



REPUBLIC OF RWANDA
Ministry of Agriculture and Animal Resources

Strategic Plan for the Transformation of Agriculture in Rwanda – Phase II (PSTA II)

Final Report

February 2009

THE STRATEGIC PLAN FOR TRANSFORMATION OF RWANDAN AGRICULTURE

Table of Contents

Executive Summary	v
Acronyms and Abbreviations	xi
Part I. The Context, Challenges and Potentials	1
Ch. I.1. The Role and context of the Strategic Plan	1
I.1.1 The role of the Strategic Plan	1
I.1.2 The international and regional context	2
I.1.3 The political, economic and social context in Rwanda	2
I.1.4 National objectives and the Strategic Plan for Transforming Agriculture	3
Vision 2020	4
The Millennium Development Goals	5
The Economic Development and Poverty Reduction Strategy	6
I.1.5 Decentralisation and local development plans	8
I.1.6 The Rwanda agricultural policy and planning environment	9
The National Agricultural Policy	11
The Strategic Plan for Transformation of Agriculture in Rwanda, 2004	12
Project experiences	13
I.1.7 Complementary policies and programmes	13
Land tenure reform	14
Strengthening agricultural cooperatives	14
I.1.8 Strengthening linkages in the development process	15
Linkages in decentralization	16
Linkages between the Strategy and the budget process	18
Linkages between the Strategy and international cooperation	18
Ch. I.2. Principles of This Strategy and the Strategic Axes for Rwandan Agriculture	19
I.2.1 Guiding principles for development of the Strategy	19
I.2.2 The four strategic axes for Rwandan agriculture	20
Ch. I.3. Rwandan Agriculture Today	22
I.3.1 Overview of the agricultural sector	22
Land availability, farm sizes and soil erosion	22
Production, productivity and trade in agriculture	23
Summary of principal commodity chains	26
Sector institutions	30
I.3.2 Rural poverty, nutrition and the rural social situation	32
Poverty in rural areas	32
Food and nutrition situation	32
Role of women in agriculture	33
Peasants without land	33
Youth and their future in agriculture	34
I.3.3 Soil and water management and agricultural technology	34
Natural endowments and their management	34
Fertilizer and pesticide use	35
Improved seeds	37
I.3.4 Strengths and potentials of Rwandan agriculture	38
Ch. 1.4 Lessons Learned and Agricultural Objectives Revisited	39
Ch. 1.5 Methodology for Developing the PSTA	41

Part II. The Strategy and Its Programmes	43
Ch. II.1 Programme 1. Intensification and development of sustainable production systems	44
Objectives	44
Main constraints	45
Potentials and opportunities	46
II.1.1 SP 1.1 Sustainable management of natural resources and water and soil conservation	47
II.1.2 SP 1.2 Integrated development and intensification of crops and livestock	48
SP1.2.1 Crop diversification and intensification	48
SP1.2.2 Livestock development	52
II.1.3 SP 1.3 Marshland development	54
II.1.4 SP 1.4 Irrigation development	55
II.1.5 SP 1.5 Supply and use of agricultural inputs	56
SP1.5.1 Fertiliser and agrochemical supply and use	56
SP1.5.2 Certified seeds and other inputs	58
II.1.6 SP 1.6 Food security and vulnerability management	59
Ch. II.2 Programme 2. Support to the professionalisation of the producers	61
Objectives	61
Main constraints	61
Potentials and opportunities	62
II.2.1 SP 2.1 Promotion of farmer organisations and capacity building for producers	63
II.2.2 SP 2.2 Restructuring proximity services for producers	65
II.2.3 SP 2.3 Research for transforming agriculture	67
Ch. II.3 Programme 3. Promotion of commodity chains and agribusiness development	70
Objectives	70
Main constraints	70
Potentials and opportunities	70
II.3.1 SP 3.1 Creating a conducive environment for business and entrepreneurship development and market access	71
II.3.2 SP 3.2 Promotion and development of traditional exports	72
SP3.2.1 Coffee	73
SP3.2.1 Tea	74
SP3.2.1 Pyrethrum	74
II.3.3 SP 3.3 Development of non-traditional high-value export products	75
II.3.4 SP 3.4 Production and value addition for domestic staple products	76
II.3.5 SP 3.5 Market-oriented rural infrastructure	77
II.3.6 SP 3.6 Strengthening rural financial systems	79
Ch. II.4 Programme 4. Institutional development	82
Objectives	82
Main constraints	82
Potentials and opportunities	82
II.4.1 SP 4.1 Institutional strengthening and capacity building	83
II.4.2 SP 4.2 The policy and regulatory framework for the sector	85
II.4.3 SP 4.3 Agricultural statistics and ICT	85
II.4.4 SP 4.4 M&E systems and coordination of the agricultural sector	86
II.4.5 SP 4.5 The decentralisation programme in agriculture	87

Part III. Strategy Implementation and Financing	89
Ch. III.1 Implementing the Strategic Plan for the Transformation of Agriculture	89
III.1.1 The approach to implementation	89
III.1.2 Implementation priorities	90
III.1.3 The Strategy's logframe	92
III.1.4 Considerations for the SWAp	104
III.1.5 A note on PSTA I and PSTAII	106
Ch. III.2 Indicative Financing for the Strategy and Its Components	108
 Annexes	
Annex 1 Budget by Programme, Sub-Programme and Activity	109

Strategic Plan for the Transformation of Agriculture in Rwanda – Phase II

Executive Summary

This *Strategic Plan for Agricultural Transformation in Rwanda – Phase II* (PSTA II) document finalised in December 2008 has been developed in response to the need for an updated strategy for agriculture. The PSTA II covers the four year period 2009-2012, terminating at the same time as the *Economic Development and Poverty Reduction Strategy* (EDPRS) at the end of 2012.

The strategy document is structured as follows: this executive summary and three Parts. Part I covering the context, challenges of the strategic plan with chapters on (a) the role and context of the strategic plan, (b) principles of this strategy and the strategic axes for Rwandan agriculture, (c) Rwandan agriculture today, (d) lessons learned and agriculture objectives revisited, and (e) the methodology used for developing the PSTA. Part II follows on with details on the strategy and its programmes with chapters on each of the four programmes with details of the sub-programmes and activities under each major programme. Finally, Part III covers the strategy implementation and financing modalities. One annexe is appended on the detailed budget.

The Role and Context of this Strategic Plan

This strategy follows on from the first *Strategic Plan for Agricultural Transformation in Rwanda* (PSTA I) (October 2004), which was developed in a highly participatory way. The objectives of the PSTA II are to update the earlier document, bringing it fully into consonance with recent national strategies such as the EDPRS, the prospective long-term *Vision 2020* and the *National Investment Strategy*. Importantly, it also takes into account the Decentralization Policy of 2000, which seeks to involve local administrations more directly in the development process. The PSTA II serves to elaborate and develop the programmes, sub-programmes and activities that will lead agricultural development, and so will guide implementation as well as forming the basis for a Sector-Wide Approach (SWAp) in agriculture.

The realisation that Rwanda's economy, and poverty reduction efforts, depend primarily on the agricultural sector and particularly food crops, underpins the GoR's concerted efforts to maintain and increase the impressive performance of the agricultural sector, upon which poverty reduction relies. An average annual real growth rate of 5% was achieved between 1999 and 2005 and national policy and investment in agriculture demonstrate the commitment to maintain these levels of growth without compromising long-term sustainability or neglecting food security. Agriculture is explicitly recognised in the EDPRS as one of the four priority sectors that will both stimulate economic expansion and make the greatest contribution to poverty reduction – the other sectors being health, education and road maintenance.

Principles of this Strategy and the Strategic Axes for Rwandan agriculture

The drafting of the PSTA II and the programmes, sub-programmes and activities developed in this process, were guided by the 8 principles that underlie Rwandan agricultural sector policy. As national policies consider agriculture to be the main springboard for the fight against poverty, **poverty reduction** is the first of these principles. Agriculture is simultaneously the vehicle for raising rural incomes and spurring on progressive development in the secondary and tertiary sectors. In turn, the key to reducing poverty is **increasing productivity and competitiveness** and so is the second principle. The third fundamental principle guiding the Strategy is that resource allocations and production decisions must be **market driven**, as increased productivity and production cannot be realized unless decision-making is linked to the markets from which farmers returns are obtained. This means that government's role should focus on creating the necessary incentives and improving infrastructure, rather than attempting to generate growth directly. Given the unique challenges faced by Rwanda's agricultural sector, **environmental sustainability** is another essential principle. **Participation in and local ownership of activities**, the fifth principle, is

the only way in which durable agricultural transformation can be achieved, as farmers need to be convinced of the soundness of new approaches and technologies if they are to apply them on their fields. While government is only a facilitator in the process of agricultural transformation, its **institutional sustainability** needs to be increased, if it is to fulfil this role. The strategy must be **flexible and dynamic** as the policy environment, government structures and agricultural setting will continue to change. Finally, as the agricultural sector does not exist in isolation, it is also essential that the sector strategy is **sensitive to the issues of gender, youth and AIDS**.

Rwandan Agriculture Today

Rwanda's agricultural sector faces a set of unique challenges. Due to the country's high population density, land is a scarce commodity, while labour is Rwanda's most abundant factor endowment. As a result soil fertility has deteriorated dramatically over time, while fertiliser use, both organic and inorganic, remains low. Furthermore, much of Rwanda's land is at a high risk of erosion, not least because of the need of smallholders to cultivate slopes of up to 55% and to bring land under cultivation that is not suited to this purpose. Food crops remain dominant in the agricultural sector, although farmers are beginning to shift slightly towards higher value food crops, such as fruit and vegetables, rice, sorghum, maize, groundnuts and soybeans. While livestock is an important potential source of income, livestock numbers remain relatively low. The government has sought to address the low-levels of livestock ownership in the context of land scarcity through its 'One Cow Per Poor Family' programme, which has involved distributing heifers to poor families and ensuring that these are not grazed.

Agricultural export production continues to represent only a small percentage of production. The main export crops are, in order, coffee, tea, hides and skins and pyrethrum. Coffee and tea have growing international markets, but for the other export products the main markets are regional, with 68% of exports destined for Kenya and Uganda. The growth of coffee exports has been held back by fluctuating international coffee prices, but Rwandan producers are now moving into fully washed coffee (including fine and speciality coffees) for which they are gaining a substantial price premium. 2006 saw a marked increase in coffee earnings, and a further increase in coffee revenues is expected in 2008. International prices for a number of fruit and vegetable crops also appear to be attractive for Rwanda, if organizational and quality issues can be surmounted. Expansion of agricultural exports will be critical to achieving the EDPRS goal of sustained 7% growth in agricultural GDP. Rwanda's unique challenges, including small farm sizes and high rural poverty rates, make urgent the task of raising the value of production per hectare. Export products typically are very high in value per hectare.

Finally, Rwandan agriculture continues to be characterised by very low levels of input use, especially mineral fertilisers. Prior to this decade, the national rate of fertiliser consumption per cultivated hectare remained in the neighbourhood of 4kg – far below the average of 9 to 11kg/ha for sub-Saharan Africa, which still has the lowest fertiliser utilisation rate of any global region. Similarly, use of improved plant seeds remains low in Rwanda, with only 12% of households reporting use of improved seeds in 2005. Other farm inputs follow the same pattern as fertiliser and seed.

Rural Poverty and Social Conditions

Poverty remains a major national concern and a challenge for public policy and programmes. It is most extreme in rural areas where many families are forced to reduce their food intake between harvests. The commitment to poverty reduction has resulted in a slight decline in national poverty rates between 2000/01 and 2005/06, although this was largely the result of improved living standards in urban areas. Improving rural livelihoods has proven a challenge due to an increase in the number of rural households dependent on scarce wage labour opportunities for survival, partly due to increasing land shortages.

In terms of gender equality, heavy burdens continue to be placed on women, who are responsible for the majority of food crop production. Furthermore, certain activities, such as manuring and managing livestock are also mainly done by women and boys.

Lessons from Recent Experience

A number of lessons have been learnt in the course of implementing the PSTA I. Most importantly, product quality, as well as quantity, will have to increase if Rwanda's products are to compete on the international market. The ability to penetrate markets for higher-value products would otherwise become a constraint on future growth. In order to achieve this, soil erosion will need to be curtailed, and experience has shown that this means not only building structures, such as terraces, but also investing in soil restoration activities. Increasing the use of fertiliser is one way of doing this; however, an important lesson learnt is that this is not only a supply-side challenge, but also one of generating demand and creating sustainable distribution channels. Extension and research is one way of encouraging both of these things, but past experience has shown that extension and research needs to be demand-driven if it is to be relevant to farmers. Rural credit needs, which will arise out of the above, need to be met with sustainable, private financial mechanisms.

The last four or five years have also shown that public sector mechanisms that support emerging products need to be strengthened, including systems (such as for sanitary and phytosanitary controls), incentives (such as assisting with the cost of quality certifications), and provision of technical assistance and construction of handling and processing facilities.

PSTA I and PSTA II

The strategic and budgetary framework of the original Strategic Plan (PSTA I) has been adopted for this PSTA II; hence the four programmes under PSTA I remain unchanged. The bulk of the effort has been put into updating PSTA I, developing the sub-programme specifications more fully in a number of areas, and describing the activities in as concrete a manner as possible in the context of a medium-term planning document. This has been seen as necessary in order to facilitate implementation, and especially in order to promote the development of a SWAp with all its attendant agreements on co-operation in particular areas. This more detailed approach has required a few slight modifications of the structure and titles of the sub-programmes as they were originally conceived in PSTA I. The differences in the programme structures are summarized in Part III of this Strategic Plan.

PSTA II and the Four Programmes that Form its Basis

The **Overall Objective** of the PSTA II as detailed in the logframe is: *"Agricultural output and incomes increased rapidly under sustainable production systems and for all groups of farmers, and food security ensured for all the population"*.

The **Specific Objective** for the Strategy is to: *"Increase output of all types of agricultural products with emphasis on export products, which have high potential and create large amounts of rural employment; this under sustainable modes of production"*.

Agricultural development is determined by the way in which physical resources (land, water) and human capital are combined. Thus, in Rwanda, the fate of the agricultural sector depends on the integration of farming systems, farmer training, development of entrepreneurial capacities, and the strengthening of the supporting institutional framework. Accordingly, this Strategy develops agendas for action under the aegis of the following four interrelated Programmes:

- 1) Intensification and development of sustainable production systems.
- 2) Support to the professionalisation of the producers.
- 3) Promotion of commodity chains and agribusiness development.
- 4) Institutional development.

Summary of the PSTA II Programmes and Sub-Programmes

The four Programmes are divided into 20 Sub-Programmes and a total of 122 Activities. Details of the objectives for each Programme and their main Sub-Programmes are as follows:

1. Intensification and development of sustainable production systems

The objectives in this Programme are four-fold: (i) create needed soil and water management structures; (ii) demonstrate to farmers and villagers the benefits of soil fertility-enhancing technologies; (iii) increase ownership of livestock and improve and intensify animal husbandry practices; and (iv) improve cultivation practices and develop sustainable production systems. There are a total of six Sub-Programmes (with 40 specific activities) these being:

- SP1.1 Sustainable management of natural resources, water and soil conservation
- SP1.2 Integrated development and intensification of crops and livestock
- SP1.3 Marshland development
- SP1.4 Irrigation development
- SP1.5 Supply and use of agricultural inputs
- SP1.6 Food security, vulnerability management

2. Support to the professionalisation of the producers

The objectives of second Programme are to: (i) strengthen the sector's social capital base; (ii) provide producers with the organizational frameworks necessary to develop commercial linkages and function as entrepreneurs; and (iii) strengthen the entities in the sector charged with the development of productive technologies, applied knowledge and imparting this knowledge to farmers. There are a total of three Sub-Programmes (with 17 specific activities) these being:

- SP2.1 Promotion of farmers' organisations and capacity building for producers
- SP2.2 Restructuring of proximity services for producers
- SP2.3 Research for transforming agriculture

3. Promotion of commodity chains and agribusiness development

The overall objective of Programme 3 is to create, through institutional reforms, investments and incentives, an environment which is favourable for farmers and agro-entrepreneurs to develop high-value products, including processed products, and to access the markets which will justify the investments in those areas. There are a total of six Sub-Programmes (with 44 specific activities) these being:

- SP3.1 Creating an environment conducive to business and entrepreneurship development and market access
- SP3.2 Development of traditional exports
- SP3.3 Development of non-traditional high-value export products
- SP3.4 Production and value addition for domestic staple products
- SP3.5 Market-oriented rural infrastructure
- SP3.6 Strengthening rural financial systems

4. Institutional development

The overall objective of this Programme is to strengthen the institutional framework through which the public sector supports agricultural development. Although the private sector will be the engine of growth in the agricultural sector, the public sector needs to define a clear framework within which private sector initiatives can play their role and it needs to provide leadership through carefully crafted interventions that will catalyze private actions. The purpose of the actions defined in Programme 4 is to facilitate the task of the public sector and make its expenditures and interventions as effective as possible. There are a total of five Sub-Programmes (with 21 specific activities) these being:

- SP4.1 Institutional strengthening and capacity building
- SP4.2 The policy and regulatory framework for the sector
- SP4.3 Agricultural statistics and ICT
- SP4.4 M&E systems and coordination of the agricultural sector
- SP4.5 The decentralisation programme in agriculture

These four Programmes provide the framework for the planning and financing of interventions in the sector for both the GoR and its DPs, the majority of whom are, or will be, using the Strategy as the basis for programming their assistance to the sector and for aligning the activities they fund through the SWAp.

Indicative Financing of the Strategy and Its Programme Components

Budgetary implications of the Strategy are summarised in the Chapter III of this report. In total, its cost is estimated at approximately RWF 336 billion or US\$617.52 million. The largest single component is Programme 1, owing to the high cost of soil conservation and irrigation works. A disaggregated budget by activity is found in the Annex 1 at the end of the report. The budget summary by Programme and Sub-Programme is as follows:

Indicative Financing for the Strategy by Programme and Sub-Programme

Programme and Sub-Programme	Amount, USD
Programme 1: Intensification & development of sustainable production systems	741,663,955
SP 1.1. Sustainable management of natural resources and water and soil preservation	214,571,429
SP 1.2. Integrated systems of crops and livestock	154,238,626
SP 1.3. Marshland development	51,188,900
SP1.4. Irrigation Development	222,660,000
SP 1.5. Supply and use of agricultural inputs	56,655,000
SP 1.6: Food security and vulnerability management	42,350,000
Programme 2: Support to the professionalisation of the producers	91,950,157
SP2.1. Promotion of farmers' organisations and capacity building for producers	12,555,000
SP2.2 Restructuring proximity services	15,935,000
SP2.3. Research for transforming agriculture	63,460,157
Programme 3: Promotion of commodity chains and agribusiness development	114,095,933
SP3.1 Creating conducive environment for business development and market access	13,177,600
SP3.2 Development of traditional exports	37,180,647
SP3.3 Development of non-traditional high-value export products	9,820,000
SP3.4 Production and value addition for domestic staple products	13,744,686
SP3.5 Market-oriented rural infrastructure	18,573,000
SP3.6 Strengthening rural financial systems	21,600,000
Programme 4: Institutional development	19,520,000
SP4.1 Institutional strengthening and capacity building	11,450,000
SP4.2 The policy and regulatory framework for the sector	330,000
SP4.3 Agricultural statistics and ICT	5,190,000
SP4.4 M&E systems and coordination of the agricultural sector	1,050,000
SP4.5 The decentralisation programme in agriculture	1,500,000
TOTAL PROGRAMMES 1-4 OF PSTA II	967,230,045

Implementation of the PSTA II

As noted, the Strategy consists of Programmes and Sub-Programmes. The instruments for implementation of a sub-programme are: projects, regulatory or policy decisions or decrees, institutional changes (with or without a decree), and perhaps in some cases new legislation. The other instrument is voluntary cooperation of the private sector. A sub-programme may be implemented via a project or projects, or by a project in combination with the above instruments. Because of the multiplicity of instruments used for implementation, responsibility for overseeing the implementation process needs to be established first by Programme, then by Sub-Programme, and then by activity within each Sub-Programme.

The logframe presented in the Strategic Plan provides detailed benchmarks or performance indicators, many of them quantitative, which will assist in implementing the Strategy and monitoring its implementation.

In order to implement the PSTA II effectively, it will be necessary to set up an implementation Secretariat in MINAGRI with sector-wide responsibilities. The Secretariat will have managers for each of the four Programmes and additional staff so that there is clear responsibility for each of the 20 Sub-Programmes. Each person responsible for a Sub-Programme will draft the scope of work for the activities under that Sub-Programme, assisted by specialised consultants in some cases, as needed. The scope of work will include terms of reference for the persons who will be in charge of implementation at the field level. The scopes of work for the activities will include timetables for implementation. The managers who are responsible for Programmes and Sub-Programmes also will monitor progress on implementation, using the indicators suggested in the logframe and monitoring procedures described in this PSTA II.

In the case of decentralisation-related activities, it will be important to review and activate the Decentralisation Implementation Plan that has been developed through MINALOC. In that regard, a first step will be to review with local governments the menu of sub-programmes so that action lines can be selected for each District that conforms to local priorities as well as national priorities. Properly done, this procedure for implementing PSTA II should strengthen the decentralisation process.

PSTA II and the SWAp

The route to implementation of this Strategy requires development of a SWAp for the agricultural sector in Rwanda. A SWAp, or sector-wide approach, is an approach for coordinating expenditures in a functional sector, such as agriculture or infrastructure, when multiple government agencies and international partners supply the funding and participate in the design of policies and programmes. Agricultural development is a multi-faceted undertaking and by its nature involves policies, programmes and projects that touch upon distinct areas such as environmental management, infrastructure development, education, land tenure systems, financial systems, and so forth. A single Ministry such as MINAGRI cannot be responsible for all of the interventions that have a bearing on the sector's development. Yet MINAGRI has a vital interest and responsibility for helping coordinate those interventions in order to ensure that they respond to a fully articulated and internally consistent vision of the path to the sector's development, and so that duplications and inconsistencies in programme and project implementation are minimized.

A SWAp is a highly participatory process in which all interested parties come together to mesh their visions and operating modalities and budgets, in order to achieve the end result of a fully coordinated programme for the sector's development. From the perspective of international partners involved in the sector, a well functioning SWAp is one of the keys to making their contributions effective in promoting their stated aims.

A SWAp is characterised by: (a) leadership by the host country or organisation; (b) a single comprehensive programme and budget framework; (c) a formalised process for donor coordination and harmonisation of donor procedures for reporting, budgeting, financial management and procurement; and (d) increasing reliance on the use of local systems for programme design and implementation, financial management and accountability and monitoring and evaluation. Furthermore, the key components of an effective SWAp are four-fold: (i) a clear nationally-owned sector policy and strategy; (ii) a medium term expenditure framework that reflects the sector strategy; (iii) systematic arrangements for programming resources that support the sector; and (iv) a performance monitoring system that measures progress and strengthens accountability.

In Rwanda a SWAp Memorandum of Understanding (MOU) for agriculture sector has been ratified by the GoR and the major Donor Partners in the sector. Under this agreement the PSTA II is the basis for funding and in order to implement and provide the necessary oversight a Secretariat under the MINAGRI will be established.

ACRONYMS AND ABBREVIATIONS

AFSR	Appui a la Filière Semencier du Rwanda
ADB	African Development Bank
AI	Artificial Insemination
AIDS	Acquired Immune Deficiency Syndrome
ASDP	Agricultural Sector Development Programme
BADEA	Arab Bank for Development in Africa
BFP	Budget Framework Paper
BNR	Banque Nationale du Rwanda (National Bank of Rwanda)
BRD	Rwanda Development Bank
BTC	Belgium Technical Cooperation
CAADP	Comprehensive Africa Agriculture Development Programme
CDP	Community Development Plan
CEGPL/CEPGL	Economic Community of the Great Lakes Countries
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Centre for Tropical Agriculture
CICA	Centre d'Information et Communication Agricole
CLAYUCA	Cassava development programme in the International Centre for Tropical Agriculture (Cali, Colombia)
COOPEDU	Duterimbere Cooperative
CRS	Catholic Relief Service
DAEF	Provincial-level Director of Agriculture, Livestock and Forests
DAP	Di-ammonium phosphate
DDP	District Development Plan
DFID	Department for International Development (UK)
EAC	East African Community
EARRNET	East African Root Crops Network
EC/EU	European Commission/European Union
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environmental Impact Assessment
EICV1	First Integrated Survey on Household Living Conditions, 2000-2001
EICV2	Second Integrated Survey on Household Living Conditions, 2004-2005
FAO	Food and Agriculture Organisation of the United Nations
FERWATHE	Union of Tea Growers
FIDA/IFAD	Fonds International de Developpement Agricole/International Fund for Agricultural Development
Gacaca	A traditional system of community justice revived in 2001 with the objective of promoting community healing by making the punishment of perpetrators faster and less expensive to the State
GDP	Gross Domestic Product
Girinka	One Cow Per Poor Family Programme
GIS	Geographic Information System
GoR	Government of Rwanda
GTZ	German Development Cooperation
ha	hectare
HH	Household
HIMO	Haute Intensite de la Main d'Oeuvre
HIV	Human Immuno-deficiency Virus
ICHA	Impot sur le Chiffre d'Affaires (a turnover tax)
IFDC	International Fertiliser Development Centre, an International Centre for Soil Fertility and Agricultural Development
IITA	International Institute for Tropical Agriculture (Ibadan, Nigeria)
IPM	Integrated Pest Management
IRCT	International Rehabilitation Council for Torture Victims

ISAE	Institute of Agriculture and Animal Husbandry
ISO	International Organisation for Standardisation
ISAR	Institut des Sciences Agronomiques du Rwanda (Rwanda Agricultural Research Institute)
JAF	Joint Action Forum
JSR	Joint Sector Review
KCAA	Kenya Civil Aviation Authority
KIST	Kigali Institute of Science and Technology
LSG	Land husbandry self-help group
LTEF	Long-term Expenditure Framework
LTIF	Long-term Investment Framework
LTIP	Long-term Investment Programme
LTSIF	Long-term Strategy and Investment Framework
MDG	Millennium Development Goals
MIGEPROF	Ministry of Gender and Women in Development
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government, Good Governance, Community Development and Social Affairs
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINIMEX	A private company with maize processing facilities
MININFRA	Ministry for Infrastructure
MINIRENA	Ministry of Natural Resources
MOU	Memorandum of Understanding
MTEF	Medium-Term Expenditure Framework
M&E	Monitoring and evaluation
<i>n.a.</i>	not available, not applicable
NAIC	National Artificial Insemination Centre
NAP	National Agricultural Policy
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NISR	National Institute of Statistics of Rwanda (also NIS)
NPK	A combined fertiliser containing nitrogen, phosphorus and potassium
OCIR-Café	Office for Rwanda Industrial Crops –Coffee
OCIR –Thé	Office for Rwanda Industrial Crops –Tea
ODI	Overseas Development Institute
OECD- DAC	Organisation for Economic Cooperation and Development – Development Assistance Committee
OPYRWA	Rwandan Office for Promotion of Pyrethrum
OTF	On the Frontier, an NGO that has played a leading role in developing vegetable production in Rwanda
PADAB	Projet d'Appui au Développement Agricole de Bugesera
PADEBL	Projet d'Appui au Développement de l'Elevage Bovin Laitier
PAIGELAC	Projet d'Appui à l'Amenagement Intégré et la Gestion des Lacs Intérieurs
PAPSTA	Project d'Appui au Plan Stratégique pour la Transformation de l'Agriculture
PASNVA	Project d'Appui au Systeme National de Vulgarisation Agricole
PBA	Programme-based Approach
PDCRE	Projet de Développement des Cultures de Rente et d'Exportation
PER	Public Expenditure Review
PIP	Public Investment Programme
PMA	Produce Marketing Association
PPCU	Policy, Planning and Capacity Building Unit
PROAGRI	Rural sector development programme of USAID
PSTA	Plan Stratégique pour la Transformation de l'Agriculture/Strategic Plan for the Transformation of Agriculture
RADA	Rwanda Agricultural Development Authority
RARDA	Rwanda Animal Resources Development Authority

RBS	Rwanda Bureau of Standards
REMA	Rwanda Environmental Management Authority
RHESI	Rwanda Horticulture Export Standards Initiative
RHODA	Rwanda Horticulture Development Authority
RIEPA	Rwanda Investment and Export Promotion Agency
RPSF	Rwanda Private Sector Federation
RRA	Rwanda Revenue Authority
RSAD	District-level Officer in charge of all agricultural activities
RSSP	Rural Sector Support Project (World Bank)
RWANDEX	Rwanda's largest coffee producer and exporter
RWF	Rwandan Francs
SG	Secretary General
SIC	Standard Industrial Classification
SIDA	Swedish International Development Agency
SNV	Netherlands Development Organisation
SOCOMA	A private cotton processing company
SOFITEX	Société des Fibres Textiles
SOPAV	A private fertilizer dealer
SOPYRWA	Rwanda Pyrethrum Company
SORWATHE	Rwanda Tea Company
SORWATOM	Rwanda Company for Tomato Production
SP	Sub-Programme
SWAp	Sector-Wide Approach
SWC	Soil and Water Conservation
UBPR	Union des Banques Populaires
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
Vision 2020	Framework of Rwanda's Development until 2020
WFP	World Food Programme of the United Nations
WUA	Water user association

Part I. The Context, Challenges and Potentials

Chapter I.1 The Role and Context of the Strategic Plan

I.1.1 The role of the Strategic Plan

The need for this Strategic Plan arises out of the high priority the Government of Rwanda (GoR) has assigned to developing agriculture at an accelerated rate. In turn this priority is based on the urgency of reducing poverty, which is more prevalent in rural areas than urban, and on the predominant role of agriculture in the economy, which means that rapid overall economic growth cannot be attained without transforming the agricultural sector.

Poverty in Rwanda is the result of historical factors including the still low overall level of economic development and the very high population density on the land, and it is exacerbated by conditions such as low average crop yields, low rate of development of the country's irrigation potential and inadequate rural infrastructure. The country's endowment of agricultural land per rural inhabitant is less than a fourth that of Kenya, about an eighth that of all Sub-Saharan Africa, and even less than half that of a densely populated country such as China.

Agriculture contributes about 39% of GDP in current prices (as of 2005), employs about 88 percent of the economically active population (though much of it employed only seasonally), and is the main earner of foreign exchange, supplying up to 80% of exports. However, the priority accorded to agricultural development derives not only from its weight in the economy and the need to reduce poverty, but also from its very considerable potential for growth and modernization. In the absence of such potential a national growth and poverty reduction strategy would necessarily emphasize relocating people in urban occupations as quickly as possible. However, studies have shown that Rwanda is blessed with natural factors conducive to higher yields and a high-value agriculture, and the performance of some segments of the sector has begun to confirm that potential. Therefore, through implementation of the measures laid out in this Strategic Plan, the agricultural sector can intensify its use of modern inputs and increase production rapidly at the same time that it creates an environment favourable to enhancing the skills of the rural population.

Given Rwanda's topography, which is a major reason for the vulnerability of its soils, establishing a sustainable basis for continuing agricultural growth has to be a priority within the sector, alongside the transformation of its production conditions and the strengthening of market linkages.

Thus, in the national context the overall objective of the sector is to contribute, in a sustainable way, to poverty reduction and to supporting Rwanda's economic growth through increasing the productivity of production factors, diversifying lines of production, adding value to farm gate products, creating better market linkages, and protecting the environment and the natural resource base. The sources of agricultural growth will be of two types: (i) those which are linked to regional and international export potential through commodity chains, in some cases for relatively new products, and (ii) those which are related to internal market development, essentially the cereal commodity chains (rice, maize) and milk, meat and vegetable crops.

The predecessor to this Strategy, the *Strategic Plan for Agricultural Transformation in Rwanda*, issued in October of 2004, was developed in a highly participatory way. The objectives of the present Strategy are to update that earlier document, bring it fully into consonance with more recent national plans and strategies such as the *Economic Development and Poverty Reduction Strategy* (September 2007), and to specify concretely the means by which the strategic orientations will be carried out, in order to facilitate the process of implementation and the process of budgeting resources for implementation.

1.1.2 The international and regional context

In recent years the international community has reaffirmed and strengthened its commitment to poverty alleviation as an overriding objective of development efforts. Perhaps the most compelling symbol of this determination is the set of Millennium Development Goals that have been subscribed to worldwide. Accompanying this commitment has been an increasing recognition that poverty is largely a rural phenomenon in low-income countries and, in addition, research findings have shown that agricultural growth is the most effective way to reduce both urban and rural poverty.¹ Indeed, the entire *World Development Report 2008*, of the World Bank, is dedicated to this theme and ways to accelerate the growth of agriculture in developing countries.

Taken together these trends have vested development strategies and programmes with a renewed interest in transforming agriculture into a more productive, sustainable sector. Agricultural success stories are increasingly frequent, from horticulture in Kenya and cocoa in Ghana, to the export-oriented livestock sector of Botswana and the fresh vegetable export success of Jordan, and to the continuing intensification of agriculture in China and the radical transformations of agriculture in Brazil and Chile, to mention only a few examples. A modernising agriculture creates many kinds of skilled employment, including in engineering, agronomy, marketing, accounting, soil sciences, crop research, specialized advisory services, financial services, veterinary services, sanitary and phytosanitary fields, and many others.

African leaders have been among those pushing hardest for support to the transformation of agriculture, as evidenced in the *Comprehensive Africa Agriculture Development Programme* (CAADP) developed through the New Partnership for Africa's Development (NEPAD). At the East Africa level, the strong interest in promoting agricultural development was demonstrated by the formulation of the long-term *Agriculture and Rural Development Strategy for the East African Community*, signed by the Presidents of Kenya, Uganda and Tanzania.² Although its issuance pre-dated Rwanda's membership in the EAC, much its discussion of constraints, challenges and opportunities, and strategic interventions, is valid for Rwanda today.

Within the region Rwanda is increasingly integrated into the East African Community of nations (EAC) and at the same time occupies a strategic location between those countries and the Economic Community of the Great Lakes Countries (CEPGL). Trade linkages in both directions are growing, including with countries farther west such as Gabon, and provide part of the basis for future expansion of Rwanda's economy. The strategic value of this geographical position is illustrated by the recent decisions of international transport and logistics companies to establish a transport hub and container depot in Rwanda to service regional markets including those of the CEPGL countries.³ Accordingly, the transport and logistics sector can be expected to grow, and this will provide additional opportunities for Rwandan agriculture.

1.1.3 The political, economic and social context in Rwanda

Fourteen years after the 1994 genocide and in the face of enormous social and political challenges, Rwanda has recorded major achievements on the political scene and in the area of governance, including:

- i) Total restoration of security in the whole territory.
- ii) The putting in place of State institutions which now function normally.

¹ Cite articles by Fan et al, Ravallion and Datt, and Mellor and Timmer.

² East African Community, *Agriculture and Rural Development Strategy for the East African Community*, 2005-2030, EAC Secretariat, Arusha, Tanzania, November 2006.

³ The Republic of Rwanda, *Economic Development and Poverty Reduction Strategy, 2008-2012*, Kigali, September 2007, p. 72.

- iii) The rehabilitation of basic social services (education, health, water, hygiene) and the carrying out of a systematic campaign against AIDS.
- iv) The full reintegration of Rwanda in the community of nations.
- v) The progressive implementation of a decentralization policy for administration within the country.

The Rwandan economic context is characterised by a relatively high economic growth rate; a forward-looking environment of participation and cooperation on the part of the private sector and citizens down to the *imidugudu* or village level; and development policies focusing on poverty reduction, food security, diversification of the economy and decentralization.

The economic growth rate since 1998 has averaged about 5% per year in real terms while inflation has been kept under 4% per year on average although it has fluctuated. As a consequence exchange rate movements have been relatively moderate.

The performance of the Rwandan economy depends mainly on the production of the primary sector, in which agricultural production, particularly of food crops, is essential. Although poor rains adversely affected the sector in 2003 and 2004, it attained an average annual real growth rate of 5% between 1999 and 2005 and the aim is to accelerate that growth. The sector's growth rate slowed in 2006 and it recorded a slight decline in 2007. In both years sector performance was affected by weather and input distribution issues and in 2007 by special conditions in the coffee sub-sector that are discussed below. A significant rebound is expected in 2008.

The Government of Rwanda has not only the will to maintain this performance but is also committed to specific actions geared towards improving it and ensuring a sustainable pattern of economic growth. Those lines of action have been developed in the context of the following national policy documents:

- The prospective long term *Vision 2020 for Rwanda*.
- The *National Poverty Reduction Strategy* and its successor, the *Economic Development and Poverty Reduction Strategy*, both adopted by all development partners.
- The National Investment Strategy.
- Sector policies and strategies covering different priority areas.

The special context of poverty in Rwanda is the most fundamental motivating and organizing factor for sector policies and strategies, which always must be aimed first and foremost at improving people's standard of living.

1.1.4 National objectives and the Strategic Plan for Transforming Agriculture⁴

Rwanda's *Vision 2020* document, finalised in 2002, describes the basic development objectives of the country over the long term. It is the key socio-economic policy document on which all national and sectoral policies and strategies are based and on the basis of which the allocation of resources between the various sectors is made. It establishes the modernisation of agriculture and animal husbandry as one of six pillars supporting its aspiration to "build a diversified, integrated, competitive and dynamic economy, which could raise the country to the level of middle income countries."

⁴ The discussions in this section and in parts of section 1.1.6 below has been adapted in part from Martin Fowler and Raphael Rurangwa, *A Long-Term Investment Framework for the Agricultural Sector*, prepared for the Ministry of Agriculture and Animal Resources (MINAGRI), Kigali, March 8, 2008.

The Government of Rwanda has also committed itself to the above-mentioned Comprehensive Africa Agriculture Development Programme (CAADP) of the New Partnership for Africa's Development (NEPAD). This is a framework, reflected in a set of key principles and targets, which aims to help African countries reach a higher path of economic growth through agriculture-led development. Most notable among the principles and targets are: the pursuit of a 6% average annual sector growth rate in agriculture, and the allocation of 10% of national budgets to the agricultural sector. CAADP also lays out paths toward achievement of the targets that have been incorporated into this Strategic Plan.

More recently, in September 2007, the Government of Rwanda developed its second poverty reduction strategy, known as the Economic Development and Poverty Reduction Strategy (EDPRS). This takes into account the modest fall in poverty headcount between 2000 and 2005 as shown by the EICV2 household survey results. The EDPRS has placed greater emphasis upon the productive sectors than did the first Strategic Plan for Transforming Agriculture (PSTA I, issued in 2004), and it has provided a frame of reference for this revised PSTA. It is planned that PSTA II will help lay the basis for an Agriculture Sector Wide Approach (SWAp) for funding the sector's programmes, which is due to be prepared in the second half of 2008.

