Schedule by Financing Source (in UA million)**

Financing Sources	2006	2007	2008	2009	2010	Total
ADF Grant	1.91	2.16	1.70	1.64	1.59	9.00
Government	0.70	0.04	0.08	0.12	0.13	1.07
Beneficiaries	0.04	0.07	0.08	0.09	0.09	0.37
<b>Total</b>	2.65	2.27	1.86	1.85	1.81	10.44

## **5. PROJECT IMPLEMENTATION**

### **5.1 Executing Agency**

5.1.1 General project coordination will lie with the Department of Forestry under the responsibility of the project manager who will sign a performance contract. The project team will be charged with the management of day-to-day activities related to its implementation, inter alia: procurements, preparation of BDs, TOR and invitation letters; coordinating and supervising the activities of the various operators intervening in the implementation of the activities; control and acceptance of the goods, services and works procured under the project; preparation of payment requests, consolidation and preparation of accounts; development of the work programmes and the budgets, quarterly status reports and annual programme implementation reports, internal monitoring and evaluation of activities implemented and consultation with services of the Ministries concerned, the other development partners and civil society on the conduct of its activities, the conduct of impact studies and the management of the special account.

5.1.2 In addition to the project manager, the implementation team will include an agroforestry head of the technical team, a monitoring and evaluation officer (agricultural engineer) officers in charge of finance, administrative management, vehicles, two assistant-accountants and a cartographer. It will also have support staff comprising two secretaries, five drivers and a messenger. It will be represented in the field by two branches located at Mahwa and Muyinga. At the provincial level, the team will work in close cooperation with the Provincial Directorates of Agriculture and Livestock. Each branch will include a Forestry Engineer acting as Branch Head, a monitoring and evaluation officer, a secretary, a driver and a messenger/security guard. The team will be supported by technical assistance for the implementation of project activities, which will include a forest management expert, an administrative and financial management expert and a community development expert. A procurement expert will be also recruited. The implementation team will be provided with the necessary technical financial and material resources necessary for the proper implementation of activities.

### **5.2 Institutional Arrangements**

5.2.1 The orientation and coordination of project activities will be carried out by a Steering Committee chaired by the Director-General for Regional Planning, the Environment and Tourism, representing the Minister. This committee will be composed of a representative of each ministry concerned with the project. They are in particular the Ministries for Finance, Agriculture and Livestock, Development Planning and Reconstruction, the Director of Forestry, the Director General of the National Institute for the Environment and Conservation of Nature, the Director of the Institute of Agronomic Sciences of Burundi, the Director of Agricultural Engineering and Land Protection, two representatives of NGOs and four representatives of producer associations and groups including 50% women. The project manager will provide secretarial services for this committee. The committee tasks are to approve the work programmes and annual budgets, ensure the implementation of the recommendations of the various missions, in particular the supervision missions of the Bank. It will receive periodic reports and monitoring and evaluation reports. It will meet at least twice per year and will be able to invite any person whose skills could be used for better project implementation and harmonious management. At the level of each province, it will be made up of a local coordination committee chaired by the Provincial Director of Agriculture and Livestock and composed of four members of producer associations and groups, two representatives of NGOs, and three provincial technical officials of whom 40% women. The representatives of these provincial coordination committees will sit on the Steering Committee. These committees will meet quarterly and will take

part in the planning of activities and site selection. The representatives of donors which have operations in the provinces covered will take part in these committees as observers.

5.2.2 The implementation of seedling production activities and labour-intensive works for plantations, the opening and maintenance of tracks and fire breaks as well as the installation of erosion-control works will be carried out by producer groups and associations selected by competitive bidding. Community plantations will be managed by the producer groups and associations with whom the Department of forestry will sign agreements for community management of resources. Agroforestry, bee-keeping, fruit-growing activities and erosion control works on farmlands will be carried out by the owners of the parcels with the technical supervision of the project. Training will be provided by specialized agencies on the basis of short lists. Improved seeds and seedlings will be provided by the specialized ISABU and seed-multiplication with which the project will sign agreements whose projects will be subjected to the prior approval by the Bank. The project team will work in close cooperation with the provincial Directorates for Agriculture and Livestock (DPAE) of the provinces covered for better coordination of interventions.

5.2.3 The financial management of the project will be carried out in accordance with the provisions in force in the country and those of the African Development Bank. The accounting system in place is considered satisfactory. An administrative, financial and accounting procedures manual and a community procurement manual will be prepared at project start-up, in conformity with the rules of procedures of the African Development Bank.

### **5.3 Implementation and supervision schedule**

The project will be implemented over a five-year period.

**Table 5.1**  
**Implementation and Supervision Schedule**

<b>Activities/Actions</b>	<b>Responsible</b>	<b>Start-up</b>	<b>End</b>
Approval by the Board	ADF	02/2006	02/2006
Signature of the Grant MOU	GVT/ADF	04/2006	04/2006
General procurement notice	GVT/ADF	05/2006	05/2006
Recruitment of project personnel	GVT/Partners	05/2006	07/2006
1 <sup>st</sup> disbursement/ workshops	GVT/ADF	06/2006	08/2006
Launching Mission	ADF/Partners	06/2006	08/2006
Preparation of shortlist and BDs	PIU	06/2006	12/2006
Establishment of Accounting System/Procedures Manual	Consultant/PIU	12/2006	02/2007
Activities start-up	GVT/PIU/Partners	06/2006	08/2006
Technical and financial supervision	ADF	Every 6 months	
Mid-term review	ADF/PIU/Consultants	06/2008	07/2008
Accounts auditing	Consultant	06/2007	06/2010
Completion report mission	ADF/Partners	10/2010	12/2010

## 5.4 Procurement Arrangements

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

**Table 5.2**  
**Procurement Arrangements (UA million)**

	NCB	Other	Shortlist	Non-ADF financing	Total
<b>1. Works</b>					
1.1 Construction of buildings	0.34 [0.34]			0.57	0.91 [0.34]
1.2 Work on state and community plantations		3.60 [3.24]			3.60 [3.24]
1.3 Agroforestry and water and soil conservation works		0.16 [0.15]			0.16 [0.15]
1.4 Production of forestry and agroforestry seedlings	1.60 [1.60]				1.60 [1.60]
<b>2. Goods</b>					
2.1 Vehicles	0.17 [0.17]			0.20	0.37 [0.17]
2.2 Computer and office equipment	0.40 [0.40]				0.40 [0.40]
2.3 Agric-equipment	0.03 [0.03]				0.03 [0.03]
2.4 Agric inputs		0.19 [0.19]			0.19 [0.19]
<b>3 Services</b>					
3.1 Training/sensitization			0.65 [0.65]		0.65 [0.65]
3.2 Supervision by NGOs			0.47 [0.47]		0.47 [0.47]
3.3 Studies			0.03 [0.03]		0.03 [0.03]
3.4 Short term consultancies		0.21 [0.21]			0.21 [0.21]
3.5 Auditing			0.09 [0.09]		0.09 [0.09]
3.6 Technical assistance			0.39 [0.39]		0.39 [0.39]
<b>4. Miscellaneous</b>					
4. Personnel		0.29 [0.29]		0.01	0.30 [0.29]
6. Operating		0.75 [0.75]		0.29	1.04 [0.75]
Total	2.54 [2.54]	5.20 [4.83]	1.63 [1.63]	1.07	10.44 [9.00]

**Note:**

- The shortlist applies only to the use of consultants.
- "Other" refers to LCB, Community-base contracts, local or international shopping, direct negotiation or force account.
- The figures in brackets concern amounts financed by the ADF.
- Non-ADF financing: financing by the Government according to its procedures.