Vision 2020

Vision 2020 seeks to transform the economy by bringing about a rapid increase in growth and a significant reduction in poverty. By the 2020 target date it is expected that the country will have, among other things, reached middle-income status with per capita GDP having grown to US\$ 900⁵ from an estimated US\$ 220 in 2000. Other goals include a reduction by more than one-half in the incidence of poverty and extreme poverty and improvements in a range of more general standard of living indicators.

The agricultural sector is to be accorded a high priority in the Government's programme of development, with a fundamental transformation of the sector being required and planned for. This will, it is foreseen, involve the sector moving from subsistence to a commercial mode of production, thus attracting a substantial increase in investment. It will result in an increase in household incomes and a reduction in poverty levels, by 50 per cent over twenty years. Agriculture is seen as a major engine of growth for the economy and its modernisation is one of the six components (pillars) of the *Vision*. By 2020, the agricultural sector's contribution to GDP is expected to be 33.

The key national and agricultural sector-related goals, or targets, presented in the *Vision 2020* document, are listed in Table 1. As indicated above, agriculture's performance in recent years differs somewhat from the early benchmarks in *Vision 2020* but nonetheless it has been quite solid.

A host of intervention areas are identified in the document: most notably a significant increase in the value of both coffee and tea exports. Others include: marshland and hillside irrigation, horticulture, agricultural research, the provision of agricultural inputs (seeds and fertilisers), livestock development (milk in particular), land and water conservation, the rehabilitation of degraded soils, agro-forestry, rural infrastructure such as electrification and feeder road upgrading, the diversification of agricultural exports and the provision of market information. The reform of the land-tenure system is seen as being essential to underpin these interventions and to ensure that an enabling environment for private sector investment and job creation in agriculture is put in place. The document emphasises the fact that "*Enormous efforts must be made in order to ensure ... that agriculture changes its nature and that Rwandan professional farmers change their vision, mode of work and mode of life.*" Experience the world over has shown that this is a lengthy process, but a promising start has already been made as the 2005/06 EICV2 household survey results clearly show.

⁵ In constant 2000 prices.

Table 1. Selected national and agriculture-related goals in Vision 2020

Indicator	2000	2010	2020
Population (million)	7.7	10.1	12.71
GDP/capita (constant 2000 US\$)	220	400	900
Poverty (%)	64	40	30
Agricultural GDP growth (%)	9	8	6
Agriculture as % of GDP	45	47	33
Agriculture as % total population	90	75	50
Land under “modernised” agric (%)	3	20	50
Fertiliser application (kg/ha/annum)	0.5	8	15
% banks’ portfolio to agric. sector	1	15	20
Soil erosion protection (% total land)	20	80	90
Coffee exports (tonnes)	19,000	44,160	<i>n.a.</i>
% of coffee production fully washed	1 (2001)	63	<i>n.a.</i>
Coffee export earnings (US\$ m)	22.0 (2002)	117.1 ⁶	<i>n.a.</i>
Tea export earnings (US\$ m)	26.8 (2003)	91.0	<i>n.a.</i>
Agricultural exports	<i>n.a.</i>	<i>n.a.</i>	“5-10 times yr 2000 value”

Source: Ministry of Finance & Economic Planning, 2003.

Vision 2020 recognises that the private sector will, over time, assume the role of driver of the economy and the State’s responsibility is stated as being to initiate, pilot, co-ordinate and monitor efforts. Whereas in the past the State had often “choked the initiatives of its citizens,” *Vision 2020* envisages that in the future it would be the catalyst and stimulator of growth and change. Indeed, the document states that by 2007 an enabling environment would have been put in place by the public sector and the private sector would assume major responsibility for investment in agriculture.

It is worth noting that *Vision 2020* assigns a high priority to achieving gender equality, placing it as the first crosscutting issue. As stated in *Vision 2020*, women make up 53% of the population and participate in subsistence agriculture more than men. They usually feed and provide care for the children and ensure their fundamental education. Gender has been integrated as a crosscutting issue in this Strategic Plan.

The Millennium Development Goals

Under the seven Millennium Development Goals (MDGs), a number of targets have been set for Rwanda and the country is committed to reaching them by 2015 (NISR & MINECOFIN, 2007). Only a small number of the 49 indicators that were drawn up to chart the progress toward each of the goals relate specifically to the agricultural sector. Those that do are contained in Table 2 below. However, the realisation of the MDG1 is heavily dependent upon the growth of the agricultural sector, given its importance in the economy of the country –as noted, it currently accounts for almost 40 per cent of the GDP while an additional 4 per cent is provided through agro-processing and more through agricultural commerce. In addition, as noted, the sector provides employment for over 80 per cent of the workforce and for many years now (with the exception of 2006) the

⁶ The Rwanda Investment and Export Promotion Agency (RIEPA) projects coffee export earnings to reach US\$85 million in 2008, from a base of US\$38 million in 2005, largely on the basis of improved quality (greater proportion of specialty coffee in the total exports). See RIEPA, *Export Guide*, Kigali, November 2006.

sector has provided more than one-half of the country's exports, in some years much more than half.

As can be seen from Table 2, progress towards meeting the targets has so far been uneven. However, targets to be realised by 2012 have also been drawn up in the Economic Development and Poverty Reduction Strategy, EDPRS, with respect to each of these indicators.

Table 2. The Millennium Development Goals and their agriculture-related targets, 2000 and 2015 (in percent)

MDG	Indicators	2000 (base year)	Latest (mostly 2006)	2015
1. Eradicate extreme poverty & hunger	Poverty prevalence	60.4	56.9	30.2
	Child 0-5 yrs stunted	43	45	24.5
	Child 0-5 yrs wasted	7	4	2
	Child 0-5 yrs underweight	24	22.5	14.5
	Protein needs available/head	44	n.a.	22
7. Ensure environmental sustainability	Proportion of land area with Titles	1 (2006)	1	30

Source: Ministry of Finance and Economic Planning, *Economic development and poverty reduction strategy, 2008-2012*, Kigali, draft of March 31, 2007.

The Economic Development and Poverty Reduction Strategy

The basic macroeconomic context of this Strategy is the EDPRS, which is the country's medium-term economic development plan, providing the framework within which the Government seeks, over the 2008-2012 period, to consolidate the process of changing the structure of the economy and moving towards achieving the long-term targets, both laid down in Vision 2020 and that are the Millennium Development Goals. It aims both to increase economic growth and to reduce the incidence of poverty –the latter to 46 percent from its rate of 57 percent in 2005/06.

Agriculture is explicitly recognised in the EDPRS as being one of the four priority sectors of the economy that will both stimulate economic expansion and make the greatest contribution to poverty reduction –the other sectors being health, education and road maintenance. The overriding policy objective for the sector is for rural household incomes to be increased in a sustainable manner and for the sources of income to be diversified while, at the same time, food security is to be strengthened. It is forecast that agriculture will contribute 28 per cent towards the growth of overall GDP over the five-year period, down from the 33 per cent that the sector contributed between 2003 and 2007.

Four higher-level indicators to be realised by the sector during the EDPRS implementation period have also been drawn up. They are:

- 7 per cent annual real rate of growth of agricultural GDP;
- 4 per cent annual real growth rate of per capita agricultural GDP;
- 20 per cent decrease in people reporting agriculture as their main source of income; and
- 50 per cent reduction in the proportion of the population receiving less than the minimum food requirements (to 16 per cent).

One of the functions of the EDPRS is to guide budget allocations. Thus, with the modernisation of agriculture being one of the areas it identifies as being critical to overall economic growth, the resources allocated to the sector are to be increased to average 6.9 per cent of the national budget over the five-year period. Detailed figures presented in the EDPRS show that an average

of 4.1 per cent of the national recurrent budget and 11.5 per cent of the capital budget are to be earmarked for the sector. These percentages translate into an average annual budget for agriculture of approximately RWF 48.00 bn. In this way, it is projected, a faster rate of growth of the sector will be generated than the 4.6 per cent per annum that was realised between 2001 and 2006; between 6 and 8 per cent is projected. However, the MINAGRI budget for 2008 is approximately RWF 26.00 bn.

In order to increase agricultural productivity, key interventions under the EDPRS framework will include increasing soil fertility, reducing soil erosion and improving land use, land management and land administration. Farmers are to receive intensive training in the optimal use of external inputs – improved seeds and inorganic fertilisers in particular. A selection of the agricultural sector-related targets contained in the EDPRS and in the MDGs is presented in Table 3.

Table 3. A selection of the agricultural sector-related targets contained in the EDPRS and in the MDGs

Indicator	2006	2012
(i) EDPRS		
Ag. land protected against erosion (%)	40	100
Area under irrigation (ha)	15,000	34,000
- of which hillside irrigation (ha)	130	10,000
Reclaimed marshland (ha)	11,105	31,105
Fertiliser application (kg/ha)	4	12
Inorganic fertiliser use (% households)	11	17
Improved seed use (% households)	24	37
Rural households with livestock (%total)	71	85
(ii) MDGs		
Poverty prevalence (%)	56.9	34.7
Child 0-5 yrs stunted (%)	45	27.2
Child 0-5 yrs wasted (%)	4	2.5
Child 0-5 yrs under-weight (%)	23	16.3
Protein needs available/head (%)	n.a.	n.a.
Proportion of land area with titles (%)	1	n.a.

Source: Ministry of Finance & Economic Planning and MINAGRI.

In addition to coffee and tea, crop and livestock enterprises that are projected to contribute significantly to the sector's growth include hides, skins and other livestock products,⁷ horticulture (including floriculture), pyrethrum and sericulture. In this way, the production base will be significantly broadened with new agricultural exports making an important contribution. At the same time, both production and value added for the traditional exports of coffee and tea are projected to increase rapidly. Thus, the sector as a whole is expected to remain a reliable source of export earnings.

Total national public expenditure is set to increase at an average rate of 11 per cent per annum over the life of the Strategy.⁸ This represents a significant scaling-up of the budget compared with previous years. However, the actual availability of total budgetary resources may be even greater, as indicated by the 2008 budget that was submitted to Parliament. It shows that the total budget is larger than the amount that was projected for the year's budget in the EDPRS document, as can be seen in Table 4 below.

⁷ Hides and skins are the third-largest agricultural foreign exchange earner, after coffee and tea.

⁸ According to Table 6.1 of the Strategy document.

Table 4. Public expenditure, 2008-2010: a comparison of the EDPRS projections and the 2008 draft budget (in bn RWF)

Source	2008	2009	2010
EDPRS projections	550	612	677
2008 budget estimates	608	651	718
Difference (%)	+5	+6	+6

Interventions to be made by the Government are, the EDPRS stresses on a number of occasions, to develop the market further and to support the private sector so that it is able to assume an increasingly important role. Public investments will, it is envisaged, create an enabling environment in which the cost of doing business is reduced so that private sector operators can flourish. Indeed, the success of both the EDPRS and the PSTA are predicated upon an increased involvement by the private sector so that it becomes the main driver of the agricultural economy. It is estimated very roughly that the private sector will meet one-third of the total cost of implementing the EDPRS.

The EDPRS also is emphatic on the issue of gender equality especially in the social and education sectors. However, within the agricultural sector, important steps need to be taken in programmes to promote gender equality, such as recruiting more female extension agents, taking gender preferences and requirements into account in agricultural research programmes, and including women representatives in water users associations, to list only a few examples. These and other measures are included in the strategic lines of action set out in this document.

The EDPRS is constructed around three flagship programmes that also are central elements of the present Strategy. Those programmes are: (i) Sustainable Growth for Jobs and Exports, (ii) Vision 2020 Umurenge (integrated rural development programme to eradicate extreme poverty and release the productive capacities of the poor), and (iii) Good Governance. It is evident that the agricultural sector can contribute to the fulfilment of the objectives of all these programmes. While it is fundamental for the Umurenge programme, it is equally relevant to the other two.

1.1.5 Decentralization and local development plans

Another major pillar in policy framework of the Government of Rwanda is the Decentralization Policy adopted in 2000 in order to involve local administrations more directly in the development process. It was complemented by a Local Administration Reform, initiated in 2002 and implemented in 2006, which made the administrative structure lighter by creating 30 districts, in place of the earlier 106 districts, and four provinces plus the City of Kigali to replace the former 12 provinces. The enunciation of that policy was followed by the revision of various laws that defined the organization and functions of districts and below the districts the sectors and cells (*cellules*).

The major objective for most forms of decentralization around the world, and Rwanda is no exception, is to enhance the participation of citizens in planning and strengthen, through various means, the “voice” of citizens in influencing service delivery providers. Decentralization has therefore both a political and a technical angle. The political (or democratic) decentralization is expected to offer citizens, including the poor, the possibility of increased participation in local decision-making processes, either directly or indirectly through elected leaders, which is expected to result in better quality of and more easy access to services. At the same time, and still on a political plane, decentralization is believed to offer a way of sharing power more widely within a country, among regions and among various groups, thereby providing grounds for political consensus and stability.

In Rwanda Decentralization is not simply organizational; it has taken place in three critical dimensions:

- i) Political decentralization, through which locally elected leaders constitute the highest local government body.
- ii) Administrative decentralization, which gives local governments the freedom to make their own staffing decisions.
- iii) Fiscal decentralization, which provides mechanisms for local government funding that include local taxes and a sharing of government revenues through a system of intergovernmental fiscal transfers.

However, further efforts are required to consolidate the decentralization process. For example, a Decentralization Implementation Plan (DIP) exists but has not been made operational. Also, at present intergovernmental transfers are relatively small and it is not yet clear which entity should be charged with the responsibility of monitoring the use of those funds. However, the earmarked funds under MINAGRI allow room for the districts to determine what they want to use the funds for based on their district development funds. It is based on a formula, so that allocations are due to the size, population and other criteria and this formula was used in the preparation of the 2009 mini-budget.

These and other issues have been recognized and the Ministry of Local Government, Good Governance, Community Development and Social Affairs (MINALOC) has recently developed an action-oriented strategy to work toward solving them and strengthen the decentralization process. Titled *Rwanda Decentralization Strategic Framework: Towards a sector-wide approach for decentralization implementation* (August 2007), this document stresses the following five areas of action:

- Strengthen efficiency and efficacy in coordination and management of the decentralization process;
- Strengthen the participation of non-government actors in the decentralization process and reinforce mechanisms for an accountable and transparent public sector;
- Develop Local Governments' and other stakeholders' capacities to effectively assume their defined rights, roles, and responsibilities;
- Simultaneously and comprehensively implement national policy defining fiscal and financial decentralization processes; and
- Reinforce mechanisms for monitoring and evaluation of the decentralization process and strengthen systems for coordinated management of information.

As a result of the decentralization framework, almost all Districts and all Provinces in the country possess a Community Development Plan (CDP) designed on a participatory basis. Results from this process were used in the elaboration of the definition of the initial draft of this agricultural strategy.

It should be noted that MINAGRI projects also tend to operate in a highly decentralized manner because they involve local communities and farmers intimately in the process of designing the actions to be carried out. This kind of decentralization, in which beneficiaries are also participants, is an important ingredient for project success.

1.1.6 The Rwandan agricultural policy and planning environment

In the last four decades, agriculture in Rwanda has gone through three distinct and contrasting periods:

- i) a twenty year period (1960-1980) characterised by high growth;
- ii) a period of stagnation followed by a serious repression and violence (1980-1994); and
- iii) a period of reconstruction and economic recovery (after 1994).

These periods were characterised by three different approaches in the formulation of agricultural policies:

- i) five or ten year plans beginning in 1950 with a hiatus from 1960 to 1967;
- ii) planning based on the adoption of an economic policy and financial framework and an elaboration of public investment programmes (1991-2002); and
- iii) the new form of planning based on a long-term vision, a national strategy for poverty reduction and sector strategies.

In spite of the changes in the approaches utilized for policy formulation and planning over the decades, there is a marked consistency in the analyses of the main hurdles to more rapid agricultural development in Rwanda. The analyses have repeatedly singled out the bottlenecks represented by elements such as: scarcity of land, small farm size, overpopulation, poor productivity in terms of both land and labour inputs, degradation of the land endowment, and use of an approach to agricultural extension that has not been effective.

Equally, the broad strategies and policies have tended to remain approximately the same, emphasizing above all improvement in productivity, regional specialisation, market-led development, crop-livestock integration, better soil and water management, and diversification of export crops. However, emphases such as development of commodity chains and participatory modes of research and extension are more recent. What may have varied over time are the approaches to implementing the strategies, as illustrated by the current priority given to participatory modes of research and extension. Even today it still is an urgent task to define the concrete mechanisms to be used in all the strategic areas. That is one of the undertakings of this Strategic Plan.

On the whole, it can be said that the historical evolution of agricultural exploitation system in Rwanda was characterised by two factors: the demographic factor on one hand and the institutional factors connected to the interests of the colonial administration and the development of export crops on the other.

The duality (food crops – cash crops), which appeared in the colonial agricultural policy system, continued to characterize the sector since the rural population has cultivated largely for subsistence at the same time that commercial agricultural opportunities have opened up. While most of the rural population cultivated food crops, an outward-looking agricultural policy of promoting cash crops for export (especially coffee, tea and pyrethrum) led to rapid adoption of these crops, through research and extension services, into the traditional cultural system together with accompanying technical packages.

Many Rwandan farmers were reluctant to abandon food crops, but nevertheless by today some 500,000 rural families are engaged in coffee growing and over 60,000 in tea growing. What has been lacking until recently has been an emphasis on improving productivity and product quality. The naturally good quality of products like coffee and tea that results from Rwanda's soils, climate and altitude, was seen as sufficient, and in any case international markets had not yet developed significant price premiums for higher quality products. It is increasingly acknowledged that there is not a tension between cultivation of food crops and export crops, but rather they are complements. For example, horticulture crops, whose potential has only recently been recognized, generate much higher levels of income and employment per hectare than domestic food crops.⁹ Household income is one of the main determinants of household food security and

⁹ "The horticulture revolution boosts incomes and employment. Relative to cereals, horticulture increases the returns on land about 10-fold. And it generates considerable employment through production (about twice the labor input per hectare of cereals) and more off-farm jobs in processing, packaging, and marketing. Women hold many of these new jobs." (The World Bank, *World Development Report 2008*, Washington, D. C., 2008, p. 58.)

nutrition levels, and therefore employment opportunities in horticulture, to complement their own subsistence cultivation, can significantly reduce rural poverty and malnutrition.

Another fundamental change has occurred in recent years in the institutional environment of the country. In addition to decentralization, strategies and implementation plans are being defined with the participation of the beneficiaries. Mobilising and involving rural people so that they take responsibility in the formulation and implementation of programmes and projects is a cornerstone of lasting agricultural development. Together with the amount of resources directed toward the improvement of technology and productivity, and a shift toward market-driven development, this new participatory orientation should make a significant difference as compared with past conditions.

Recent agricultural policy has been articulated through two documents published by MINAGRI: a National Agriculture Policy (NAP) issued in early 2004, followed by the PSTA I in October 2004. The NAP spells out the main areas of agriculture that need to be transformed and lays down guidelines for government intervention in the sector. The PSTA I document was intended to provide the basis for implementing the Policy, and to that end it defines four overarching Programmes and 17 Sub-Programmes and specifies detailed contents of the latter.

The National Agricultural Policy

The principal thrust of the 2004 National Agriculture Policy (NAP)¹⁰ is that supporting the agricultural sector to move from subsistence to market-oriented production will result in both economic growth and increased food security. The Policy foresees the development of a professional and profitable sector underpinned by active agricultural research and extension services. The comparative advantage of cash crop production by region is to be promoted enabling economies of scale to be realised, while mixed crop and livestock farming is to be a national priority in all regions.

While acknowledging the important role to be played by increased production of traditional export crops (coffee and tea, for example), the Policy stresses the need to increase the cultivation and export of horticultural produce and other non-traditional agricultural exports in order to create a more-diversified export sector. Other areas of focus identified in the Policy include soil and water conservation, encouraging private sector involvement in all aspects of the commodity chain and marshlands management.

The weak state and inappropriateness of much of the work carried out in the past by both the research and extension systems is recognised as a major constraint to the development of the sector. So, too, is the lack of implementable laws relating to land tenure and its use.

To address these and other issues, the strategies proposed under the NAP include adaptive research, involving a more decentralised approach linked to commodity-chain analysis. This is to be the focus of publicly funded agricultural research in the future. Agricultural extension will continue to be carried out by government agencies but will be geared to training members of co-operatives and farmers' associations. In other words, there is to be more participation by farmers in both agricultural research and extension in the future. Increased use of external inputs and improved water management are other key themes. At the same time, work is to be undertaken to improve the efficiency of post-harvest operations, including processing, marketing, market information and storage. Interventions are also to be made to improve livestock production. They will include zero grazing approaches and disease control using private-sector service providers.

According to the NAP, commodities on which efforts are to be focussed in the first instance include rice, maize, beans, Irish potatoes, floriculture, sericulture, hides and skins, coffee, tea, horticulture and wheat. They were selected on the basis of the contribution they make to exports,

¹⁰ MINAGRI, *Politique Agricole Nationale*, Kigali, March 2004.

food security and import substitution, as well as their potential contribution to sectoral growth and diversification. A detailed assessment of the feasibility of supporting other possible agricultural enterprises is to be undertaken prior to any public sector support being provided to them.

The need for integrated pest management is highlighted in the Policy while the public sector will address sanitary and phytosanitary issues. This will involve, among other things, updating legislation and regulations, setting standards, carrying out training and strengthening the capacity of quality-testing laboratories.

The Policy also underlines the need for the Government to adopt a more restricted, strategic role in developing the sector. From 2004 onwards, the work of the Ministry would, the NAP states, be limited to planning, regulation, promotion and co-ordination. The private sector would be supported and reinforced wherever possible in its work of transforming agriculture into a commercially oriented sector. The task of putting these guidelines into effect is a continuing one, and it requires close coordination with the private sector and care in developing the specifics of implementation programmes.

Five areas on which particular emphasis is to be placed are identified in the NAP, namely: (i) regions experiencing chronic food insecurity; (ii) soil and water conservation; (iii) small livestock (sheep and goats) acquisition by farmers and the provision of training in animal production; (iv) crop and livestock disease control; and (v) input distribution –mainly fertilisers– by private entrepreneurs, farmers' associations and co-operatives that will be closely monitored by MINAGRI. Other areas of intervention include mechanisation, strengthening agricultural education and the enactment of a new land law.

The Strategic Plan for Transformation of Agriculture in Rwanda, 2004

The PSTA which was drawn up in 2004 covers the 2004-2008 period and is the means by which the NAP is to be made operational, guided by the path laid down in Vision 2020. The principal challenges that agriculture was seen to be facing included the need for it to be transformed into a commercial sector, with income-generation and employment creation being key requirements; for food security to be enhanced; and for environmental degradation to be halted.

That Strategy's objective, based on that of the NAP, was stated as being for agriculture to contribute in a sustainable manner to poverty reduction and to support economic growth. The document was developed in a highly participatory manner. It foresaw that during the second-half of its period of implementation the private sector would become the dominant partner in the development of agriculture, but that the role of Government would be critical until then. It was envisaged that the role of the State would be refocused in order to support this transition, to encourage partnerships with the private sector and to facilitate the decentralization process.

The Strategy developed a framework based around four Programmes directed toward releasing key bottlenecks in the sector, and it established Sub-Programmes designed to implement the main thrusts of the Programmes. This framework is retained, reinforced and amplified somewhat in this current version of the Strategy.

MINAGRI drew up a series of ambitious physical and/or production targets to be realised under each of the sub-programmes. Some of these targets have since been revised in the light of the experience gained in implementing the first version of the Strategy. Most of them have been incorporated into the *Economic Development and Poverty Reduction Strategy* and are to be achieved by 2012, with interim targets having been established for each year. Some of the key indicators and their targets are detailed in Table 5 below.

The projections in Table 5 have been obtained from several official MINAGRI and MINECOFIN publications, including the PSTA I and the EDPRS. However, in many cases different targets are

given for the same year, since they are revised on a regular basis. Hence, Table 5 contains more recent projections for some of the target areas than can be found in the PSTA I document.

Table 5. A selection of the PSTA I targets to be realised by 2010

Indicator	2006-07	2008	2010
Agricultural land protected (%)	40	<i>n.a.</i>	100
Radical and progressive terraces (ha)	12,000	20,000	32,000
Hillside irrigation (ha)	130	350	700
Marshlands rehab./developed (ha)	11,000	19,100	27,100
Households receiving cows	3,500	11,000	95,000
Households using improved seed (%)	24	29	34
Fertiliser application (kg/ha)	4	7	10
Households per extension worker	3,000	2,920	2,740
Horticulture exports (tonnes)	2,000	11,400	20,000
Producer orgs. specialising in District's priority commodity chain	<i>n.a.</i>	<i>n.a.</i>	3

Source: MINAGRI, *Strategic Issues Paper 2008-2010*, Kigali, June 2007;

One of the means by which agricultural production is to be boosted is the development of the commodity chains of a number of agricultural enterprises. These are separated into those destined for export (in particular coffee and tea, pyrethrum, sericulture and horticulture) and those linked to the development of the internal market. The enterprises in this latter group were prioritised through a process of consultation at the provincial level; potatoes, wheat, beans, milk and meat have thus been selected for attention.¹¹ The key support needing to be provided by the agricultural research services for the development of each of these commodity chains is emphasised in the Strategy. In addition, stronger efforts are need to bring together producers and markets, including agro-processors. This topic is discussed in Part II of this Strategy.

Project experiences

The project experiences are an integral part of the planning process. Invariably the experience of implementing projects yields new lessons and unforeseen issues that lead to changes in approach and in project design, and they have implications for overall strategic guidelines. Projects such as PDCRE, PASNVA, RHESI, PAPSTA and PAIGELAC, to mention only a few, have generated this kind of feedback to policy and planning levels, and some of their findings at the field level have been incorporated into this new PSTA II. In addition, the watershed management approaches of PAPSTA are serving as the basis for new projects, such as the activities in eleven watersheds planned for Kirehe.

It is important to maintain and nourish these feedback links between projects and the policy making and planning process, for they are a major channel for incorporating the farmers' own ideas and suggestions into future plans.

1.1.7 Complementary policies and programmes

Agricultural development is inherently a multi-faceted, multi-sectoral undertaking. Accordingly it cannot be successful without complementary and supporting programmes and actions in other

¹¹ A number of other enterprises are added to the list later in the Strategy document, including maize, rice, fruits and legumes. A revised list of priority agricultural enterprises that are to be supported during 2008 under the commodity chain priority programme of the EDPRS, has recently been drawn up. It includes maize, rice, honey, fish and milk. Support to the horticulture commodity chain is an ongoing programme. Another list of priority commodity chains (10, in all) to be supported by MINAGRI is provided in MINECOFIN, *Rwanda: A long-term investment framework*, Kigali, 2006. It includes essential oils, sericulture, pyrethrum and potatoes.

sectors. Two of the most important of these concern modernisation of the land tenure system and promotion of effective farmer organizations.

Land tenure reform

In the words of the Long-Term Investment Framework, the land tenure system is recognised as having held back past efforts to develop the sector, and therefore reforming it is a national priority that can directly facilitate faster agricultural development.

The factors affecting land distribution and tenure have been identified as the following:¹²

- The dense and growing population of Rwanda.
- The historical context of conflict and mass population movements resulting in conflicting land claims and inability to address the needs of landless returnees.
- Until recently, weak land rights legal framework, often unenforceable, resulting in uncertainty and ambiguous practices.
- Uncertain and inequitable women's access and rights to land.
- Weak, albeit nascent, land market.
- Lack of institutional and technical capacity to implement and sustain land reforms.

To respond to the challenges in this area a strategic road map for land reform has been developed and is expected to show the way forward for implementation of a system of more secure land tenure, including developing a land administration system and trial interventions at the District level and capacity building in the Districts. It is clear from international experiences that security of long-term tenure rights is important for encouraging soil conservation practices and other on-farm investments, as well as providing an inheritable asset for future generations. Equally, an efficient land administration system is needed that is easily accessible at the local level for land transactions. In this last regard, farmers are now able to take the necessary steps for registering their titles at the Sector level, and the administrators at the level forward the documentation to the District level.

Strengthening agricultural cooperatives

Cooperation has been important in the agricultural sector in all countries of the world, and it has taken many forms, depending on the historical, cultural and economic context. In present-day agriculture formal farmer organizations often play a vital role in purchasing inputs, procuring farmer advisory services, and marketing outputs. In Rwanda the development of farm cooperatives has suffered historical obstacles. In the words of the *Sector Strategies Document: Cooperatives Sector*,¹³

Traditionally, Rwanda had its own forms of food self-assistance. Some of these forms have survived until now, like *Ubudehe*, *Umubyizi* and *Umuganda*. However, nothing was done to consolidate this traditional philosophy of mutual assistance in the . . . economically oriented initiatives.

The modern cooperative movement started as a promotion tool of the colonial government policies. After the independence, [cooperatives] have been used as tools of implementing the Government policies and plans, becoming, thus a political tool. This has led in most cases to [confusion regarding] the notions of “cooperative,” “association,” and “organizations” [and their roles].

¹² European Commission, World Food Programme, and the National Statistics Institute of Rwanda, *Comprehensive Food Security and Vulnerability Analysis*, Rural Rwanda, Kigali, 2006.

¹³ Ministry of Commerce, Industry, Investment Promotion, Tourism and Cooperatives (MINICOM), Kigali, February 2006, p. 10.

The 1994 war and genocide had fatal consequences on the already faltering cooperatives, on the human, material and financial resources levels.

. . . the Government and the donors have introduced a culture of dependence by conditioning external assistance to the establishment of cooperatives or other forms of associations. Indeed, [many] members [have come to consider] a cooperative as a means of receiving financial assistance from donors rather than as a productive enterprise.

However, the Government of Rwanda considers now the cooperatives as full partners in efforts for alleviating poverty. To harmonize and coordinate the interventions in that sector, it has been decided to design a national policy for promoting the cooperatives and to gather in a single document the strategies chosen and the priority activities retained for the years 2006-2008.

This MINICOM sector strategy sets out the following goals for strengthening the cooperative sector (p.11):

- To implement a legal and statutory framework favourable to the launching of a great number of really autonomous cooperatives and to their functioning and growth.
- To implement an institutional framework adapted to the cooperatives' needs, especially in implementing a consultation forum among all the partners.
- To facilitate the structuring of cooperatives in the intermediary organizations (unions, federations and confederations) and their membership to the international cooperative movement; these organizations will serve efficiently the members' interests and will contribute to the poverty alleviation accordingly.
- To strengthen the active participation of the youth, women, disabled persons and demobilized soldiers in the cooperative movement and to value their role.
- By the cooperative education, training and human resources development, to reinforce the effective ownership of the cooperatives by their members and the professionalism of the cooperatives management.
- To facilitate the access of cooperatives' members to Information and Communication Technologies in order to help them acquire the required knowledge for the promotion of good practices in cooperative management and to be connected to the national and international markets.

At present more than 1,100 registered cooperatives exist in rural areas, including those that work outside of agriculture. Many of them are large, with 700 to 1,000 members each, and accordingly smaller organizational units at the village and cell level are integrated into this cooperative structure. A clear lesson from international experience is that cooperatives function best when they arise at the local level out of perceived needs of farmers and villagers, rather than being organized in a top-down fashion. It will be important to incorporate this lesson into the cooperative programmes and to encourage the simplest and most local cooperatives that have well-defined purposes, such as marketing given agricultural products or purchasing inputs on a larger scale, and thus at a lower unit price, than individual farmers could do. It will be equally important to strengthen the training of cooperatives in financial management, since they are conduits for credit lines, especially in the area of working capital.

1.1.8 Strengthening linkages in the development process

For the Strategic Plan to be operational, it will be necessary to reinforce new articulations or linkages in the sector planning and implementation process. These linkages operate along four avenues or dimensions:

- i) Putting into effect a platform for communication between, and coordination of, different stakeholders of the sector. Advances have been made in this area in the form of creating a Rural Cluster of stakeholders and a SWAp Working Group.

- ii) Linking the national level to decentralized levels in operational ways; for MINAGRI, this means well-defined linkages between the government's agricultural service providers and the districts.
- i) Linkage of fiscal and financial flows to decentralized levels of implementation and multi-stakeholder environments;
- ii) Linkage of commercial perspectives and market orientation to food security, environmental management and sustained economic growth.

Bringing together different stakeholders in an appropriate framework will allow the public and private sectors and civil society to work together with a view to sharing roles and responsibilities, harmonising the conception of strategies and the approaches and modalities of implementing the various interventions. Creation of such platforms will help ensure efficient coordination of technical and financial support from different development partners.

Linkages in decentralization

It will be very necessary to strengthen the relatively new linkage between the central (national) level and the decentralised levels, as discussed in section 1.5 above. Decentralised entities, that is, provinces, districts, municipalities (cities, sectors and cells) will take increasing responsibility for drawing up their development plans and their implementation.

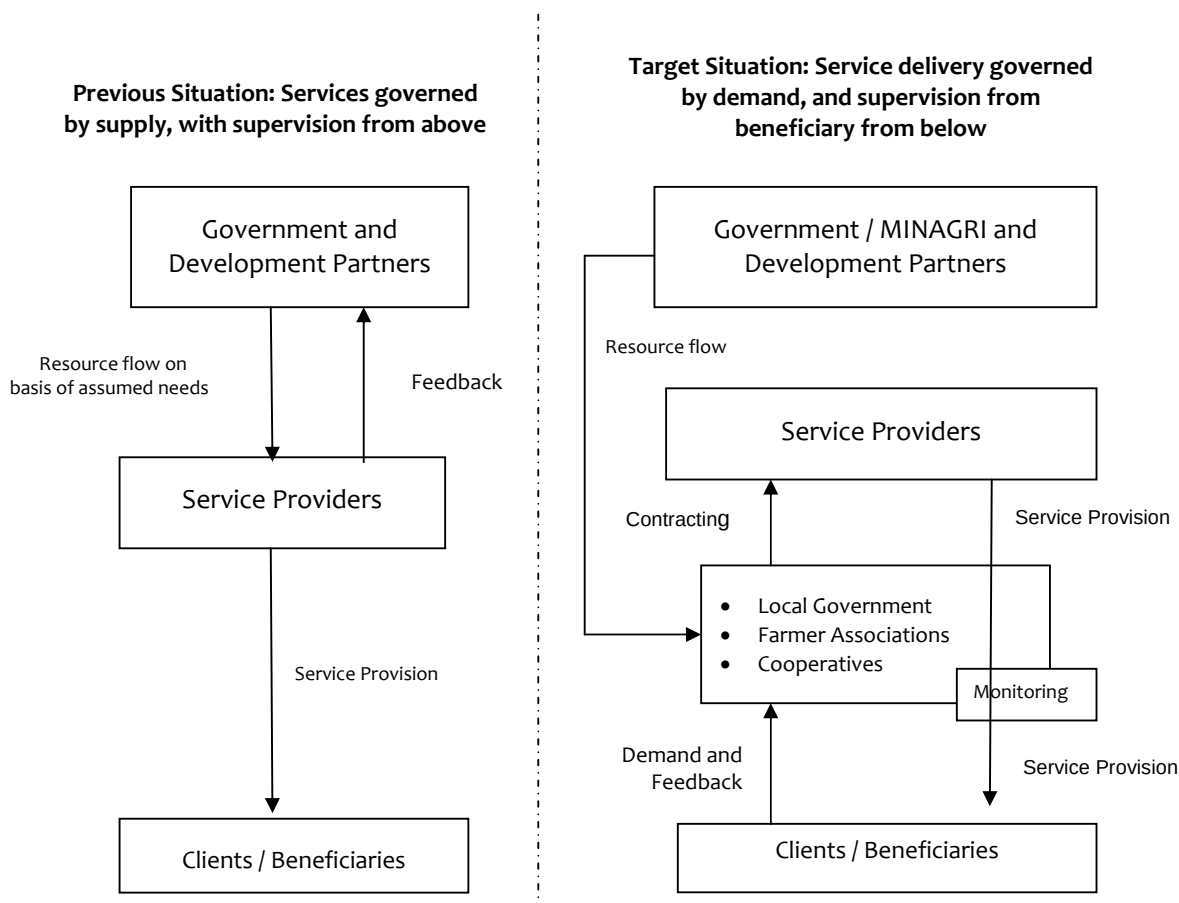
MINAGRI itself has undergone decentralization to a degree, with the devolution of technical field-level responsibilities to the agencies that are collectively known as service providers: RADA, RARDA, RHODA and ISAR. These agencies in turn are mandated to play a supporting role to the districts and other local entities, and to respond to requests for services from the district and local level.

The three agencies, RADA, RARDA and RHODA have some staff representing them at the provincial level, but no staff at district level. RARDA has vets in every secteur and district who may not be representing them per se but with whom they work closely. ISAR and OCIR The and OCIR Café both have significant numbers of decentralised staff, in the form of researchers at research stations, agronomists in coffee producing areas and the actual ownership of tea factories and plantations. In the light of PSTA I and the decentralisation reform, *the major role of these agencies will be to train and facilitate the actions of farmer communities, farmer organisations, local governments and the private sector to gradually take up their roles.* Hence the agencies have facilitation responsibilities, and no direct implementation responsibilities.

RHODA is a new institution, but RARDA and RADA are agencies that were hived off from MINAGRI (i.e., former livestock and agriculture departments which were merged with seed service and veterinary laboratories respectively). The organisations still have to grow into their new roles – and many of the members of staff still have an attitude of ‘we are the technical implementers.’ According to the new policies, however, as well as the new administrative set-up with local governments, other actors are supposed to undertake (at least part of) the implementation tasks.

As a result, these agencies are expected to seek activities that suit their new role of facilitating other actors. A nice example of such a new role is provided by RARDA, which now trains district level vaccinators rather than undertaking vaccinations directly as it did before. Obviously, in various other areas also the mix of activities, as well as the way activities are implemented, needs to change as compared to the way business was conducted in the past. The transition is illustrated in Figure 1 below showing that service provision has to change from a supply-driven mode to a mode in which beneficiaries can hold the service provider to account and as such also have a say in the type of services to be delivered, as well as in the way these services are delivered.

Figure 1. Old and new mechanisms for service provision: client power



At least as for part of their activities, the three agencies need to become service providers that are, in their operations, guided by market-based principles. In future the districts are supposed to become the clients of the agencies, in a relationship in which the client ultimately decides what services should be provided, rather playing the role of subordinates taking directions from the agencies.

Apart from this facilitating role, the agencies will have a role in the implementation of particular activities (e.g., large irrigation schemes) that are too big to be handled by an individual district council or activities that run across various councils. As such, the agencies could also manage certain projects.¹⁴

As a third role, the agencies have responsibilities in regard to policy formulation, creating an enabling environment of their respective sub-sectors, as well as monitoring tasks to ascertain that, for example, districts keep to the nationally set norms and standards.

In view of both agricultural policy and the process of decentralization, the above guidelines mean that agencies will refrain from activities which, following the principle of subsidiarity, can be

¹⁴ This means that in future, rather than only the recurrent budget, that plus parts of the development budget will be allocated to the agencies, and they then would have accounting responsibilities for all the allocations.

undertaken (or should be undertaken) by districts. In cases in which districts currently are not able to undertake those activities, the agencies are supposed to assist districts in undertaking those activities, rather than undertaking them themselves.

Linkages between the Strategy and the budget process

This Strategy is designed to be operational and for that purpose it needs strong links to the budget process. The last part of the Strategy is devoted to a detailed specific of actions under the Sub-Programmes and a costing of those actions. This budgetary information will feed into decision-making on fund allocations via three channels:

- **The Central Government's annual budgets**, and from there to Local Government budgets on the basis decisions on cost-sharing and resource transfers.
- **Funding decisions of the international partners**, facilitated by the SWAp mechanism that is currently under development.
- **The Government's Medium-Term Expenditure Framework**, which is an essential link because of the need for continuing funding for most of the activities.

In addition to these channels, the Strategy should be an input into the occasional revisions of a Long-Term Investment Framework. Continuity and consistency of focus and funding over a number of years is a prerequisite for the success of many agricultural development activities.

This strategy needs to be accompanied by an action plan for each Programme and Sub-Programme that specifies steps to be taken in each district and at the national level, and disaggregates the funding by source (Central Government, Local Governments, international partners) and also specifies what is expected of the private sector.

A major message of this Strategy is that so far the funding levels have fallen short of what will be necessary to achieve the EDPRS targets for the sector, so it is hoped that the specificity of this document, in regard to both modalities of implementation and activity costing, will help catalyze the needed funding commitments.

Linkages between the Strategy and international cooperation

Another important element of the Government's policy framework is the Aid Coordination Framework, as articulated in the Aid Policy Document (2006). This document promotes increased government ownership of development assistance, moving donors towards sector and general budget support and alignment with the government's systems, both reporting and calendar. At the sector level, the SWAp modality is to be used to coordinate budget support from the partners and the Government's budgeting process.

As emphasized throughout in this document, the *Programme* is the principal vehicle for coordination of implementation measures both within the Government and with international partners. A Programme brings together projects and the policy reforms or measures that are needed to make the projects successful. This same approach is used at the level of Sub-Programmes. This concept is the basis for the development of a SWAp for the agricultural sector, which is discussed in section III.1.3 below.

Chapter I.2 Principles of This Strategy and the Strategic Axes for Rwandan Agriculture

I.2.1 Guiding principles for development of the Strategy

As well as establishing the key areas of intervention, in the form of Programmes and Sub-Programmes, and *what* is to be achieved in each area, the Strategy must specify *how* the aims will be achieved. Both the definition of the areas of intervention and the specification of the modalities of intervention – the *how* – have been guided by a set of basic principles that underlie sector policy. These principles are **eight** in number and are enunciated in this section.

As is evident from the foregoing discussion, national policies consider the agricultural sector to be the main springboard for the fight against poverty. **Reducing poverty** is the first basic principle of this Strategy and is a defining characteristic of the interventions. Economic growth in the primary sector should become the principal vehicle for raising rural households out of their situation of generalised poverty. At the same time, agricultural growth should spur progressive development in secondary and tertiary sectors, and this will further alleviate poverty by creating increasingly greater opportunities for off-farm employment.

Off-farm employment within the agricultural sector itself also will be an avenue for raising rural incomes. Studies have shown that even subsistence farmers benefit from intensification of agriculture through the opportunities it creates for them to work on other farms and in enterprises such as collection centres, pack houses, and processing facilities. This additional employment in turn provides a way to increase their household food security, along with better yields of their own subsistence crops. Nevertheless, benefits for the poor cannot be taken for granted in any development programme, and it is important to put mechanisms in place for guaranteeing that different categories of farmers, especially the most vulnerable, benefit from the economic growth that is being generated.

The key to reducing poverty, in turn, is **increasing productivity and competitiveness**. This is the only sustainable manner of reducing poverty and is to be achieved through a number of simultaneous thrusts, starting with intensification of input use, improved management of soil and water resources, and farmer training (increasing the stock of human capital in rural areas). The actions will include increasing farmers' access to physical capital in the form of livestock, to basic resources such as irrigation water and to rural infrastructure such as roads, collection points, and drying and packing facilities.

The third fundamental principle guiding the Strategy is that resource allocations and production decisions must be **market driven**. There are undoubted opportunities to increase productivity and production in Rwandan agriculture, but the full benefits of those efforts cannot be realized unless the outcomes, and hence the decisions, are linked to the markets from which higher farmer returns are obtained. This also means that the development of the sector rests increasingly on the role of the private sector, and the State will play a facilitating and regulatory role. In many areas, MINAGRI needs to become more of a facilitator and less of a doer.

A corollary is that appropriate incentive structures need to be put in place to drive the desired transformations of the sector. For example, coffee and tea producers merit quality premiums in the prices of the raw material they produce. In some cases, incentives can be transitory, until farmers become familiar with the benefits of new approaches and technologies and generate enough revenue to take on cost burdens themselves. Fertiliser use subsidies may be a case in point.

Given the degradation of soils in Rwanda and the continuing fragility of the resource base it is essential that this Strategy for Agricultural Transformation should recognise that the sustained intensification of agricultural activities will require the sustainable management of land and water.

Thus **environmental sustainability** is a fourth fundamental principle of this Strategy. It is a critical necessary condition for the continuation of benefits to the rural population. It includes not only the sustainability of new agricultural activities but also actions directed toward the recovery and recuperation of the degraded resource base, so that it can support more highly productive activities in the future.

The interactions between agricultural productivity and the environment are fundamental. Soil erosion and over cultivation reduces soil fertility and agricultural productivity so that food production declines, rural incomes decrease and thus poverty increases. To compensate for declining soil fertility, a solution may be to apply more inorganic fertiliser, but that costs money, which again requires foreign exchange and sets up a spiral of needing to apply increased amounts of fertiliser to compensate for worsening soil fertility. Moreover, fertiliser run-off has environmental impacts, especially in water resources, which again have economic impacts. In contrast, sustainable agricultural practices reduce soil erosion and soil fertility decline, which mean that agricultural productivity is maintained at less cost.

Participation in and local ownership of activities is a fifth fundamental principle of the Strategy. Unless farmers are convinced of the soundness of approaches, they will not be adopted in a lasting manner. Equally, local participation in the design of projects, and in the carrying out of activities like adaptive research, improves the effectiveness of the interventions. In the end agricultural development requires changing attitudes and habits, and this will not happen unless the beneficiaries participate in the undertakings from the outset. As an illustration of the importance of this principle, in 2007 MINAGRI conducted a pilot test of Citizen Report Cards for farmers to record their satisfaction with agricultural services such as extension and veterinary services, and a full roll of the system is being made this year.

A sixth fundamental principle of the Strategy is **institutional sustainability**. In a first instance this means developing fiscal mechanisms and capacity building strategies that ensure the sustainability of the role and functions of local governments. But more broadly, this principle means implementing activities and measures in ways that help create and strengthen sustainable modalities and private institutions. For example, credit operations conducted at the retail level directly by projects and government agencies are not sustainable and tend to undermine the development of viable financial institutional modalities in rural areas. Equally, input delivery must be carried out in ways that foster development of sustainable private networks (including producer cooperatives) for that purpose.

A seventh fundamental principle is that **the strategy is flexible and dynamic**. It pretends to create a new future for the rural population, and there are always uncertainties and risks with fundamental changes in paradigms. Therefore the Strategy must be open to revision over time through feedback from the grass-roots level.

The eighth basic principle is that **the Strategy is sensitive to the issues of gender, youth, and AIDS**. In all phases and dimensions of its design and implementation, and in all locations, these themes must be taken into consideration in the planning and the carrying out of actions. The Constitution itself lays the basis for more gender awareness and actions directed at removing gender biases, and experience in rural development, in other countries as well as Rwanda, has shown that the participation of women in agricultural activities invariably increases their benefits in terms of household welfare. Equally, in programme design it is important to avoid inadvertent negative impacts, e.g., upon women's nutrition and control of resources in moving to a cash economy.

1.2.2. The Four Strategic Axes for Rwandan Agriculture

Agriculture's basic factors of production are physical resources (land, water) and human capital. The way in which these factors are enhanced and combined is critical for agricultural development. For effective utilization of these factors in an environment like that of Rwanda, integration of farming systems is essential, along with farmer training, development of entrepreneurial

capacities, and a strengthening of the supporting institutional framework. Accordingly, this Strategy develops agendas for action under the aegis of four interrelated Programmes that stress these themes and 20 Sub-Programmes that provide specific paths to implementation.

The four Programmes that lie at the heart of the Strategy are:

- 1. Intensification and development of sustainable production systems**
- 2. Support to the professionalisation of the producers**
- 3. Promotion of commodity chains and agribusiness development**
- 4. Institutional development**

These four Programmes provide the framework for the planning and financing of interventions in the sector for both the Government of Rwanda and its development partners, the majority of whom are using the Strategy as the basis for programming their assistance to the sector and for aligning the activities they fund through the SWAp arrangements. It is the successful implementation of these four Programmes and their Sub-Programmes that will result in the goals of the *National Agricultural Policy* and the *Economic Development and Poverty Reduction Strategy* being realised. Part II of this Strategy is devoted to setting out in detail these Programmes on the basis of the objectives and constraints to be overcome in each area. A costing of the Programmes and Sub-Programmes then follows in Part III.

The Programmes are crosscutting in nature and will lay the foundations for better performance in all the kinds of crops and livestock products that farmers choose. Where additional approaches are required that are specific to certain products, they are described in the relevant sections of Part II.

Chapter I.3 Rwandan Agriculture Today

I.3.1 Overview of the Agriculture Sector

Land availability, farm sizes and soil erosion

The Rwandan landscape poses a thorny problem of availability of arable land that, because of the high population density, is exploited to the very limits of agricultural possibilities and often beyond, and the small size of the country (26,336 km²) does not offer any alternative for increasing the amount of arable land. The arable land area is estimated at 1.4 million hectares (52 % of the total surface of the country) but actual areas cultivated often have exceeded 1.6 million hectares in recent years. Another 0.47 million ha. are in permanent pasture, so well over 70% of the country's total land surface is exploited for agriculture, which is an extraordinarily high figure.¹⁵

Landholdings are very small with more than 60% of households cultivating less than 0.7 ha., 50% cultivating less than 0.5 ha., and more than 25% cultivating less than 0.2 ha. This constraint is aggravated by the fact that most farms have multiple, scattered plots, many of them tiny. In addition to the small size of farms and plots, crops are grown on steep slopes up to and above 55%. The less demanding crops, usually cassava, tend to occupy the most marginal zones –those with steep slopes and with poor soil fertility. It is generally agreed that slopes of more than 5% need erosion control measures. However, most of the cultivated land has steeper slopes and is not protected with recommended control measures.

About 40% (800,000 ha.) of Rwanda's land is classified by the FAO as having a very high erosion risk, 37% requires soil retention measures before cultivation, and only 23% of the cultivated land is more or less free from risk of erosion. As regards soil fertility, a high proportion of the soils have significant acidity, 75% of the land is "highly degraded," and overall it has one of the highest negative nutrient balances in sub-Saharan Africa.¹⁶

As these figures suggest, soils are being lost at a rapid rate. It has been established that Rwanda is losing 1.4 million tons of soil per year. This is equivalent to a decline in the country's capacity to feed 40,000 people per year. The annual loss is estimated to be 945,200 tons for organic matter, 41,210 tons for nitrogen, 280 tons for phosphorus and 3,055 tons for potassium. In some areas the annual rate of loss can go up to 557 tons/hectare. These losses affect all crops. As a consequence of the soil erosion, the Nyabarongo River carries 51 kg/second of soil at Nyabarongo-Kigali, 44 kg/second at Nyabarongo-Kanzenze, and 26 kg/second at Akagera-Rusumo.

The climate is aggressive and capricious. On one hand it is characterised by strong precipitation in the mountainous areas, exacerbating the erosion and soil degradation. On the other hand, low altitude areas such as Imbo, Bugesera, Mayaga and Mutara experience erratic and low rainfalls.

Out of 165,000 hectares of marshlands, 93,754 hectares have been cultivated (57% of the total marshy surface area). However, as of 2006, only 11,000 hectares were developed so that they can be cultivated throughout the year. Other parts of the marshlands are cultivated without any technical study by peasants grouped into organizations or by cooperative groups supported by local or foreign non-governmental organisations. Such developments risk causing ecological disequilibria in the fragile ecosystems.

Other general problems in terms of soil and water and management in Rwanda are the following:

¹⁵ The World Bank (June 2007, p. 9).

¹⁶ Ministry of Lands, Environment, Forestry, Water and Mines, *Rwanda Ecosystem Rehabilitation and Poverty Eradication Programme*, draft concept note, Kigali, January 30, 2008, p. 1.

- Poor use of farmyard manure; even though more than 50% of rural families raise cattle, the average number of cattle per household is small and cattle breeders practicing zero grazing are still rare.
- Agroforestry is not well developed, which explains lack of firewood and the consequent practice of people using farm residues in the home.

Erosion control actions are being applied but not sufficiently and the coverage of better practices and control structures in all the zones needing erosion control is still very insufficient. On the whole, farmers do not yet perceive erosion control as an essential step for intensification of production.

Despite the fact that the more commercial farmers usually can adapt to changing conditions, there are troublesome indicators of a deterioration in the situation of most farmers if agriculture is not transformed and modernized in time:

- Farms are facing more and more difficulties in ensuring family subsistence, particularly during droughts; many families are regularly confronted with food and nutritional shortages, either seasonally or throughout the year.
- Even for families that avoid food shortages, for many rural families the incomes derived from the sale of agricultural products are not sufficient to cover other household needs.
- Traditional techniques for regeneration of soil fertility, such as fallowing land are no longer possible.
- The decline in animal manure production and its availability for fertilization of fields and the erosion resulting from deforestation brings with them a worrying decline in soil fertility.

In this context it is easily understood that the poverty reduction strategy in Rwanda must assign first priority to rural development, and especially the transformation and modernisation of the agricultural sector.

Production, productivity and trade in agriculture

Food crops hold a very dominant position in Rwandan agriculture. As shown in Table 6, beans and bananas are by far the dominant crops in terms of area planted by farmers, followed by sorghum and Irish potatoes and then sweet potatoes, cassava and maize, in that order. However, since 1990 the largest percentage increases in area sown, by a large margin, have been fruit and vegetables (increasing more than fourfold), followed by Irish potatoes and wheat (increasing approximately threefold). Other crops with significant increases in the area allocated to them have been rice, sorghum, maize, groundnuts (especially since 1997) and soybeans. Bananas (including plantains) and cassava have suffered slight reductions, and sweet potatoes and other root crops declined sharply in area sown. The area devoted to peas was substantially less in 1997 than in 1990, but after 1997 it has remained approximately the same. Long time series of data are not available for coffee, tea, pyrethrum and other non-traditional crops, but these specialised crops appear to be generally increasing in production, sometimes rapidly.

On the whole these are significant changes in national cropping patterns over a fairly short period of time, and they demonstrate the readiness of Rwandan farmers to respond to new opportunities and changing incentives. The trend of greatest concern is that for most crops the yields do not show a discernible upward trend since the 1990s, with the exceptions of cassava (since 2002) and peas and sweet potatoes (since 2000). Rice yields also have been higher since 2000 than in the 1990s except for 1997. Groundnuts have experienced a marked decline in average yields, perhaps as a result of the expansion of their cultivation into more marginal lands.

However, when total agricultural value added (income) per hectare is examined over a longer period of time, the trend is slightly positive. It increased from about US\$360 in 1970 to about \$440 in 2005,¹⁷ which translates into an annual growth rate of 0.6% per year. Given the impossibility of expanding the amount of arable land and the rate of demographic growth, this rate of increase of value added per hectare is clearly unacceptable and needs to be accelerated.

Not surprisingly, given Rwanda's scarcity of arable land, the country has one of Africa's highest levels of agricultural value added per hectare.¹⁸ But this does not contradict the possibilities of increasing it substantially through more intensive application of inputs. The other side of the factor use coin is labour productivity, and the prevailing rural poverty shows that it is quite low. The urgent task is to increase returns to labour with higher rates of use of complementary inputs (including water) and a gradual shift toward higher value crops on average. This will increase returns to land as well.

Livestock represent an additional and important source of income and nutrition for farm families, and they are traditionally used as a form of savings (a store of value) for those families, most of whom have no experience with financial savings. In spite of Rwanda's land scarcity, the government has been promoting livestock ownership and quality upgrading through integrating farming systems with zero grazing. Apart from specialty and fine coffees, the greatest achievement of Rwandan agriculture in this decade has been a remarkable increase in livestock herds and poultry flocks, especially small ruminants and pigs but of all types (Table 7).

This trend has brought with it very large increases in meat and milk production, which undoubtedly have improved the food security and nutrition situation of substantial numbers of rural families. Even honey production showed a remarkable increase. One of the main thrusts of this Strategy will be to continue these trends and enhance livestock productivity through breed improvements and better management including use of farmyard manure for soil improvement.

The principal agricultural exports are, in order, coffee, tea, hides and skins, and pyrethrum. Coffee and tea have growing international markets, but for the other export products the main markets are regional. In fact, as of 2005 only 9% of exports went to Europe while 41% were destined for Kenya and 27% for Uganda. The Congo and Tanzania represent other significant markets. Dessert bananas and flowers are beginning to penetrate wider international markets, and French beans and zucchini now are exported to Kenya, from where they are re-exported to Europe. Meat is exported to Gabon and livestock on the hoof to Congo. A potential market that is untapped for Rwandan exports thus far is the Middle East.

At the beginning of this decade coffee price trends were not favourable, but now they are improving and the shift toward fully washed coffee (including fine and specialty coffees) is gaining a substantial price premium for Rwandan coffee producers, with the consequence of marked increases in coffee export earnings in 2006 and probably in 2008. International prices for a number of fruit and vegetable crops also appear to be attractive for Rwanda if organizational and quality issues can be successfully surmounted.

¹⁷ The World Bank (June 2007, p. 13, citing FAOSTAT data).

¹⁸ *Op. cit.*, p. 12.

Table 6. Area harvested of principal crops, 1990 and 1997-2007

Crop/Year	1990	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Sorghum	133,421	108,894	114,639	129,261	174,195	165,444	171,608	179,991	179,307	196,732	170,298	159,670
Maize	98,522	76,481	71,212	72,673	89,053	105,560	104,628	103,100	106,976	109,400	114,836	140,141
Wheat	9,313	6,275	5,700	5,172	10,043	10,748	12,046	20,727	22,191	24,157	22,972	27,161
Rice	6,816	3,233	4,144	4,919	4,266	5,090	6,423	7,666	12,167	13,922	14,033	15,037
Cereals	248,072	194,883	195,695	212,025	277,557	286,842	294,705	311,484	320,641	344,211	322,139	342,009
Beans	262,563	238,525	234,923	228,215	333,205	343,966	358,002	356,899	319,349	313,019	356,381	355,725
Peas	45,896	33,562	28,750	26,796	29,993	32,125	31,228	34,752	32,175	34,796	31,141	36,545
Groundnuts	9,365	3,459	7,045	7,397	13,463	14,767	15,900	16,823	18,884	16,011	16,197	19,488
Soybeans	26,867	13,756	17,858	19,073	29,543	29,555	31,289	36,067	36,707	42,119	42,364	55,423
Pulses, oilseeds	344,691	289,302	288,576	281,481	406,204	420,413	436,418	444,541	407,115	405,945	446,082	467,181
Irish potatoes	42,055	42,000	28,264	29,770	108,983	117,403	124,972	134,034	133,418	135,622	139,750	114,164
Sweet potatoes	175,893	149,342	148,858	179,941	174,663	197,727	195,370	147,290	163,069	148,526	138,725	146,763
Colocase, yams	52,137	42,914	46,158	49,049	21,320	25,669	25,334	27,158	27,098	26,537	25,251	31,722
Cassava	131,768	82,188	76,314	118,492	120,463	136,238	130,457	134,386	133,875	115,694	118,860	143,225
Roots & tubers	401,853	316,444	299,594	377,252	425,429	477,037	476,134	442,869	457,460	426,379	422,586	435,874
Bananas, plantains	400,570	349,906	405,264	410,323	360,470	363,249	358,863	358,418	363,383	361,251	366,296	351,958
Fruit, vegetables	18,374	n.a.	19,310	20,889	41,692	44,042	47,420	58,225	48,160	81,777	84,830	83,959
Total above	1,413,560	1,150,535	1,213,783	1,301,970	1,511,352	1,591,583	1,613,540	1,615,538	1,596,759	1,619,563	1,641,933	1,680,981
Coffee										33,000	38,559	
Tea						9,786	9,572	9,588	9,542	11,750	12,306	
Pyrethrum						2,385	2,665	3,191	3,394	3,191		

Sources: MINAGRI, MINECOFIN, OCIR Café and OCIR Thé.

Table 7. Trends in livestock and livestock products, 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007
Livestock ('000 head)								
Cattle	755	814	960	992	1,007	1,077	1,122	1,147
Goats	757	917	920	1,271	1,264	2,664	2,688	2,738
Sheep	233	267	301	372	687	690	695	704
Pigs	177	197	208	212	327	456	527	571
Poultry	2,043	1,278	1,056	2,432	2,482	2,109	1,776	1,868
Rabbits	339	495	489	498	520	427	418	423
Livestock products (mt)								
Milk	57,853	63,484	97,981	112,463	121,417	135,141	146,840	158,764
Meat	22,807	25,608	35,748	39,126	48,681	49,861	52,226	54,780
Fish	6,996	7,308	7,612	8,144	8,126	8,180	9,267	9,655
Eggs	1,471	920	1,015	2,432	2,452	2,452	2,236	1,620
Honey	n.a.	760	819	908	1,029	1,671	1,676	n.a.

Source: MINAGRI.

Rwanda imports agricultural products from regional trading partners, mainly subsistence crops, including plantains and cassava. With modest yield increases it appears Rwandan production can be competitive with these imports, and so import substitution in this area offers another market outlet for additional production, as indicated in the National Agricultural Policy.

Summary of principal commodity chains

Agricultural crop production in Rwanda can be grouped in three categories: food crops (legumes, cereals, roots and tubers, bananas), the traditional cash crops (coffee, tea, pyrethrum), and the new cash or export crops (fruits and vegetables, flowers, spices etc.). Food crops occupy by far the largest share of the cultivated land (Table 6).

Domestic markets for food crops in Rwanda have been characterized as underdeveloped because of their high costs but efficient in their use of limited resources. The high costs are mainly due to the informal nature and fragmentation of the value chain, so that produce changes hands several times as it moves from the farm gate to the final consumer. This is further complicated by the high transport costs as can be seen from a recent World Bank study of the sector (World Bank, June 2007, pp.32-33).

Maize

The commodity chain of maize has been undergoing a profound change, due to increased involvement of the private sector in its production, transformation and commercialisation. This is best illustrated by the case of the company MINIMEX, which built a factory for maize flour processing with a capacity of 300t/day. This is equivalent to 75% of the total national production and a partnership with farmer organizations for the production of the raw material (maize) was established. Maize possesses the advantage of being grown in all agro-ecological zones of the country, with a higher potential in the former provinces of Ruhengeri and Gisenyi and in developed marshlands. Relative price information suggests that Rwandan maize production can be competitive with imports though not in export markets. In 2005 the import parity price calculated at the farm gate was RwF 406 per kg, vs. a producer price at farm gate of RwF 220 per kg.¹⁹ Given the recent strong upsurge in world maize prices, it is likely that the competitive position of domestic producers vis-à-vis imports will have increased.

¹⁹ The World Bank (June 2007, p. 52).

The crop has a generally good potential for increased yields and returns with fertiliser application, especially in the Impala zone and the highlands of Budaha-Ndiza-Buberuka.²⁰ Experiment station yields are as much as four times average farm yields, which suggest considerable scope for productivity improvement.

Rice

Rice is a cereal with growing importance in Rwanda. In 2003 rice was grown on 6,020 ha with a total production of 27,866 kg of paddy rice, equivalent to 18,112 kg of polished rice. Rice production is carried out in the rice schemes in the former provinces of Cyangugu, Butare, Gitarama, Kigali-Ngali, Umutara and Kibungo. The study for the marshlands utilisation master plan identified 48,000 ha of marshlands that are suitable for rice production. The nation's rice production covered 28% of rice needs in 2001, 50% of the needs in 2002 and 60% of the needs in 2003. Importation of rice can be further reduced if the national production capacity is increased. As in the case of maize, price data indicate Rwandan rice production can be competitive with imports although not in export markets. In 2005 the import parity price translated to the farm gate level was RwF 427 per kg, vs. a producer price at farm gate of RwF 365 per kg.²¹ Given the recent sharp rise in world rice prices, it is likely that the competitive position of domestic producers vis-à-vis imports also will have increased.

With the aim of increasing rice production, MINAGRI has been endeavouring to increase the area of marshlands development, through the Rural Sector Support Project (RSSP). Research activities by ISAR have demonstrated yields of 7 t/ha and up to 10 t/ha on controlled plots, as compared to an average of about 3.5 t/ha on farmers' plots in the 2001-2005 period, so use of improved seeds and recommended cultivation practices should make this crop more profitable.

Coffee

The traditional export crops (coffee, tea, pyrethrum) are particularly important to the nation (foreign exchange earners) and to the farmers (monetary income). Coffee is grown by some 500,000 farmers in 30 Districts, which are the most suitable ones for the crop in the context of regional specialization and intensification of coffee growing.

Coffee production in Rwanda declined through the 1990s and up to 2001, as a consequence of fluctuating and declining world prices, and by the end of that period many producers were uprooting their coffee trees. The amount of effort devoted to tending coffee trees declined, and crop losses were high from the fungal infection leaf rust and from the insect antestia. Concomitantly the quality declined. In 1987, 40% of Rwandan coffee was classified as "standard grade" and 60% as the lower "ordinary grade." By 2000, 90% of production was of ordinary grade.

During this period of unfavourable price trends for commercial-grade coffee, prices for higher grades (fine and specialty) increasingly diverged from the former. In light of this development in world markets, in 2002 Rwanda began to put into action a strategy for enhancing the quality of its production so that it could be sold at the higher prices. One of the keys to producing the higher grades is fully washing the coffee. In 2002 there were only 2 washing stations in the country, and a goal was established to have 58 by 2007 and 107 by the year 2010. These goals were surpassed, and by 2007 there were over 120 washing stations spread across all producing regions of the country.

At the same time, international marketing campaigns were launched for Rwandan coffee, massive numbers of coffee trees were planted, and efforts were made to intensify the use of fertiliser, fungicides and insecticides. In 1999 there were about 80 million coffee trees in Rwanda, and since 2002 80 million additional trees were planted. Not all the new trees went to replace aging existing stock, as they should

²⁰ Valerie Kelly and Anastase Murekezi, *Fertiliser Response and Profitability in Rwanda*, Kigali, February 2000, p. 18.

²¹ The World Bank, June 2007, p. 52.

have, but still the average age of coffee trees in the country has been reduced substantially. There also have been issues in input distribution and regarding incentives for farmers to produce better quality coffee cherries, and these issues are discussed in Part II of this Strategy, but still it is evident that the coffee sector is undergoing a significant and largely successful transformation.²² Some cooperatives now market their own coffee internationally, through an umbrella organization that has direct contact with buyers, and producers are rewarded for quality through the mechanism of a second payment for the cherries, disbursed after the international sales are consummated.

The reforms in the sector included the privatisation of the State-owned coffee export company, RWANDEX, in 2006. Following the privatisation a large number of new private domestic and international coffee exporters has settled in Rwanda. However, OCIR-Café continues to provide valuable technical assistance to coffee growers and processors.

In the 2000-2003 period coffee exports were worth 19 million dollars per year on average, representing about 28% of the total exports in that period. By 2006 the value of coffee exports reached \$54 million. They fell back in 2007 owing to a combination of a downturn in the natural yield cycle of coffee trees and the uprooting of a variety (Caturra) that proved unsatisfactory in Rwandan conditions. However, coffee exports are projected to rebound significantly in 2008, so clearly they are on a higher plateau now than a few years ago, and it continues to rise.

Tea

Tea constitutes the second largest traditional export crop. In 2006 and 2007, tea exports earned US\$ 32 million each year. Prices fluctuate enormously on the world market, and production varies from 13.000 tons to 17.000 tons in normal conditions.

Following the recent implementation of price differentiation and improvement in tea transport, OCIR-Thé has achieved a considerable increase in Rwandan tea quality, which is now ranked first in the Mombasa auctions. One of the strategic objectives is the privatisation of the factories owned by OCIR-Thé in a way that ensures that tea growers receive part of the benefits of the price premium for the high quality of Rwandan tea. The new tea factory in Shiri that began operation in 2007, with farmers holding 30% of the shares, may show a way for the achievement of this objective. On the quality side, the private tea factory Sorwarthé has gained Fair Trade certification for its products and is expecting to receive ISO 22000 certification in August of this year, which will further boost the price it receives on international markets.

Unlike the coffee marketing system, Rwanda's tea marketing system continues to be dominated by state-owned companies. In contrast to coffee, which is grown by a large number of small-scale private growers, tea is cultivated mainly on large plantations, which are owned and managed by about a dozen tea "factories" that process green tea into black tea. The factories supplement the tea cultivated on their own land with relatively small amounts of tea produced by tea cooperatives and private growers. The marketing chain for tea is necessarily short, reflecting the extreme perishability of green tea, which must be delivered to the factory within hours of being picked so as not to suffer a significant loss in quality. Tea is usually picked early in the early morning, when temperatures are cool, and it is transported in baskets to local collection points. After being weighed, it is loaded onto trucks for delivery to the factory. Following a brief withering period, it is chopped, fermented, dried down, cut, and packaged for export. Tea exported from Rwanda is mostly transported by road to Mombasa, where it is sold at auction. Private factories however increasingly sell tea directly to niche buyers and blenders in, for example, the USA. Rwandan tea is generally of very high quality, and as mentioned it always fetches premium prices at the Mombasa auction.²³

²² The foregoing three paragraphs are based on conversations in OCIR-Café and on the document, "Rwanda National Coffee Strategy, 2009-2012," MINAGRI and MINICOM, Kigali, July 2008.

²³ From this paragraph onward, some parts of the remaining discussion in this section have been adapted from The World Bank (June 2007).

The Office des Cultures Industrielles au Rwanda - Thé (OCIR-Thé) was established as a parastatal marketing board to manage the tea sub-sector and provide technical assistance. The proposed privatization for the factories owned by OCIR-Thé has run up against two hurdles: the aforementioned issue of providing appropriate quality premiums for tea farmers, and the reluctance on the part of private investors to acquire tea factories that following years of underinvestment and inadequate maintenance no longer are able to operate efficiently. The low level of operating efficiency not only raises production costs but also severely affects the quality of the final product. Tea is a product in which Rwanda has a comparative advantage because of altitude and climate, and it is a case where improvements in the processing stage could lead to considerably higher levels of income and of production. Hence Part II of this Strategy lays out a roadmap for achievement of the privatization goals in the tea sub-sector.

Pyrethrum

Rwanda's pyrethrum marketing system is extremely localized. Approximately 25,000 farmers cultivate pyrethrum on around 3,200 ha concentrated within a small radius around the country's single pyrethrum processing plant located outside Musanze, former Ruhengeri. Most pyrethrum growers belong to a production cooperative, and most of the cooperatives in turn are organized into a federation of cooperatives, which coordinates production and marketing activities. In the past, pyrethrum growers marketed mainly fresh-cut flowers, but most have adopted simple farm-level solar drying technologies and now sell mainly dried flowers, which are less perishable and much less costly to transport.

The pyrethrum processing plant, which was formerly owned and operated by a parastatal under the management of the Office du Pyrèthre du Rwanda (OPYRWA), was heavily damaged during the war, and it remained out of commission for about a decade. Pyrethrum production fell sharply during this period, and most of the crop was exported to processing facilities in Kenya and Uganda. In 2004, the plant was taken over by a group of private investors operating as the Société du Pyrèthre de Rwanda (SOPYRWA). SOPYRWA has embarked upon an ambitious scheme to renovate, expand, and modernize the plant. A key element of SOPYRWA's strategy is to shift from producing the crude pyrethrum extracts that were produced in the past, and for which only a limited market exists, to producing more highly refined pyrethrum distillates that can be sold to a much more wider range of global buyers. The value of pyrethrum exports has increased sharply and reached US\$3 million in 2007.

Livestock

Livestock activities tend to follow a pattern of regional concentration within the country. Cattle rearing is concentrated in the former provinces of Umutara, Gitarama, Nyabihu and Kigali. The first is characterised by the extensive type of animal husbandry, whereas the other three are more or less oriented towards milk production. The raising of goats is more concentrated in the former provinces of Kigali, Byumba and Kibuye. Pigs are raised mainly in Gitarama and Butare. Beekeeping is widespread in the former provinces of Kibungo, Byumba and Gitarama, and organic honey is produced, especially from bees in natural forests.

The production systems are still mainly the traditional type, with little use of improved techniques. Intensive production is practiced for dairy production, with a trend toward genetic improvement, around Kigali City as well in Gishwati, where especially noteworthy progress has been achieved regarding genetic improvement. However, the pilot projects of PAPSTA have been putting in place improved production systems on a small scale in more remote locales, and at the household level, involving improved breeds and management techniques.

Hides and skins

Rwanda's marketing system for hides and skins is localized and in general is not well organized. individual tanneries collect hides and skins of domestic ruminants (cattle, sheep, and goats) from nearby livestock producers, who are encouraged to deliver them to local collection centres. Poor post-slaughter treatment attributable to a lack of specialized equipment, low levels of human capacity, and deficient coordination along the value chain results in severe degradation of hides and skins, which often receive significant quality discounts in international markets. Hides and skins exports currently amount to a little under 2,000 tons per year (valued at US\$3.6 million in 2007), over 90% of which is low-value dry leather and less than 10%

of which is higher-value wet blue leather. The leading destinations for Rwanda's hides and skins exports are Hong Kong, Pakistan, Kenya and Italy.

Poultry

Poultry, mainly chickens, are raised by the majority of rural households as a source of eggs and meat for home consumption and occasionally also as a minor source of supplemental income. Large-scale commercial poultry operations that use improved breeds and have recently started to appear in urban areas, especially in and around Kigali. The National Hatchery located at Rubilizi near Kigali has emerged as an important source of improved breeds sought by commercial producers.

Sector institutions

In the broadest sense the agricultural sector institutions include:

- i) public institutions at the central level;
- ii) local authorities at decentralised levels;
- iii) private institutions including farmer cooperatives;
- iv) civil society institutions; and
- v) entities representing international development partners.

At the central level one can distinguish two types of institutions concerned with the sector: several Ministries of the Central Government, and the public or semi-public autonomous institutions under the aegis of the Ministry of Agriculture and Animal Resources, MINAGRI.

It has been pointed out that agricultural development is an inherently multi-sectoral undertaking. Accordingly, various Ministries share the following responsibilities for agriculture: policy formulation, strategies, operational programmes for agricultural policy (MINAGRI); planning of Agricultural Public Investment Programmes (MINECOFIN), management of natural resources related to agriculture such as land, water, environment (MINIRENA); development of the road infrastructure and energy to facilitate intensification and modernisation of agriculture (MININFRA); coordination of development activities at Provincial and District levels (MINALOC); gender promotion, and capacity building for women engaged in agricultural activities (MIGEPROF); training in modern agricultural techniques and other professional training (MINEDUC); and training and control of cooperatives and export promotion (MINICOM).

Among the main public or autonomous semi-public institutions involved in the agricultural sector are: the RIEPA, which promotes involvement of local and foreign investors in the agricultural sector, BNR which ensures the supervision of credits, savings and financial services in the agricultural sector, and the Rwanda Development Bank (BRD), which is the spearheading institution in the financing of agro-industry. In 2004 the Government decided to strengthen the role of BRD in the financing of investments in agriculture and tourism.

Other supporting institutions include: research institutions (ISAR, IRCT), teaching institutions (Faculty of Agriculture at the National University of Rwanda, KIST, ISAE Busogo), some NGOs involved in research (development research) as well as the agencies responsible for the management of tea and coffee (OCIR-Thé, OCIR-Café).

A major change in the sector's institutional structure occurred in 2005 with the creation of the autonomous service providers for crops and livestock, the Rwanda Agricultural Development Authority (RADA) and the Rwanda Animal Resources Development Authority (RARDA). In 2007 Parliament passed the law creating another service provider for the horticultural sub-sector, the Rwanda Horticulture Development Authority (RHODA). These institutions were mentioned above in the context of decentralization. Their roles are clearly defined in their respective business plans. In the case of RARDA, for example, the business plan states: *The implementation of agricultural policies and programmes is mainly under the responsibility of Districts and the Provinces. At the provincial level the Director of Agriculture, Livestock and Forests (DAEF)*

coordinates agricultural activities, and at district level all agricultural activities are coordinated by the district agronomist.

All activities related to planning, execution, follow-up, evaluation and reporting are coordinated by the hierarchy of MINALOC, Province and Districts: Regular reports are made by the district agronomist to the DAEF who in turn submits the report to the Governor. The latter sends a provincial report to the Minister responsible for Local Administration (MINALOC) who in turn sends it to all Ministries concerned.

Private sector institutions

Different private Institutions are also involved in the agricultural sector, as individuals and in association. Farmer cooperatives are playing an important role, especially in crops such as coffee. Many entrepreneurs in the private sector such as those of the Rwanda Private Sector Federation (RPSF), which brings together seventeen professional and sector associations and six provincial associations, are becoming more and more engaged in agriculture. Commercial Banks and the Banque Populaire du Rwanda S.A. are important institutions as far as financing investments in agriculture are concerned. The number of micro finance institutions and savings and credit cooperatives is growing steadily and these will equally play an important role in the agricultural sector in the coming years. Entrepreneurs are increasingly involved in input delivery and agro-processing, the latter especially in sub-sectors like coffee and livestock processing. The emerging sub-sector of horticultural exports is a result of private initiatives, supported by government investments such as the cold storage facility at Kigali International Airport and by public sector work on sanitary and phytosanitary certification procedures. In some field crops such as rice and sugarcane private enterprises play a significant role.

Development partners

Agricultural development projects and programmes are often largely financed by development partners. Most of the funding for the agricultural sector is from external sources: 71% in 2005, 90% in 2006 and 74% in 2007.²⁴ The multilateral funding institutions active in Rwandan agriculture are the World Bank, ADB, EU and the Arab Bank for Development in Africa (BADEA), as well as United Nations Agencies such UNDP, FIDA and FAO. Bilateral cooperation partners such as USAID, Netherlands, Belgium, China, Germany, Italy, Canada, Great Britain, and international NGOs, are equally involved in the sector.

Some agricultural projects financed through external loans are characterised by a low level of disbursement, due to the poor absorptive capacity of the agencies responsible for their implementation, as well as complexities of donor procedures or delays for other reasons in operations.