5.4.2 The national procurement laws and regulations concerning in Burundi were examined and deemed acceptable.

5.4.3 Works: Building construction works of an amount of 0.34 million and production of forest and agro-forestry seedlings of a total amount of UA 1.60 million will be procured according to national competitive bidding procedures. Works in the state and communal plantations (planting and maintenance of young seedlings, opening and maintenance of fire breaks annual opening of access tracks and fire breaks of an amount of UA 3.60 million, agroforestry and water and soil conservation (contour bunds and erosion control ditches) of a total amount of UA 0.16 million will be procured according to community-based procurement procedures. Works will be implemented using labour-intensive works method with the participation of the beneficiaries, within the framework of agroforestry and soil and water conservation works, in the form of local materials and labour.

5.4.4 The community-based procurement procedures will be defined in a procedures manual which will be proposed by the Government and must be approved by the Bank before its implementation. Compliance with the ADF procurement rules, notably the Guidelines for Procurement under Community-based Investment Projects will be required in the provisions of this manual.

5.4.5 In view of the many small contracts which will be treated as Community-based procurements and the need to speed up implementation of Community-based infrastructure, the contracts relating to the procurement of works of a maximum amount of UA 35,000 will be approved by the project team and will be subject to ex post examination by the ADF. The procurement documents including requests for price lists, the evaluation and contract award forms will be kept at the Department of Forestry for periodic examination by supervision missions. Information on the procurement process will be collected by the implementation team each quarter and will be incorporated in the quarterly project status report to be submitted to ADF.

5.4.6 Goods: Vehicles and the motorcycles, for an amount of AU 0.37 million, office furniture, equipment (computer equipment, photocopies, fax and telephone) for a total amount of UA 0.40 million and farm equipment for a total amount of AU 0.03 million will be procured according to national competitive bidding / NCB procedures. Suppliers are available locally and the nature of the goods and the maximum amount of each contract (UA 50,000) will not attract foreign firms. The supply of improved seeds and citrus fruit seedlings of an amount of UA 0.19 million will be done on the basis of an agreement with ISABU and specialized and seed centres. The latter are the only organizations capable of providing quality seeds and seedlings.

5.4.7 Services: The services of service providers in charge of the training and sensitization for an amount of UA 0.65 million, supervision for an amount of UA 0.47 million, technical assistance for an amount UA of 0.39 million, studies for UA 0.03 million and annual audit for an amount of UA 0.09 million will be procured on the basis of a short list. The preferred procedure will be that based on the technical evaluation with price consideration. The short-term consultancy ranging from a few weeks to one or two months, of a total amount of UA 0.21 million will be procured according to the direct negotiation procedure.

5.4.8 Miscellaneous: The contractual personnel of the project for an amount of UA 0.29 million will be recruited according to a competitive procedure. Their allowances will be financed by the ADF. The various supplies necessary for the operation of the project, for an amount of UA 0.75 million, will be procured through local shopping, the amount of each contract not exceeding UA 20,000.

5.4.9 The text of a general procurement notice adopted with the Government of Burundi will be issued for publication in *Development Business*, once the Board of directors approves the grant proposal.

5.4.10 Review procedures: The following documents will be presented for consideration and approval by the Bank before publication: i) specific procurement notice; ii) bidding documents or invitation letters to Consultants; iii) evaluation reports on the bids of contractors and suppliers or consultants' proposals including recommendations on contract awards. The prior opinion of the Bank on the technical analysis report on bids relating to consultants is necessary; iv) Draft contracts, where they have been amended and incorporated in the competitive bidding documents.

## **5.5 Disbursement Arrangements**

5.5.1 The Grant resources will be managed in accordance with the rules of procedure of the African Development Fund (ADF). The resources intended for the operation of the project will be deposited in a special account opened in the Bank of the Republic of Burundi (BRB). This account will be provisioned by an initial payment on the basis of a programme of expenditure covering four months of activities, drawn up by the executing agency and previously approved by the Bank. It will be replenished periodically, on presentation of a request and justification of compliance with Bank procedures. Disbursements under the procurement of goods, services and works will be released by direct payment to suppliers, service providers and the contractors concerned.

5.5.2 The ADF funds intended for the operation of the project and the government counterpart funds will be placed in two accounts opened for that purpose at the Bank of the Republic of Burundi (BRB). The special account and the account intended to receive the counterpart funds of the Government will be subject to an annual audit just as project activities. Financial management and project accounting will be managed using the professional software which will be acquired at project start-up. The project budget will be managed and monitored by expenditure category.

## **5.6 Monitoring and Evaluation**

5.6.1 Internal Monitoring and Evaluation of project activities which is ongoing, will be carried out by the team set up for this purpose at the Department of Forestry and composed of monitoring and evaluation officers, under the supervision of the project manager and with the support of the technical assistance, and the ministries concerned with project activities. To that end, there will be monitoring of the activities and outputs based on project matrix contents. There will be a special focus on monitoring environmental impacts as well as measures taken for their mitigation and the socio-economic impacts on the target groups (men and women). To this end, the project will carry out, at start-up a basic gender-disaggregated socio-economic survey to determine the preference situation of beneficiaries and define the performance indicators to be followed. A continuous monitoring of the effects and impacts of the project on target groups will thus be conducted through the constitution of representative sample of men and women beneficiaries in each province. Two other surveys will be conducted in the 3<sup>rd</sup> year and the last year of the project to assess the performance and impact of the project on the basis of the various indicators selected.

5.6.2 Monitoring and evaluation will also cover the implementation rate for infrastructure and works; effective involvement of the NGOs and grassroots communities; the use of human, financial and material resources of the project. A detailed schedule of the various works envisaged and training will be drawn up for the entire duration of the project, and will be evaluated regularly within the framework of the quarterly status reports to which it will be appended, for submission to the Bank.



5.6.3 An information and management system will be set up for the management of monitoring and evaluation information. This system will comprise: (i) a gender-disaggregated database containing project logical framework data, details of activities of the different components, details of outputs, information on beneficiaries, goods and services procurement, socio-economic data, environmental situation, etc. ;(ii) an information system for the tracking of the various project interventions and the socio-economic characteristics of the sites and beneficiaries (men and women) of the project, and (iii) a management chart permitting the monitoring of the key performance indicators of the project for better planning of its activities. Quarterly reports on the implementation status of the project, comprising pertinent information provided by the information system, will be prepared by the monitoring and evaluation team and communicated regularly to the stakeholders concerned (Bank, Steering Committee, ministries concerned, etc.).