Civil society and cooperatives

Several organizations and associations are also partners in the agricultural sector either as service providers or beneficiaries of different projects and programmes. Community-based organisations play a big role in the organisation of farmers and provision of extension services, as well as in the marketing of agricultural products, and local farmer cooperatives are playing an increasingly active role.

The agricultural professional organizations and entities are major beneficiaries of the sector interventions, not only primary beneficiaries of various projects and programmes, but also as service providers and service intermediaries at different levels, such as the providers of micro finance programmes. There are a number of agricultural cooperatives and associations operating at national level. These include the Union of Tea growers (FERWATHE), the coffee growers cooperative and the Association of Rice Growers. Some organizations, such as the association Imbaraga, which groups together agriculturists and livestock farmer and currently is active in the five provinces of Rwanda, are gradually adopting a national perspective in their provision of services.

²⁴ Martin Fowler, Claver Gasirabo, Sam Kanyarukiga, and Augustin Mutijima, 2007, p. 40.

1.3.2 Rural poverty, nutrition and the rural social situation

Poverty in rural areas

Poverty remains a major national concern and a challenge for public policy and programmes. It is most extreme in rural areas where many families are forced to reduce their food intake between harvests. A survey of household living conditions, EICV2, shows that rural incidence of poverty is still much greater than that of urban areas. However, it declined slightly between 2000/2001 and 2005/2006 for farming households, as well as for residents of Kigali City and for the nation as a whole. The poverty rate has increased for landless rural households that depend only on wage labour and other non-farm sources of income. Hence one of the main challenges for the sector is to create more remunerative wage employment. Table 8 shows the results of the two household living conditions surveys by province and in total.

Table 8. Poverty Headcount by Province, EICV1 and EICV2 (%)

	EICV1	EICV2
City of Kigali	24.4	20.2
Southern province	65.8	67.3
Western province	63.1	62.0
Northern province	66.9	62.7
Eastern province	61.8	50.4
National	60.4	56.9

Source: Andy McKay, Mary Strode, Clare O'Brien and Geoffrey Greenwell, 2007.

Perhaps the most striking results are the sharp drop in the incidence of poverty in the Eastern Province, as a result of agricultural development there, and the slight increase in poverty in the Southern Province. Overall, income inequality increased slightly between the two surveys, with the Gini coefficient rising from 0.47 to 0.49.

Food and nutrition situation

Given the prevailing levels of poverty in rural areas, it is not surprising that most rural households are not yet secure in their ability to obtain the food they need. According to the *Comprehensive Food Security and Vulnerability Analysis, Rural Rwanda*,²⁵ 28 percent of the rural population is food insecure, 24% is highly vulnerable, and 26% is moderately vulnerable. However, it was noted that these results may have been biased by the poor 2005-2006 harvest, so they may be considered “worst-case” estimates.

The study found that some regions are more food-insecure than others: the zones with the highest proportion of food insecure are the Bugesera (40%), the Crete of the Nile (37%), the Lake Shore (37%), the Eastern Curve (34%) and the Southern Plateau (34%). The severe consequences of food insecurity for child stunting and other physical development indicators can be seen in the foregoing discussion of national and sectoral targets. In 2002 20% of the rural households were found to suffer chronic malnutrition for children under the age of five, and 45% of rural households suffered moderate malnutrition for those children.

As regards diet, for the majority of Rwandans, daily food intake largely consists of bananas and roots and tubers (sweet potatoes, cassava, and Irish potatoes), which contribute 60 % of calories. Leguminous crops constitute the principle source of proteins and a considerable source of fats. Beans alone account for 40% of proteins, while peas, soybeans and groundnuts also contribute in that regard. The last two crops are the

²⁵ World Food Programme, European Commission and National Statistics Institute of Rwanda, 2006, p. 2.

main source of fat. Consumption of cereals (sorghum and maize) is poor despite the fact that they are energy-generating foods. Cereals contribute only 15.4% of the energy needs. Animal foods contribute little in the diet, just above 2% for calories, 6% for proteins, and 40% for fat (these averages were calculated for the years 2001-2003). Although vitamins and mineral salts are important for a balanced diet, fruits and vegetables are still only eaten in small quantities.

The urgent need to make improvements in nutrition is shown by data from the Health Sector Survey for children under five years of age, which show that while the average height for age has been increasing over the period 2000-2005, the weight for height and weight for age indicators have declined. This indicates nutritional deficits have not been reduced.

Role of women in agriculture

In 1996 it was estimated that 34% of households were female-headed, out of which 21% were widows. The proportion of households headed by widows varied from province to province, 13% in Gikongoro and 28% in Butare, for example. These households constitute the population at the highest risk of poverty and malnutrition. By 2005/2006 the share of female-headed households had declined to about one-fourth. Between 2000/2001 and 2005/2006, a higher proportion of women than men moved from farming in their own right to become unpaid family workers. Also, women have taken advantage of small business opportunities and this marks one of the few opportunities for them to diversify from agriculture.

Even in other situations where the number of female-headed households is lower, it has been proven that women play an important role in agricultural production activities. The participation of Rwandan women in production and notably in agriculture is something so common that it is taken for granted without always realizing the heavy burdens imposed on women.

Overall, studies carried out in the region show that women in the age group of 15-60 years spend one-third of their time in agriculture, while men spend only 19% of their time in agriculture 54% of their time in diverse leisure activities and on paid work, against 18% of women's time in this last category. Women use about 30% of their time for domestic activities while men spend only 4% of their time on such tasks.

In sum, women's time is often the most scarce resource of a rural household, and for that reason studies in Africa have shown that investments in facilitating household management, such as wells located near homes and more efficient cooking stoves, lead to higher income levels for the entire household. In spite of their heavy burdens of work, studies also have shown that women generally are better managers of household resources. For that reason, the Food for Work Programme in Rwanda now requires that 50% of the beneficiaries be women. The PAPSTA pilot projects in watersheds also have shown the importance of putting women in charge of managing additions to household resources such as livestock whenever possible.

Peasants without land

People who have no land comprised 11.5% of rural households in Rwanda in 2000/2001, according to the EICV1 survey, with the Provinces of Cyangugu (13%), Kigali Ngali (7.8%) and Gisenyi (7.2%) on top of the list. (The EICV2 did not report data for this category.) The EICV1 also found out that households without land and who have to rent it often get low-quality land. These families are often poor with no means to acquire the farm inputs that would help them produce enough food for their needs. They depend essentially on their own production for their livelihood and have no other source of income (no off-farm activities). Therefore any shock to their production (e.g., climatic) throws them into a food-insecure situation.

It has been noted that farm workers alternately go through periods with heavy and multiple activities (for instance during tea harvest) and periods of low activity, and they have no savings to see them through the periods of enforced idleness.

Gainful off-farm employment is still relatively rare in the rural areas, which is partly a consequence of poor labour skills and partly of low demand for labour. However, specialized crops and increased agro-processing are beginning to employ more persons. Flower cultivation, for example, requires thirty employees per hectare.

Youth and their future in agriculture

Even though there are no real figures available on the youth in rural areas, there are some indications that unemployment was increasing at least until recently (small groups seen along the roads and some town and city suburbs; school dropouts and rural exodus).

Young orphans of war and AIDS orphans are heading many households and have to take over the cultivation of their parents' farms without having had any preparation for it. A synchronised action for professional training should identify what is feasible with the view to preparing the youth for a better form of agriculture and other business opportunities.

It is very important to integrate a practical agricultural curriculum in rural education in order to better prepare youths for the tasks they will face in the labour force. Equally, studies should describe opportunities in agricultural professions and agricultural services, to motivate higher studies and a search for wider kinds of job openings.

1.3.3 Soil and water management and agricultural technology

Natural endowments and their management

Rwanda has a favourable altitude, climate and rainfall regime for agriculture, in addition to a heritage of fertile soils in some zones, though in many areas they are frequently high in acidity. Yet the hilly topography, with many steep slopes, has been conducive to depleting that heritage through rapid runoff of surface water and soil erosion.

Some reports on the extent of sloping land in Rwanda contain confusion regarding slope measurements in degrees vs. percent. The definitive statement on slope classes is shown in Table 9 below.

Table 9. Slope Classes of Rwanda's Land Endowment

Slope class (%)	Hectares	% total area
0 – 2	145,235	7.1
2 – 6	157,439	7.7
6 – 13	551,647	27.1
13 – 25	400,514	19.7
25 – 55	611,043	30.0
> 55	168,220	8.3

Source: MINAGRI/HYDROPLAN/SHER, Schéma Directeur d'Aménagement des Marais, de Protection des Bassins Versants et de la Conservation des Sols, 2002; as quoted in Ministry of Lands, Environment, Forestry, Water and Mines, *Rwanda Ecosystem Rehabilitation and Poverty Eradication Programme*, draft concept note, Kigali, 30 January 2008, p. 10.

Precipitous slopes are cultivated; in extreme cases farmers are growing crops on slopes hard to remain standing on. Because of the topography and the heavy population pressure on the land that pushes farming onto the steeper slopes, Rwanda has one of the highest soil erosion rates in Africa. In addition,

the history intensive cultivation without adding fertilisers has depleted soil nutrients to a significant degree.

The challenge of increasing the fertility of the soils should not be underestimated. The above-mentioned study on marshlands management states:

“Most soils in Rwanda are highly weathered, dominated by kaolinite in the clay fraction, have a low cation exchange capacity . . . and are acid to strongly acid (pH < 5.5 and often < 4.8) often with aluminium toxicity. This means that soils have low natural fertility and a low nutrient retention capacity, indicating that most soils need liming prior to any measures (such as the addition of organic material) aimed at improving fertility.”²⁶

Altitude, with its slowing effect on plant maturation, is a key factor in the high quality of some Rwandan products such as tea. Rainfall, while abundant on average in comparison with that of many other countries, is irregular, both spatially and seasonally. The western part of the country, with steeper slopes, receives the heaviest rainfall, while the eastern part is more subject to droughts. Hence in both regions a large investment in water control and harvesting structures, and in practices for water and soil conservation and soil nutrient enhancement, is an absolute necessity –for protecting the resource base, for increasing productivity through more irrigation and more fertile soils, and for providing more watering points for livestock.

MINAGRI has approached these issues through the implementation of six pilot projects in different areas of the country, each project covering a particular watershed. The projects coordinate with a number of agricultural service providers, including RADA, RARDA and ISAR, and they embrace a gamut of activities ranging from increasing family livestock holdings (with the associated farmer training) to progressive and radical terracing to seed multiplication and development of agroforestry varieties and to production for the market.

As of 2006, Rwanda had only 11,000 hectares under irrigation, about one percent of the land under cultivation. Of this total, only about 130 hectares represented hillside irrigation and much of the rest of the irrigated area was not supported by prior technical studies and hence often not managed optimally.

However, a marshlands development plan and an irrigation master plan will be completed soon and they should lay the basis for more systematic and productive development of irrigation systems in those environments.

Fertiliser and pesticide use

Rwandan agriculture is characterised by a very low level of input use, especially mineral fertilisers. Prior to this decade the national rate of fertiliser consumption per cultivated hectare remained in the neighbourhood of 4kg. This was far less than the average of 9 to 11kg/ha for Sub-Saharan Africa in general, which has still the lowest fertiliser utilisation rate of any region in the world. Between 1984 and 2005 the quantities of imported fertilisers never exceeded 8,000 tons per year except for 1993.²⁷

Fertiliser imports were liberalised in 1999 and private companies began to be more interested in this sector. In 2000 the Government took measures to favour the involvement of the private sector by abolishing free fertiliser distribution to farmers as well as the ICHA and customs fees for entry of fertilisers.

²⁶ Ministry of Lands, Environment, Forestry, Water and Mines, *Rwanda Ecosystem Rehabilitation and Poverty Eradication Programme*, draft concept note, Kigali, 30 January 2008, p. 11.

²⁷ Valerie Kelly, Edson Mpyisi, Anastase Murakezi and David Neven, “Fertiliser Consumption in Rwanda: Past Trends, Future Potential, and Determinants,” paper presented in the Fertiliser Use and Marketing Policy Workshop, MINAGRI, Kigali, 22-23 February 2001, p. 15; and data from the IFDC.

The Government also put in place, under funding from the World Bank, a credit line for fertiliser imports with subsidized interest rates (9% instead of 16%), in the context of the Rural Agricultural Markets Development Project. According to the final report of the project on 28 June 2004, an amount of US\$1.28 million was used for this purpose (and fully reimbursed) with credits provided through commercial banks, that is, 64% of the total amount budgeted. However, it was found that some private imports of fertilizer were ineffective products, so the Government reassumed responsibility for its importation. Existing arrangements require cooperatives and other users to commit themselves in advance of the planting period to purchase fertilizer, and on that basis the Government plans the importation. However, lack of access to credit can prevent producers from making this kind of commitment.

Fertiliser use rates have remained generally low but are rising. On the basis of survey data, Kelly *et al.* estimated that only 5% of the farms used inorganic fertiliser or lime in the 2000A season, covering 3% of the cultivated area. Quantities purchased by farmers were quite small on average: 36% used between 1 and 5 kg and 70% used less than 25 kg. However, because of the very small plot sizes the rate of application per hectare was satisfactory, at 118 kg./ha for those using inorganic fertiliser and lime.²⁸

The EICV survey data provide a slightly different estimate of the percentage of rural households using inorganic fertiliser in 2000/2001 and show that this percentage almost doubled between 2000/2001 and 2005/2006, rising from 6.0% to 11.9%. Likewise, the share of households using insecticides more than doubled, from 11.8% to 26.2%, and the share using purchased seeds rose from 51.1% to 71.2% (although most farmers who purchase seed plant the largest share of their land with own seed retained from the previous crop). The percentage using organic fertiliser almost tripled from a low base, moving from 2.6% to 7.1%.²⁹

Fertiliser use rates have been much higher for some crops. In the period 2001-2003 on average, for Irish potatoes, 28% of the farmers used inorganic fertilisers and for tea the figure rose to 45%. It was 6% for rice and 1% for coffee.³⁰ (However, coffee accounted for 21% of total national inorganic fertiliser use in 2000A; see Kelly *et al.*, p. 20.) Among the major crops, Irish potatoes have been shown to provide the highest returns to fertilisation,³¹ which would explain its relatively high use rate.

Among the factors that have limited and still limit the use of fertilisers, the following principal influences can be cited:

- i) Lack of sufficient farmer awareness of the value of applying fertilisers.
- ii) Farmers' lack of enough skills in the use of fertilisers; for example, applying very small quantities per hectare or making applications at inappropriate times in the cultivation cycle can be a waste of resources.
- iii) The high cost of fertilisers for small farmers. According to a study of the fertiliser market in Rwanda, "ninety-eight percent of those interviewed blame the lack of increase in individuals' fertiliser use on their limited financial resources."³² Price was also indicated as a barrier to adoption in a more recent strategy paper that suggested farmers can pay up to Rwf 250 per kg.³³
- iv) Inefficient fertiliser supply and distribution system especially in upcountry areas, which makes it unavailable to farmers when it is needed.³⁴ The experience of the last two years shows that cooperatives may not always make the necessary financial commitment to purchase this input in time for the fertilizer to arrive when it is most needed on the crops. The government is developing

²⁸ Valerie Kelly *et al.*, *op. cit.*, p. 19.

²⁹ Andy McKay, Mary Strode, Clare O'Brien and Geoffrey Greenwell, 2007.

³⁰ The World Bank, June 2007, p. 25.

³¹ Valerie Kelly and Anastase Murekezi, February 2000.

³² Josepha Mukamana, "The Chemical Fertiliser Market in Rwanda," Kigali, March 2002, p. 24.

³³ MINAGRI, "Strategy for Rapid and Sustainable Growth of Fertiliser Use in Rwanda," n.d., p. 5.

³⁴ MINAGRI, *op. cit.*, p. 4.

- new approaches to input distribution involving the establishment of local agricultural Support Centres and a re-involvement of the private sector in distribution, as discussed in Part II.
- v) The packaging of fertilisers in large sizes (50 kg) makes it difficult for farmers with small plots to buy it.³⁵
 - vi) Fertilizer mixes imported and sold to farmers may not be the most appropriate for all crops, locations and seasons. In fact, the fertilization requirements can vary substantially as a function of these factors. In addition, there is no import of trace element fertilizers, which can be very important for some crops such as potatoes and rice in the context of Rwandan soils.

Consistent with the low use of seed and fertilizer, use of pesticides is also low. Preliminary analysis of data from the 2005 Agricultural Survey (Season A) indicates that pesticides are used in approximately 12 percent of households. Pesticides are applied mainly to coffee and tea, bananas, potatoes and horticultural crops. The low use of pesticides can be traced back to demand-side as well as supply-side factors. Weak demand for pesticides results in part from farmers' poor knowledge of pest and disease control methods, which in turn is compounded by the lack of research being done on chemical pest control practices. It also results from the cost of purchased inputs and the consequent financial risk for farmers, most of whom have very low levels of income. The limited availability of pesticides in the market stems from the difficulty of procuring pesticides, most of which are imported.³⁶

Improved seeds

Improved seeds are principal vehicles for transmission of new technology to the sector. Currently few farmers in Rwanda plant improved seeds. In 2005, only 12 percent of households reported using improved seeds, covering only 2 percent of cultivated land. According to preliminary analysis of the Season A results from the 2005 Agricultural Survey, 90 percent of seed for food crops is saved by the farmer from the previous production cycle.

Responsibility for improved seed multiplication activities was formerly held by a parastatal organization, the National Seed Service, which has now been integrated into RADA. At about the same time, a new seed law was enacted with the goal of encouraging increased private investment in the seed industry. The effort to attract increased private investment has been limited thus far, so the Crop Production unit under RADA remains the leading producer of improved seed in the country. Recently there have been some initiatives to distribute improved seeds of maize, sorghum, rice, wheat, and beans, as well as improved virus-resistant planting materials for potato, sweet potato, cassava, and banana. The amount of seed produced remains small, however, and it covers only a small fraction of potential needs (Table 10). Recently RADA has been contracting farmers for seed multiplication and concentrating its own efforts on seed certification. This approach may speed up the process of producing and distributing improved seeds.

Table 10. Production of improved seed (mt) and demand coverage (%), 2001-2007

Crop	2001		2002		2003		2004		2005		2006		2007	
	Prodn	Cov	Prodn	Cov	Prodn	Cov	Prodn	Cov	Prodn	Cov	Prodn	Cov	Prodn	Cov
Sorghum	495	7.2	64	0.9	58	0.9	206	5.4	206	3.0	19.5	0.3	13.0	0.2
Maize	1,292	11.3	363	3.2	1,228	10.7	1,127	11.6	1,127	9.9	230.8	18.0	438.6	35.0
Wheat	111	1.0	54	0.5	25	0.2	50	0	50	0.5	21.6	4.0	16.4	12.0
Beans	432	0.5	856	0.9	707	0.8	521	0.6	521	0.6	46.5	2.0	79.5	2.0
Soybeans	379	4.0	286	3.0	345	3.7	80	1.8	80	0.9	0	0	16.3	2.0
Potatoes	1,036	0.1	1,020	0.1	1,258	0.1	1,172	0.1	1,172	0.1	512.7	0	1,961	2.0

Source: AFSR study, "Demande Solvable et Rentabilité de la Production Semencière," Kigali, 2008. Note: the data for 2006 and 2007 appear to be inconsistent with those of earlier years.

³⁵ *Ibid.*

³⁶ This paragraph and the following sub-section on seeds have been adapted, with some additions, from The World Bank (June 2007, p.30).

RADA also works with horticulture, and in 2007 it produced and sold to farmers 25,333 grafted fruit seedlings for mangoes, avocados and oranges.³⁷

1.3.4 Strengths and potentials in Rwandan agriculture

A number of important issues need to be resolved, and larger amounts of resources are needed, in order to accelerate the growth of agriculture in Rwanda. Nonetheless, it is clear the sector has a number of strengths that give the sector considerable potential for growth and higher levels of productivity and that would warrant an intensified level of support and attention to policies.

In the area of natural resources, Rwanda has a base of decent to very good soils, although in many cases the nutrient base needs to be rebuilt and erosion stopped. The climate is generally benign for agriculture, with a favourable temperature range and more adequate amounts of rainfall than in many countries. However, rainfall patterns can be erratic and greater efforts at water harvesting and irrigation are needed. The altitude, which influences the climate, is a benefit for coffee, tea and many non-traditional crops since it creates a longer growing season that, for example, intensifies flavours of fruits and enables them to claim a price premium in international markets. The other side of the coin is that the growing season for cereals, particularly rice, is much longer than in lower-altitude countries.

Rwanda has dedicated farmers who by necessity have learned to extract the most from a small resource endowment and who are eager to participate in the design and implementation of activities for improving the sector's prospects. This human capital base is a valuable asset. Social capital, mainly in the form of cooperatives and other local organizations, is still in a more nascent stage but is growing.

Another advantage for Rwanda is its proximity to regional markets with an improving road network. It also enjoys relatively good access to the Middle Eastern and European markets, a factor that can be exploited more in light of the increasing world demand for high-value, labour intensive niche products.

A very considerable advantage is the country's strong Government that is committed to agricultural development and poverty alleviation. This is an intangible asset but is vital for development efforts. A concomitant strength is the support of international development partners for the agricultural sector in Rwanda

Finally, as a result of these strengths, it has been shown at the product level that Rwanda can be competitive in the production of a number of high-value products such as specialty coffees, tea, bananas and pyrethrum plus emerging export products such as pineapple, cut flowers, courgettes, French beans, macadamia, physalis, cut flowers, sericulture products, and others. Developing each of these products is a challenge, but the returns to the rural population can be very considerable.

³⁷ MINAGRI, Annual Report 2007, Kigali, 2008.

Ch. 1.4 Lessons Learned and Agricultural Objectives Revisited

Since PSTA I was written important changes have taken place in Rwanda's agricultural sector. On the institutional side, the Ministry of Agriculture and Livestock has been converted into a policy and coordination body, and the direct services to farmers have been placed in six service organisations: RADA, RARDA, RHODA, ISAR, OCIR-Café and OCIR-Thé. The mandate of the service units has changed as well, and they are now charged with responding to the demand for specialised services at the level of farmers, farmer organisations and local governments, rather than deciding in advance which services are needed and going to the field to offer them.

During this period the decentralisation policy has been put into effect, with the result that district governments also are important service providers. MINAGRI now faces greater requirements to coordinate planning and implementation of programmes and projects with local governments, in the anticipation that over the longer run this will result in strengthened implementation capacity, project designs that are more responsive to farmer priorities, and projects that are more sustainable.

The productive part of the sector has been changing as well, with significant changes occurring in the national crop and product composition, as shown in Tables 6 and 7 above. Products growing particularly rapidly include wheat, rice, soybeans, fruit, milk, meat, and specialty coffees. Fruit and vegetable exports are still small in quantity but are growing fast. By contrast, in this decade products such as sweet potatoes have declined somewhat in importance and production of crops such as beans and sorghum has remained more or less at the same trend level although subject to annual fluctuations.

These changes have been promising for farmers because they point to a gradual shift toward higher-value products, within categories like cereals and in the overall picture with the rapid growth of livestock products, specialty coffees, and fruit and vegetables. Two of the lessons to emerge from these trends are that:

- The ability to penetrate markets for higher-value products may become a constraint on future growth unless it is strengthened with decisive actions; and concomitantly,
- Product quality will have to increase as well as production quantities, in order to sustain higher rates of growth.

Other lessons learned in the past four to five years are that:

- Increasing fertiliser use is not only a supply-side challenge but also one of generating demand and creating sustainable distribution channels.
- Successful erosion control is not only a question of building structures but it also requires sustained attention to restoring soil fertility.
- Extension and research need to be demand-driven in order to increase their relevance to farmers.
- Meeting rural credit needs requires development of sustainable, private financial mechanisms.
- Public sector mechanisms for support for emerging export products need to be strengthened, including systems (such as for sanitary and phytosanitary controls), incentives (such as assisting with the cost of quality certifications), and provision of technical assistance and ensuring financing for construction of handling and processing facilities.
- MINAGRI, and its agencies, and especially its projects do not undertake a sufficient amount of project and programme evaluation, impact assessment, and cost benefit analysis

Expansion of agricultural exports will be critical to achieving the EDPRS goal of 7% growth in agricultural GDP. Although satisfying domestic markets for food products will continue to be important, Engel's Law, which codifies the nature of income elasticities of demand for food products, imposes a tight upper bound on the rate at which the domestic market for agricultural products can grow, and therefore opening more export markets will be essential for absorbing and justifying more rapid growth of production. In the short run there are possibilities of substitution for some food imports from the region (e.g., rice and plantain), but exports offer the main opportunity for accelerating sector growth.

The conditions of Rwandan agriculture reinforce this need to foster rapid growth of exports: the vast majority of farms are very small, and this in combination with the prevailing rural poverty makes urgent the task of raising the value of production per hectare. Export products typically are very high in value per hectare and therefore offer one of the main avenues of response to this need. In addition, world markets are evolving in such a way that high-value niche products have a continuously greater market share. For example, the value of specialty coffees imported into the United States is now greater than the value of regular coffees. From a viewpoint of production and competitiveness, Rwanda's generally favourable climate and its high endowment of labour per hectare point to a comparative advantage in these high-value products.

At the sector-wide level, the EDPRS has posited targets for inputs and physical resources in the sector: fertilizer and improved seed use rates, extent of area irrigated, area of marshlands reclaimed, area covered by erosion control measures, and households owning livestock. These are important and essential targets, and without achieving them the expectations for sector growth cannot be fulfilled. Nevertheless, it has become evident that equally strong efforts are needed in the areas of quality standards, post-harvest management, agro-processing, marketing, and development of rural financial systems, especially in light of the need to accelerate export growth. It is not always possible to establish quantified targets in these complementary areas but the corresponding areas of action have been identified in Programme 3 of this Strategy. Equally, the systems for agricultural extension and research need to be reformed and strengthened, and high priority needs to be assigned to capacity building, including entrepreneurial capacity. In short, physical interventions in the sector need to be accompanied by policies and programmes designed to make the sector more knowledge-intensive.

Looking beyond the sector, agriculture has key linkages to other sectors, including water, energy and forestry. For example, reducing soil erosion also reduces siltation in hydro-lakes, which would justify increased expenditure in reducing soil erosion. If renewable energy initiatives replace fuel wood to some degree in rural areas, then this will tend to reduce cutting down trees and help the battle against soil erosion. Moreover, in the context of deforestation and increasing lack of access to fire wood, new sources of energy will potentially have a positive effect on people's, and especially women and children's, health.

With respect to the water sector, integrated water resources management is important for achieving sustainable agricultural practices. Irrigation for agriculture also clearly impacts on water resources management. All in all, solutions to problems such as soil erosion, deforestation and wetland degradation that impact on agricultural productivity need to be achieved through integrated approaches involving several sectors. The inclusion of linkages with key sectors such as forestry, water, energy and health is very important and should be addressed through inter-ministerial coordination mechanisms and the SWAp process.

Ch 1.5 Methodology for Developing the PSTA

Both the initial version of this Strategy, PSTA I, and the EDPRS were developed in a participatory manner with inputs from a large number of stakeholders. Since the main thrusts of PSTA I are retained in this new version of the Strategy, that full process has not been repeated. Nevertheless, a wide range of sector experts and stakeholders were consulted in the process of developing this document, in a sample of districts as well as in the centre, and the recommendations of the PSTA II working groups were taken into account. Some of the experts and stakeholders have been closely associated with the formulation of District Development Plans and other activities at the District level. Extensive recourse was made to documentation developed in recent years concerning all the sector programmes and projects, covering their design and implementation and, in some cases, their results. This documentation records in a systematic way the findings and recommendations of many experts and stakeholders, and often was developed through its own participatory processes, so it has been a central input into this Strategy.

Care has been taken to ensure consistency with the principal orientations of Vision 2020 and the EDPRS. In particular, the Strategy's lines of action are designed to further the achievement of the objectives of the three flagship programmes of the EDPRS: i) Sustainable Growth for Jobs and Exports, ii) Vision 2020 Umurenge (integrated rural development programme to eradicate extreme poverty and release the productive capacities of the poor), and iii) Good Governance. Another systematic theme in the Strategy is gender awareness, which has to permeate the design of all the programmatic areas.

Another important input has been international experiences, especially in Africa. Those have been taken into account when relevant to the design of strategic approaches and policies. Above all, consultations with authorities in MINAGRI and the service providers have been invaluable in distilling the lessons of experiences since the issuance of PSTA I and in providing strategic guidelines on the basis of those experiences. As the work on PSTA II developed, drafts were circulated for comment, and the feedback has enriched the document and refined many of the guidelines for the action areas.

In this new version of PSTA emphasis has been placed on formulating the lines of action in an implementable manner. This has required clarifying not only what is to be achieved, but as much as possible how it is to be achieved, without entering into the level of detail that is appropriate to an implementation plan or project document. In many areas it is not sufficient to say that a given change must be promoted, but rather how it is to be promoted. At minimum, the document strives to incorporate operational guidelines in each critical area, for example, regarding how to restructure the extension service and how to obtain needed investments in infrastructure for handling and processing agricultural products.

The development of the strategic thrusts in each area has proceeded through the following six steps:

- 1) Reviewing the guidelines in PSTA I and subsequent strategic documents.
- 2) Reviewing the objectives and opportunities, challenges to be met, and the constraints or obstacles that may stand in the way of fulfilling the opportunities.
- 3) On the basis of this analysis plus the thrusts of PSTA I, other studies and the opinion of experts and stakeholders, and the lessons learned (see above), positing tentative approaches designed to overcome the constraints and fulfil the opportunities.
- 4) Reviewing these tentative strategic orientations in light of international experiences and feedback on drafts of this Strategy, and refining the orientations accordingly.
- 5) Developing specific lines of action to put into effect the strategic orientations.
- 6) Assigning approximate, indicative budgetary magnitudes to the lines of action.

It goes without saying that in the final analysis the value of any strategy resides in its implementation. It is the aim of this Strategy to lay the groundwork as much as possible for successful implementation of its strategic thrusts in all areas. By the same token, any strategy needs to be reviewed from time to time in light of changing circumstances and progress and problems encountered. Therefore the lines of action will need to be refined and filled out with more detail in the course of implementation.

In the following section of this Strategy (Part II) the Programmes and their corresponding Sub-Programmes are described along with the main lines of action required to implement each of the Sub-Programmes. Then in Part III implementation considerations are developed along with the budgetary estimates. The budgetary details and detailed logframe are contained in Annexes 1 and 2 respectively.

Part II. The Strategy and Its Programmes

The **Overall Objective** of the PSTA II as detailed in the logframe is: *“Agricultural output and incomes increased rapidly under sustainable production systems and for all groups of farmers, and food security ensured for all the population”*.

The **Specific Objective** for the Strategy is to: *“Increase output of all types of agricultural products with emphasis on export products, which have high potential and create large amounts of rural employment; this under sustainable modes of production”*.

Agricultural development is determined by the way in which physical resources (land, water) and human capital are combined. Thus, in Rwanda, the fate of the agricultural sector depends on the integration of farming systems, farmer training, development of entrepreneurial capacities, and the strengthening of the supporting institutional framework. This Strategy is build upon the foundations of the same four Programmes put forth in PSTA I, with the difference that the lines of action are more detailed and they take into account the developments of recent years. Accordingly, this Strategy develops agendas for action under the aegis of the following four interrelated Programmes:

Programme 1.	Intensification and development of sustainable production systems
Programme 2.	Support to the professionalisation of the producers
Programme 3.	Promotion of commodity chains and agribusiness development
Programme 4.	Institutional development

Programme 1 is aimed at releasing the physical constraints to the sector’s development, in the areas of erosion control, water capture and management structures, input use and food security. It also incorporates the training activities that need to accompany the provision of physical infrastructure and inputs.

Programme 2 is aimed directly at making the sector more knowledge-intensive through professionalization and capacity building for producer organisations and through improvements in the systems for technology generation and dissemination.

Programme 3 is designed to enhance producer knowledge in areas of quality control, post-harvest management and marketing, and to provide the associated technical expertise and infrastructure, including in agro-processing. It also aims to promote agribusiness development.

Programme 4 is directed at strengthening the public sector’s capacity to support the sector’s development and at improving the policies that guide actions by producers and entrepreneurs.

The succeeding sections of this part of the Strategy describe the contents of each of the Programmes and their associated Sub-Programmes.

Chapter II.1 Programme 1. Intensification and development of sustainable production systems

Objectives

In order to realize Rwanda's considerable agricultural potential it will be essential to reduce the rate of soil erosion and restore fertility to wide areas of cultivable land. Rwanda can no longer allow the destruction of its essential soil and water resources without taking corrective measures, and it needs to restore as much as possible the lost productive capacities of the land. Future generations will depend on actions taken now by villages and rural communities themselves, because it is their heritage and their means for survival.

The Government is supporting local communities in this vital undertaking and helping imbue producers with the ethic of soil conservation and rehabilitation of the land's fertility and its water resources. Development partners, who are equally conscious of the seriousness of the problem, also plan to support this process on a major scale. In the near term the Government and the partners will have to bear most of the costs of these efforts but as the rural population is made a participant in the process over the longer run and is trained in the technical issues and experiences the benefits, farmers will become convinced of the need to maintain soil conservation structures and follow appropriate soil and water conservation practices.

Equally, because of the small average farm size, it is absolutely essential to raise the economic productivity of existing farmland, as mentioned above in this document. That means increasing physical productivity through better technologies that generate higher yields, and moving to a higher-value mix of outputs (including livestock as well as crops). These changes need to take place in a way that guarantees the sustainability of agricultural production and incomes.

Hence the objectives in this area are four-fold:

- i) **Create needed soil and water management structures** such as progressive terraces, radical terraces and water harvesting structures in agricultural areas, always ensuring that the necessary complementary actions to restore soil fertility are undertaken. This is particularly necessary in the case of radical terraces, which may require up to 3-4 years of application of organic material and mineral fertilizers before being used for sowing crops. Equally, the progressive terraces need to be combined with the planting of appropriate agroforestry species.
- ii) **Demonstrate to farmers and villagers the benefits** of maintaining and using these structures and other practices to enhance soil fertility, and **train them in those practices** using participatory approaches for training farmers and learning how to best adapt practices to each locality.
- iii) **Increase ownership of livestock and improve and intensify animal husbandry practices** so that they provide more household income, are consistent with the limited endowments of land per farm household, and contribute to maintaining soil fertility.
- iv) **Improve cultivation practices and develop sustainable production systems** in order to generate higher levels of production and farm incomes from the limited base of arable land and to reduce the perceived need to cultivate marginal and vulnerable lands.

In the pursuit of these objectives the specific interventions in given communities and watersheds will be designed in accordance with the principles of local participation and promotion of gender equality.

Main constraints

Soil and water management

The first constraint to improved soil and water management is the demographic pressure. It leads to rapid decline in the size of farms; disappearance of fallow lands from the farming systems and hence over-cultivation; lack of replenishment of organic matter; and cultivation on excessively steep slopes without any erosion control measures.

The second constraint is connected to quality of soils and their acidity and advanced degree of degradation. Many soils now are poor and have low organic matter and low fertility except in lowlands and volcanic areas. Some hillsides are already completely degraded by erosion and production is impossible without fertility restoration. To date agroforestry is not very well developed yet it can be adapted to all zones and on all slopes while playing multiple roles of soil conservation and biomass production.

The third constraint lies in the widespread traditions of using inappropriate agricultural techniques and the frequently low level of interest on the part of farmers in applying recommended measures for sustainable agriculture.

The fourth main constraint is insufficient institutional capacity. The agencies in charge of water and soil conservation (WSC) are still not efficient enough. Very few marshlands have been developed and given enough infrastructure for adequate water management. The law on WSC has not yet been applied. The supporting results from agricultural research are meagre. Upland irrigation is unknown in Rwanda.

Animal husbandry

The main constraints that are holding back improvements in animal husbandry include:

- i) Deficiencies in animal feed both in quality and quantity. This arises from poor and limited pastures, water shortages, poor quality of commercial feeds and limited use of agricultural by-products for feed purposes. Under zero grazing, which is being actively promoted, feed is still a limitation in many cases because of lack of sufficient fodder crops, include legumes.
- ii) The prevalence of animal diseases, especially epidemic diseases that regularly affect livestock in spite of improved animal health monitoring.
- iii) Poorly performing local breeds with low productivity, although the One Cow (Girinka) Programme is starting to change this albeit not yet on sufficient scale.
- iv) Poor diversification: livestock activities still concentrate on cattle, which have a long reproductive cycle and which are not accessible for the majority of farmers who have insufficient land. As pointed out in the RARDA business plan (pp.10-11): *“small ruminants and other monogastrics have a much faster generation interval and in most cases have multiple offspring and are cheap to keep. The projected herd growth in indigenous animals is faster in sheep and goats than cattle. It takes 4, 6 and 10 years for herd of 100 goats, sheep and cattle to double in number. Goats and sheep can therefore contribute to income generation and poverty alleviation much faster especially for small-scale farmers”*.
- v) Poor veterinary services with few qualified cadres and limited means of responding to farmers' needs.
- vi) Lack of training of farmers in the importance of caring for the quality of the hides of their livestock, which results in lost opportunities for additional income from the tanning industry.
- vii) Unavailability of loans for small livestock farmers, which limits their opportunities and possibilities of adopting modern technology in animal production.
- viii) Weaknesses in farmer organizations, which do not have sufficient human and material resources for effective joint marketing and input purchase.
- ix) Weak links between research and extension services. Most research is carried out in research stations with weak links to the farmers themselves.

Cultivation practices and production systems

The main constraints for moving to more efficient, higher-value production systems include the above and also:

- i) The fragmentation of small farms into ever-smaller plots.
- ii) Low rural income levels which make farmers reluctant to shift away from subsistence crops and known techniques of production, out of concern about food security for their families.
- iii) Low levels of market integration in most farming areas.
- iv) Low rates of use of inorganic fertilisers, owing mainly to lack of purchasing power on the part of most farmers but also due to other factors mentioned above (lack of sufficient awareness of fertiliser's benefits, lack of proper development of the distribution system, lack of availability of the most appropriate fertiliser mixes, lack of timeliness in placing orders for fertiliser purchase).
- v) Low rates of use of improved seeds because of still-inadequate production levels and a weakly developed seed distribution system.
- vi) Inadequate relation between research and extension services leading to poor technology transfer to farmers.
- vii) Difficulties in accessing loans for input purchase, for the majority of farmers.
- viii) Insufficient training in product quality and post-harvest handling, and insufficient infrastructure for post-harvest handling and marketing.

Potentials and opportunities

The sector's potentialities arise from a number of favourable factors: considerable agro-ecological variation; the existence of 165,000 hectares of marshland of which 100,000 hectares can be developed and make agricultural intensification possible; abundant water resources that can be used for irrigation purposes on hillsides; relatively abundant rainfall; and good markets for high-value products provided quality specifications can be satisfied.