5.6.4 External monitoring and evaluation: It will be carried out by an external technical monitoring and evaluation committee of the project, composed of the Directorate-General of Regional Planning, the Environment and Tourism (Chair), officials of the National Institute for the Environment and Nature Conservation (INECN), the Department of the Environment and the Department of Monitoring/Evaluation of the Ministry for Agriculture and Livestock. These structures will see to coordination of the various interventions, on the one hand, and will ensure agreement between the national objectives and those of the project, on the other hand, in order to propose adjustments where necessary. This committee will carry out missions to the field and draw up monitoring reports recommending the actions to be implemented to remove any constraints noted and to improve project impacts. This monitoring report must be communicated to the ADF for information. In addition to the two supervision missions of the Bank envisaged per year; during the third year of implementation, a mid- term evaluation of the gains of the project compared to the objectives set is also envisaged

5.6.5 Reporting: The Department of Forestry will submit to the Bank the following reports: (i) quarterly status reports, (ii) annual reports, (iii) annual financial reports, (iv) mid-term review report and (v) a project completion report which will be presented at the Bank at the end of the project. It will provide a half-yearly report on the monitoring of the other cross-cutting issues.

## **5.7 Financial and Audit Reports**

The financial service of the project will have an accounting system for all activities. It will keep separate accounting registers where all the expenditure incurred by the ADF and the government counterpart funds will appear clearly. Consultants will be recruited in the first year (i) to prepare a manual of administrative, accounting and financial procedures and to set up a computerized financial management system, and (ii) prepare a Community-based investment procurement manual. External audit firms will be recruited to audit and validate once per year the accounts, the revolving fund and the project accounts of the project. The audit reports are submitted to the Government and ADF, six months following the end of the financial year concerned. Non-submission of the audit report will entail suspension of disbursements.

## **5.8 Aid Coordination**

5.8.1 During the preparation of this project, the actions envisaged were discussed in detail with all the financial partners represented in Bujumbura and intervening in most cases in the forestry and environmental subsector. The actions of all these partners are complementary and the ultimate objective remains one and the same, namely poverty reduction and environmental protection. Their experiences and the lessons learnt from the implementation of similar projects were taken into account in developing the project (cf para. 4.13 and 4.1.5)

5.8.2 A Government/Development Partners Partnership Framework relating to budgetary supports, was initiated by the European Union, Belgium, France, UNDP and World Bank. This framework, which was signed by the Government, aims at increasing aid effectiveness, notably through: (i) the strengthening of dialogue between the Government and its partners in order to take into account the priorities of the Government as stated in the PRSP; (ii) the convergence of the partners procedures; (iii) coherence and complementarity between the conditionalities of the various donors, by retaining in the budgetary support programs the criteria and indicators contained in the PRSP, PRGF, the reform program and the sectoral policy documents; (iv) improvement of the predictability of flows of the budgetary support of partners; and (v) capacity building for the economic and financial administration of Burundi.

5.8.3 To achieve the goals of the Partnership Framework, the donors invited the Government to organize concomitantly public finance and PRSP reviews. Following such joint evaluations, the signatory partners will present to the Government a common memorandum clarifying their views and their recommendations. During the dialogue which will follow, the stakeholders will have to reach a consensus on the evaluation of the Government's performance regarding poverty reduction and public finance reforms. The Bank has signed the Partnership Framework jointly with the other development partners. This Partnership Framework will also permit consultation on the sector interventions of the different donors. Thus, interventions in the forestry and environmental sub-sector will be coordinated between the partners at the level of the Directorate-General for Regional Planning, the Environment and Tourism. This project is fully in keeping with the actions of the other donors and will complement the different ongoing, or planned actions.

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

6.1 Recurrent costs: The recurrent costs are estimated at UA 1.69 million of which UA million financed by the ADF, UA 0.36 million by the Government and 0.08 by beneficiaries during the five years of the project. They include the maintenance of project buildings, materials and equipment and vehicles, and personnel wages. At the end of the project, the Government will finance only the maintenance costs of the equipment and the wages of the supervisors of State woodlots. The project personnel other than civil servants on secondment will not entail recurrent expenses as they will be recruited according to contracts of specified duration not exceeding the duration of the project. The recurrent expenses after the end of the project, estimated annually at BIF 155 million, will be financed by the Extraordinary Investment Budget (EIB) provisioned with regard to the forest sub-sector mainly by : (i) revenue from forest taxes; (ii) revenue from the authorizations to transport wood and other forest products; (iii) thirty percent of the amount of the fines and forest transactions; (iv) thirty percent of the amount of the revenue from felling; (v) revenue from wildlife exploitation (vi) State subsidies and (vii) donations and legacies. The revenue generated by the various taxes is estimated at BIF 350 million. The trend of recurrent expenses during the five years of the project is shown in the table below:

**Table 6.1**  
**Trend of Recurrent Costs by Financing Source (in UA million)**

Financing Sources	2006	2007	2008	2009	2010	Total
ADF	0.21	0.28	0.27	0.25	0.24	1.25
Government	0.04	0.04	0.08	0.10	0.10	0.36
Beneficiaries	0.00	0.00	0.00	0.04	0.04	0.08
Total Recurrent Costs	0.25	0.32	0.35	0.39	0.38	1.69

## 6.2 **Project Sustainability**

The project depends on the sustainability of its activities. Indeed, the objective is to restore vegetation cover on the watersheds while protecting soil fertility, agricultural, pastoral and forestry production. The beneficiaries will directly take part in planning and implementing all the activities of the project. Such involvement of the populations and their role in the management of community plantations is likely to guarantee the sustainability of the actions, enhance their capacities to protect the environment and obtain additional resources. The revenue generated by forest taxes will enable the Government to regularly monitor and maintain the project's forestry and environmental management outputs and to consider major actions for the protection of watersheds and the environment in general. The envisaged training of the population and forestry officials will build their capacities and will create the conditions for sustainable development of the subsector, by fostering the emergence of groups and more dynamic producer associations and forest professionals better equipped to ensure sustainable management of the resources. The experience gained in the implementation of the Bukinasazi Reafforestation Project and other similar projects shows that the adhesion of the populations to the Watershed Management Programme constitutes the guarantee of the sustainability of the actions. The developments which will be carried out at the request of beneficiaries, will use simple techniques that are adapted and easily grasped by the populations.

## 6.3 **Key risks and Mitigative Measures**

The key foreseeable risks are as follows:

- a. *The fragility of the peace process both at the domestic and subregional level* constitutes a major risk which could, in general hamper, the proper implementation of the strategy of the Bank in Burundi and limit project impact. While there has been significant progress in terms of consolidation of the democratic process, internal peace remains fragile. The implementation of the PRGF in 2004, considered satisfactory by two IMF/IDA/ADB joint reviews, in spite of the political context and strong social pressure, constitutes a mark of the determination by the Government to restore the fundamental balances of the economy. The will of the Government to consolidate peace as well as the support envisaged by the international community should make it possible to create the conditions for satisfactory implementation of Bank assistance in Burundi;
- b. *Climatic risks, notably drought*, which has disturbed the country's ecological balance in past years may constitute a risk for the success of the activities, in particular the plantations and agroforestry activities. With the water control actions envisaged from hillside reservoirs and soil erosion control measures, this risk could be mitigated;
- c. *Weak institutional capacities also constitute a risk which could hinder achievement of the project objectives.* This risk can be mitigated with the support of several development partners in the sector. The extent of the weakness of capacities as well as the immense needs in this field is one of the justifications for the capacity building component. This risk will be mitigated by the sensitisation, supervision and training programs envisaged by the project.

## **7. PROJECT BENEFITS**

### **7.1 Financial analysis**

7.1.1 The project will contribute substantially to the improvement of beneficiaries' incomes through the rational, constant and sustainable use of the forest resources and the development of income-generating activities. The estimated forest operating accounts were established for a standard holding of one hectare of *Eucalyptus* plantation and additional revenue generated by *Grevillia*, and *Cedrela*, whose detailed tables appear in the working paper. The comparative analysis of the situations with without project shows that the income of the forest owners increased. This increase compared to the situation without project is BIF 1.09 million. The forestry activities induced by the project will also generate additional levies estimated at BIF 350 million.

7.1.2 With regard to the agricultural crops, the project will concern a total of 750 farms (that is a surface area of 600 ha at a rate of 0.8 ha per holding and will contribute to the improvement of the incomes of project beneficiaries. Three farm models were established: model 1 predominantly banana (banana sub- system), model 2 predominantly citrus fruits (citrus fruits sub-system) and model 3 predominantly avocado (avocado sub-system). In year 5 of the project, the net margin for the standard banana farm will rise from BIF 2,132,563 (without project) to BIF 4,395,732 (with project), that is an additional margin of BIF 2,263,169. The net margin for a standard citrus fruits farm will rise from BIF 2,388,296 from BIF 2,320,963 to BIF 5,023,865 or a margin of BIF 2,702,903. The percentages of increase net margin are 106% for model I (banana type), 118% for model 2 (citrus fruits type) and 116% for model 3 (avocado type).

### **7.2 Economic analysis**

7.2.1 An economic analysis was conducted on the basis of comparison between the situation without project and the situation with project. The economic benefits of the project will result from the rise in firewood, lumber and timber production as well as from agricultural crops following intensification, namely banana, citrus fruits, avocado, maize, beans, potatoes. With the project, the additional forest productions are 2.02 million m<sup>3</sup> for *Eucalyptus*, 1.12 million m<sup>3</sup> for *Grevillia* and 0,3 million m<sup>3</sup> for *Cedrela*. As concerns agricultural crops, the additional production is estimated at 9,875 tonnes on the whole including 2,800 tonnes of bananas, 1,700 tonnes of citrus fruits, 1,350 tonnes of tomatoes. From the peak year (5<sup>th</sup> year of the project), these additional productions will contribute to food security and poverty reduction in the six provinces covered by the project. The incomes with project stand at BIF 839,155,318 compared to the incomes without project of BIF 375,335,518 that is additional incomes of BIF 463,819,800. The average income per capita stands at BIF 761,474 per year.

7.2.2 The project will benefit the country's economy through other effects that are more difficult to quantify in particular soil and water conservation, improvement of the working conditions of the Department of Forestry, the safeguarding of the forest heritage, the protection of watersheds and the constitution of a body of supervisors specialized in the field of the forest resource management, as well as the improvement of farming techniques and the use of appropriate technologies of soil fertilization by farmers of the project. The economic impact of the project was also assessed according to the number of jobs generated and the total amount of wages paid. The manpower utilization standards are based on the labour-intensive method. The distribution of employment throughout the production-exploitation-processing (33 years) cycle, according to ILO standards, shows that approximately 28,600 jobs will be created. The wages paid will be approximately BIF 5,6 billion.

7.2.3 The evaluation of the contribution of the project to the national economy is based on the following assumptions: (i) an evaluation of the net benefits of the project is estimated over a 33-year period; (ii) expenses include investment costs, operation and maintenance costs of the infrastructure, cost of renewal of the equipment and the additional variable costs of the standard unit selected; (iii) the cost of investments, renewal of equipment and the prices of the forest products used are constant prices (excluding taxes, customs duties, physical contingencies and price increases); (iv) the cost of management of State plantations were estimated at a quarter of their value insofar as these woodlots are public property and, in general, are the responsibility of the State. Moreover, the training and the activities relating to institutional support were excluded from the costs of the project as the benefits arising directly from these activities cannot be easily quantified in monetary terms; (v) the economic prices used are the financial prices because the products are not subject to international transactions; and (vi) physical and financial contingencies were not taken into account in the economic costs of the project. In terms of profitability, the project posts an economic rate of return (ERR) of approximately 15%, and the net present value (NPV) is BIF 4.2 billion at a 12% opportunity cost of the capital.

### **7.3 Impact Analysis of Cross-cutting Aspects**

7.3.1 Poverty reduction: The actions envisaged under the project will involve an increase in net average income of supervised farmers of BIF 63,456. This increase in incomes will relieve the poorest populations of the project area who will then be able to bear certain expenditures on food, health and education. The project will induce 28,600 temporary jobs in State and community plantations, water and soil conservation and of food crop production. The project will foster the promotion and enhancement of the capacities of producer associations (men and women) and the promotion of private woodlots. This situation will lead to an improvement of the socio-economic indicators and a significant reduction of the incidence of poverty. Income-generating activities such as bee-keeping, market gardening and fruit growing will contribute to economic growth, and notably to the wellbeing of women and children.

7.3.2 Gender: Women will greatly benefit from the actions financed by the project through full or part-time employment, the training provided to associations and farmers (of whom 40% women) and their participation in the local coordination committees in the provinces. Moreover, the marketing of forest and food products will enable them to improve their incomes and their living conditions, while safeguarding the environment. Women will benefit from training by specialized structures which will enable them to be connected to networks of savings and loan institutions in order to finance gainful activities and increase their household incomes, but also, to generate investments conducive to better integration in the market economy.

7.3.3 Participatory approach and local governance: The participation of all stakeholders will result from: (i) the creation of the capacity of self-management of the forest and pastoral resources and community woodlots; (ii) the increased empowerment of farmers and the development of human resources leading to a better organization of the sub-sector and (iii) participation in environmental protection, in particular that of the sensitive areas (bare hillsides and watersheds). The involvement of beneficiaries notably women in decision-making at the level of the committees, groups and associations will foster good local governance. Lastly, the involvement of several producers and other operators upstream and downstream of the project (nursery gardeners, seed multipliers, forest owners, wood and charcoal traders and transporters) will foster the promotion of the private sector, which will lead to a distribution of additional incomes to men and women.

## 7.4 Sensitivity Analysis

7.4.1 A sensitivity analysis was conducted based on a number of assumptions: (i) increase in project cost; (ii) reduction of the additional project benefits due either to decline in the outputs considered, or to that of product prices; (iii) the occurrence of the two assumptions made, i.e. reduction in profits and increased costs; and (iv) delay of two years in starting exploitation. Sensitivity tests conducted, show the following results.

<u>Situation</u>	<u>ERR</u>
Increase in project costs of 10%	14.7%
Lower outputs entailing a reduction in profit of 10%	14.1%
Increase in costs and reduction in profit of 10 %	13.8%
Two-year delay in starting exploitation	12.9%

7.4.2 These sensitivity tests lead to the conclusion that the project remains viable in spite of the increase in expenses. The sensitivity of the ERR to a fall in revenue will be mitigated by constant monitoring of the implementation of all project actions in order to maintain its expected peak production level.