On the crop side there are a number institutional and human factors that can help overcome the constraints and fulfil the potentials:

- i) Political will to modernise and transform the agricultural sector as clearly expressed in the 2020 Vision, the EDPRS, the National Agriculture Policy, and the previous version of this PSTA.
- ii) MINAGRI leadership and committed and qualified staff.
- iii) Increasing involvement of private investors in the agricultural sector.
- iv) The dynamism of most farmers' organisations and farmers' willingness to innovate and seek ways to increase productivity.
- v) The land tenure law that will limit land fragmentation and encourage land re-grouping with a view to utilising the land resource better.
- vi) The strengthening of input programmes, particularly for fertilizer and certified seeds.
- vii) The success of recent activities aimed at promoting diversified agriculture on small farms that is fully integrated with livestock raising.
- viii) The planned implementation of incentives such as the Guarantee Fund for agricultural credit.
- ix) The emergence of export initiatives for an increasing number of non-traditional crops.
- x) Research prospects in a number of crops such as rice, maize, wheat, tea and coffee, and in vitro tissue cultures and other techniques.

In regard to livestock, as explained below, key elements of this Strategy include increasing livestock ownership, improving breeds and strengthening disease control. There is a high demand from producers for additional livestock, which can be explained by the long livestock-tending tradition and the need for restocking following the decimation of a large number of animals during the war. There also is strong interest among producers in genetic improvement, including use of modern artificial insemination techniques.

A number of factors are present that could contribute to livestock development in the coming years, viz.,

- i) The success of the initial phases of the Girinka Programme, including its component of smaller animals, and the integration of livestock with cropping on small farms.
- ii) The creation of RARDA and the decentralisation policy that will bring services closer to the people, notably at the level of the secteur, which is at the base of development. Veterinary services are being developed at this level, although they still are in an embryonic state.
- iii) The land law will give farmers more land security and enhance the value of livestock investments.
- iv) New legislation on animal health and veterinary services will contribute to reducing the threat of losses from diseases.
- v) The strengthening of programmes for genetic improvement in several classes of livestock.
- vi) The establishment of agricultural credit guarantees.

In light of these considerations, the following **six Sub-Programmes** (two of which has two components) have been established for implementing the main lines of Programme 1:

- SP1.1 Sustainable management of natural resources, water and soil conservation
- SP1.2 Integrated development and intensification of crops and livestock:
 - SP1.2.1 Crop diversification and intensification
 - SP1.2.2 Animal resources development
- SP1.3 Marshland development
- SP1.4 Irrigation development
- SP1.5 Supply and use of agricultural inputs
 - SP1.5.1 Fertiliser and agrochemical supply and use
 - SP1.5.2 Certified seeds and other inputs
- SP1.6 Food security, vulnerability management

II.1.1 Sub-Programme 1.1: Sustainable management of natural resources and water and soil conservation

The **objectives** of SP1.1 are: (1) to decrease sharply the rate of soil erosion; (2) to provide irrigation to hillside farms; and (3) to increase the water retention capacity of watersheds.

The **pillars of action** of SP1.1 are:

- o Investment in structures for water capture and conveyance.
- o Investment in structures for erosion control.
- o Training in appropriate practices for erosion control and water management.
- o Investments, training and incentives for farmers in buffer zones around national parks and other areas that need protection.

The **lines of action**, or action areas, in SP1.1 are the following:

SP1.1a Following Vision 2020 and in the context of national plans for natural resource management and environmental protection, construct 50 **valley dams and water reservoirs on hillsides**, with water conveyance structures for irrigating 3,570 hectares (a little less than half of the Vision 2020 target).

In the development of hillside irrigation systems, **make adequate provision for livestock watering**. Where there still are natural pastures, develop multiple watering points and train farmers in herd rotation in order to minimize soil erosion around the watering points. Careful planning will be required for the conveyance structures since in many cases the most cost-effective method will be a form of **pressurized irrigation**. Over a longer period, scale up this initial experience and adapt the methodologies to other modes of implementation, such as watershed management communities, with appropriate modifications based on lessons learned, in order to reach the full target of irrigating 10,000 ha. of land on hillsides (Vision 2020).

As part of this activity of constructing dams and water catchment structures, put in place effective **water catchment protection measures** to protect the reservoirs against siltation. Also, develop a costing and financing approach, as in some cases this will require investments by the government and may require hillside farmers to lose some cultivable area at least for a period of time (e.g., until fruit trees or forage trees begin to yield, or until terraces have had fertility restored). A compensation formula is needed for cases of loss of cultivable area for the sake of environmental externalities, because even a loss of land for 1 to 3 seasons imposes a considerable hardship on low-income farmers.

SP1.1b Mobilise communities to **develop watershed management plans in a participatory manner** and provide support to **protect an additional 30% of the land against erosion**, to raise the total from 30% to 50% (Vision 2020 target is 90%) via progressive terraces, radical terraces, living barriers, teaching contour planting, a shift to crops suitable for erosion control on steeper slopes, adoption of integrated soil fertility management (ISFM) practices, and other suitable land-husbandry practices. In the case of radical terraces recent experiences have shown that it will be necessary to accompany farmers for up to three years, instead of the current one year, and during that time apply large quantities of lime and organic fertiliser to the terraces, and also restore the trace elements, especially zinc, that are lost in the cutting of the terraces. A major aim of the accompaniment of farmers will be sensitizing them to the need for soil fertility replenishment.

As an integral part of and extension of the participatory undertaking to formulate watershed management plans, help organize and **train 35,000 farming households in land husbandry on hillsides and hillside irrigation**, and in cultivating and marketing the commercial crops that are warranted by the provision of irrigation. To the extent possible, help organize these households by sub-watershed so they can have a common interest in the protection of their areas, utilizing organizations such as water user associations (WUAs), land-husbandry self-help groups (LSGs), and CCPIGs. (These sub-watershed groups could prepare future proposals for the Joint Action Forums at the district level, and the agricultural platforms that are being encouraged at the secteur level.)

SP1.1c Develop and implement programmes of agricultural investments, incentives and training in **buffer zones around national parks** and other protected areas, so farm families have economic encouragement to stay out of the protected areas. This activity will be carried out in coordination with MINIRENA.

II.1.2 Sub-Programme 1.2: Integrated development and intensification of crops and livestock

This Sub-Programme is designed to provide a response to the necessity for integrating and diversifying crop and livestock development in each locality. It is divided into two components, one for replicating the recent experiences in inculcating integrated crop-cum-livestock systems among the farming population, and the other for carrying out support activities that are specific to the livestock sub-sector.

Sub-Programme 1.2.1 Crop diversification and intensification

The **objectives** of SP1.2.1 are to: 1) help place agricultural activities *per se* on a more environmentally sustainable basis, in addition to implementing the soil conservation measures referred to earlier; 2) diversify production to provide farmers with additional sources of income and more security in light of the

fluctuating nature of weather variables and market prices; 3) introduce activities and technologies for significantly increasing yields and incomes on the small plots that characterize most of Rwandan agriculture and for providing rural non-farm income; and 4) to integrate livestock and cropping activities on small farms.

Extensive production systems, under pressure of population growth, grow with an average rate of about 7 kg/ha/yr (cereal equivalents). Intensive systems, based on the use of external inputs, grow about 10 times faster. The present cereal yield being in the order of 1000 kg/ha/season, a 7% growth rate can only be reached through more generalised use of fertilizers, improved seeds, and other inputs.

The **pillars of action** of SP1.2.1 are:

- o Replicate on a significantly wider scale the successful experiences for integrated livestock-cropping systems.
- o Incorporate agro-forestry, including forage species, into mixed cropping and livestock systems.
- o Provide specialized expertise for marketing the high-value products that are starting to be produced through these systems.
- o Where appropriate, integrate the intensified farming systems with pilots on pressurized irrigation (see below).
- o Coordinate in given points in space (localities) the provision of the inputs and technical assistance required to develop and inculcate integrated approaches, including integrated soil fertility management.

The **lines of action**, or action areas, in SP1.2.1 are the following:

SP1.2.1a Replicate the experiences for integrated livestock-cropping-agroforestry systems throughout the country, as rapidly as existing technical capacity permits, without diminishing the level of technical support to existing projects below the continuing requirements. Increase the emphasis on agro-forestry for hillside plantings and the development of community-level nurseries for fruit crops and other trees, and seed multiplication activities for staple crops. Continue support for the programme of one pilot field per village. Develop synergies with the animal resources development activities specified below, particularly in relation to forage crops and organic fertiliser. Agroforestry and crop-livestock integration have a high potential for supporting intensification when used as complements to inorganic fertilizers. Research from ISAR in the eighties and early nineties confirmed research results from West Africa on this subject.

Utilize these projects as a vehicle for increasing the amounts of lime placed on soils and educating farmers in its importance, especially in the more acidic zones, in view of this critical limitation on soil fertility. Also, where appropriate integrate these activities with the projected pilot experiences with pressurized irrigation that are described below.

Continuing diversification of cropping patterns, especially toward higher-value crops, will be important. In this regard, note that the work under SP3.3a below will help identify export markets for the non-traditional products that are cultivated through these experiences. Before planting decisions are made for these kinds of crops there should be close coordination with the experts in export marketing, to be sure that markets are available for the products harvested.

SP1.2.1cb Develop and implement a programme to **link these projects to the work on irrigation development and the pilots mentioned below on pressurized irrigation** along radical terraces (with appropriate soil fertility restoration measures) and contour plantings, and along progressive terraces for fruit crops sensitive to water regimes.

SP1.2.1c Scale up the One Cow per Poor Family programme throughout the country, with refinements on the basis of experience and on the basis of a special review noted at the end of the description of this activity. The benefits from this programme are clear, as stated in a recent evaluation:

“16,500 heifers were distributed since 2006 up to 15 April 2008 from which 12,700 are Ankole, about 2,900 crossbreds and 900 purebreds. [Additionally] 200 heifers are distributed as credit secured by a guarantee fund operated by Central Bank to assist farmers to obtain a credit. The Programme is relevant as:

- It targets the important wider objective to increase the agricultural production, which leads to better farm income and improved food security and human nutrition.
- It responds well to the problem of low agricultural production due to small farms and poor soil fertility, which is the main reason for rural poverty and human malnutrition.

Consequently there is a substantial social impact on human nutrition and human health, which includes gender issues (about 30% of beneficiaries are women), vulnerable groups (one of the selection criteria for beneficiaries) and reconciliation. Milk is often given as gift to neighbours and vulnerable people. The environmental impact is via fodder as erosion control measure and soil cover, and by increasing soil fertility with manure.”³⁸

This study has noted constraints that must be addressed in scaling up the programme, as follows:

“While the programme is well designed its implementation presents weaknesses as timing of heifer distribution (distribution to unprepared farmers), quality problems in the supplies (in the case of Ankole mostly non-pregnant heifers are distributed) and due to an in general poorly equipped AI system (lack of LN and semen). These problems are not fully generalised as the programme was partly well implemented (with imported in-calf heifers, with projects and NGOs with more intense input). Constraints in implementing the programme are:

- o The supplied Ankole heifers were often small and in poor condition, not pregnant (although supposed to be inseminated), and if they give birth it is often a purebred Ankole calf although it should be a crossbred from AI. In many places AI is not easily available. Farmers were often not sufficiently trained prior heifer arrival. Also veterinary services are not sufficiently available in all districts.
- o The stables have hardly any pavement and no real manure pit to collect the manure adequately.
- o The fodder area is often too small and contains few leguminous plants. Fodder is not conserved, and there is little use of concentrates. If the farmer is not prepared and hasn’t established fodder crops and a cowshed he may keep the crossbred cow on pasture, which leads to tick borne diseases and losses.
- o The milk is often sold as raw milk, which can lead to health hazards (brucellosis, tuberculosis) if not boiled. There are few milk collection centres.
- o On all levels guiding elements are not sufficiently specified on procedures to follow (clear and concise definition of norms, qualities, quantity, time periods and locations). Questions can be raised on for example what is an eligible household from the point of view of poverty, what are the criteria for heifers to be supplied, etc.”³⁹

The refinements of the programme would include:

³⁸ Thomas Armbruster and Joseph Rwicaninyoni, *Developing an investment proposal for: Scaling up investment in the ‘One Cow Per Poor Family’ programme*, study report prepared for La Cooperation Belge, AGRIFOR Consult, May 2008, p. 8.

³⁹ Armbruster and Rwicaninyoni, 2008, pp.9-10.

- i) Rely **more on Friesian and other crosses** than on purebred exotic cattle, owing to considerations of cost and disease resistance. At the other extreme, pure Ankole cows that have not received artificial insemination with other breeds should not be distributed owing to their low productivity in milking.
- ii) Use **artificial insemination (AI) rather than importing cows, which is more expensive. The AI programme should be carried out through private operators**, with public sector support at the beginning.
- iii) It is clear that feed availability is the main limitation to the programme on the side of recipient farms. Most cows must eat equivalent of their body weight in fodder every day if they are to be economical to keep. Hence it is advisable to **increase somewhat the minimum farm size for eligibility for receiving cattle. On smaller farms the practice of providing small ruminants, pigs and rabbits should be continued.**
- iv) Place **more emphasis on poultry distribution.** Chickens are an economical important source of protein for families with their daily production of eggs.
- v) **Include cropping patterns in the requirements for eligibility for receiving cattle**, for example, as well as planting fodder legumes, require switching from sorghum to maize when doing so would provide more cattle feed per unit of land.
- vi) **Strengthen the local milk marketing chains.**
Integral to strengthening Rwanda's milk marketing chains is the construction of further milk collection centres, as these will prevent the bottom falling out of the milk market in areas where milk production has increased considerably and so stimulating supply. Similarly, a milk processing plant is required to ensure milk is properly utilised and of adequate quality. Eventually, it is hoped that Rwanda will be able to produce adequate quantities to cover domestic demand, rather than continuing to rely heavily on imports from Uganda.

A commitment was made at the Kivu Retreat of the Government of Rwanda in February 2009 to build a further 70 milk collection centres throughout Rwanda by the end of 2009, as well as to work with the private sector to construct a milk processing plant at Mukamira.

Additional and more extensive recommendations and commentaries were formulated by the Armbruster and Rwicaninyoni study, as follows:

"Guiding principles and specifications of procedures to be followed shall be concisely detailed at all levels. It would be necessary for example to provide the measurable indicators for a poor household, of the drug kits delivered with the cow, the basic criteria for the heifer to be delivered, the plan of the cattle shed. Heifer supply must be better controlled and specified that certainly in-calf heifers are distributed. The supplier should only deliver an animal proven to be inseminated (insemination certificate, or better, a certificate of positive PD), and to charge a fine in case the delivered animal gives birth to an Ankole calf. RARDA and the Districts should be more demanding and better control the necessary standards on all the levels.

In order to optimize the production of milk, fodder legumes should be planted by those cow beneficiaries who have not grown *Calliandra* or *Leucaena*. Moreover, all the crossbred and purebred cows distributed should be supplemented with the use of concentrates as from the seventh month of pregnancy.

Planning and M&E: Several steps are necessary to ensure the programme becomes more quality oriented (and not only quantity), including refinement of suppliers contracts (and future service providers' contracts) to specify the targets and results that will be delivered and controlling fulfilment of specifications; structuring of reporting formats according to the components, outputs and indicators

specified in the logical framework, issue quarterly and yearly programme progress reports using a pre-defined format for reporting according to international project management standards.

An important factor that will influence the success of the programme is the distance to markets in major towns and milk marketing. Dairy farmers living close to towns can expand their dairy holdings and a larger number of farmers can enter into the dairy business, whereas in more remote rural villages a few extra dairy cows can cause the local milk market to collapse because of the limited number of customers. Establishing milk collection centres is costly and complex. As milk production from the *One Cow Programme* is in the early hours this limitation has not yet really come up [but it will].⁴⁰

In light of the limitation on fodder availability mentioned above, an integral part of this activity will be the completion of **a review of the fodder issue for small farms**, to be completed by the end of 2009. This review should take into account all relevant options for supplying fodder including concentrates (and those made from cassava), and carry out an economic analysis of the alternatives of cattle, small ruminants, pigs and poultry for each farm size in each region, in view of typical cropping patterns. This review should yield guidelines for the future of the programme of supplying livestock to small farms.

Sub-Programme 1.2.2 Livestock development

The **objectives** of SP1.2.2 are: 1) to increase the productivity of livestock activities of all species and in all regions of the country; 2) to train farmers on appropriate methods of livestock husbandry; 3) to improve animal health conditions throughout the country; and 4) to increase the output and value of the fisheries and apiculture sub-sectors.

Note that the very important Girinka Programme is included in Sub-Programme 1.2.1 above because its context is integrated cropping and livestock systems, in which forage crops including trees are planted and in turn the animals produce organic fertiliser. Nevertheless, the national experts and other programmes on livestock provide strong support to the Girinka Programme.

The **pillars of action** of SP1.2.2 are:

- o Expanded ownership of livestock.
- o Promotion of zero grazing through fodder provision.
- o Genetic improvement.
- o Disease control.

The **lines of action**, or action areas, in SP1.2.2 are the following:

SP 1.2.2a Reinforce **animal disease control operations** through strengthened control posts, vaccinations, and cooperate with EAC partners on animal health monitoring issues. Actions in this area are already well advanced within the county, but it is a crucial area and therefore the disease monitoring and control network needs to be continuously strengthened and the cooperation with regional partners given more force.

SP1.2.2b Develop and implement a programme for **better and more complete veterinary services**. The components of this programme are:

⁴⁰ Armbruster and Rwicaninyoni, 2008, pp. 10-11.

(i) Strengthen **training of veterinarians and para-vets**, and carry out a programme to **train farmers in recognising most animal diseases** and providing temporary treatment until veterinary help arrives. A plan will be formulated for provision of veterinary care and development of the requisite capacity, including the option of contracting with veterinarians from the region to work with Rwandan trainees on farms until the requisite national capacity is fully developed.

(ii) Enhance the country's **veterinary diagnostic capacity** through improvements in laboratories and training of laboratory technicians, on the basis of a plan developed for that purpose.

(iii) **Free up the import of veterinary supplies and medicines** and remove all import duties on them. Work with the EAC partners to achieve an unrestricted regional market in veterinary supplies and medicines.

SP1.2.2c Accelerate the **artificial insemination programme** and the training of technicians in each locality in techniques of artificial insemination. It is more cost-effective to use AI than to import selected breeds and cross breeds of cattle.

SP1.2.2d Continue and expand the **breed improvement programmes** for all species, with emphasis on development and validation of different crosses, and extend it to **poultry** with imported breeds. Until earlier this year breeding work with imported poultry would not have been possible because of the import ban imposed out of concern for avian flu, but now that ban has been lifted, and poultry can represent an important source of income and nutrition for farm families.

SP1.2.2e Develop and implement a programme of inspecting all villages for adequacy of **livestock watering facilities**, and invest in infrastructure for that purpose as required. The lack of sufficient access to water has been identified by ISAR as a constraint to livestock development.⁴¹

SP1.2.2f Develop and implement a programme of **farmer training**, including training of trainers, in promotion of **zero grazing, forms of fodder supply, and intensive animal husbandry practices** (drawing in part on the fodder review mentioned above). This programme will coordinate with the Girinka programme and with the programme of integrated cropping and livestock systems, but it will also work with farmers outside the ambit of those programmes. The intensive animal husbandry practices will include emphasis on developing sources of feed, especially in the dry seasons, through silage, planting of leguminous trees, and other approaches. In the absence of sufficient high-quality lime for Rwanda's acidic soils, it may be difficult to achieve zero grazing in the short run. Until better sources and greater quantities of lime are made available (see SP1.5.1e below), the use of manure for soil fertility will be more important than ever, especially from small ruminants.

SP1.2.2g Intensify and extend the programme for **management of internal lakes and aquaculture development**, with emphasis on activities like tilapia cultivation that can increase food security and nutrition and provide rural non-farm sources of income. (See Programme 3 for development of the cold chain for fisheries products.) This is an area that can be favourable for investors and should be marketed to potential investors by RIEPA.

SP1.2.2h **Support beekeeping**, including for organic honey in natural forests, through: i) donation of beehives; ii) provision of technical assistance on topics like spacing of hives, harvesting honey in ways that are not destructive to the environment, filtering and processing honey, packaging and labelling the honey, certification, and export marketing; and iii) cost sharing on processing equipment, packing and labelling materials, and obtaining certification. In Cameroon, the efforts of several NGOs and development partners

⁴¹ Nyagahungu I, Mutware S.J, Umunezero O, Rushemuka P, Ndikumana I, Gasore E. R, Rusanganwa C, Rwemalika J.D and Ndabikunze M.S, Participatory Diagnostic Report for Cyabayaga Watershed, Umutara, Eastern Province, Rwanda, edited by Bagabe M. C, Nyagahungu I, Ndiramiye L and Njeru R. W., ISAR 2006 *Integrated Watershed Management Series Number 3.1*, Kigali, June 2006.

have been successful in promoting more intensive and structured ways of managing beehives, including use of hand smokers instead of setting bushfires for the collection of the honey.

Organisations involved in supporting these efforts include DFID, GTZ, SNV, Birdlife International, and Bees Abroad (UK). Communities have been taught how to construct hives such including top-bar hives and where to place these hives on their farms and forest lands for bee colonisation and optimal honey production. Evidence for the success of these initiatives is provided by the existence of profitable beekeeping co-operatives and groups in the Cameroon Highlands eco-region.⁴²

II.1.3 Sub-Programme 1.3: Marshland development

The **objectives** of SP1.3 are: 1) increase the amount of land under irrigation, which will facilitate double cropping, reduce weather risks to yields, and improve product quality, all of which should increase farmer incomes significantly; 2) provide farmers with somewhat larger plots of land so they can be commercially viable; 3) train farmers in irrigation methods; and 4) develop appropriate local institutional mechanisms for management of irrigation systems.

The substantial benefits generated by marshlands include flood alleviation, ground water storage and recharge, the retention of pollutants and food web support.

The **pillars of action** of SP1.3 are:

- o Investment in land development including drainage systems as well as irrigation infrastructure.
- o Selection of high-value crops that warrant the cost of irrigation.
- o Minimization of the environmental effects.
- o Organisation of marshland farmers for water management, system maintenance and coordinated planting.
- o Develop legislation for WUAs and the corresponding implementing regulations, applicable to irrigation on both hillsides and marshes.

The **lines of action**, or action areas, in SP1.3 are the following:

SP1.3a Complete the formulation of the **Marshlands Development Plan**, taking into account the environmental impacts of such undertakings and providing measures for control of environmental effects. Include in the plan a valuation of marshland resources prior to development, with options for possible compensation of farmers in the event that it is decided some marshland areas should be withheld from development for environmental reasons. As part of the work on the Marshlands Development Plan, a broader analysis also should take place in order to measure the environmental impacts and the social and economic costs and benefits of marshland development.

SP1.3b On the basis of feasibility studies and implementation plans, **develop 10,000 hectares of marshlands with irrigation systems**, including drainage systems and measures for protection of catchment areas, and starting with Gashora Swamp. Implement strategies for minimizing the environmental consequences of marshland development. Identify the crops to be produced on the irrigated fields and the markets for those crops, emphasizing crop diversification and high-value crops. Delineate farms so that average holdings are somewhat larger than those now prevailing in the country. In marshlands, through the water user associations organize joint planting schedules on areas as large as possible, so that situations do not develop in which one farmer is flooding his field when the field next to it should be dry.

⁴² Emmanuel O Nuesiri and Eunice E Fombad, "Apiculture and poverty alleviation in Cameroon," *Bees for Development* (UK), 2006.

Joint planting decisions will also facilitate marketing, as larger quantities of harvest will be available at the same moment.

11.1.4 Sub-Programme 1.4: Irrigation development

The **objectives** of SP1.4 are to develop successful, sustainable irrigation experiences in Rwanda by: (1) establishing an appropriate legal framework for water use rights and ownership of irrigation systems, (2) developing modern techniques of irrigation centred on pressurized irrigation, and (3) developing farmers' capacity to manage, in associative form, irrigation systems.

The **pillars of action** of SP1.4 are:

- o Establish the legal basis for water use rights and tenure rights for irrigation systems.
- o Implement pilots for pressurized irrigation on hillsides and fertigation systems.
- o Organise and train hillside farmers for water management, system maintenance, and management of finances for irrigation systems.

The **lines of action**, or action areas, in SP1.4 are the following:

SP1.4a Complete the development of the **Irrigation Master Plan**.

SP1.4b Develop legislation and the associated implementing regulations to **establish the legal basis for water use rights and tenure rights for irrigation systems**. The former provide the needed security of access to water and the latter provide incentives for adequate maintenance of the systems by farmers, since in the event of migration to an urban area they would be able to sell their rights in the irrigation system as well as their usufruct rights to the land. This legislation should define water use rights in low-flow periods as well as normal periods, establish whether gross use or consumptive use is the basis for measuring the rights, define the conditions under which farmers may trade or sell the use rights, and define the conditions for passing use rights to progeny.

As part of this activity, **legally structure the water user associations** (a law is now available in draft), with implementing regulations, and define farmers' responsibility for system management and maintenance, and the government's role as well. These responsibilities need to include water allocation rules, including in drier periods. They also should provide a legal basis for the collection of levies for maintenance and operations, and make provision for those funds to be deposited in local financial institutions, under the control of the water user associations. It is necessary to ensure that the provisions are equally applicable to hillside irrigation systems. The roles of the State and the users in water allocation need to be defined, e.g., the State delivers water to the headgates in bulk and the users take charge of allocation in primary, secondary and tertiary canals, or the State's remit extends to the primary canals as well.

SP1.4c Promote the **formation of water user associations**, with the same guidelines and rules as above, **for hillside irrigation systems** that depend on common sources of water such as small catchment reservoirs. Formulate and carry out a plan for **training farmers, including women farmers, in irrigation and drainage**, and in management of water users associations. Ensure that the plan covers all relevant types of irrigation and questions of design of small-scale systems and their operation and maintenance.

SP1.4d Develop approximately **13,000 hectares of hillside irrigation systems** and incorporate the above-mentioned farmer training into the implementation actions.

SP1.4e In the context of the soil and water conservation activities and the integrated crop development programmes, develop **pilots for pressurized irrigation**, especially on radical terraces and contour

plantings, and also along progressive terraces for fruit trees that are sensitive to water regimes. Develop a cost-sharing program with farmers for installation of these systems, and provide the associated training and assist in the identification of crops that warrant the cost of irrigation.

As part of this activity, explore and implement on a pilot basis fertilization regimes that are appropriate for irrigation, such as fertigation along with pressurized irrigation for high-value crops on hillside terraces and plots, and the use of pellets for nitrogen fertilizer in flooded marshlands.

11.1.5 Sub-Programme 1.5: Supply and use of agricultural inputs

This sub-programme is divided into two components, one for fertilisers and other agrochemicals, and the other for seeds and other inputs. There is overlap in the sense that some activities touch upon both the components.

Sub-Programme 1.5.1 Fertiliser and agrochemical supply and use

The **objectives** of SP1.5.1 are: 1) increase rate of use of fertilisers and other modern inputs; and 2) create a sustainable private distribution system to ensure timely delivery of fertilisers to producers at reasonable prices.

The **pillars of action** of SP1.5.1 are:

- o Developing demand for agrochemical inputs; the challenge is not only one of physical delivery of inputs to farms but rather it is more one of creating an appreciation among the farming population for the value of modern inputs in the productive process, and hence creating a lasting demand for them. Farmers already use substantial amounts of fertilizer on crops like coffee, tea, potatoes and rice because they know the benefits that will accrue to it.
- o Developing sustainable supply and distribution systems for inputs.
- o Refining technical prescriptions for applications of fertilisers and other inputs, by crop, location and season.
- o Implementing systems of quality control for the inputs distributed.

The **lines of action**, or action areas, in SP1.5.1 are the following:

SP1.5.1a After implementing in 2008 the system of fertiliser distribution with auctions and vouchers for maize and wheat, define **a long-term approach for ensuring availability of fertiliser supplies to Rwandan dealers and farmers in a timely manner** and in varied nutrient combinations. For this purpose it also would be relevant to take into account existing fertiliser distribution networks in EAC countries. Also, as soon as it is practicable it will be necessary to shift the supply strategy to the **import of fertiliser by elements** so that mixing can be carried out according to the needs of each crop, zone and season. A mixer is being imported into the country, and the mixing capacity should be assessed in light of the needs.

SP1.5.1b Continue the programme of **vouchers for fertiliser purchase** and extend it to other crops and groups of producers. Institute a policy of gradually phasing down the value of the vouchers for each participating farmer, after 2-3 years at the initial level. Eventually phase out the free distribution of seeds in favour of incorporation of seeds into the voucher program, and extend the vouchers to cover pesticides as well.⁴³ Efforts should be made to ensure that the various initiatives in the area of rural finance (see SP3.6

⁴³ Eliminate government credit from the fertiliser programme since its payback has been very low in the past and international experience shows it is likely to remain low.

below) cover the purchase of inputs, since the vouchers will cover only part of the cost, and only temporarily. Equally, it will be urgent to widen the applicability of the voucher programme to all crops for the set of participating farmers; otherwise there will be strong incentives to divert fertiliser from the targeted crops to those where the returns to fertiliser are highest.

SP1.5.1c Develop more **fertiliser demonstration plots on farmer fields**, in the context of farm field schools or other local, participatory research and extension activities. For farmers who agree to contribute their fields for this purpose, donate the fertiliser, as well as seed and other necessary inputs such as lime, for the duration of the demonstrations. On the basis of soil analyses, it is necessary **continuously assess fertilisation requirements (including lime, organic fertilisers and trace elements) and refine the prescriptions** for combinations of fertilisers needed by crop, zone and season.⁴⁴ The fertiliser trials and soil analyses should be carried out **in a fully participatory way in which farmers themselves rate the soils on the plots in their village, exchange ideas on soil fertility, and review the results of the analyses**. This would represent an extension of the work with the fertiliser demonstration plots. Experience in Mali has shown that this approach increases farmers' willingness to devote resources to developing and applying organic fertilizers and to improve their soil management practices in general.⁴⁵ To implement this programme close collaboration is needed between the extension services and the research service, as well as local farmer organisations. These activities can provide a forum for farmer training in use of integrated nutrient management, including organic and mineral fertilisers, mulching and other soil treatments such as lime for acidic soils, which represent about two-thirds of all the soils. It is important to ensure that women farmers have full participation in these activities.

As part of this programme, monitor the soil analysis capacity by sending samples at random intervals to outside laboratories for comparison of results; make improvements in this capacity as warranted.

SP1.5.1d Develop a **sustainable fertiliser and agrochemicals distribution network** by: (i) promoting a multiplicity of input dealers so that competition among dealers occurs (and price ceilings on fertilisers can be eliminated), perhaps limiting the amounts that a single dealer may purchase at the auctions; and (ii) developing the Agricultural Support Centres and leasing the facilities on a medium- to long-term basis to the private sector. As a condition of the leases, require the operators of the Support Centres to meet minimum stocking requirements for fertilisers and other agricultural inputs. Enable the operators of the Support Centres to participate in the auctions for fertiliser.

As part of the distribution programme, require the fertiliser dealers and Support Centres to carry at least 30% of their stock in 25 kg bags, or even 10 kg bags (as opposed to 50 kg bags), and monitor the demand for fertiliser in these smaller quantities. Some farmers have smaller plots that would not justify the use of 50 kg and in addition it would be difficult for some women farmers to carry a 50kg-bag from purchase point to their farms in the sloping terrain they have to walk over. This issue was brought out in MINAGRI's recent fertiliser strategy⁴⁶

SP1.5.1e In the area of **fertiliser and agrochemical quality control**, institute a system for random testing of fertilisers and other agrochemicals that are distributed and for monitoring the age of the fertilisers sold, with a requirement to destroy stocks that have lost effectiveness with the passage of time. A quality control programme of this nature can be mounted jointly with the Rwanda Bureau of Standards, and information on the results should be routinely disseminated among farmers.

⁴⁴ The need for variations in the combinations over time is illustrated by marshland rice growers in Kirehi who have been applying successfully NPK plus urea but are planning to include DAP in the combination with the next planting.

⁴⁵ Toon Defoer, Salif Kanté, Thea Hilhorst and Hugo de Groote, "Towards More Sustainable Soil Fertility Management," *AGREN Network Paper* no. 63, ODI, London, July 1996.

⁴⁶ MINAGRI, "Strategy for Rapid and Sustainable Growth of Fertiliser Use in Rwanda," Kigali, p. 5.

Lime, which is essential for Rwanda's abundant acidic soils, presents a special problem in terms of quality. Three factors make it difficult to push large scale use of lime: a) The price is too high; b) the quality is often low; and c) the sources that are exploited have an Mg content that is much too low, creating in time serious deficiencies (limited soil Mg that is accessible for crops will be replaced by Ca). As part of this line of action, an activity should be undertaken to solve these problems. Dolomite, a better source for agricultural lime, is available in the country. As long as such a program is not yet a reality, organic matter management should receive even more attention than normal, to keep the soil acidification rate as low as possible.

SP1.5.1f Adopt and pursue as a long-run goal an **EAC free market in agricultural inputs and distribution**, so that Rwandan entrepreneurs can link with suppliers and distributors in neighbouring countries, eventually eliminating the need for government imports and auctions. Work toward agreements with the EAC on this approach. This approach will strengthen the supply side of agricultural input markets and is consistent with maintaining the use of vouchers on the demand side for fertilisers. The *Agriculture and Rural Development Strategy for the East African Community, 2005-2030*, has recommended standardising: "authorisation procedures, inspection, certification and monitoring of quality of agricultural and livestock inputs and produce" and it proposes, "harmonisation of standards on sanitary and phytosanitary issues, farm input requirements, food safety and quality assurance, export inspection procedures and certification to facilitate movement of goods and freeing of cross border trade."⁴⁷

SP1.5.1g Move ahead with the studies for and **development of a methane-based fertiliser production capacity** in the country.

Sub-Programme 1.5.2 Certified seeds and other inputs

The **objectives** of SP1.5.2 are: 1) increase the rates of adoption of certified seeds; 2) strengthen controls over seed development and multiplication to ensure quality; 3) ensure all cassava farmers have virus-free planting material; 4) promote the use of farm mechanisation in appropriate forms, along with animal traction.

The **pillars of action** of SP1.5.2 are:

- o Developing an appropriate legal and institutional framework for certified seeds.
- o Increasing production of basic seed.
- o Strengthening the activities devoted to seed multiplication and distribution.
- o Promotion of demand for seeds.
- o Promotion of appropriate farm mechanisation.

The **lines of action**, or action areas, in SP1.5.2 are the following:

SP1.5.2a To develop the **legal and institutional framework** for certified seeds the following steps will be needed: i) Draft and approve the implementing regulations for the seed law. ii) Create an independent seed certifying authority. iii) Develop a seed monitoring and inspection capacity. The independence of the certifying authority is crucial to its proper functioning.

SP1.5.2b For **production of basic seed**: i) Finalise and operationalise the plan for seed development; ii) strengthen the capacity in RADA, ISAR for producing foundation and basic seed; iii) accelerate seed

⁴⁷ East African Community, *Agriculture and Rural Development Strategy for the East African Community, 2005-2030*, EAC Secretariat, Arusha, Tanzania, November 2006, pp. 51, 67.

production for additional crops that so far have not received sufficient attention, such as climbing beans, soybeans and potatoes; and iv) shift to the private sector as much seed multiplication as possible, especially for vegetables and other higher-value products where the returns will justify private sector involvement.

SP1.5.2c For **seed production and distribution** alternatives need to be explored, as follows:

- i) Extend the coverage of RADA's program of **contracting with farmers for seed multiplication**, and the corresponding supervision by RADA staff. Institute procedures for monitoring the quality of the basic seed released to RADA, especially in respect to the purity and phytosanitary condition of the varieties they represent.
- ii) Link up ISAR directly with farmer organisations to commission them to multiply seeds of the crops they grow. An incentive should be built in so that the farmers who opt for seed multiplication and who produce seeds of required standards should be paid premium prices that are better than paid for products. To maintain the purity of the seeds, arrangements can be made with farmers from one specific area to multiply seeds for the whole country. The recent experience with cassava cuttings is a case in point.

Under either option, it will be necessary also to: (i) Provide participating farmers with equipment for drying and sorting seeds; (ii) Set up a programme of **authorized seed dealers** with permits to purchase seed from the farmers contracted by RADA for seed multiplication; (iii) Strengthen **seed certification** in a manner consistent with the policy spelled out below of creating an independent seed certification service, with seals and labels on bags of certified seed, and through the extension programme disseminate educational information on the value of using certified seed; and (iv) Accelerate the successful programme for providing **clean cassava planting material**, free of the cassava mosaic and other viruses.

SP1.5.2d To **promote demand for certified seeds**: (i) Include seed varieties in the above-mentioned participatory trials of fertilisers. (ii) Incorporate, as mentioned, certified seeds into the programme of input purchase vouchers. (iii) Implement an educational campaign regarding the value of certified seeds.

SP1.5.2e Provide guidance and funding for **development of private nurseries and cooperative nurseries**. This is now done in some pilots, for example, but needs to be extended widely.

SP1.5.2f On the basis of the research work on appropriate forms of mechanisation (see below), **develop an agricultural mechanisation and animal traction policy** and inform farmers of **appropriately scaled mechanisation options** and offer **training and access to finance to local entrepreneurs who wish to acquire tractors and other machinery and rent the machinery or sell mechanisation services to farmers**. In many cases it will not be profitable for farmers, or even cooperatives, to own agricultural machinery because the use of it will be highly seasonal and therefore the assets will be underutilised. In these circumstances, machinery rental and purchase of mechanisation services represent options that are more viable economically. Equally, opportunities for adopting animal traction need to be explored because sometimes they are environmentally and economically more appropriate. For mechanisation, options such as small tillers, of the kind used in East Asia, need to be explored in developing the policy.

II.1.6 Sub-Programme 1.6: Food security and vulnerability management

The **objectives** of SP1.6 are: i) to improve household food security and nutrition in rural areas, ii) to reduce the population's vulnerability to external shocks and health threats.

The **pillars of action** of SP1.6 are:

- o An early warning system regarding possible food shortages.
- o Hermetic local storage to reduce food crop losses.
- o Education, training and support on nutrition and health including HIV/AIDS.
- o Promotion of gender-friendly crops and livestock.
- o Improved household environmental health.

The **lines of action**, or action areas, in SP1.6 are the following:

SP1.6a Work with EAC partners to **set up regional and national early warning systems** regarding climatic events that may affect harvests and possible food shortages.