## 8. CONCLUSIONS AND RECOMMENDATIONS

### 8.1 Conclusions

8.1.1 The Burundi Watershed Management Project falls within the framework of the Bank's operations strategy for Burundi, as well as the Government's development programme. Indeed, the sector constitutes a priority of the interim Poverty Reduction Strategy Paper (I-PRSP), which reflects the long-term development vision of the Government, the principal objective being the promotion of strong growth and poverty reduction. The actions envisaged aim at reversing the trend of soil and forest resource degradation by creating State woodlots on bare hillsides, protecting the soil against effects of erosion by setting up erosion control works, involving the populations in integrated development of watersheds and by the practice of agroforestry and other income-generating activities providing them financial resources required for other needs. The project constitutes a major instrument of implementation of the national strategy as regards natural resources management, environmental protection and capacity building.

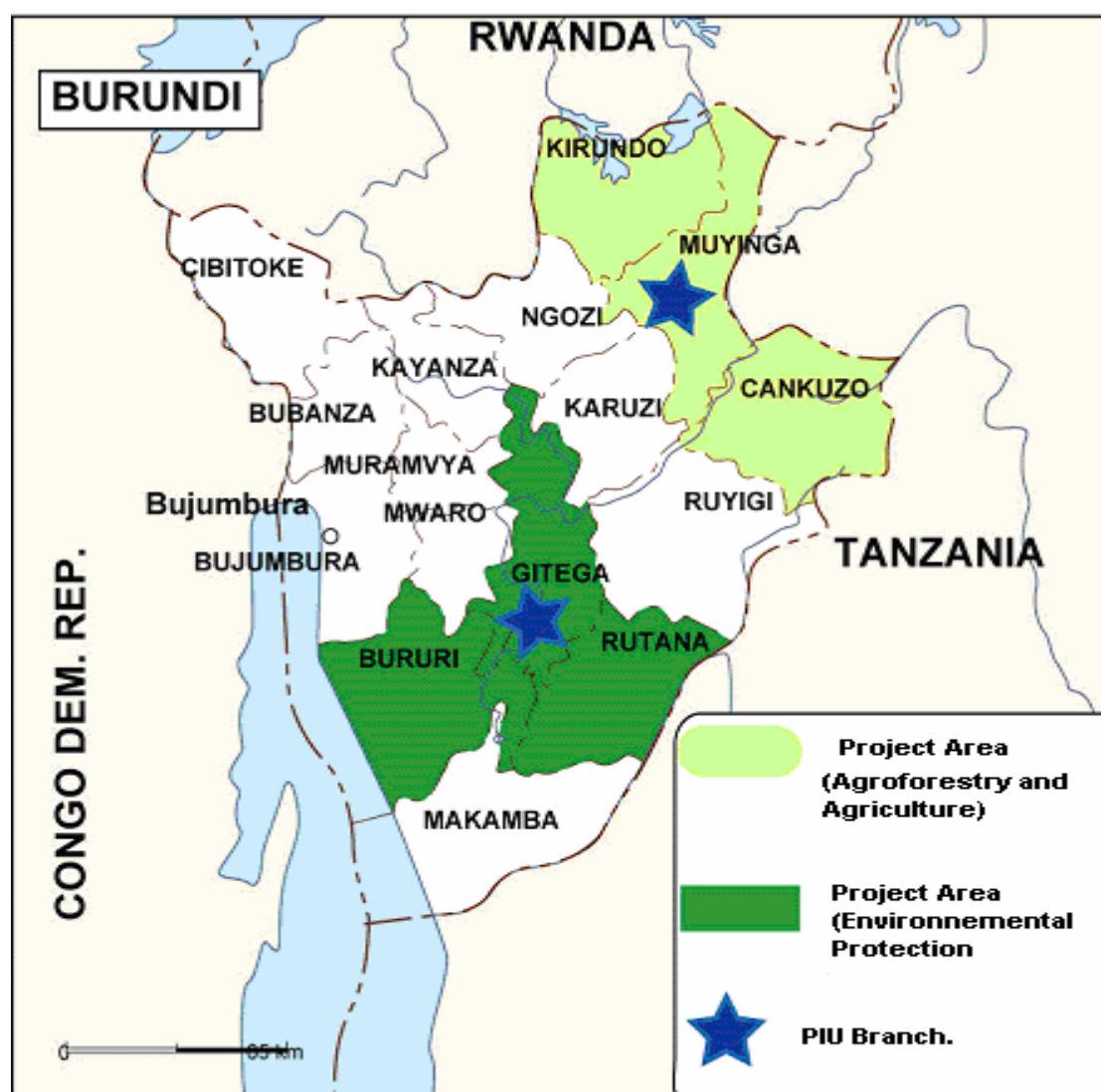
8.1.2 The project will help build national capacities in sustainable management of forest and pastoral resources through the training of 2,000 smallholders in agroforestry and erosion control, study trips for 50 smallholders, the sensitization and supervision of 46,800 smallholders in agroforestry activities, development of fodder species and diversification of production in their holdings. The project, in addition to environmental protection, will contribute to an increase in the forest production by the creation of 15,000 ha of State plantations, 1,800 ha of community woodlots and 3,750 ha of private woodlots. It will contribute to an annual increase in the incomes of the populations estimated at BIF 761,474. At full development, (5<sup>th</sup> year), an additional 9,875 tonnes of food and market-gardening crops will be produced. The other benefits of the project lie in the creation of 28,600 jobs of which 11,400 for the benefit of women, the protection and improvement of 5,800 ha of natural pastures through agro-silvo-pastoral integration, as well as the rehabilitation of 35km of old tracks in a state of degradation and the opening of 100 km new tracks in the new plantations. As designed, the project is technically feasible and financially, economically, socially and environmentally viable. The rate of return is approximately 15%.

## **8.2        Recommendations**

In light of the foregoing, it is recommended that an ADF grant not exceeding UA 9 million should be awarded to the Republic of Burundi for the financing of the project, as described in this report, subject to the following conditions precedent to first disbursement:

- (i) Provide ADF with evidence of the appointment of a Project Manager/ Forestry Engineer; two Branch Heads/ Forestry Engineers, an Agro-forestry Engineer whose qualifications and experience shall have been previously approved by the Fund (Para 4.5.18);
- (ii) Provide ADF with evidence that the Government has made available the facilities of the Bukirasazi Reafforestation Project in Mahwa to accommodate the project team in Mahwa and Muyinga (Para. 4.5.18).

**BURUNDI : WATERSHED MANAGEMENT PROJECT (PABV)**  
**MAP OF PROJECT AREA**

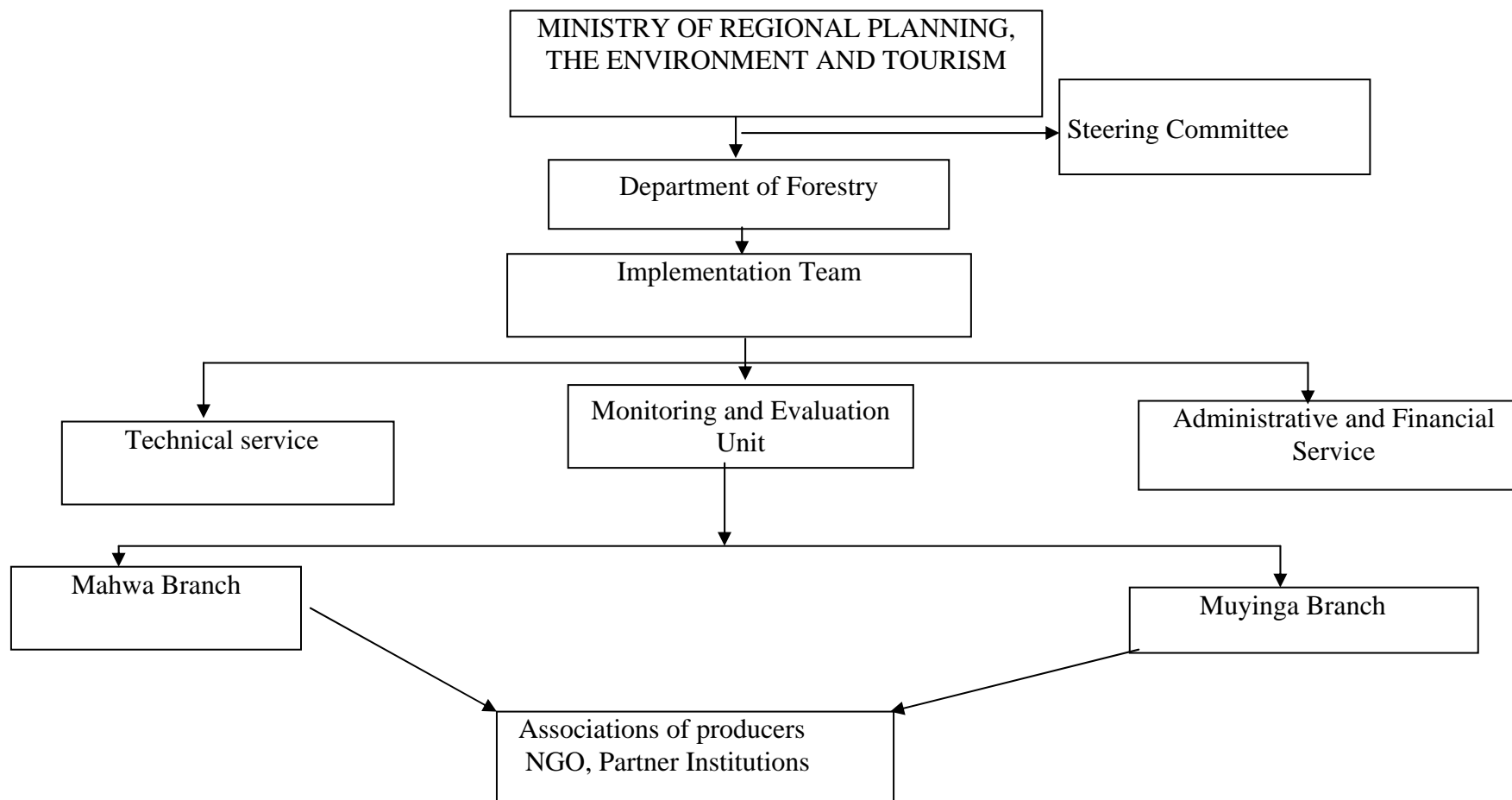


This map was drawn by staff of the African Development Bank Group for exclusive use by readers of this report. The names and boundaries shown on this map do not imply on the part of the ADB Group and its members, any opinion concerning the legal status of a territory or any approval or acceptance of its boundaries whatsoever.



**REPUBLIC OF BURUNDI**  
**WATERSHED MANAGEMENT PROJECT**

**PROJECT ORGANIZATION CHART**



**REPUBLIC OF BURUNDI**  
**WATERSHED MANAGEMENT PROJECT**

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

		<b>ADF</b>	
	<b>L.C</b>	<b>FE</b>	<b>Total</b>
Categories			
<b>I. Investment</b>			
1. Works	1.59	2.91	4.50
2. Goods	0.27	0.43	0.70
3. Services			
3.1 Training and sensitization	0.27	0.34	0.61
3.2 Supervision of NGOs	0.24	0.21	0.45
3.3. Studies	0.01	0.01	0.02
3.4 Short term consultancy	0.06	0.14	0.20
3.5 Audit	0.04	0.04	0.08
3.6 Technical assistance	0.00	0.38	0.38
<b>II. Recurrent Costs</b>			
4. Personnel	0.22	0.00	0.22
5. Operating costs	0.30	0.41	0.71
<b>Basic cost of project</b>	3.00	4.87	7.87
Physical contingencies	0.26	0.29	0.55
Price contingency	0.33	0.25	0.58
<b>Total project cost</b>	3.59	5.41	9.00

**REPUBLIC OF BURUNDI**  
**WATERSHED MANAGEMENT PROJECT**

**ECONOMIC RATE OF RETURN**

Years	Investment	Operating expenses	Supplementary operating income	Net supplementary income
1	2.698		81	69
2	1.189		147	116
3	1.078		247	231
4	1.040		300	347
5	1.039	50	354	463
6		50	354	463
7		50	444	646
8		50	444	831
9		50	444	1.014
10		50	444	1.014
11		50	444	1.014
12		50	354	463
13		50	354	463
14		50	444	3.888
15		50	444	3.888
16		50	444	3.888
17		50	444	3.888
18		50	444	3.888
19		50	354	463
20		50	354	463
21		50	354	463
22		50	354	463
23		50	354	463
24		50	354	463
25		50	533	13.836
26		50	533	13.836
27		50	533	25.255
28		50	619	25.255
29		50	619	25.255
30		50	354	12.556
31		50	354	12.556
32		50	354	12.556
33		50	354	12.556
<b>ERR</b>				<b>15.29</b>

**SUMMARY OF BANK OPERATIONS IN BURUNDI**

<b>PROJETS BY SECTOR</b>	<b>Window</b>	<b>Date of approv.</b>	<b>Date of signature</b>	<b>Date of closure</b>	<b>Amount approved (UA million)</b>	<b>Amount disbursed (UA million)</b>	<b>Disbursemen t rate (%)</b>	<b>Amount cancelled (UA millions)</b>	<b>Undisbu rsed amount (UA millions)</b>	<b>Status</b>
<b><u>RURAL SECTOR</u></b>										
1. Bututsi agro pastoral project	ADF	14/12/1988	28/5/1989	31/12/2007	6.46	2.77	42.95	0.0	3.68	Reformula ted in April 2005
<b><u>SOCIAL SECTOR</u></b>										
1. Multisectoral socio-economic reintegration project	ADF	13/12/2004	12/1/2005	31/12/2009	9,81	0.0	0.0	0.0	9.81	Ongoing
2. Emergency assistance against drought	ADF	29/6/2005	20/7/2005		0.34	0.0	0.0	0.0	0.34	
<b><u>INFRASTRUCTURE SECTOR</u></b>										
1. Rural water supply infrastructure rehabilitation and extension project	ADF	14/12/2005	-	-	12.00	-	-	-	12.00	Not yet effective
<b><u>MULTISECTOR</u></b>										
1. Economic reform and governance support programme (PAREG I)	ADF	8/12/2004	12/1/2005	31/12/05	6.72	6.72	100	0.0	0.0	Complete d
2. Support to structures in charge of governance	ADF	8/12/2004	12/1/2005	31/12/06	1.5	0.0	0.0	0.0	1.5	Ongoing
3. Institutional capacity building project	ADF	7/07/2004	17/9/2004	31/12/07	2.13	0.05	2.5	0.0	2.08	Ongoing

**REPUBLIC OF BURUNDI**  
**WATERSHED MANAGEMENT PROJECT**

**Terms of reference of the Project Manager**

**Title:** Project manager

**Qualification and experience:** The project manager who shall be a forestry engineer, shall have at least ten years' experience in national resource management in general and in the forestry sector in particular. Furthermore, he shall have experience in leading a multidisciplinary team.