SP1.6b Extend to all areas of the country the current programme of **providing hermetic storage facilities** that eliminate insect infestations without recourse to agro-chemicals. These facilities (“cocoons,” or “hermetic cubes”) are suitable for cereals, beans and soybeans and make vital contributions to household food security, by reducing crop losses: and to farm incomes by permitting farmers to sell product well after the harvest period, when prices have increased. It is estimated that on average 2-3 such facilities with capacities of 50 tons each (although the size can vary according to local production levels) would be needed for each *secteur*, and therefore in total about 1,000 more units of that size would be required. It is also recommended that the central government pay half the cost and that farmer organisations pay the remaining part of the cost. The importance of this programme can be seen by the fact that in developing countries as a whole, it is estimated that up to 40% of all harvests are lost through pest infestations.⁴⁸ **Training must be provided in the management of these facilities** because they cannot be opened at frequent intervals. This kind of demand on the part of farmers led to the failure of the programme in Namibia.

It is planned that two such storage silos will be built as pilot programmes, in conjunction with the appropriate cooperatives, by the end of 2009.

SP1.6c Strengthen household nutrition and health practices by: i) expanding training on kitchen gardens; ii) carrying out educational campaigns on nutrition including role of lipids; iii) carrying out educational campaigns on maternal and child health; and iv) carrying out educational campaigns on HIV/AIDS and other diseases such as tuberculosis and malaria.

SP1.6d Develop and implement a plan for promoting and protecting **gender-friendly crops and livestock** including actions such as a programme for control of banana wilt disease, development of mushroom cultivation for rural women, increased emphasis on poultry and small ruminants in integrated development projects. (These activities are incorporated into 1.2.1a, integrated livestock and cropping systems. The budget here is for banana wilt control, mushroom development, and poultry dissemination.)

SP1.6e Develop and implement a campaign install **more efficient fuelwood stoves** that utilize less wood and that discharge smoke outside kitchens through chimneys. In addition to the need to reduce the fuelwood demands on forests, the accumulation of smoke inside the homes is a health threat, especially to women and children. Eritrea, for example, has developed and disseminated an award-winning design for improved fuelwood stoves that rural families themselves can make with local materials.

SP1.6f Ensure that **all rural households have access to a safe well for drinking water** and institute a monitoring programme to ensure the water is potable. In cases in which the water quality does not meet standards, install water purification filters on wellheads. A number of filter designs are available internationally.

⁴⁸ Larger, more commercial storage facilities are included under Programme 3.

Chapter II.2 Programme 2. Support to the professionalisation of the producers

Objectives

The objectives of Programme 2 are: i) to strengthen the sector's base of social capital, ii) provide the producers with organizational frameworks through which they can develop commercial linkages and generally function in a more entrepreneurial manner; iii) strengthen the entities in the sector that are charged with the development of productive technologies and other forms of applied knowledge and with imparting this knowledge to farmers.

Social capital is especially relevant in a rural environment in which most farmers are smallholders. It is extremely difficult for these farmers to access, say, export markets when they act individually, so associative efforts are required. By the same token, the systems that develop new agricultural techniques and information on markets and other issues need to be made more effective, both in developing relevant information and in ensuring that farmers obtain that information and are able to utilise it. Making progress in this regard requires involving farmers more directly in processes of knowledge generation and dissemination. It also requires institutional changes to make the knowledge systems more responsive to farmers' needs and priorities.

In a word, the overall objective of Programme 2 is to empower farmers in the sense of giving them greater ability to develop solutions on their own initiative and to access the specialised forms of technical assistance that they need on particular issues.

Main constraints

Because of the small size of farms in Rwanda, it must be pointed out that in order for PSTA II to succeed it requires farmers' organisations that are efficient and effective in providing services to their members, the farmers. The current level of institutional development and preparedness in these organisations, be they cooperatives or non-cooperatives, is very low. The main weaknesses of farmer organisations are found in the areas of management capabilities and governance. In general, they lack experience in entrepreneurial activities, and many of them have not yet acquired experience in successfully carrying out joint actions for the benefit of their membership, which is the main route to creating social capital. Experience with farmer organisations is more extensive in some parts of the country, especially in the north, than in others, and it is deeper in the case of coffee than for other crops.

A major constraint is the ineffectiveness of the extension system. The extension agents have weak links to the research service; often do not have sufficient means of moving about the countryside, and generally lack knowledge on more specialised topics. They also have a message-oriented, top-down framework for working and have not developed strong skills as facilitators of the farmers' own processes of knowledge acquisition. Also, there are too few women extension agents. The process of linking District extension agents with specialised sources of knowledge is not well developed.

The research service is being strengthened but its links to farmers themselves need strengthening, so that farmers' priorities can play a greater role in establishing research agendas and so that farmers can participate more directly in research processes. It must be noted that ISAR is moving in this direction, as exemplified by the participatory effort to analyse the constraints to development in selected watersheds. The study for the Cyabayaga watershed, for example, had the following purposes:

“To ensure that farmers internalise the process and own the technologies, it is critical to involve them in all stages of development. It is in this context that Institut des Sciences Agronomiques du Rwanda

(ISAR) initiated the Cyabayaga integrated watershed management research and the specific objectives were to:

- Determine the socio-economic and institutional factors influencing Natural Resources Management (NRM) use.
- Identify the major crop and livestock production constraints, their causes and strategies to address them.
- Identify the major soil and hydrological constraints to crop and livestock production, their causes and strategies to address them.”⁴⁹

However, to date this kind of undertaking has been concentrated more on diagnostics than on joint research for developing solutions.

Potentials and opportunities

Participatory workshops have revealed that each District has tens if not hundreds of village organisations. In total, there are more than 1,100 farmer organisations in the country, although many of them were formed fairly recently and through initiatives from the Centre and the Districts, rather than arising from existing practices of local cooperation. Cooperatives are more effective if they arise out of farmer initiatives instead of being formed from the Centre, and Rwanda does have a strong tradition of community cooperation. Farmers have shown themselves to be open to new crops and technologies of production.

What is needed above all is to add entrepreneurial experience and expertise to these groupings. Among other things, this will require reforms to the extension modalities and efforts to bring specialized experts in close contact with farmer organizations.

The decentralisation policy also creates opportunities by placing decision-making on many issues at the local level. The ways in which the local institutions will function and how they will relate to farmers, on the one hand, and central institutions, on the other, still needs to be fully worked out, but the policy establishes a basis for quicker responses to new opportunities in rural areas.

The research service has demonstrated that it has capable scientists. The staffing needs to be filled out more at the highest technical levels, and the operating modes need to be modified so that researchers can collaborate more directly with farmers.

The following three Sub-Programmes have been established for implementing the main lines of Programme 2:

- | | |
|-------|---|
| SP2.1 | Promotion of farmers’ organisations and capacity building for producers |
| SP2.2 | Restructuring of proximity services for producers |
| SP2.3 | Research for transforming agriculture |

⁴⁹ Nyagahungu I, Mutware S.J, Umunezero O, Rushemuka P, Ndikumana I, Gasore E. R, Rusanganwa C, Rwemalika J.D and Ndabikunze M.S, Participatory Diagnostic Report for Cyabayaga Watershed, Umutara, Eastern Province, Rwanda, edited by Bagabe M. C, Nyagahungu I, Ndiramiye L and Njeru R. W., ISAR 2006 *Integrated Watershed Management Series Number 3.1*, Kigali, June 2006.

II.2.1 Sub-Programme 2.1: Promotion of farmers' organizations and capacity building for producers

The **objectives** of SP2.1 are to: 1) develop management and entrepreneurial capacities in farmer cooperatives and other organizations; 2) help insert farmer organizations into activities of higher value, both at the farm level and in agro-processing; 3) develop farmer organizations as vehicles to improve farmer access to inputs and outputs, always in response to farmer initiatives; 4) develop rural women's organisations; and 5) promote the growth of social capital to provide farmer organisations with an enduring foundation for the long run.

The **pillars of action** of SP2.1 are:

- o Long-term relation with cooperatives for capacity building.
- o Emphasis on governance and agribusiness management in capacity building.
- o Community innovation centres to promote inter-farm exchanges.
- o Farmer training centres as non-formal educational centres that provide specialised technical information to farmers and farmer organisations.
- o Provision of specialized training on issues of product quality.

The **lines of action**, or action areas, in SP2.1 are the following:

SP2.1a In coordination with MINICOM, develop and implement a **long-term programme of capacity building in village organisations, cooperatives, rural women's organisations and other farmer organisations, with emphasis on those that are dedicated to input purchase and output marketing and those that are linked to processing facilities.** Define the institutional framework and the roles of all relevant entities as well as the goals of the programme and the means of achieving them. This programme should give special attention to promoting and strengthening rural women's organisations.

In the case of large organisations (500-1000 members and more), the capacity building should endeavour to help create smaller, specialised sub-units whenever that is feasible, and work directly with those sub-units as well as with the larger units.

The training should be tailored to the types of production of the organisations and it should cover organisation purposes and organizational forms, governance, participatory and communication within an organisation, building social capital, business planning, financial management, contract types and negotiations, marketing and input markets, quality controls and post-harvest management, sources of technical assistance at the farm level and for post-harvest management, and other relevant topics. This assistance needs to be very long-term for each participating organisation. A review of farmer organizations in Africa noted the vital role they must play and reported success stories in Kenya, Cameroon, Burkina Faso and elsewhere. It also commented,

"These organisations often do lack human resources, skills and means. Those in charge must learn to negotiate contracts, manage budgets, represent the interests of all members of their organisations and, gradually, to become autonomous. To be effective, such apprenticeships need to extend over a period of 8-10 years," according to the World Bank in its Agricultural Services and Producer Organisations Project.⁵⁰

⁵⁰ "Farmers' organisations: Services and setbacks," Spore, no. 115, 21 March 2005, p. 2.

The programme of assistance will select the most promising organisations and work with them on a sustained basis. As they “graduate” from the training programme, then it can be extended to other organisations.

It will be important to set clear criteria for selecting those units to start with otherwise the ones left behind could easily be lost as they feel sidelined. The members of particularly poorly managed farmer organisations need the support more and should be supported first. The demonstration effect will be greater.

SP2.1b Strengthen local points for training and sharing experiences regarding innovations. The two components of this activity are:

(i) **Strengthen the community innovation centres**, in existing facilities and/or farms, usually at the level of the *secteur*, in areas of organisation, equipment and promotion campaigns and train their staff. Through those centres, which should be managed by farmer organisations, facilitate networks among producers to compare experiences and facilitate learning, with the aim that farmers themselves will take charge of training and inter-farm exchanges. These centres should have small plots of land on which trials can be conducted with new crops and new technologies of production, and they should be continuously open to farmers to visit, observe, question and exchange ideas. These centres will need the support of RADA, RARDA and district agronomists and veterinarians and other facilitators, along with the occasional participation of researchers to help design the trials. Hence they should be expanded only as rapidly as they can be staffed and managed properly. They also should contain internet connections through which farmers can obtain information about markets and technologies. It is important that the farmers themselves decide on which crop trials they will carry out, and that they evaluate them.

(ii) Develop **farmer training centres**, in existing facilities, to provide specialised technical information to farmers and farmer organisations. These will be non-formal educational centres, relatively few in number but well spaced throughout the country. They will offer intensive training, typically in one- to two-week modules, on a wide range of up-to-date topics including livestock feeding and birthing, soil conservation and fertility, non traditional crops, post-harvest management, marketing, quality standards, developing cooperative business plans, agro-forestry, pressurized irrigation techniques, and the like. The centres need field facilities to demonstrate crop and livestock topics. It will be important to ensure that significant numbers of women farmers participate in this training.

SP2.1c Following the OTF⁵¹ hides and skins strategy, design and implement a project for **training abattoir operators and selected groups of farmers in proper care of livestock skins and hides** at the farm and processing levels. Of Rwanda’s exports of hides and skins, only 10% are sold in the highest price category (“wet blue”) in part because most are already damaged by the time they reach the tanneries and in part because of imperfect processes in abattoirs. The project should have the aim of raising to 25% the percentage of wet blue hides in total hides exports. Producing quality hides can be a significant source of additional income for farmers.

SP2.1d In collaboration with **coffee growers’ cooperatives and washing stations**, extend the programme of **training farmers in producing high-quality cherries and generally understanding the agronomic and quality issues that affect their incomes**. Producing high-quality cherries requires closer attention to varietal selection, crop tending, selectivity and timeliness in harvesting, and adequate post-harvest treatment of the cherries on the farm. While the treatments provided at the washing stations are crucial for producing specialty coffees, quality begins at the farm level. As part of the programme, community members, women in particular, should be trained in cupping so that quality differences begin to be perceived at the local level.

⁵¹ OTF signifies On the Frontier, an NGO that has spearheaded development and improvement of several products.

II.2.2 Sub-Programme 2.2: Restructuring proximity services for producers

The **objectives** of SP2.2 are to: (1) develop an extension system that is accountable to the farmers as clients, with appropriate structures of incentives for that purpose; (2) promote participatory systems in which farmers participate and research and extension converge at the field level; (3) develop permanent systems for training extension agents in specialised areas and keeping them up to date; and (4) strengthen systems by which farmers can propose projects and activities and solicit the necessary technical assistance to implement them, consistent with the framework of decentralisation.

The **pillars of action** of SP2.2 are:

- o Make extension accountable to farmers.
- o Institute permanent, specialised training for extension agents.
- o Certify lead farmers as trainers.
- o Strengthen extension for market linkages and develop the role of extension agents as facilitators in the quest for information and knowledge.
- o Utilize mass extension messages, especially on rural radio.
- o Develop special participatory programmes such as fertiliser trials (see SP1.5 above) and IPM experiments.
- o Strengthen CICA as support institution, a source of technical information in written and electronic form.

The **lines of action**, or action areas, in SP2.2 are the following

P2.2a Work with farmer organisations to **develop and promote a system through which farmers contract with the farm advisors (extension agents)** and are able to utilise an appropriate mechanism, for example, vouchers supplied by the government to pay most of the costs of the service, at the beginning all the cost. The system will first be applied on a pilot basis to the more commercial product chains such as potatoes, rice and fruits and vegetables. The pillar of the system is that farmer groups would be able to choose their own advisors, and to change them if they are not satisfied with the assistance provided. This is the key to making extension accountable to the farmers, which international experience has shown is perhaps the most needed reform in extension services. Establishing a demand-driven extension system (une vulgarisation guidée par la demande des clients et les exigences du marché) is a priority in the national extension strategy.⁵² For the most part, this extension will be targeted on specific crops and technical issues (vulgarisation ciblée), as mentioned in the National Extension Strategy.⁵³

In implementing such a system a strong set of checks and balances is needed to avoid abuses in the form of collusion between extension agents and the leaders of farmer organisations. One of the strongest checks would be having significant numbers of organisation members sign to confirm the service was delivered.

As a fundamental element of this effort, assist the extension agencies to **redefine the role of extension agents**, toward becoming facilitators of the process of obtaining information rather than vehicles for the delivery of extension messages in a top-down fashion, and toward working in a participatory learning environment with farmers. “In many situations the dissemination of standard packages of inputs and

⁵² MINAGRI, Stratégie Nationale de Vulgarisation Agricole, Kigali, août 2007, p. 13.

⁵³ MINAGRI, Stratégie Nationale de Vulgarisation Agricole, Kigali, août 2007, p. 15.

practices is no longer relevant, if indeed it ever was. . . . what is increasingly required is an approach that can generate custom-made, environmentally friendly solutions based on the farmers' involvement."⁵⁴

Complementary to this work, create a **registry of qualified agricultural service providers**, disseminate it widely to farmer organisations, and create mechanisms for continuously updating it. One proven modality, through which farmers and farmer organisations can select extension agents, or teams of them, is through local labour fairs.

SP2.2b Establish a **permanent training service for extension agents, including district agronomists**, which includes intensive, up-to-date training on specialised topics such as brokering links to markets, appropriate fertiliser combinations, maintaining soil fertility, other aspects of sustainable development, hillside and marshland irrigation, post-harvest handling of crops, IPM, sanitary and phytosanitary and food safety standards, farm business management, product marketing, the facilitation role of extension agents, participatory methods of research and extension, and so forth. Each topic would constitute a separate training module. Extension agents working in the field could attend at intervals, with government salary support, for the purpose of studying particular modules, and receive certificates for passing the examinations on those modules. These qualifications in turn would increase the agents' value to farmers. The training programmes would include contact with researchers at ISAR and with specialised international experts, as well as site visits within Rwanda. Provision should be made to encourage the development of female extension agents and their participation, as well as that of district agronomists, in these training programmes.

This training should be used in part to strengthen the component of extension that links farmers to markets for their products. This is increasingly seen as essential for transforming agriculture:

"Market demands are changing rapidly and becoming more stringent. Publicly financed (but probably privately provided) market-oriented agricultural advisory services . . . are essential if poor producers and rural entrepreneurs are to have the knowledge and information they need to meet these changes . . .

Market orientation demands a value chain orientation; which in turn implies that advisory services must meet the needs of a range of actors –not just farmers.

For these reasons, traditional 'technology transfer' services will no longer be a primary focus. Outdated assumptions and modalities associated with this approach are a major obstacle to the promotion of more appropriate innovation systems . . .

Market-oriented agricultural advisory services put competitiveness in the spotlight. This means that whilst technological research may be part of maintaining market share, brokering market relations, facilitating organisational development and advice for business management takes on greater importance."⁵⁵

SP2.2c Implement on farms **participatory research-cum-extension approaches such as farm field schools and related approaches**, where research is carried out on farmers' fields and neighbouring farmers visit those fields regularly (say, once per week) to review findings of the research and bring up their own issues for investigation. Farm field schools now have been successfully implemented in a number of countries, mainly for work on IPM and basic food crops but also some traditional small-farmer commercial crops such

⁵⁴ R. Piccioto and J. R. Anderson, "Reconsidering agricultural extension," World Bank Research Observer, 12(2), August 1997, p. 254.

⁵⁵ Ian Christoplos, "Agricultural advisory services and the market," *Natural Resource Perspectives*, no. 113, ODI with the support of SIDA, London, March 2008, pp. 1-2.

as cocoa. However, at the outset it will be appropriate to bring in international advisors who have worked with farm field schools in other countries, to guide the initial efforts and train Rwandan specialists in the approach. In some variants of the approach, farmers work together with researchers on varietal adaptation and testing. Rwanda's ample experience in rural community organisations would facilitate the implementation of participatory approaches, which also have been identified as a priority in the national extension strategy.⁵⁶ Involve district agronomists in these experiences.

As part of this participatory approach, develop an **integrated pest management (IPM) policy** which is specific to each kind of crop and implement ongoing **demonstration and training activities in IPM** in all regions of the country, with the aim of having at least one such effort underway in each District, preferably extending them to the *secteur* level eventually.

SP2.2d Develop and implement a programme of **certifying farmers, including women farmers, as trainers and facilitators** after they have been involved in participatory research and extension activities and receive specified types of additional training afterwards.

SP2.2e Improve the information side of extension by: i) Strengthening **programmes of mass extension messages**, in collaboration with districts and disseminated through media such as radio and brochures, for basic questions such as using legumes and silage for livestock feeding, care of new-born animals, detecting livestock diseases, restoring soil fertility especially on radical terraces, and the like. ii) Developing and implementing a plan to **update and deepen the information managed by CICA and its links to farmer organisations and extension agents**, so that it may serve as a principal source of technical and marketing information.

II.2.3 Sub-Programme 2.3: Research for transforming agriculture

The **objectives** of SP2.3 are to: 1) orient research in greater measure to farmers' priorities, in part through the approach of participatory research with farmers; 2) strengthen the scientific capacity of ISAR; 3) give priority to adaptive research rather than basic research; and 4) following CAADP Pillar 4, adopt a holistic approach to research and extension.

The objective of aligning the research agenda more with farmers' priorities cannot be emphasized too much. In interviews carried out for a study on strengthening the role of the private sector, according to many respondents, improving the quality, relevance, applicability, and dissemination of research results is the area where Government's performance most urgently needs to improve. Most respondents believed research was not contributing towards improved commercial opportunities for farmers and that a wide range of opportunities are being missed.⁵⁷

The **pillars of action** of SP2.3 are:

- o Participatory research on farmers' plots.
- o Permitting farmers help set research agenda in regional research stations.
- o Implementation of a competitive research funding mechanism.
- o Giving priority to applied, adaptive research.
- o Promoting researcher participation in national alliances: participatory fertiliser trials, cassava value chain, appropriate mechanisation, greenhouse trials, and training of extension agents.
- o Adopting a holistic approach to research and extension.

⁵⁶ MINAGRI, *Stratégie Nationale de Vulgarisation Agricole*, Kigali, août 2007, p. 11.

⁵⁷ MINAGRI and PAPSTA, *Observations and Recommendations on Private Sector Development in Agriculture*, by Dan Kobb for HTSPE Limited, DFID and IFAD, Kigali, October 2008, p. 9.

The **lines of action**, or action areas, in SP2.3 are the following:

SP2.3a Develop a programme of **participatory research with farmers on their plots**, in at least six pilot areas to start with, and in connection with the rural innovation centres and ISAR's local stations. This programme should utilise the existing pilot fields (there is one per village) to the extent it is feasible, and priority should be given to fields in watersheds where soil conservation is a major issue. It also should involve extension agents (from Districts and from RADA) in the activities as facilitators of the processes, to help extension agents learn this role.⁵⁸ Conduct research on crops selected by the farmers in each zone and emphasis varietal adaptation, fertilisation prescriptions and timing, use of lime, trace elements and organic fertilisers, cultivation practices, intercropping options, disease and pest control, and where relevant water management, plus additional topics of interest to farmers.

SP2.3b ISAR possesses a valuable network of local research stations that are being converted into **rural innovation centres** (distinct from the more local community innovation centres). This network should be utilized to **establish local research agendas** that align research more closely with farmers' priorities, by **involving farmers and other stakeholders in the decisions on each year's research agenda** for each area, and establishing ways they can participate in research activities, in addition to the programme of participatory research on farms. Broadly speaking, the programme of participatory research will be directed to the lower-income farmers (which is most of them), while this programme of farmer involvement in local research stations provides an opportunity for the farmers who are more connected to the market, and other stakeholders in the value chains, to define their research needs, although this dividing line should not be rigid. The research agendas should include not only varietal development but also cultivation practices, intercropping, agro-forestry and other topics.

SP2.3c Institute a mechanism for competitive research funding under which any entity or group of entities may submit proposals for the **competitive award of research funding**. ISAR may apply on multiple occasions on its own, and it may also apply jointly with other institutions, for example with tea estates for research on high-quality tea clones. Equally, other institutions may make proposals on their own for research funding.

SP2.3d Following on the example of bilateral donor support for ISAR, develop and implement **a strategy to secure long-term funding support for public-sector agricultural research**, with provision for eventual participation of the private sector in the funding.

SP2.3e Continue and augment **programmes of international cooperation and staff exchange and secondment** as an interim measure to strengthen the scientific capacity of ISAR while staff is receiving graduate education and other forms of training. ISAR has some highly qualified staff members but it needs to increase its scientific personnel in light of the needs. With the aim of **building stronger capacity among senior research scientists**, complement this activity through programmes of short-term, specialised training abroad.

SP2.3f Increase the **adaptive research on varieties imported from the region**, e.g., maize from IITA, coffee (especially Ethiopian varieties), sorghum, plantain, etc.

SP2.3g **Maintain and operate ISAR's in vitro laboratories** covering potatoes, coffee, tree crops and bananas.

SP2.3h Implement a holistic approach to research and extension, unifying the relevant entities to the extent possible, and strengthen **ISAR's collaboration with other institutions and activities** in addition the extension services, giving priority to the following:

⁵⁸ "It was recognized that poor interaction between researchers, extension agents and farmers was the main reason that many technologies which were developed in Mali were proving to be irrelevant to farmers' needs." From: Toon Defoer et al., *op. cit.*

- Become a full partner with other stakeholders in the **integrated cassava research and development programme** discussed under Programme 3 of this Strategy.
- For the case of rice, some farmers, e.g., in Kirehi, are able to obtain two rice crops per year on marshlands. However, where that is not possible, encourage **trials on rotations such as rice-vegetables and rice-soybeans**. (Rice cropping in Korea, for example, is based on such rotations.)
- On the institutional side, develop a **farmer liaison unit** that is closely linked to the Joint Action Forums and farmer organisations, travels frequently to their locations to discuss their issues, and helps define actions in the research organisation that will respond to those issues.
- Establish in ISAR a **liaison unit with the permanent training institute for extension agents** to ensure appropriate inputs from researchers into those training activities.
- Develop a collaborative programme between ISAR, RADA and MINAGRI for **research on appropriate cultivation strategies with greenhouses** (see Programme 3).
- Collaborate with RARDA in **genetic improvement programmes for livestock and poultry**.

Chapter II.3 Programme 3. Promotion of commodity chains and agribusiness development

Objectives

The overall objective of Programme 3 is to create, through institutional reforms, investments and incentives, an environment which is favourable for farmers and agro-entrepreneurs to develop high-value products, including processed products, and to access the markets which will justify the investments in those areas.

Main constraints

The constraints that need to be overcome include:

- Lack of sufficient experience and entrepreneurial capacity in the country, especially in the areas of marketing and agro-processing.
- Lack of sufficient awareness of international product quality standards and ability to comply with them.
- Inadequate infrastructure for post-harvest management and agro-processing.
- An insufficient network of all-weather rural roads and insufficient rural electrification. PSTA I commented that “road conditions in the rural areas are deplorable” and that is still true in many areas.
- Inadequate international air transport linkages for export products.
- A nascent and still insufficiently developed system for monitoring and controls in the area of sanitary, phytosanitary and food safety standards.
- Lack of sufficient research on non-traditional crops.
- Continuing government ownership of tea estates that need investment in modernisation.
- Insufficient finance for producers and insufficient investment capital for agro-processing and export development.
- For coffee, a large proportion of old coffee trees, poor productive potential of traditional varieties, inefficiency in extension services, and still-low capacity among the majority of farmers organisations. The low quality for most coffees is due in part to field practices and in part to the shortage of washing stations and inefficient systems of quality control, and insufficient price differentiation in relation to quality.
- For tea, the constraints include low capacity of tea producer organisations; low productivity in the output of tea leaves especially among smallholders (much lower output in the estates of OCIR-Thé as compared with the operations of SORWATHE); and high costs of energy and transport of exports.

Potentials and opportunities

The emergence of several high-value products in Rwandan agriculture, along with a strong tradition of farmer cooperation and the existence of organisations for that purpose, point to considerable potential for developing a vibrant agro-export sector. Neighbouring countries, especially Kenya and Uganda and, more recently, Ethiopia, have shown that this is feasible. The increasing preference of international markets for organic and fair trade products, niche products with denomination of origin, and vegetables and tropical fruits in general, represents an opportunity for increasing the acreage planted and production of these high-value crops.

Development of non-traditional crops also represents an important opportunity to increase rural employment and reduce rural poverty, since these crops typically generate several times more employment and income per hectare than cereals, legumes and root crops do.

The livestock and fisheries sectors also have the potential to generate more value added through higher-value products, for the domestic market as well as the export market, provided that issues of the product chains can be resolved, including in product handling, processing and marketing.

The following six Sub-Programmes have been established for implementing the main lines of Programme 3:

- SP3.1 Creating an environment conducive to business and entrepreneurship development and market access
- SP3.2 Development of traditional exports
 - SP3.2.1 Coffee
 - SP3.2.2 Tea
 - SP3.2.3 Pyrethrum
- SP3.3 Development of non-traditional high-value export products
- SP3.4 Production and value addition for domestic staple products
- SP3.5 Market-oriented rural infrastructure
- SP3.6 Strengthening rural financial systems

II.3.1 Sub-Programme 3.1: Creating an environment conducive to business and Entrepreneurship development and market access

The **objectives** of SP3.1 are to: (1) accelerate the development of a cadre of entrepreneurs who have cutting-edge training and exposure to successful cases of start-ups; (2) provide them with financing for promising business plans that they develop, and (3) creating an enabling framework for access of Rwandan products to world markets.

The **pillars of action** of SP3.1 are:

- o Accelerate the development of entrepreneurial capacity.
- o Strengthen environment for agro-business, especially with reference to meeting international standards for export products.

The **lines of action**, or action areas, in SP3.1 are the following:

SP3.1a Develop and implement a **Young Entrepreneurs Training Programme**. This should provide in compressed form the essence of an MBA programme in a few months, and it should be provided by a degree institution specialised in those kinds of programmes. As well as providing intensive classroom work it should include site visits to successful cases of small enterprises in countries of the region and as far away as South Africa. Students would be selected on the basis of ability and motivation from the pool of applicants, with special emphasis on recruiting female students, and a requirement of graduation would be the preparation of a detailed business plan for an enterprise the student would like to create. The business plans would be judged by a panel of international and national experts, and those that qualified should be eligible for start-up funding from a participating bank or from a new venture capital window (see Sub-Programme 3.6 below in this Strategy).

SP3.1b Design and implement a programme for **training members of women's farming organisations in entrepreneurship**, including accounting, cost control, business planning, and marketing. The mentorship model, in which existing entrepreneurs donate time for training emerging entrepreneurs, can be used as one of the approaches for training women's organisations.

SP3.1c Draw up and implement a plan to **strengthen the sanitary, phytosanitary and food safety (SPS) system** by: i) creating a single, autonomous service or entity (see activity SP4.1b in Sub-Programme 4.1 below) charged with responsibility for the system, ii) developing a capacity for risk analysis with respect to various kinds of plant and animal diseases, iii) instituting a livestock and poultry monitoring system based on identification of factors that expose animals and poultry to health risks, iv) establishing a single SPS enquiry point for international communications, with links to producer organisations and exporters, and charging the institution with continuous review of international sanitary, phytosanitary and food safety standards and the corresponding regulations in trade partners and with the responsibility for keeping farmers and exporters informed of those standards and regulations.

SP3.1d Draw and implement a plan to **improve the laboratories used for sanitary, phytosanitary and food safety analyses**, upgrade staff qualifications, and institute modern analytic protocols in the laboratory procedures. The goal is **to obtain ISO 17025 certification** for the main (reference) laboratories in the system.

SP3.1e Coordinate with other countries of the EAC to **harmonise sanitary and phytosanitary policies and legislation and inspection and certification procedures in the EAC region**,⁵⁹ and to establish EAC regional zoosanitary and phytosanitary referral laboratories for diagnosis of pests and diseases.⁶⁰

SP3.1f Formulate and implement guidelines for **supporting part of producers' costs of obtaining quality certifications** that may be relevant for some products, such as fair trade, organic, certificates of (geographical) denomination, and so forth. For individual smallholders, and even producer cooperatives, the cost of obtaining these certifications can be prohibitive, but having them can enable producers and exporters to obtain substantial price premiums in international markets.

SP3.1g **Configure Kigali Airport as an effective horticulture hub** (with KCAA and RHODA).

SP3.1h Develop an **accord with Uganda for use of Entebbe international airport, and with Kenya for the Nairobi airport**, for shipment of fresh and processed agricultural products from Rwanda to Europe and other destinations. The accord would include pre-inspections at the point of embarkation in Rwanda in order to avoid excessive delays at the border, and expedited handling of the shipment at the airport in Uganda.

SP3.1i Explore with airlines, including cargo-only carriers, the option of providing flights out of Kigali at regular intervals to destinations in the Middle East and/or Europe, for carrying Rwandan produce. If feasible arrangements could be made, then **provide a government guarantee for several years for cargo space in the minimum amount** the airline would need to justify the flights. In the first year or two or three it is anticipated that the space would not be filled, and hence the government would have to make good on part of its guarantee. However, the availability of the space should serve as an inducement for export-oriented producers to step up their production levels and diversify their crops, so that eventually the space would be filled and it would not be necessary to have recourse to the guarantee.

⁵⁹ East African Community, *Agriculture and Rural Development Strategy for the East African Community, 2005-2030*, EAC Secretariat, Arusha, Tanzania, November 2006, p. 88.

⁶⁰ Ibid.

II.3.2 Sub-Programme 3.2: Promotion and Development of traditional exports

The **objectives** of SP3.2 are, for traditional exports, to: 1) improve the quality of post-harvest handling so farmers can receive higher returns on their harvests; 2) promote closer links between farmers and processors, so farmers can deliver products with the required quality and share in the additional returns gained from higher quality; 3) promote the expansion of the agro-processing sector for traditional products and private sector participation in it.

The **pillars of action** of SP3.2 are:

- o Raise the quality of coffee produced and bring more coffee producers into the circle of specialty coffees.
- o Improve the productivity of tea estates and strengthen the international marketing of Rwanda's teas.
- o Improve the competitiveness of and add value to pyrethrum production.

The **lines of action**, or action areas, in SP3.2 are specified for coffee, tea and pyrethrum.

Sub-Programme 3.2.1 Coffee

SP3.2.1a Put in place a system to **improve input distribution and management and monitoring of that distribution** for coffee, including seedlings, plantings, application of inputs and studies to evaluate fertilisation strategies. Soil fertility is a major constraint to increased volumes of high quality coffee. Chemical fertilisers are certainly necessary but Government distribution programs in the past have not been very effective. This needs to be re-examined in terms of alternative private models that may work better. In addition, organic fertilizers need to also be part of the scheme. This is especially true since the Rwandan soils are highly weathered and chemical fertilisers alone will not product the positive results required to sustain the soils in the long term. As part of better farm management for coffee, **implement a national programme for shading coffee**. Although some fragmented attempts at shading have been attempted using indigenous tree species, there is a need to implement this approach on a systematic basis. Shade trees and border agro-forestry species also provide plant nutrition and material for organic fertiliser and mulching.

Regarding fertilisation, persons interviewed for the formulation of recommendations for development of the private sector commented that: (1) no studies have been done under field conditions to see whether the current fertilizer regime is effectively absorbed into coffee trees and (2) experiments are being designed without an adequate control group to draw robust conclusions.

SP3.2.1b **Identify the cause of the "potato taste"** that is a major constraint to getting greater prices for Rwandan coffees and **implement as an urgent matter a programme to correct it**. Nearly 25% of all Rwandan specialty coffees in 2008 revealed significant levels of this defect. This percentage is higher than last year. The specialty coffee industry realizes now that Rwandan coffees will continue to be infected with this defect unless remedial actions are taken. Already, Rwanda is losing income due to this problem. Several higher end buyers have even refused to continue to buy Rwandan coffee because of it. Larger roasters selling to big buyers like Walmart and Target are also refusing to buy Rwandan coffee in large quantities for these markets due to the defect.

SP3.2.1c Implement **turn-around programme for washing stations** to improve their productivity and profitability, including wider application of the post-sale premium payment schemes that are already operational in some coffee cooperatives. Many of the washing stations still operate inefficiently and with weak management, and this activity will also include upgrading their infrastructure.

Rwanda's coffee washing stations are not functioning at full capacity and emphasis will be both on ensuring larger coffee harvests, as well as increasing the number of coffee washing stations in Rwanda, so that coffees produced achieve higher prices. Rwanda's government has committed itself to installing 25 coffee washing plants as well as doubling the rates of usage of existing coffee washing stations. Furthermore, much of Rwanda's coffee is currently not roasted prior to export. Increasing roasting capacity is therefore also a priority and the establishment of coffee roasting and packaging units is a priority for 2009 and 2009/2010.

SP3.2.1d Implement a programme of **control of coffee leaf rust** and other diseases that affect this crop.

This is the main threat to coffee growing and therefore needs to be attacked decisively. Also, carry out continuing **adaptive research on coffee varieties**, including those from Ethiopia. Utilise the competitive research funding mechanism to support this research. Utilising Ethiopian varieties Panama now produces the highest-valued speciality coffee in the world.

SP3.2.1e Carry out a programme for **improved international marketing of coffee** to gain higher prices for a wider number of producers. This will include: i) Support the **operationalisation of the Coffee Marketing Alliance**, including systems of quality control, and the **Cup of Excellence Programme**, and **raise the international awareness of Rwandan coffee**. ii) Create additional value added activities including **toll roasting and partnerships and relationships with major buyers abroad**. A joint venture with investors in Dubai will be a priority⁶¹ This is another principal route to increasing the value of Rwandan coffee.

SP3.2.1f Continue the programme of **rehabilitating and replacing old coffee plantations** with plantings of new varieties that are of better quality and are more disease-resistant, and develop multiplication centres for new seedlings. As part of this undertaking, implement a **census and for this purpose, if appropriate, utilise tools such as GIS study of all coffee-producing areas**. Such information is essential for designing the programmes for renovation of plantations and other purposes.

Sub-Programme 3.2.2 Tea

SP3.2.2a **Privatise the State-owned tea estates** with tea farmers as partial shareholders in the new private enterprise. Examples have been set by the new tea factory in Shiri, in which farmers hold 30% of the shares, and the tea factory in Gisenyi in which they hold 10%. This mechanism will help ensure that farmers gain part of the higher returns that are earned from higher quality tea. The approach has proven useful in other countries in Africa as well:

"In Burkina Faso, cotton producers hold a third of the share capital of the Société des fibres textiles (SOFITEX) . . . They also hold shares in a cotton making company in Gourma, SOCOMA . . . Farmers from Northern Cameroon are planning a similar move and have already amassed significant capital with which to buy another cotton company due for privatisation. . ."⁶²

SP3.2.2b Carry out **pre-feasibility and feasibility studies for tea estates in Mushubi, Nshili, Gatware, Karongi, Ngororero, Rutsiro, and Nyabihu**, and make subsequent **investments on a cost-sharing basis**, with Government shouldering one-third of the cost and the private sector two-thirds.

SP3.2.2c Carry out a **research program on high-quality clones of tea varieties**, and develop mechanisms for disseminating them.

⁶¹ These first five lines of action for coffee were formulated in: MINAGRI and MINICOM, *Rwanda National Coffee Strategy 2009-2012*, Kigali, July 2008.

⁶² "Farmers' organisations: Services and setbacks," *Spore*, no. 115, 21 March 2005, p. 2.

SP3.2.2d Review **tea marketing strategies** and support efforts to look beyond the Mombasa auction and forge direct links with specialised international buyers, in order to take best advantage of Rwanda's high quality tea.

Sub-Programme 3.2.3 Pyrethrum

SP3.2.3a Implement a cost-sharing programme with farmers' organisations to **install solar dryers** in order to improve product quality at the farm level.

SP3.2.3b Provide specialised technical assistance to develop **export markets for high value distillates**. Production of this item needs to move to higher quality levels in order to maintain markets.

SP3.2.3c To make this sub-sector more competitive, strengthen **research on varieties with high pyrethrin content** and utilise the mechanism of competitive research funding for this purpose.

SP3.2.3d Support the private sector to **strengthen distribution of seeds with high pyrethrin content**, another requirement for meeting higher quality standards.

II.3.3 Sub-Programme 3.3: Development of non-traditional high-value export products

The **objectives** of SP3.3 are to: 1) improve the quality of post-harvest handling so farmers can receive higher returns on their harvests; 2) promote closer links between farmers and processors, so farmers can deliver products with the required quality and share in the additional returns gained from higher quality; 3) promote the expansion of the agro-processing sector for non-traditional exports and private sector participation in it; and 4) develop markets for promising export products and facilitate contacts and contracts between buyers and Rwandan producers through which farmers can learn directly about quality requirements, shipping arrangements, timing issues, and other facets of the business of producing for export markets.

The **pillars of action** of SP3.3 are:

- o Specialised technical assistance in producing for quality, product handling, and identifying and accessing markets.
- o Measures for bringing markets and producers together.
- o Support for organic production, greenhouse development.
- o Strengthening of horticulture research.

A number of promising non-traditional products have been identified and some are already being exported. These products include avocados, French beans, courgettes, organic pineapple, organic dessert bananas, macadamia, passion fruit, silk, cut flowers and foliage, and organic honey, among others. Rwanda's potential in this area is strong.

The current world economic conditions have increased returns for many agricultural activities although they place a greater strain on farmers because of higher input prices, especially of fertilisers, and that implies greater cash outlays months in advance of the (uncertain) returns. The world market situation also places a premium on high-quality, niche products because they are less likely to suffer a substantial eventual downturn in prices than commodities are.

Another consequence of the world economic conditions is that the Middle Eastern market has been more attractive relative to many other export markets. This is a market that Rwanda is fairly well placed to exploit with its exports but has not yet done so.

The **lines of action**, or action areas, in SP3.3 are:

SP3.3a Through RHODA or a unit devoted to value addition and product quality, provide **specialised technical assistance for:** (i) training horticulture pioneers and extension agents in export products, centred around demonstration farms; (ii) identifying export markets, (iii) improving product handling and marketing (including grading, packaging, labelling, and making shipping arrangements); (iv) training farmers in food safety and product hygiene issues, (v) training farmers in enterprise management and developing business plans; and (vi) establishing partnerships with regional and international supermarkets. This activity will be carried out in good measure by the use of specialized short-term technical assistance. Its components will also include:

- i) **Supporting organic horticulture production** with technical assistance for cultivation, post-harvest handling and marketing. Rwanda is uniquely well placed to produce and market organic products and is already doing so with crops like dessert bananas and pineapples. The technical assistance needs to cover all relevant topics from maintenance of soil fertility with minimal use of inorganic fertilisers and organic means of pest control to certification and marketing strategies for organic products.
- ii) Supporting farmers and entrepreneurs to establish food safety and quality management systems at enterprise level to make Rwanda's products more competitive. This activity should also cover import substitution products.
- iii) Developing and implementing a plan to provide support for **producer participation in trade fairs and for inward buyer missions, and for trial shipments of new products and for new markets.**
- iv) For export products that are promising and for which producer groups have demonstrated interest, promote investments and **invite international investors as well as buyers to come to Rwanda** to explore the options and explain quality requirements and post-harvest handling norms.
- v) Through adaptation trials, help identify the promising export products and projects and invite entrepreneurs to assess their feasibility and participate in their development with support from the financial mechanisms indicated in SP3.6. An example could include the already envisaged project for **collection of gooseberries (physalis) from small farmers and their export to Europe**; the project was started by a Rwandan woman entrepreneur but then dropped for reasons of change of career, but the European market for this product is strong. Colombia, for example, exports US\$15 million a year of physalis to Europe, mostly to Germany. In addition, gooseberries are par excellence a smallholder crop, and Rwanda may have an opportunity to export an organic version (which Colombia does not).

SP3.3b Increase ISAR's capacity in **horticulture research**.⁶³ So far that research has emphasized cereals and cassava. As a related measure, implement a special programme for **control of diseases in high-value products**, especially passion fruit, which is particularly vulnerable.

SP3.3c Implement a programme for the **continued development of sericulture**, including silk processing, and the identification of export markets for silk products.

SP3.3d Develop a programme of technical assistance, risk-sharing and cost-sharing with agricultural entrepreneurs and cooperatives who wish to develop **greenhouse cultivation** methods for vegetables such as table tomatoes and peppers. Greenhouses are expensive but increase yields several-fold in all climates, and they represent a major option for intensifying production on small farms and groupings of small farms. They currently are used only for flowers in Rwanda.

II.3.4 Sub-Programme 3.4: Production and value addition for domestic staple products

⁶³ The first three points of this sub-programme were developed in: MINAGRI, *Horticulture Strategy for Rwanda*, September 2006.

The **objectives** of SP3.4 are to: 1) strengthen the commodity chains for the domestic market, from the farm level to the final sales, with key interventions at crucial points in those chains for competitiveness; and 2) as for non-traditional products, expand the food processing infrastructure.

It should be noted that the dividing line between SP3.4 and SP3.5 below is somewhat arbitrary, and necessary investments in infrastructure are included in both sub-programmes.

The **pillars of action** of SP3.4 are:

- o From an overall view of selected commodity chains, identify the critical points where interventions could make a decisive improvement in productivity and competitiveness.
- o Combine farmer training, technical assistance and investments to maximize the synergies for each commodity chain.

The **lines of action**, or action areas, in SP3.4 are:

SP3.4a Design and implement an **integrated programme for cassava development**, in which the government, through a public corporation created for this purpose, invests in: 1) facilities for drying cassava close to the farm (to reduce its weight for transport), and 2) a plant in the south of the country for processing the dried cassava into animal feed. Explore options for processing cassava into other products such as starch. The experiences of EARRNET (the East African Root Crops Network) and the programme CLAYUCA in the CGIAR institution CIAT (in Cali, Colombia) can serve as guidance for designing this kind of facility. Put the facilities up for sale to farmers and private entrepreneurs after they are operating successfully.

SP3.4b Implement an **integrated programme for cereal development** with the following components: 1) develop and implement a plan to support the development of facilities for maize processing into flour, starch and animal feed concentrates, either in the form of incentives to investors or direct government investment under a provision to eventually transfer the facilities to the private sector; 2) replicate the successful rice intensification system and build concrete drying platforms in all the rice-growing areas and evaluate the option of introducing the Philippine model of drying rice in zip-up bags that can protect against the rain; and 3) train bakers in the use of wheat flour, maize flour and cassava flour, and implement food technology programmes to add maximum value to flours.

SP3.4c Develop and implement a **programme of strategic supply-side interventions for domestic market crops** that would include at minimum the following actions: i) Accelerate the programme of **inoculation of soybeans and other legumes** (with the bacteria *Rhizobia*), to fix atmospheric N_2 into the NH_4 form that is useful to the plant. ii) Work with farmer organisations to **promote rotations of maize with Irish potatoes** in Ruhengeri and Gisenyi to avoid the soil nutrient and disease problems that arise from continued potato monoculture.

SP3.4d Work with fishermen's organisations to draw up and implement a plan for **development of the fish commodity chain in Lake Kivu**, including specification for equipment, measures to safeguard the fish population in the lake, and a marketing strategy. (See Sub-Programme 3.5 for investments in cold storage facilities for fisheries.)

II.3.5 Sub-Programme 3.5: Market-oriented rural infrastructure

The **objectives** of SP3.5 are to: 1) ensure the provision of the necessary infrastructure for post-harvest handling and processing, to enable Rwanda's farm products to penetrate higher value markets; 2) ensure provision of the facilities for the agro-processing sector, under private ownership and/or management; 3)

ensure the availability of adequate internal and international transport for Rwandan agricultural products, at sufficiently regular intervals and at affordable costs, in light of the plans for increased production for markets, both domestic and export.

The **pillars of action** of SP3.5 are:

- o Facilitating public investment in agribusinesses under provisions for cost sharing and/or transfer to the private sector for operation.
- o Using public-private partnerships to construct and operate key forms of infrastructure for agriculture.
- o Improve the transport and electrification networks in rural areas, without which it is almost impossible to participate in markets for high-quality products.

Two institutional approaches are required here: public-private partnerships for investments in key infrastructure, and modalities for providing venture capital for agri-business. The former is appropriate for investments like cold chain facilities (including refrigerated trucks). The latter is appropriate for agro-processing enterprises. The need for venture capital, even from the public sector, is increasingly recognized because the newer the product, technology or market, the less likely banks are to finance the start-up precisely because they will not have the expertise needed to evaluate the projects. Yet new projects in these senses are needed to accelerate agriculture's growth. Fundación Chile, for example, has been successful in creating and then spinning off to the private sector a large number of new agricultural enterprises, including service providers. This role is most effective when the venture capital is supplied in response to vetted proposals from the private sector.

Developing the institutional modalities for facilitating these approaches is included in Sub-Programme 4.1, along with a discussion of their rationales. The kinds of infrastructure and facilities that would be constructed are the subject of the present Sub-Programme.

The **lines of action**, or action areas, in SP3.5 are:

SP3.5a Carry out **feasibility studies for new post-harvest and processing facilities**, and where interest is demonstrated by entrepreneurs, **fund the development of business plans and assist them to apply for financing arrangements**, whether they be leasing, guaranteed term credit, or venture capital (see Sub-Programme 3.6).

The areas for which these activities would be carried out include the following but do not exclude others:

- **Collection points for selected crops that can serve also as grading and packing facilities**, and drying and storage facilities as warranted.
- **New agro-processing facilities** such as wheat mills, abattoirs, fruit pulp plants and packing plants (avocados, pineapples, passion fruit, gooseberries, etc.), dairy processing plants such as the construction of a milk processing plant at Mukamira, improved tanneries, and silk processing facilities, among others.
- **Facilities for handling and processing non-traditional export products.**
- **Facilities for transformation of soybeans into flour and other products** such as soymilk for human consumption, under a plan in which they will be sold to the private sector.

SP3.5b Provide government support for **modernization of slaughterhouses and tanneries** to comply with international sanitary requirements and to improve treatment of hides and skins.

SP3.5c Develop and implement a programme for **improved collection and hygienic transport of raw milk** to processing plants, from dispersed producing locations with emphasis on those participating in the Girenka programme.

SP3.5d Construct and transfer to fishing organisations **cold storage and transport facilities including ice-making capacities at all fisheries sites**, including those on internal lakes as well as Lake Kivu.

SP3.5e Through inter-ministerial coordination develop a **plan for rural electrification that includes among the priorities Improving the power supply to SOPYRWA, coffee washing stations, and other agricultural processing facilities.**

SP3.5f Develop and implement a plan for increasing the coverage of **all weather agricultural marketing roads**, assigning priority to areas producing perishable crops. Although the use of village labour has helped ensure road maintenance to a minimal level, in many cases it now will be necessary to **use machinery to construct resistant road bases and incorporate drainage provisions in the road design.**

SP3.5g Develop and implement a plan for making available **refrigerated lorries** for producers of perishable crops; one option would involve their purchase by a public corporation with lease to private entrepreneurs. A subsidy would be implicit, at least in the initial years, because capacity is unlikely to be utilized fully throughout the year.

II.3.6 Sub-Programme 3.6: Strengthening rural financial systems

The **overall objective** of SP3.6 is to build sustainable rural financial systems that provide access to financial services for rural people. The **specific objectives** are: 1) **strengthen rural financial institutions** to provide an enduring basis for the provision of agricultural and agro-industrial credit, savings and other financial services over the long run; 2) **develop a wider range of financial products** that will better serve the needs of producers, agro-processors, marketing agents and the rural population in general; 3) **increase the amount of investment finance** available to farmers and agricultural entrepreneurs in the short run as well as the long run; and 4) **strengthen the capacity of rural financial institutions and of the rural population** to manage financial services.

The **pillars of action** of SP3.6 are:

- o Improve access to credit and other financial services by strengthening the rural financial system and enhancing its sustainability.
- o Widen the range of types of collateral and financial instruments available to the rural population.
- o Develop mechanisms for increasing the amount of investment finance available with emphasis on funding the kinds of productive investments not well covered by the present market for financial services.
- o Strengthen the demand side for rural financial services through activities to improve financial literacy in rural areas and the capacity of local financial intermediaries.

The **lines of action**, or action areas, in SP3.6 are:

SP3.6a Work with other Ministries and entities to help financial intermediaries develop and strengthen **the processes and products of a more diversified set of financial services to the rural population**, including savings deposits that are structured in appropriate ways and money transfer facilities, and work to build capacity in local financial intermediaries such as savings and loan cooperatives and micro-finance institutions. The potential for mobilising rural savings through the farmers' organisations is enormous. The success of rural banking sector in Kenya and Namibia, for example, speak volumes for this possibility. Rural

banking in Kenya, CO-SAVE in TZ, Koshi y'O Muti (Savings Under the Tree) in Namibia are some successful stories besides the Grameen bank in Bangladesh. The discipline generated from these systems has resulted in 98% of repayment of the loans borrowed by the peasants to finance agricultural activities and social needs. Rural savings and credit cooperatives have worked elsewhere very successfully in stimulating agricultural and other socio-economic growth.

SP3.6b Continue to refine and enlarge the programme of **agricultural loan guarantees (AGF)** for private lending to agriculture, agro-processing, and agricultural export activities. It needs to be borne in mind that a portion of the amounts guaranteed, determined according to technical risk analyses, has to be deposited in a special account in the central bank, in order for the guarantees to be credible with private financial institutions. Simply making provision in the government budget for the guarantees is not sufficient. On occasion this requirement may give rise to questions about why funds are deposited without an apparent use, but in fact the presence of the deposits facilitates loans to the sector.

SP3.6c Pilot **risk mitigation products** such as **savings facilities tailored to the needs of the rural population**⁶⁴ and a **micro-insurance programme, both for crops in areas covered by weather** stations and for livestock. To enable this programme to be sustainable and to make it worthwhile to the private sector, invest in weather stations (new and rehabilitated) and collection of weather data to enable its extension to a larger number of crops in a larger number of areas. Certify the capacity of local veterinarians and their certification to allow for individual livestock/herd cover and strengthen the data collection capacity of the animal resources agency.

Support the development of these pilots through training of farmers and farmer groups, including women's groups, sensitizing them to insurance modalities and agricultural insurance in particular. Inform insurance companies and banks on new innovations in weather and livestock insurance and support the initial stages of product development for the first crop and livestock products.

SP3.6d **Develop value chain finance** with particular attention to: i) developing the legal basis for and Implementing a **programme of warehouse receipts** (also called certificates of grain deposit) that enable farmers to obtain financing based on their grain stored in approved facilities, and ii) developing **regulations that facilitate the use of invoices for agro-inputs and agricultural sales as collateral (factoring)**. Input suppliers and agricultural marketing agents are significant sources of agricultural finance, and regulations of this nature contribute to increasing the flow of such finance and lowering its cost to borrowers.

The availability of warehouse receipts helps farm families to obtain higher prices for their harvests by waiting until market prices rise above their levels at harvest time, which always represent the annual price minimum. An informal precedent for such a programme already exist in Rwanda, since secteur authorities now issue, in some cases, certificates confirming the deposit of grain in the hermetic storage facilities mentioned elsewhere in this Strategy, and the certificates in turn enable the farmers to obtain loans from local financial institutions including microfinance. The legal and supervisory foundations for these activities need to be put in place. Uganda has recently developed a successful programme of warehouse receipts.

SP3.6e **Develop financial products and services that promote productive investment in agriculture and agro-processing** including but not limited to options such as:

- i) Expansion of the existing **grants-loan programme** (the Rural Investment Facility, RFI).
- ii) Developing a framework for **leasing** as a mode of providing financing for purposes such as acquiring equipment and vehicles.
- iii) Developing a programme of **credit lines** (rediscount lines) for agriculture, agro-processing and marketing, and export credit needs. Such lines could originate in a specially created window and would operate through any qualified financial intermediary that satisfies criteria on capital-to-loan

⁶⁴ BKK in Indonesia has been a leader in the successful development of rural savings products.

ratios and repayment rates on its portfolio. The intermediaries can include savings and loan cooperatives, banks, microfinance institutions, and any other qualified financial institution. Historically and worldwide, microfinance has been more involved in financing market activities, consumption loans, and urban micro enterprises, than agricultural investment and production per se, but there are exceptions⁶⁵ and microfinance needs to be encouraged to do more in agriculture, in part through appropriate credit lines. The credit lines would be aimed at and limited to specific areas where there are gaps in financial markets, such as the financing of investments in tree crops and small private irrigation facilities. Without the mechanism of credit lines it is very difficult for these highly productive kinds of investments to obtain finance. The credit lines should not be used for production loans but they could be extended to export credit. In the current world economic conditions, export finance is harder than ever to obtain from the importers.

- iv) Creating an **agricultural venture capital window**, through which venture capital (risk capital) can be provided to small and start-up enterprises in agriculture and agro-processing and marketing.⁶⁶ Eligibility for the programme would be determined by an independent panel, including international experts, that reviews business plans submitted to it, but it would be mainly aimed at providing term capital for facilities, exporters and for new products and technologies. The funding provided would generate shareholdings in the enterprise for the government, and regulations would establish a deadline (perhaps 5-7 years) at which the government would be obliged to sell the shares, giving first rights of purchase to the enterprise concerned (at the initial valuation). In the absence of purchase from the enterprise the shares would be sold at auction. The entrepreneurs would be required to contribute a specified percentage of the capital. Experience has shown that lack of this form of financing is a significant gap in capital markets, and banks typically are not interested in financing enterprises that involve new products or new technologies, for lack of ability to appraise such projects. While this kind of finance may not be directly aimed at the rural poor, it can improve their incomes significantly by supporting the development of outlets for their higher value products and enterprises that will provide them technical assistance on issues like quality control.

As noted, the activities eligible for financing through a credit line and the grants-loan programmes need to be clearly established. The interest rates to the financial intermediaries participating in a credit line should be attractive enough for them to become more engaged with what is admittedly a risky sector, and it would be desirable to offer somewhat lower rates for medium- and long-term financing for investment in facilities in the sector, than for short-term working capital loans for production and for export. Because of the need for a low cost of capital for the operation of credit lines, their main drawback is lack of long-term sustainability, but for an extended period they can play a vital role in promoting access to finance for valuable investment projects that are consistent with Rwanda's comparative advantage.

SP3.6f Design and implement a programme to help **improve financial literacy and prepare the demand side for rural and agricultural credit** by providing technical assistance to farmers, cooperatives and enterprises in the preparation of business plans and loan applications. Experience in Brazil with mobile units that provide such assistance in rural areas has been highly successful, and similar programmes have been implemented in other countries. The financial literacy programme has to emphasize the importance of other financial products such as insurance, savings, warehouse receipts and loan guarantees, and it should be oriented as much or more toward women as toward men.

⁶⁵ ACORD in Eritrea has been deeply involved in financing agricultural production by smallholders, especially by women farmers.

⁶⁶ With the support of the IFC, Mozambique is setting up a risk capital fund for SMEs.

Chapter II.4 Programme 4: Institutional development

Objectives

The overall objective of Programme 4 is to strengthen the institutional framework through which the public sector supports agricultural development. This involves actions in a number of areas, including capacity building; redefining the roles of some institutions and personnel; improving management information systems and coordination mechanisms within the sector, including between the Centre and the Districts; strengthening the policy and regulatory framework; providing a better statistical and informational base for public policy decisions; making better use of information and communication technologies; and instituting procedures to ensure that the decentralisation programme functions well so that local-level actors are full participants in decision making and programme implementation.

Although the private sector will be the engine of growth in the agricultural sector, the public sector needs to define a clear framework within which private initiatives can play their role, and it needs to provide leadership through carefully crafted interventions that will catalyze private actions. In cases in which projects are designed as pilots for private sector activities, an exit strategy for the government needs to be defined at the outset.

Given the low levels of incomes in rural areas, in most cases farmers are still dependent on government programmes to obtain training and information and productive infrastructure. These kinds of support need to be designed well and their implementation properly coordinated among the many entities and actors in the sector. The purpose of the actions defined in Programme 4 is to facilitate the task of the public sector and make its expenditures and interventions as effective as possible.

Main constraints

A major constraint in this area has been insufficient budgetary allocations to agriculture, in light of the expectations and EDPRS targets for the sector. Other constraints in this area arise from the newness of many of the sector's institutions and remaining uncertainty about their roles in areas such as agricultural extension, sanitary and phytosanitary monitoring and controls, and investments in agribusiness facilities. Also, the optimal formula for designing and implementing national programmes in coordination with decentralised institutions has not yet been found.

Procedures for monitoring and evaluation of programmes and projects are still underdeveloped. More systematic lessons need to be drawn from project experiences, and in cases where projects are seen as forerunners of commercial activities, cost-benefit or rate of return analysis needs to be carried out. In the policy area, some key pieces of legislation still lack the corresponding implementing regulations, as noted in the foregoing discussion, and appropriate policies in some areas still need to be defined (irrigation management, extension, sanitary and phytosanitary controls, and modalities of government investments in agribusiness, for example). This vacuum creates uncertainty for the actors in the sector and needs to be addressed as quickly as possible.

Technical capacity, while increasing and impressive in some areas, is still not at the desired level in all areas, and strong efforts are required not only to create this capacity but equally to provide incentives to recruit and retain highly qualified specialists.

Potentials and opportunities

The Rwandan Government's strong commitment to development efforts in general, and to agricultural development in particular, creates an important opportunity for strengthening institutions in the sector and the impulse they provide to the sector. The commitment of the international community to support

Rwandan agriculture is another critical factor in opening up greater opportunities to strengthen the public sector's policies and programmes.

The potential for reinforcing the government's supporting and leadership roles in agriculture is well illustrated by the presence of capable and dedicated specialists in the sector's institutions, albeit not in sufficient numbers –in institutions RARDA, RADA, ISAR, RHODA, OCIR-Café, OCIR-Thé, the Ministry itself, and in the ongoing programmes at the field level. In addition, there is a good deal of awareness of the challenges and issues that need to be resolved. This is true in all areas touched upon by this Strategy, where many of the indicated lines of action have already been initiated or are in the planning stage.

The goal is an efficient public agricultural sector that fulfils its responsibilities in “public good” areas and carries out key interventions in coordination with producers and other private sector participants that succeed in catalyzing the energies of the sector.

The following five Sub-Programmes have been established for implementing the main lines action for Programme 4:

- SP4.1 Institutional strengthening and capacity building
- SP4.2 The policy and regulatory framework for the sector
- SP4.3 Agricultural statistics and ICT
- SP4.4 M&E systems and coordination of the agricultural sector
- SP4.5 The decentralisation programme in agriculture

II.4.1 Sub-Programme 4.1: Institutional strengthening and capacity building

The **objectives** of SP4.1 are to: 1) define the most effective roles, structures and ways of functioning for the agricultural public sector entities, 2) restructure those entities if needed to carry out their roles, and 3) strengthen their capacity to carry out their responsibilities.

The **pillars of action** of SP4.1 are:

- o Restructure the institutions of the agricultural public sector so that they can fulfil their functions more efficiently.
- o Develop and retain a high level of professional capacity in those institutions.

The **lines of action**, or action areas, in SP4.1 are:

SP4.1a Create a suitable mechanism **for making venture capital investments in post-harvest management, agro-processing and export marketing**. In the articles establishing the procedures specify that cost-sharing and joint ownership agreements may be made with the private sector for investment purposes, and that the State's shareholdings have to be sold within a specified period of time, preferably 5-7 years. One model, for example, is to offer the shares to the co-investor at the original valuation, and failing a transaction, offer them at auction.

SP4.1b Create, under the aegis of MINAGRI, a **unified and autonomous service or entity responsible for monitoring, controls and international communications for sanitary, phytosanitary and food safety issues**, tentatively called either the Rwanda Agricultural Sanitary and Phytosanitary Service or the Rwanda Biosecurity Service. (See activity SP3.1c in Sub-Programme 3.1 above.) Although the country has a network of institutions that collaborate for implementing measures in this area, in particular RBS, MINAGRI and

MINISANTE, international norms require that there exist a single agency responsible for the monitoring and controls and for international representation and communications in this area. The creation of a unified, autonomous service or entity for this purpose is the worldwide trend. Fiscal autonomy is necessary so that the entity may levy fees and commissions on its services, such as laboratory analyses and sanitary export certification, and may set its own salary scales to attract and retain specialists with the necessary scientific training. This will require new legislation to create the service or entity. A solid system in this area has become a prerequisite for participating in export markets for non-traditional products. In addition, the relevant articles of the new plant Health Law (still in draft between MINAGRI and the Ministry of Justice and developed under technical guidance from RHESI) need to be reviewed to replace the existing model of interagency collaboration with the new approach of a unified and autonomous agency.

This new service needs to work with the private sector to inculcate habits of testing products. It has been observed that, “Significantly more testing and research on the quality of Rwanda’s agricultural products is needed (for both export and domestic goods). For example, milk quality is not being routinely tested, while bacteria counts are well beyond COMESA standards. This poor quality will significantly decrease the shelf life of pasteurized milk and will result in increased processing costs.”⁶⁷

SP4.1c Create an **independent seed certification service**. The entities and/or services responsible for developing foundation seed and overseeing seed multiplication cannot also be the ones that certify seeds. That would generate an institutional conflict of interest. The seed certification service will require capacity to monitor the seed sector and inspect and test seeds without prior notification to the relevant parties. The private sector has expressed concern about the quality of seeds, especially for rice where cross-pollination is said to occur from lack of sufficient separation of seed beds.

SP4.1d **Assess training needs** in the agricultural public sector and formulate and implement a **programme for technical capacity building in the agricultural public sector**, including at the district level, that encompasses all relevant topics including specialised areas such as statistics, laboratory sciences, veterinary services, sanitary and phytosanitary systems, irrigation development, fisheries management, post-harvest management and agro-processing.

SP4.1e Assess the ways in which gender-related issues are handled in all programmes and **develop a sector-wide gender strategy** that will touch upon all activities, and carry out the related training in gender issues for all Ministry staff.

SP4.1f Develop a **Leadership and Strategic Management Development Program for top leadership and senior management cadres in the agriculture sector** and implement it through regular top executive seminars and workshops and selected study visits.

SP4.1g Assess the human resource requirements, including in management areas, for implementing this Strategy and **develop a new plan for personnel management** that includes staff augmentation and setting appropriate salary scales.

SP4.1h Continuing the present work, fully **consolidate and implement the Management Information System** in MINAGRI and in agricultural service providers and autonomous sector agencies. Feed into the management information system more frequent and systematic evaluations of projects and programmes, including cost-benefit or rate of return analysis for cases where projects are designed as pilots for eventual private sector activities.

⁶⁷ MINAGRI and PAPSTA, *Observations and Recommendations on Private Sector Development in Agriculture*, by Dan Kobb for HTSPE Limited, DFID and IFAD, Kigali, October 2008, p. 10.

II.4.2 Sub-Programme 4.2: The policy and regulatory framework for the sector

The **objectives** of SP4.2 are to: 1) complete the articulation of the sector's policy framework, as a guide to projects and other actions, and to clarify policies for the benefit of private sector actors, and 2) develop the necessary legislative basis and regulations to underpin and facilitate sector policies and activities.

The **pillars of action** of SP4.2 are:

- o Assess the needs and aspirations of farmers and other actors in the sector as a guide to areas for which policies need to be strengthened or clarified.
- o Hold consultations on sector policies before finalising them and widely disseminate the policy documents once they are completed.
- o Translate policies into laws and regulations where appropriate.

The **lines of action**, or action areas, in SP4.2 are:

SP4.2a Develop through consultative procedures a **policy framework for management of irrigation water and soils** that includes the above-mentioned issues concerning water user associations, water use rights, and incentives to farmers for ceding land use temporarily for soil conservation programmes; and draft the corresponding legislation and regulations. Ensure that all water users are fully informed of the policy framework when it is available.

SP4.2b Develop a **policy framework for agro-export development** that specifies the policy instruments to be utilised, such as the above-mentioned support measures for certifications, trial shipments, farmer attendance at trade fairs, and sets guidelines for the degree of subsidy authorised in each case, along with policies for construction, leasing and sale of facilities for post-harvest management and agro-processing.

SP4.2c Draft the **decree on land consolidation**. In Article 20 of the Land Law, it is mentioned that this is the responsibility of MINAGRI.

SP4.2d For control of pesticides and fertilizers, there is an **urgent need for the Agrochemicals Law**. RHESI produced the 1st draft of this Law and it needs to be completed and submitted to Parliament.

II.4.3 Sub-Programme 4.3: Agricultural statistics and ICT

The **objectives** of SP4.3 are to: 1) strengthen the statistical information collected at regular intervals about agriculture, and 2) improve the capacity to analyse that information and produce timely syntheses for policy makers.

The **pillars of action** of SP4.3 are:

- o Use of modern statistical sampling procedures to ensure coverage of all crops, not only those occupying substantial acreage.
- o Training in economic analysis of statistical results to obtain syntheses relevant for decision-making.
- o Development of market information nodes for farmers.
- o Collection of other kinds of relevant information such as meteorological data by location.

The **lines of action**, or action areas, in SP4.3 are:

SP4.3a Continue the existing system of crop assessments and **reinforce the methodologies with updated sampling procedures designed to cover more specialised crops**, making use of both list frames and area frames. Benchmark the crop surveys every three years with the household surveys. The objective will be eventually to produce two surveys for each of the A and B seasons, one for areas planted followed by one for quantities harvested. The first surveys will permit early projections of likely magnitudes of harvests. (For the C season only one survey would be contemplated.) Provision will be made for obtaining estimates of head of livestock. In this area cooperation with the NISR is vital, given its extensive experience with the household surveys and the enquête agricole.

SP4.3b Develop a **capacity for analyzing sector data in a timely and policy-relevant fashion**. As part of this activity, establish procedures for and train staff in the **timely analysis of survey data for policy makers**. This should include construction of output indices, for the sector and by sub-sector and product group, and identification of sources of growth along with the magnitude of contribution of each source of growth.

As another part of this activity, develop a **programme of collecting, verifying and analysing crop budgets**, because they are a basic input into agricultural project appraisals, competitiveness analysis and other analyses, and they represent useful tools for training farmers on cost management issues. The analyses should take into account prices at the border and at the farm gate plus transportation and marketing costs, in order to arrive at calculations of competitiveness.

SP4.3c Establish a **sector-wide ICT system** with information flows between centre and production localities and possibly with geo-referencing of projects and farms that participate in sector programmes. As part of this activity, develop **real-time market information capabilities** and install them in community innovation centres, farmer training centres and other appropriate locales and facilities. This will require coordination with the ICT system developed for the Ministry, as well as with local governments. Add an important component to the sector ICT system by rehabilitating the **network of local meteorological stations** and strengthen links to the centre and mechanisms for disseminating the information to all localities. Establish links with regional meteorological offices to develop basic information that would feed into the above-mentioned early warning system regarding possible food shortages.

II.4.4 Sub-Programme 4.4: M&E systems and coordination of the agricultural sector

The **objectives** of SP4.4 are to: 1) establish coordination mechanisms for defining sector policies and funding sources, based on the SWAp mechanism, and 2) establish systems for monitoring implementation of projects and programmes and obtaining feedback on them from stakeholders.

The **pillars of action** of SP4.4 are:

- o Coordinating closely the contributions of development partners and government agencies, to ensure consistency of programmes and projects and appropriate levels of funding.
- o Establishing systems for measuring progress in implementing programmes and obtaining feedback on the results.

The **lines of action**, or action areas, in SP4.4 are:

SP4.4a Put in place a **SWAp structure**, as a permanent mechanism for inter-ministerial coordination of funding and actions in agriculture, especially in areas of overlap of responsibilities such as watershed management, rural electrification, feeder roads for agricultural market access, trade agreements within the region, land tenure, and the like, and for coordination with development partners. A SWAp has been

defined as “a process in which funding for the sector –whether internal or from donors– supports a single policy and expenditure programme under government leadership, and adopting common approaches across the sector.”⁶⁸ The SWAp process for agriculture in Rwanda is already well underway, and the phases it needs to go through have been defined as part of a roadmap leading up to the SWAp. This Strategy and the activities it sets forth are a basic input into the SWAp.

SP4.4b Set up a PSTA monitoring system and as part of it **define progress indicators and results indicators for sub-programmes in this Strategy**. The measurement and reporting of progress needs to be based on present reporting systems, which include:

- Quarterly reports from Agencies to MINAGRI, to PM office.
- Internal Management meetings in MINAGRI.
- Inter-ministerial coordination through MINECOFIN and SIC (SG level).
- Rural cluster (monthly meeting with stakeholders).
- Joint Sector Review (annual for all).
- Joint Budget Support Review & Report (each semester for Budget Support Donors); the Report is for all.
- PER: every two years.
- Annual Ministry Report.
- Trimester meetings between MINAGRI, the service providers and the districts.

In addition to the indicators, establish **statistical baselines for monitoring progress**, including agronomic, economic and social variables. Also as part of the monitoring system, establish **self-reporting systems** in which programme managers and coordinators at the local level are required to make frequent reports on progress toward goals, problems encountered, and solutions formulated, accompanied by occasional spot checks by supervisory personnel from the centre.

SP4.4c Develop procedures for obtaining **feedback regarding agricultural programmes and projects from farmers and other stakeholders** utilising the system of citizen report cards. Establish procedures for incorporation of the feedback into the ongoing design process for the projects and programmes and into the reviews and revision of implementation modalities.

SP4.5d Put in place an **evaluation system** that looks not only at progress in implementation of programmes but also, utilising the statistical baseline and subsequent surveys, measures the social and economic impact of the programmes. This kind of evaluation provides important inputs for better programme design in the future.

II.4.5 Sub-Programme 4.5: The decentralisation programme in agriculture

The **objectives** of SP4.5 are to: 1) establish functional procedures for effective fiscal decentralisation in agriculture, and 2) establish mechanisms of coordination between the Centre and the Districts in the allocation of funds and monitoring and reporting on their use.

The obstacles to achieving these objectives are numerous. The existing constraints to a more effective decentralisation include:

- o The small size of the decentralised budget to fund agricultural development (FRW 1.3 Bn in 2008 - 4.2 % of MINAGRI budget).
- o The fact that current transfers are earmarked for specific activities and leave little discretion for local governments.

⁶⁸ From DFID/Dutch MoFA/ODI, as cited in a presentation by André Habimana, Director of the Development Planning Unit, MINECOFIN.

- o Lack of predictability of the allocation schedule, which undermines planning and budget preparation.
- o Lack of clarity regarding which entities are supposed to monitor the use of decentralised funds.
- o Weaknesses in the reporting of activities and accountability on the part of local governments.
- o Lack of clarity regarding the role of District Agronomists.
- o Incomplete definition of implementation modalities at the local level and the roles of central agencies in support of the Districts.
- o Incomplete management information systems, especially as regards the transmission of information from Districts to MINAGRI.

A recent evaluation of these and other issues and comprehensive recommendations for improving the system have been presented in Gerhard van 't Land, *Supporting Fiscal Decentralisation in the Agricultural Sector*, MINAGRI in collaboration with MINALOC, Kigali, February 22, 2008.

The **pillars of action** of SP4.5 are:

- o Clearer rules for allocation of funds to local governments.
- o Conditioning the allocations on the development local government plans.
- o Strengthening mechanisms for local involvement in the design of programmes and projects.

In light of this work on the issues, the **lines of action**, or action areas, in SP4.5 are:

SP4.5a Implement the recent recommendations for improving fiscal decentralisation in agriculture, including the following steps:

- o Allow local authorities more discretion in planning for agricultural activities, in line with PSTA/EDRSP.
- o Carry out the measures specified in the Decentralization Implementation Plan (DIP).
- o Increase the size of earmarked grants.
- o Design a new grant system in such a way that it supports decentralisation and builds the capacities of the different levels of local government.
- o Create two different earmarked grants, one for recurrent costs and an earmarked grant for development.
- o Allocate those grant budgets across District by using a formula taking into account different factors (Population, cultivated area, livestock numbers, poverty, erosion threats, etc.).
- o Make the allocation of the development grant conditional upon submission of an acceptable annual plan as well as regular quarterly reports of acceptable quality.
- o Agree that MINAGRI will take on role of monitoring the utilisation of the grants.
- o Reinforce the role of agricultural agencies as service providers to local governments, either by engaging in activities that help to build capacity or by offering services Districts can buy. They would not engage in direct implementation or monitoring of implementation.

From a longer perspective, the following additional actions will be undertaken to make the decentralisation system more robust.

SP4.5b Support efforts (with funding) to **strengthen Joint Action Forums in the districts and to strengthen the capacity of secteur-level authorities to collaborate with farmers and farmer organisations** in the review of problems and the formulation of proposals for action at the district and national levels. As part of this effort, for all projects and programmes to be implemented at the local level, provide opportunities for farmer organisations, district authorities, and secteur authorities where appropriate, to review them in draft and participate in developing their final versions.

Part III. Strategy Implementation and Financing

Chapter III.1 Implementation of the Strategic Plan for Transforming Agriculture

III.1.1 The approach to implementation

Implementation is essential for a strategy to have effects; it is what gives a strategy value and makes a real contribution to the development effort. Accordingly, a strategy needs to be followed by budgetary allocations, action plans and the actions themselves. To facilitate implementation, it is important that the strategy be presented in concrete form, that it not only describe what is to be achieved (goals or objectives) and *what* should be done in each action area, but that it also state *how* it is to be done, as much as possible in the context of a broadly encompassing document. At least it should lay out the approach to be used for each implementing action. For that reason, this Strategic Plan endeavours to be as specific as possible regarding the actions to be undertaken for each Programme and Sub-Programme, and it includes estimates of approximate budgetary magnitudes for each action.

The Strategy consists of *Programmes* and *Sub-Programmes*. The *instruments for implementation* of a sub-programme are: projects, regulatory or policy decisions or decrees, institutional changes (with or without a decree), and perhaps in some cases new legislation. The other instrument is voluntary cooperation of the private sector. There are no other implementation instruments than these. A sub-programme may be implemented via a project or projects, or by a project in combination with the above instruments. For example, an irrigation sub-programme may include several field projects for constructing irrigation systems *plus* a national decree or law establishing water user associations *plus* a national decree or law establishing water use rights.

Because of the multiplicity of instruments used for implementation, responsibility for overseeing the implementation process needs to be established first by Programme, then by Sub-Programme, and then by activity within each Sub-Programme.

The logframe presented below provides detailed benchmarks or performance indicators, many of them quantitative that will assist in implementing the Strategy and monitoring its implementation.

In order to implement the PSTA II effectively, it will be necessary to set up an implementation secretariat in MINAGRI with sector-wide responsibilities. The secretariat will have managers for each of the four Programmes and additional staff so that there is clear responsibility for each of the 20 Sub-Programmes.

Each person responsible for a Sub-Programme will draft the scope of work for the activities under that Sub-Programme, assisted by specialised consultants in some cases, as needed. The scope of work should include terms of reference for the persons who will be in charge of implementation at the field level. The numerous project concept papers and other project documentation that already exists will help provide inputs into this drafting process. The scopes of work for the activities will include timetables for implementation.

A necessary step in the implementation process will be to review the progress indicators in the logframe and translate them from the level of Sub-Programmes to lines of action.

In the case of decentralisation-related activities, it will be important to review and activate the Decentralisation Implementation Plan that has been developed through MINALOC. In that regard, a first step will be to review with local governments the menu of sub-programmes so that action lines can be selected for each District that conform to local priorities as well as national priorities. Properly done, this procedure for implementing PSTA II should strengthen the decentralisation process.