**Duties:** The manager is responsible for the day-to-day management of the project. To that end, he organizes annual sessions for planning, control and monitoring of the implementation of the annual work schedule and its budget, in conjunction with the executing agencies. He will draw up a schedule of procurements and competitive bidding documents. He manages the special account and supervises the preparation of annual financial statements. He coordinates internal monitoring and evaluation. Within this framework, he defines specific simple, technical and organizational indicators for the entire project, using the indicators featuring in the matrix as a reference. Evaluation will notably cover, the rate of construction of the works and infrastructures, effective involvement of NGOs and socio professional organizations and efficient use of the human and material resources of the project.

The coordinator organizes external monitoring missions, periodic supervision missions and the mid-term review of the project.

The manager draws up quarterly and annual activity reports on the implementation status of the project and submits them to the Government and the ADF no later than 15 and 30 days respectively after the end of the quarter and the year concerned. He ensures that the different partners intervening as technical operators in the implementation of project components submit periodic reports on the project. At the end of the project, he will draw up a completion report according to the Bank model. The Manager shall ensure that the administrative and financial service of the project keep an accounting system for all activities, and that the following are prepared: (i) administrative, accounting and financial procedures manuals, (ii) computerized financial management system and (iii) community-based procurement manual. He shall ensure that external audit firms are recruited to audit and validate once a year, the accounting, revolving fund and accounts of the project. He shall see to the submission of audit reports to the Government and the ADF, no more than six months following the end of the financial year audited.

Lastly, the Manager shall ensure that project activities are harmonized with those of other donors in the sector.

**REPUBLIC OF BURUNDI**

**WATERSHED MANAGEMENT PROJECT (PABV)**

**Summary of the Environmental and Social Management Plan**

**1. Brief Description of the Project**

The project seeks to protect the watersheds against soil erosion by creating state plantations, improving soil fertility in farmlands by practising agro-forestry and increasing the wood potential through the establishment of community and/ or private woodlots. Its main outputs concern: (i) institutional capacity building for the Department of Forestry through the training of officers and technicians in forest management and erosion control techniques; (ii) training in forest fire fighting, water and soil conservation, agro-forestry, promotion of improved stoves as well as the promotion of fodder species and diversification of agricultural production in their farming units; and (iii) creation of forest plantations (state, community and private). Reafforestation activities will seek the protection of bare hillsides against erosion through the creation and upkeep of about 20,000 ha of state plantations, community and/ or private woodlots on approximately 20% of available land. Furthermore, labour-intensive works will be used to open new tracks / firebreaks on the one hand, and on the other hand, rehabilitate the forest tracks of the former Bukivasazi reafforestation project that are in a state of degradation. Actions aimed at stepping up the construction of erosion control works, improving pastures and appropriate farming techniques extension are envisaged. Hillside lakes will be provided to control water, notably in the market gardening perimeters. Furthermore, the project will foster the creation of hedgerows, planting of fodder species and production of organic manure which could be combined with liming material to improve soil pH.

**2. Key Environmental and Social Impacts**

2.1 The lack of alternative sources of income could result in a lack of strict adherence of the populations to the rules of silviculture, hence, the risk of yielding to the temptation of early exploitation of trees without waiting for their maturity and in the worst case by the clear-cutting (razing) of future communal plantations. This could lead to soil erosion worsening the effects of run-off, alteration of the process of decomposition of organic materials and of recycling of nutrient materials in the soil structure. Also to be envisaged is the impact on wildlife which would translate into the modification of habitat quantity and quality through its fragmentation by harvesting operations which could result in the flight of certain species or change their behaviour faced with the attacks on their environment. The adoption and popularization of simple forest management plans should contribute to reduce the practice of early exploitation of woodlots and non-compliance with the rules of silviculture.

2.2 Firebreak upkeep and track rehabilitation works could generate various nuisances (spread of dust and farms, opening of borrow pits, etc). The establishment of community woodlots could initially arouse great enthusiasm. In practice, however, it could happen that “communes” in a bid to ensure the success of their planting programmes would tend to increase their demand at the start of the season, but would be unable to fulfil their commitments at the time of planting. Hence, the need to persuade them to replant a moderate surface area (5 to 10 ha maximum) each year in order to be able to ensure indispensable upkeep (clearing of plantations, silviculture works and fire-breaks).

2.3 The judicious choice of reforestation species will be important, since it has been observed that species such as *Pinus patula*, would tend to choke off undergrowth and reduce the microbiological activity necessary for the evolution of the pedological profile of soils. They can however be effective in protecting the bare hillsides with rock outcrops. The reforestation of bare hillsides will play a major role in watershed protection, the reconstitution of forest resources and biodiversity, as well as the country's vegetation cover rate. The establishment of protection plantations in the form of community and private woodlots and erosion control works on hillsides will permit the protection of sustainable agriculture in wetlands, which contribute to the satisfaction of the populations' lumber, fuelwood and charcoal needs. The different watersheds development activities will translate into an additional production of bananas, beans, maize, tomatoes, onions and citrus fruits.

2.4 Involvement of the populations in all the activities through labour-intensive works will have beneficial effects at the socio-economic level, by improving their living conditions and ensuring better management of resources. However, manpower importation from one hill to another for the reforestation of hillsides within the framework of state plantations could weigh heavily on reforestation costs, but this would be mitigated by using the labour-intensive technique. The project will induce the creation of more jobs and permit the populations to be further involved in the management of watersheds and satisfy their daily wood product needs. The opening of forest tracks will facilitate the evacuation of agricultural produce and reduce risks of fire spread. The planting of fodder will provide feed for cattle and small livestock which would benefit the populations. The project will give women an important role enabling them to benefit from most of the agro-forestry, horticulture, bee keeping and market-gardening activities.

### **3. Optimization and Mitigation Programme**

3.1 Appropriate measures will be taken during the firebreak tracks opening and rehabilitation works in order to reduce the nuisances and avoid further degradation of existing vegetation or soil disturbance. In general, these soils suffer from an aluminic acidity (pH of 2 to 4), hence the need for liming and/ or organic fertilizer correction. In this regard, the integration of stockbreeding in the agricultural production system will be intensified. The project will foster the introduction of multipurpose agro-forestry species (fertilization, fodder production, fruits) such as the Australian Macadamia, *Moringa oleifera*, *Leucaena leucocephala* and Neem).etc. The choice of fast-growing species already known to the populations, such as *Callitris calcarata*, *Pinus patula*, *Pinus kesiya*, *Eucalyptus spp.*, *Grevilea robusta.*, *Cedrela spp.*, etc. could increase the chances of success of the operation. The opening of firebreaks and upkeep of existing tracks will permit the limitation of bushfire risks and favour the productivity of plantations.

3.2 The dangers of large-scale monoculture and reduction of biodiversity will be avoided by increasing the number of species planted. Priority will also be given to fast-growing species which are nitrogen-fixing in order to protect soils and improve their fertility. They could also benefit from the promotion of composting and manure pits aimed at increasing the availability of organic fertilizers. The agro-forestry species to be used for hedges are: *Acacia elata*, *Acacia longifolia*, *Acacia melnoxylon*, *Albizia lebbeck*, *Casuarina equisetifolia* and *Cassia siamea*, etc. The contour lines will be demarcated by herbaceous species such as *Setaria sphaculata*, *Tripsacum laxum* and *Pennisetum spp.*, and arbour species such as *Calliandra calothyrsus* and

*Leucaena leucocephala* on farms terracing. Community woodlots will be created close to state plantations and will be subject to participatory management regime known as “co-management” or contractual management, whereby there is a simple concerted development and management plan setting annual woodlot harvest quotas which establish a maximum margin for upkeep and restoration of the production potential for a 7 to 10 year-period. It is recommended that at the same time initiatives to reduce fuelwood consumption and save energy should be relaunched by revitalizing the use of improved stoves and promoting the use of wood substitutes (solar energy, gas, briquettes, etc.) in close collaboration with the competent services.

3.3 As part of market-gardening activities, the use of pesticides and other insecticides will be governed by the same ecological safety precautions as fertilizer use and must exclude lipid soluble products with long-term effects and that are highly toxic for humans. It is recommended that sufficient surface areas should be provided for the proper functioning of the system of hedgerows, combined with high-production fodder growing, development of agricultural by-product, notably by setting up storage units for hay and other products such as urea treatment and the acquisition of more appropriate packaging equipment. However, the use of fire for pasture regeneration within paddocks should be strictly circumscribed in order to avoid any wild spreads.

3.4 At the social level, the project team will identify in the field in consultation with local authorities, the appropriate forums for discussion of project aspects that are disturbing to the inhabitants and finding satisfactory solutions for all stakeholders. The team will also ensure that the disadvantaged segments of the population are not excluded from the decision-making process regarding revenue distribution on the basis of their respective levels of involvement in the implementation of the project.

#### **4. Monitoring Programme and Complementary Initiatives**

4.1 Environmental monitoring will be carried out by the Directorate for the Environment, which will ensure that the effective implementation of measures produces the expected outcomes based on the monitoring indicators previously defined through a short-term consultation. Specific indicators, such as soil quality, phenomenon of erosion, plant performance etc will be those concerned. Another service provider with the necessary tools and the competency will be required to conduct the actual evaluation of the effects of the mitigative measures as part of the monitoring and evaluation activities of the project. A budgetary allocation of BIF 110 million will be earmarked to cover environmental and social monitoring activities.

4.2 The table below shows the potentially pertinent indicators that may be used for monitoring project implementation. The specific indicators should be determined according to the project context, the major impacts, the costs and difficulties anticipated during data collection and processing.



<b><u>Component</u></b>	<b>Indicators</b>
Environmental or social	
Water	<ul style="list-style-type: none"> <li>• Recharge capacity and static level of ground water</li> <li>• Parameters of the <i>Guidelines for Drinking-water Quality</i> of the WHO for the evaluation of the physical and chemical characteristics of ground water and the quality of surface water (upstream, on the site and downstream)</li> <li>• Number of male and female workers trained in the safe use of chemical products</li> </ul>
Soils	<ul style="list-style-type: none"> <li>• Volume of sediments down stream of project area</li> <li>• Concentration of organic compounds in the sediments</li> </ul>
Ecosystems	<ul style="list-style-type: none"> <li>• Area of forest cleared along water ways</li> <li>• Surface Area of natural forest replaced through forest planting</li> </ul>
Vegetation	<ul style="list-style-type: none"> <li>• Number of indigenous and exotic species used</li> <li>• Per capita biomass</li> <li>• Annual volume of wood harvested according to diameter of trees</li> <li>• Regeneration rate per species</li> </ul>
Management of water resources and land	<ul style="list-style-type: none"> <li>• Number of social conflicts requiring legal or administrative interventions</li> <li>• Number of bush fires and surface area affected</li> <li>• Change in availability of forest products by category on local markets and during harvest, before and after the project (quantity and quality)</li> <li>• Total surface area lost for agriculture and stockbreeding</li> </ul>
Communicable diseases	<ul style="list-style-type: none"> <li>• Prevalence rate of malaria, STDs and zoonosis</li> <li>• Number of reproduction sites of disease vectors and vector density</li> </ul>
Non-communicable diseases	<ul style="list-style-type: none"> <li>• Prevalence rate of intoxication</li> <li>• Inventory of sites of exposure of workers, including pesticide storage sites</li> </ul>
Division of labour	<ul style="list-style-type: none"> <li>• Time spent by men, women and children in forest product management or harvesting, before and after the project.</li> </ul>
Income-generating activities	<ul style="list-style-type: none"> <li>• Proportion of income received and managed by men and women of families participating in the project before and after the project.</li> </ul>
Access to and control of factors of production	<ul style="list-style-type: none"> <li>• Women's level of satisfaction with investment decisions of the project and management methods (survey)</li> </ul>
Women's involvement in the social organization	<ul style="list-style-type: none"> <li>• Proportion of men and women involved in forest management committees.</li> </ul>

## **5. Institutional Arrangements and Capacity Building Requirements**

The implementation of mitigating measures and cushioning of the environmental and social management impacts of the Watershed Management Project will be participatory and will commit the responsibility of all stakeholders involved so as to ensure the sustainability of investments. The guidelines provided will therefore focus on: (i) coordinating and harmonizing environmental monitoring approaches adopted by the project and its different partners (other projects and programmes intervening in the same zone) and (ii) organizing consultations to ensure the division of responsibilities among the structures involved in the monitoring (research bodies, technical services, NGOs, local authorities, socio-professional organizations, etc.). To enable these institutions to be effectively involved in the implementation of the project and monitoring activities, the building of their capacities is envisaged. As such, the project will afford an opportunity for experts of these structures to upgrade their skills and raise their level of mastery of problems of development of stockbreeding and environmental management related to the implementation of the project.

**6. Public Consultations and Information Dissemination Requirements**

Project beneficiaries will be closely involved in the conduct of environmental monitoring. This will enable them to hold discussions with the project steering team on the impact of the activities and any readjustments to be carried out. The project management will conduct a sustained communication, consultation and sensitization drive, and must: (a) consult the men and women assigned to all phases of the project; (b) offer opportunities to all groups affected (men and women) to participate in consultations by proposing appropriate consultation mechanisms; (c) determine traditional behaviours with regard to rights and responsibilities in the domain of forestry and identify ways of increasing the involvement of excluded groups; and (d) inform project beneficiaries on how their concerns have been or will be taken into account.

**7. Cost estimates**

The main activities to be taken into account under the ESMP will be those concerning the setting of the reference situation on the reforestation sites in order to determine the specific impact indicators as well as the environmental surveillance and impact monitoring missions.

**Cost estimates of activities to be implemented under the ESMP**

<b>Description</b>	<b>Amount (BIF thousand)</b>
Definition of specific indicators of environmental monitoring	<b>10,000</b>
Environmental monitoring mission	<b>100,000</b>
Measurement of mitigating effects	<b>80,000</b>
<b>Total</b>	<b>190,000</b>