The managers and deputy managers who are responsible for Programmes and Sub-Programmes also will monitor progress on implementation, using the indicators suggested in the logframe below. It will be essential that a self-monitoring system be developed in which implementers at the field level submit short monthly reports on progress and issues encountered, plus solutions developed for problems that may have arisen. The managers and deputy managers will carry out random spot checks in the field of the progress stated in these reports.

In case of continuing problems and delays in implementing an activity, the concerned managers and deputy managers will convene a review session with the field personnel responsible for implementation and specialists who can contribute to developing solutions. It is important to develop an ethic of identifying and reporting problems promptly, on the part of field-level implementers and others involved in the process, in order to facilitate the development of solutions.

The scope of work for the various activities in PSTA II will be incorporated into the MTEF on a continuing basis.

III.1.2 Implementation priorities

Clearly it will not be possible to initiate all the lines of action in the first phase of implementation of the Strategic Plan. For that reason, this section of the PSTA II proposes priority lines of action for each of the Sub-Programmes (Table 11). These priorities should be reviewed by Programme and Sub-Programme managers prior to starting implementation. (Note: the order of lines of action within each Sub-Programme does not indicate priorities for implementation.)

Table 11. Priority Lines of Action by Sub-Programme (Preliminary)

Programme 1: Intensification and development of sustainable production systems	
SP 1.1. Sustainable management of natural resources and water and soil preservation	1.1a. Construct 50 valley dams and reservoirs with conveyance structures 1.1b Participatory watershed management plans and protection of 20% of the land against erosion
SP 1.2. Integrated systems of crops and livestock	
SP 1.2.1 Crop diversification and intensification	1.2.1.a. Replicate the systems of integrated livestock and cropping 1.2.1.c. Scale up the One Cow programme
SP 1.2.2 Livestock development	1.2.2.a Animal disease control operations: control posts and monitoring; vaccinations 1.2.2.c Artificial insemination and training 1.2.2.d Breed improvement programme for all species 1.2.2.e Livestock watering facilities 1.2.2f Farmer training in intensive animal husbandry, incl. fodder supply 1.2.2.g Management of internal lakes & aquaculture development
SP 1.3. Marshland development	1.3a Complete the marshland development plan and feasibility studies for 3,975 has.
SP1.4. Irrigation Development	1.4a Complete development of irrigation master plan 1.4b hillside irrigation on 13 000 ha 1.4b. Formulate regulations and/or legislation that defines farmers' water use rights and defines tenure rights over the irrigation systems, and finish legally structuring water user associations (WUAs)
SP 1.5. Supply and use of agricultural inputs	
SP 1.5.1 Fertiliser and agrochemical supply and use	1.5.1a Establish long-term approach for fertilizer imports 1.5.1b Continuation of voucher programme with wider coverage 1.5.1c Fertiliser demonstration plots on farmer fields, participatory

	fertilisation trials 1.5.1d Sustainable agrochemicals distribution network
SP 1.5.2 <i>Certified seeds and other inputs</i>	1.5.2a Legal and institutional framework for certified seeds 1.5.2b Expanded production of basic seeds 1.5.2c Seed multiplication and distribution
SP 1.6: <i>Food security and vulnerability management</i>	1.6b Wider coverage of hermetic storage facilities + training 1.6c Strengthen household nutrition, health training, programmes 1.6d Gender-friendly crops and livestock 1.6f Potable water sources for households
Programme 2: Support to the professionalisation of the producers	
SP2.1. Promotion of farmers' organisations and capacity building for producers	2.1a Strategy and programme for capacity building in farmer and village organisations 2.1d Train farmers in agronomic and quality issues for coffee
SP2.2 Restructuring proximity services	2.2a Develop and promote a system through which farmers contract with the farm advisors or extension agents 2.2b Establish permanent training service for extension agents 2.2c Implement on farms participatory research-cum-extension approaches such as farm field schools
SP2.3. Research for transforming agriculture	2.3a Programme of participatory research with farmers on their plots 2.3c Mechanism for competitive award of research funding 2.3e Programmes of international cooperation and staff exchange and capacity building for senior research scientists 2.3g Maintain and operate ISAR's in vitro laboratories
Programme 3: Promotion of commodity chains and agribusiness development	
SP3.1 Creating a conducive environment for business and entrepreneurship development and market access	3.1a Young Entrepreneurs Training Programme 3.1c Strengthen the sanitary, phytosanitary and food safety (SPS) system 3.1d Improve the laboratories and capacity used for sanitary, phytosanitary and food safety analyses (to ISO 17025 certification) 3.1g Configure Kigali Airport as an effective horticulture hub 3.1i Government guarantee for air cargo space
SP3.2 Development of traditional exports	
SP3.2.1 <i>Coffee</i>	3.2.1a System to improve input distribution for coffee, and monitoring that distribution (chemical inputs, seedlings), introducing private modalities, and to increase use of organic fertiliser and shade trees. 3.2.1a Identify causes of and solution for the "potato taste" problem that is reducing market acceptance of Rwanda's specialty coffee. 3.2.1d Control of coffee leaf rust and other diseases and adaptive research on coffee varieties 3.2.1e Improve international marketing of coffee including initiating toll roasting and partnerships with major buyers abroad
SP3.2.2 <i>Tea</i>	3.2.2a Privatised tea estates with farmer shareholdings 3.2.2c Research program on high-quality clones of tea varieties
SP3.2.3 <i>Pyrethrum</i>	3.2.3a Install solar dryers 3.2.3b Develop export markets for high value distillates
SP3.3 Development of non-traditional high-value export products	3.3a Specialised technical assistance for horticulture farmers and for marketing, including organic production 3.3c Continued development of sericulture
SP3.4 Production and value addition for domestic staple products	3.4a Integrated programme for cassava development 3.4b Integrated programme for cereal development 3.4d Development of the fish commodity chain in Lake Kivu

SP3.5 Market-oriented rural infrastructure	3.5a Technical assistance for feasibility studies of new agro-processing facilities and government cost-sharing for investment in the facilities 3.5c Improved collection and hygienic transport of raw milk 3.5d Cold storage and transport facilities including ice-making capacities at all fisheries sites 3.5e Plan for rural electrification with agricultural priorities 3.5f All-weather agricultural marketing roads
SP3.6 Strengthening rural financial systems	3.6b Loan guarantees 3.6c Risk mitigation products, incl. pilot for a weather insurance programme for crops 3.6d Value chain finance including warehouse receipts, factoring regulations 3.6e Finance for productive investment, incl. grants-loan programme, credit lines, leasing, venture capital 3.6f Financial literacy and preparing the demand side for agricultural credit
Programme 4: Institutional development	
SP4.1 Institutional strengthening and capacity building	4.1a Create mechanism for venture capital investments in agriculture and agro-processing 4.1b Create an autonomous service responsible for monitoring, controls and international communications for sanitary, phytosanitary and food safety
SP4.2 The policy and regulatory framework for the sector	phytosanitary and food safety issues 4.1c Create independent seed certification service 4.1e Develop a sector-wide gender strategy 4.1h Consolidate and implement the Management Information System
SP4.3 Agricultural statistics and ICT	4.3b Develop procedures for and train staff in timely analysis of survey data for policy makers plus collection and analysis of crop budgets 4.3c Establish a sector-wide ICT system with real-time market information and network of local meteorological stations
SP4.4 M&E systems and coordination of the agricultural sector	4.4a Put in place a SWAp structure 4.4b PSTA II monitoring system 4.4d Put in place an evaluation system with baselines
SP4.5 The decentralisation programme in agriculture	4.5a Implement the recent recommendations for improving fiscal decentralisation in agriculture

III.1.3 The Strategy's logframe

The logical framework for the Strategic Plan for the Transformation of Agriculture is presented in the tables on the following pages. Emphasis has been placed on developing the performance indicators and assumptions in some detail, in part to facilitate review and updating of the Strategy over the course of its implementation.

It should be noted that not all the suggested indicators will be made operational. Rather, they are options, and the persons responsible for implementing the Sub-Programmes and activities will make the final selection of the most relevant indicators.

STRATEGIC PLAN FOR THE TRANSFORMATION OF AGRICULTURE, 2008-2012
Logical Framework

Objectives	Progress indicators	Indicators in Quantities	Means of Verification	Assumptions
Overall Objective				
Agricultural output and incomes increased rapidly under sustainable production systems and for all groups of farmers, and food security ensured for all the population	1) Agricultural GDP growth rate, averaged over cyclical effects 2) Percentage of rural population under national poverty line 3) Percent age of population with less than minimum food requirements	• Average 6.5% GDP growth for all crops, livestock products • Per capita real income in agriculture increases by 4% per year from 2005 baseline of RWF 74,515 • Share of rural pop. below national poverty line falls from 60% to 52% • % of pop. with less than min. food req. falls from 28% (2006) to 18%	• National accounts • EICV • Annual JSR Reports • EDPRS Reporting • WFP reporting	• Rwanda at peace with neighbours • Economy grows at 8% per annum and equitably within stable macro environment • Implementation of PRSP in other sectors contributes to poverty reduction • Political commitment to poverty reduction, good governance maintained • Development partners sustain support for Rwanda • Pop. growth reduces • HIV/AIDS, other diseases reduced i • Normal climatic conditions
Specific objectives				
Increase output of all types of agricultural products with emphasis on export products, which have high potential and create large amounts of rural employment; this under sustainable modes of production	1) Growth rate of crop production 2) Growth rate of livestock production 3) Growth rate of agricultural exports	• Crop growth 6% • Livestock production growth 7% • Agricultural export growth 8%	• Enquête Agricole • Annual JSR Reports	• Land reforms implemented • Rainfall is normal • No major occurrence of uncontrollable pests and diseases • Increased willingness of banks to finance agriculture • Stable international markets • Rural electrification and roads improved

Outputs by Programme				
Programme 1. Intensification and development of sustainable production systems				
1.1 Soil and water conservation	1) Reductions in the rate of soil erosion and restore fertility 2) Irrigation on hillside farms 4) Increases in the water retention capacity of watersheds 5) Training of farm households in land husbandry on hillsides and hillside irrigation 6) Develop more livestock watering points.	• Area protected against soil erosion increases from 40% to 100% of cultivable land • 70 new valley dams and reservoirs on hillsides, and water conveyance structures to irrigate 5,000 has • 35,000 farm HH trained • Number of rural women trained • Ha of existing terraces protected and rehabilitated (including protection of new terraces) rise from 13,000 to 45,000. • Ha of newly constructed terraces rise from 13,000 to 32,000. • 1,000 new water ponds constructed. • Land protected by trenches and progressive terraces increases from 504,00 ha to 860,000 ha • 800 community ponds or tanks constructed • Increase from 5 to 8 the pilot sites for watershed management approaches	• Monitoring of District Performance Contracts • Annual reports of MINAGRI and MINIRENA • ERE reports • HIMO reports	
1.2 Integrated development and intensification of crops and livestock: crop diversification and intensification	1) Number of farms with livestock as well as crops, especially for poorer households 2) Number of farms growing export crops 3) Increases in crop production 4) Increases in agroforestry and agro-silvopastoral activities 5) Review of the fodder requirements for the One Cow Programme with recommendations for types of livestock to promote by farm size (fodder generating capacity)	• Increase in number of crop farms with livestock from 71% to 85% • 270,000 HH with livestock through One Cow Programme • 50% increase in number of farms growing export crops • 6% ave. annual increases in crop prod'n • % of farm HH trained in seed technology, tree management and post harvest rises from 70 to 90 • No. of tree nurseries rises from 1 per secteur to 1 per Umudugudu • 42 million trees planted annually • Fodder requirements review completed • Increase no. of farmers associations trained in improved animal husbandry practices from 200 to 300 p.a.	• Annual reports: RARDA/ISAR/ MINAGRI • Monitoring of District Performance Contracts • Agricultural Survey • Cattle movement report	• Export marketing assistance in Programme 3 is provided

1.2 Integrated development and intensification of crops and livestock: livestock development	1) Percentage of livestock maintained in intensive systems. 2) Increased vaccinations of livestock 3) Control or eradication of main epidemic animal diseases (TB, Blackquarter, Brucellosis, Foot and Mouth Diseases, Contagious Bovine Pleuropneumonia). 4) Key transboundary diseases totally eradicated: CBPP, FMD 5) Poultry population free from Newcastle, Typhose 6) Increase in the number of cows born from AI annually. 7) Professionalised and increased honey production. 8) Strengthen fisheries commodity chains. 9) Construction of 70 milk collection centres to stimulate and improve quality of milk production	• Increase in % livestock which is zero grazed from 6% to 70% • Cattle of improved breeds in local market, up from 9% (80,000 head in 2005) to 45% • Increase no. of farmers associations trained in improved animal husbandry practices from 200 to 300 p.a. • AI for 50,000 cows per year • 25 border disease control posts and 7 quarantine stations operational • At least one trained vet per district • % of livestock herd vaccinated against major diseases rises from 18 to 80 • Incidence of TB, Brucellosis reduced from 2.6% to zero • Incidence of key transboundary diseases reduced from 1.7% to zero • Poultry population free of Newcastle, Typhose rising from 10,382 to 15,000 • 12,888 Honey farmers around Nyungwe forest, Akagera basin Virunga mountain zone and Gishwati forest professionalized in honey production (production, processing and marketing) • Honey production increased from 1,029 t to 4,242 t p.a. • 30 fish farming stations rehabilitated • Fish ponds increased from 4,000 to 8,000 • Increase local fish prod'n by 30% to 9,620 tonnes p.a. • 70 milk collection centres constructed	• Annual reports: RARDA/ISAR/ MINAGRI • Monitoring of District Performance Contracts • Agricultural Survey • Cattle movement report	• No new outbreaks of major epidemic animal and poultry diseases in countries of the region
1.3 Marshland development	1) Complete marshland development plan 2) Marshlands developed with irrigation and drainage systems and farmer training, after EIAs	• Area of developed marshlands raised from 11,105 ha (2006) to 20,000 ha • Marshland development plan completed and actionable; compliant with environmental standards	• Monitor District Performance Contracts • Reports of RADA, REMA, MINAGRI • Agricultural Survey	• EIAs foresee environmentally compatible ways to develop the marshlands
1.4 Irrigation development	1) Establish the legal basis for water use rights	• Irrigation master plan prepared	• Monitoring of	• The necessary laws and

	and tenure rights for irrigation systems. 2) Develop hillside irrigation systems 3) Implement pilots for pressurized irrigation on hillsides and fertigation systems. 4) Organise and train hillside farmers for water management, system maintenance, and management of finances for irrigation systems. 5) Implement pilot irrigation project in the Nasho valley	• Law and regulations for water use rights and tenure for irrigation systems • Law and regulations for water user associations • Irrigated area on hillsides increases from 130 ha (2006) to 13,000 ha • 500 ha of pilots with pressurized irrigation • Nasho large-scale irrigation project completed	District Performance Contracts • Annual reports of RADA, REMA, MINAGRI • Agricultural Survey	regulations will be approved for water use rights and water user associations.
1.5 Supply and use of agricultural inputs: Fertiliser and agrochemical supply and use	1) % of farms using inorganic fertilizers. 2) % of farms using organic fertilizers. 3) % of farms applying trace elements to the soil. 4) % of farms using pesticides. 5) % of farms practicing IPM. 6) # of fertilizer demonstration plots. 7) # of on-going participatory analyses of soils and fertilization 8) System for testing fertilisers established	• Increase in farms using inorganic fertilisers from 12% to 25% • Increase in farm using organic fertilisers from 7% to 25% • Total of 20% of farms applying trace elements. • Increase tonnes of fertiliser imported from 14,000 to 56,000 by 2012 • Increase % of farmers organisations trained in fertilisers from 20 to 70% • Each rural household has a composter • Farms using pesticides up from 26% to 37% • IPM policy developed, implemented • Farms practicing IPM up from 10% to 40% • 12 ongoing fertiliser demonstration plots established • Set-up 12 farmers field schools • 15 ongoing participatory soil analysis exercises established • Construct a fertilizer plant. • Expand the Crop Intensification Programme to cover a larger percentage of Rwanda's arable land.	• Annual reports: RARDA/ISAR/ MINAGRI • Monitoring of District Performance Contracts • Agricultural Survey, EICV	• Funding for input purchase voucher scheme is made available. • Capacity for guiding participatory trials and analyses exists in sector institutions. • Yield response to fertilisers is high in crops that are not now major users of fertilisers.
1.5 Supply and use of agricultural inputs: Certified seeds and other inputs	1) Increased use of improved seeds. 2) Increased use of farm mechanisation. 3) Emergence of private enterprises offering mechanisation services. 4) Increased use of animal traction.	• % of farms using improved seeds rising from 39% to 50% • Increase production of foundation seed from 3,000 to 15,000 tonnes • Increase from 2% to 80% the no. of cooperatives with a representative trained in the use of improved seeds • Increase distribution of improved forage seeds to	• Coop. reports in MINICOM • Monitoring District Performance Contracts • MOU RADA/Districts • Reports RRA, BNR • Annual reports: RADA/	• Regulations for seed law approved. • Independent Seed Certification Authority established and made operational. • Seed monitoring and inspection capacity developed.

		13.3 tonnes p.a. • % of farmers associations and cooperatives using mechanised techniques or animal traction rising from 3% to 10% • Emergence of at least 5 private enterprises offering farm mechanisation services • Increase the number of tree nurseries from one per sector to one per Umudugudu • Increase number of trees planted annually per household from 5 to 30 • Increase the total number of trees planted per annum to 42m • Expand the Crop Intensification Programme to cover a larger percentage of Rwanda's arable land. • Improved quantity and quality of foundation seeds available	ISAR/ MINAGRI • Agricultural Survey • EICV	
1.6 Food security and vulnerability management	1) Early warning capability for food shortages. 2) Hermetic storage facilities at local level for staples. 3) Training in management of storage facilities. 4) Gender-friendly crops adopted. 5) Nutrition levels increased. 6) More efficient rural stoves adopted. 7) Safe drinking water in rural areas.	• Early warning system established • 1,000 additional hermetic cereal storage units set up in secteurs • Gender-friendly crops and poultry in 50,000 more HH • Installation of one mother garden per sector • Average kcal intake per day rises from 1,734 to 1,937; protein from 49 to 55 gr.; lipids from 8.8 to 23 gr. (2006 baselines) • Improved stoves in 20,000 HH • 100,000 HH with safe drinking water access • Training provided for managers and users of 1,000 storage facilities. • Set up two pilot silos, in cooperation with cooperatives, by end 2009.	• Bilan Alimentaire data at national and Provincial level • Crop Assessment • FAO and WFP data Survey Reports • MINAGRI reports	• Activities are complemented by educational programmes in health and nutrition. • The scope of the kitchen garden programme is increased.

Programme 2. Support to the professionalisation of producers

2.1 Promotion of farmers' organizations and capacity building for producers	1) Increase in number of women and disadvantaged groups actively involved in farmer organisations and service provision in the agricultural sector. 2) Increase in cooperatives successfully	• 100 more cooperatives successfully marketing products • 20 more community innovation centres functioning well	• Agricultural survey from NIS/MINAGRI • ECIV, 2000, 2006 • Citizen report card	• Capacity building programme for cooperatives emphasises governance. • Capacity building programme for cooperatives involves
--	---	--	---	--

	marketing agricultural products. 3) Increase in no. of community innovation centres. 4) Increase in no. of farmer training centres. 5) Increase in no. of farmer associations transformed into cooperatives, provided that farmers themselves promote the idea. 6) Training farmers in coffee harvesting for quality. 7) Training farmers and slaughterhouses in handling hides for quality.	• Six farmer training centres functioning well • No. of agricultural cooperatives increased from 1,105 (2006) to 1,200, in cases where farmers have taken the initiative and clearly see the role the cooperatives in marketing and input purchase. • 20 coffee cooperatives trained in harvesting • 10 farmer groups and slaughterhouses trained for hides	surveys from projects and RARDA and RADA • MINAGRI reports from local gov't consolidated nationally (NISR/MINALOC, MINECOFIN, • Agricultural Survey from NISR/MINAGRI	accompanying the cooperatives for the long term.
2.2 Restructuring proximity services for producers	1) Extension agents hired by cooperatives instead of gov't agencies. 2) Permanent facility to train extension agents in specialised topics established. 3) Farm field schools and other participatory extension activities established. 4) Programme of mass extension messages via radio is functioning.	• 200 cooperatives hiring their extension agents • Client satisfaction with extension using citizens report cards increases annually for both male and female respondents • 500 extension agents receiving training in specialised topics • Increased number of women extension agents.		• Government provides support to cooperatives for cost of extension services • Registry of qualified agricultural service providers is established and maintained up to date. • Extensive training and awareness building is carried on with cooperatives and farmer associations regarded the new approach to extension
2.3 Research for transforming agriculture	1) Participatory research activities established and supported. 2) Farmers become more involved in establishing research agendas. 3) Competitive research funding mechanism established. 4) Strengthen ISAR's capacity. 5) Cooperative programmes established for international exchange and secondment of researchers. 6) Wider ISAR involvement in research with other institutions. 7) Increased adaptive research on varieties from the region. 8) Research progress on greenhouse cultivation. 9) Strengthened genetic research on livestock	• Six participatory research programmes established with farmer groups • Seven research stations are converted so that farmers have the main voice in establishing research agendas • Ten senior researchers sent abroad for additional training • ISAR linked to new integrated cassava programme • Participation of ISAR scientists in specialised training of extension agents in the new facility • Participation of ISAR scientists in fertiliser trials and participatory soil analysis activities • Adaptive research programmes for at least 3 crops and 20 varieties from the region • Greenhouse cultivation research program	• Annual reports: ISAR/ MINAGRI	• ISAR's in vitro laboratory is improved and well maintained. • ISAR staff willing to shift their operating paradigm to a more participatory one in which farmers own fields are sites for research.

	and poultry.	operating		
		ISAR-RARDA programme established for genetic research on livestock, poultry		

Programme 3: Promotion of commodity chains and agribusiness development

3.1 Creating a conducive environment for business and entrepreneurship development and market access	- Number of young entrepreneurs trained, including women. - Actions taken to strengthen the sanitary, phytosanitary and food safety (SPS) system as described in the text. - Support given for organic and other quality certifications. Including, equipping a laboratory and organising the certification of fresh produce based on standardised testing. - Obtaining frequent cargo flights and/or arrangements for transshipment through Kampala, for Rwandan fresh produce.	160 young entrepreneurs trained in the programme established for that purpose. - Train 60 organisations of women farmers in entrepreneurship. 6 new products with export market certifications for organic production and other quality attributes. - One laboratory for standardised testing equipped - Certification process for fresh produce organised. - Triple the present weekly cargo capacity out of Kigali international airport for perishable products by 2012, or suitable arrangements through Kampala.	- MINICOM/ RIEPA (Annual reports) - MINECOFIN reports - MINAGRI reports - BNR Reports - OCIR Thé - OCIR Café - OTF reports - RADA, RARDA, RHODA report	A single, autonomous entity created for the sanitary, phytosanitary and food safety system, with supporting legislation.
3.2 Development of traditional exports: coffee	- Identification and solution of the “potato taste” problem that is reducing marketability of Rwandan speciality coffee. - Improved performance of coffee washing stations. - Rehabilitated coffee plantations. - Increase in value of coffee exported, by increasing production of roasted and fully-washed coffee.	- Cause of “potato taste” problem identified. - Solution “potato taste” problem implemented. - Turn-around programmes implemented for 20 washing stations. 20,000 has of coffee rehabilitated or renovated. 40,000 tons of coffee exported annually by 2012. % of coffee fully washed rises from 10% to 37%. - Coffee washing stations utilisation rates doubled. - One coffee roasting and packaging unit (capacity 1,000 tons) built. - Establish a joint venture with importers in Dubai.	- MINAGRI reports - OCIR Café reports	- Improved programme for coffee input distribution. - Strengthened programme for control of coffee leaf rust and other diseases. - Operationalisation of the Coffee Marketing Alliance, including systems of quality control, and the Cup of Excellence Programme. - More adaptive research on coffee varieties.
3.2 Development of traditional exports: tea	- Tea estates privatised. - Shift in emphasis to high-quality tea, including export of blended and packaged	- Privatisation of all State-owned tea estates. - Green leaf tea exports reach 123,000 t. - High-quality % of tea rises to 73 from 70. - Construction of 5 new tea factories with	- OCIR-Thé reports - MINAGRI reports	- Research programme on high-quality tea clones established. - Tea marketing strategies revised as

	teas. 3) Expansion of tea production.	participation of private investors. • Construction of one tea blending and packaging plant		indicated in the text.
3.2 Development of traditional exports: pyrethrum	1) New markets for high-value products from pyrethrum. 2) New varieties with high pyrethrin content.	• Pyrethrum exports increased from 46,635 t to 89,270 t.	• MINAGRI reports • OTF reports	
3.3 Development of non-traditional high-value export products	1) Technical assistance for horticulture handling, marketing, with emphasis on product quality. 2) Technical assistance provided for horticulture production. 3) Increased horticulture research. 4) Producer participation in international trade fairs. 5) Sericulture development. 6) Cultivation with greenhouses. 7) Gooseberry exports. 8) Visits to Rwanda by international investors and buyers to explain techniques relevant to high-value export products. 9) Set up a PPP for juice concentrate production	• Horticulture exports increased from 1,992 tonnes to 25,600 tonnes. • Area in mulberry trees for sericulture up from 15 ha to 10,000 ha. • Wet-blue hides and skins exports up from 3,183 tonnes (2005) to 6,366 tonnes. • Rwandan producers attending at least 4 international trade fairs. • Rwandan export products w/international certification up from 4 to 12. • 5 new crop varieties entering into commercial production. • 10 ha in commercial greenhouses. • Gooseberry exports to Europe initiated. • No. of women farmers with export crops. • Production of juice concentrate.	• MINICOM/ RIEPA (annual reports) • BNR reports • OCIR Thé • OCIR Café • RBS report: ISO/MINAGRI • Cooperative reports in MINICOM • RHODA reports • RHESI reports • MINECOFIN export statistics	• Kigali Airport fully configured as horticulture hub. • Laboratories upgraded for SPS and food safety analyses and staff trained, to attain ISO 17025 certification. • Successful arrangements made for greater weekly volume of air cargo space.
3.4 Production and value addition for domestic staple products	1) Integrated cassava programme operational. 2) Integrated cereals programme operational. 3) Soybeans, other legumes inoculated with Rhizobium. 4) More fish production, Lake Kivu.	• Cassava processing plants functioning. • Small-scale cassava processing by cooperatives by end 2009. • Maize processing plants functioning. • Concrete rice drying platforms or technologies installed. • Bakers trained in the use of wheat flour, maize flour and cassava flour. • Fish production from Lake Kivu up by 30%.	• Cooperative reports MINICOM • Annual reports: RADA/ ISAR/ MINAGRI • Agricultural Survey	

3.5 Market-oriented rural infrastructure	1) Construction of crop collection points that serve as grading and packing facilities. 2) Feasibility studies carried out for agro-processing facilities. 3) Slaughterhouses modernised. 4) Soybean processing facilities. 5) Hygienic milk transport network. 6) Ice-making facilities at all fisheries sites plus cold transport. 7) All-weather roads to priority production areas. 8) Electrification for agro-processing. 9) Construction of a flower park 10) Improved milk processing capacity 11) Rice processing facilities.	• Number of cold chain storage facilities increases from 1 to 20. • One UHT milk plant constructed. • 20 modern rural markets constructed. • 12 rural markets rehabilitated. • 5 feasibility studies carried out for agro-processing facilities for export. • 1,000 km new all-weather rural roads. • Ice-making capabilities in all fishing sites. • Refrigerated lorries increased from 1 to 5. • 3 new agro-processing facilities constructed for export with private investors. • One milk processing plant constructed at Mukamira • Rice milling plant operational	• MINICOM/ RIEPA (Annual reports) • MINECOFIN (Annual reports) • MINAGRI reports • OCIR Thé • OCIR Café	• Private investors respond to opportunities and incentives provided by government for agribusiness.
3.6. Strengthening rural financial systems	1) Agricultural credit line operating. 2) Loan guarantees in operation. 3) Weather insurance programme functioning. 4) Warehouse receipts programme in operation. 5) Venture capital window established and operating. 6) Regulations for use of invoices as collateral approved. 7) Programme for demand side of credit underway. 8) Additional rural financial instruments developed, especially savings instruments.	1) \$15,000,000 available and lent through second-storey credit line. 2) \$10,000,000 in loan guarantees deposited in fiduciary account. 3) \$1,000,000 available for agro-enterprises through venture capital window. 4) Rural savings deposits increased by 200%. 5) At least one warehouse receipt scheme operational.	• MINECOFIN reports. • MINAGRI reports. • National Bank of Rwanda reports.	• Banking sector responds to opportunities and incentives provided through these programs.

Programme 4. Institutional development

4.1 Institutional strengthening and capacity building	1) Autonomous public corporation to invest in post-harvest mgt, agroprocessing, export marketing. 2) Autonomous Rwanda Agricultural Sanitary and Phytosanitary Service. 3) Independent seed certification agency. 4) Restructuring of MINAGRI as per SP4.3.	• Plans developed for public investment corporation for agriculture. • Public investment corporation created. • Plans for sanitary service. • Sanitary service created. • Plans for seed certification agency. • Seed certification agency created. • Plans for restructuring MINAGRI.	• MINECOFIN reports • MINAGRI reports	• Political will to create autonomous entities. • Political will to strengthen MINAGRI including adjustment of salary structures and augmentation of technical staff. • Willingness of extension agents to adapt to new role.
--	--	--	--	---

	5) Assessment of training needs and technical capacity building in the agricultural public sector. 6) Sector-wide gender strategy and Ministry training in gender issues. 7) New plan for personnel management. 8) Redefinition of role of extension agents. 9) Implementation of MIS.	• Restructuring implemented. • Training needs assessment. • Capacity building plan. • Training implemented. • Gender strategy developed. • Ministry-wide gender training done. • Plan for personnel mgt. with new salary scales, staffing. • Personnel plan implemented. • Extension agents' role redefined. • Training implemented for extension agents in new role. • MIS consolidated. • MIS implemented.		
4.2 The policy and regulatory framework for the sector	1) Policy framework for irrigation and soil management. 2) Policy framework for agro-export development. 3) Land consolidation decree. 4) Agriculture mechanisation strategy 5) Animal nutrition strategy	• Policy for irrigation and soil management developed. • Workshops held to disseminate policy on irrigation, soil management. • Policy on agro-exports developed. • Workshops held to disseminate policy on agro-exports. • Land consolidation decree drafted and approved. • Workshops held regarding implementation of land consolidation decree.	• MINECOFIN reports • MINAGRI reports • MINALOC reports	• International cooperation functions for developing policy on water and soil management • International cooperation functions for developing policy on agro-export development.
4.3 Agricultural statistics and ICT	1) Reinforcement of statistical survey methodologies to better cover more specialised crops. 2) Training of staff in timely analysis of survey data for policy makers. 3) Programme of collecting and analysing crop budgets. 4) Real-time market information capabilities installed in community innovation centres, farmer training centres and other locales. 5) Rehabilitated network of local meteorological stations with strengthened links to the centre and mechanisms for disseminating the	• New statistical sampling designs for crop assessments. • New sampling procedures implemented in surveys. • Training implemented for policy analysis of survey data with spreadsheets. • Design of programme for collection and analysis of crop budgets. • Implementation of crop budget programme. • Design of programme for real-time market information. • Implementation of market information programme. • Plan for rehabilitating meteorological stations	• MINAGRI reports • NISR reports	• Sufficient technical capacity exists for identifying issues and technical experts who can address them, and for following up the work.

	information to all localities. 6) Sector-wide ICT system.	and strengthening network. • Implementation of plan for meteorological stations. • Plan for sector-wide ICT system including equipment purchase. • Implementation of ICT plan.		
4.4 M&E systems and coordination of the agricultural sector	1) SWAp for the sector defined. 2) Results indicators reviewed and refined as necessary and baseline developed where needed. 3) Self-reporting monitoring system developed. 4) Feedback procedures developed using citizen report cards. 5) Evaluation procedures in place.	• SWAp accords signed. • SWAp budgets agreed. • Definitive set of results indicators issued. • Statistical baselines designed for indicators requiring them. • Baselines compiled. • Procedures for feedback developed. • Evaluation procedures established.	• MINECOFIN reports • MINAGRI reports • Documents of agreement with international partners.	• Pre-conditions for successful SWAp exist, as described in section III.1.3. • Baselines are compiled in a timely manner.
4.5 The decentralisation programme in agriculture	1) Programme of recommendations for fiscal decentralization implemented. 2) Joint Action Forums in the districts strengthened. 3) Capacity of secteur-level authorities to collaborate with farmers and farmer organisations strengthened.	• Local authorities given more discretion in planning agricultural activities, in line with PSTA/EDRSP. • Earmarked grants increased. • New grant system designed. • Two kinds earmarked grants created, one for recurrent costs and one for development. • Formula developed for allocating grant budgets across Districts. • Agreement for MINAGRI to monitor the utilisation of the grants. • Programme to reinforce the role of agricultural agencies as service providers to local governments. • Enhanced funding and advisory assistance to the Joint Action Forums. • Plan to strengthen secteur authorities. • Implementation of plan for secteur authorities.	• MINAGRI reports • MINICOM reports.	• Willingness of multiple institutional actors to collaborate closely.

II.1.4 Considerations for the SWAp

The route to implementation of this Strategy requires development of a SWAp for the agricultural sector in Rwanda. A SWAp, or sector-wide approach, is an approach for coordinating expenditures in a functional sector, such as agriculture or infrastructure, when multiple government agencies and international partners supply the funding and participate in the design of policies and programmes. Agricultural development is a multi-faceted undertaking and by its nature involves policies, programmes and projects that touch upon a number of distinct areas such as environmental management, infrastructure development, education, land tenure systems, financial systems, and so forth.

In these circumstances a single Ministry such as MINAGRI cannot be responsible for all of the interventions that have a bearing on the sector's development. Yet a MINAGRI has a vital interest and responsibility for helping coordinate those interventions in order to ensure that they respond to a fully articulated and internally consistent vision of the path to the sector's development, and so that duplications and inconsistencies in programme and project implementation are minimized.

A SWAp is a highly participatory process in which all interested parties come together to mesh their visions and operating modalities and budgets, in order to achieve the end result of a fully coordinated programme for the sector's development. From the perspective of international partners involved in the sector, a well functioning SWAp is one of the keys to making their contributions more effective in promoting their stated aims.

As noted in the workshop of 29 May 2008, a SWAp is at once:

- an **approach** which involves a **different type of relationship** between government and development partners;
- a **mechanism through which support** to public expenditure programmes can be better co-ordinated; and
- a **means of improving aid effectiveness** - by improving the efficiency and effectiveness with which all resources are used, and accounted for, in the sector.

It is important to remember that a SWAp is an approach, not a blueprint. The approach is based on key principles and attempts to progressively apply them, but it is the national conditions and preferences that guide the development of the process.

From a viewpoint of budgeting resources for the sector, a SWAp is a form of Programme Based Approach (PBA) applied at the sector level. PBAs in turn have been defined as “a way of engaging in development cooperation based on the principle of coordinated support for a locally owned programme of development, such as a national poverty reduction strategy, a sector programme, a thematic programme or a programme of a specific organisation.” They are characterised by:

- Leadership by the host country or organisation;
- A single comprehensive programme and budget framework;
- A formalised process for donor coordination and harmonisation of donor procedures for reporting, budgeting, financial management and procurement;
- Increasing reliance on the use of local systems for programme design and implementation, financial management and accountability and monitoring and evaluation.

(Quoted from OECD-DAC 2005.)

The key components of an effective SWAp are⁶⁹:

- A clear nationally-owned sector policy and strategy;
- A medium term expenditure framework that reflects the sector strategy;
- Systematic arrangements for programming resources that support the sector;
- A performance monitoring system that measures progress and strengthens accountability.

⁶⁹ HSLP Institute, *Sector-wide Approaches: A resource document for UNFPA staff*, 2005.

The effectiveness of a SWAp depends on the policy and institutional environment that exists when the SWAp is initiated. These “initial conditions for success” include⁷⁰:

- A sound macroeconomic framework.
- A basic agreement on strategy and policy between government and donors.
- The possibility of participation by key stakeholders including the political leadership and private sector in SWAp formulation processes.
- A donor community that is committed to moving towards common and aligned approaches.
- Consistency between the national strategy (EDPRS strategy) and the sector strategy (PSTA), which in turn also means a clear alignment between political and technical leadership of the SWAp.
- A consensus within government and between government and donors on key policy and management issues for the sector. This need not cover the entire range of issues on which the SWAp will eventually touch but it does need to include some resolution of issues on which ideological disagreements can hold sway, including a working definition of the agricultural or rural development sectors and the respective role for private and public action in the sector.
- Effective ownership and leadership at sector ministry level also requires commitment to the process elsewhere in government, particularly from the Ministry of Finance and at a senior political level. Without this, formulating a SWAp can be a very slow business, as witnessed in Ghana and in Cambodia.
- A commitment to alignment and harmonisation goes without saying, but what is most vital is evidence from donors that are willing to move quickly to address changes in their practice both as a demonstration of good will and as a clear sign that they are willing to give space to government leadership and ownership of the process.

In Rwanda many of these conditions are fulfilled but nevertheless the development and implementation of a SWAp for the sector will require a great deal of cooperation and perseverance on the part of all the participating entities. This Strategy document is designed in large part to facilitate the dialogue that will lead to a full SWAp arrangement, by laying out not only an estimate of the disaggregated expenditures by programme area but also the reasoning behind each programme and sub-programme. Agreement on the sector's needs and how these give rise to specified kinds of interventions is an essential pillar of the process of coming to agreement on joint support for the programmes.

It is well to reiterate that **policy changes** and **projects** are means of implementing programmes and sub-programmes. Once the latter have been agreed upon, and their *raison d'être*, then it is easier to co-operate in the realms of policy reforms, project design, and project implementation. The most desirable outcome to be attained through a SWAp is mutual co-operation among funding entities for agreed-upon projects and policy undertakings. However, in the end, even if a

given development partner wishes to support or, perhaps in a few cases, support only a particular project, instead of the “basket” of funding for a sub-programme, the partner should be reassured to see that the sub-programme includes complementary measures that are likely to enhance the project's success.

Finally, another important lesson to emerge from the review of experiences in developing countries undertaken by the Global Donor Platform for Rural Development is that:

The more mature operations such as the PMA in Uganda and PROAGRI in Mozambique, plus the more recent experience of the ASDP in Tanzania, confirms the need for close integration of the sector approach with wider budgetary and public finance reforms. In Tanzania, the upside of a protracted SWAp formulation process has been that the ASDP has benefited from significant improvements in the wider planning and budgeting context, including the development of a sector Medium Term Expenditure Framework (MTEF) and local government MTEF processes. In Uganda, a robust central MTEF process has guided the roll out of the PMA priorities into line ministry budgets. In Mozambique, integration with wider public finance reforms may have resulted in faster implementation progress, particularly in relation to flow of funds to local governments.⁷¹

⁷⁰ Global Donor Platform for Rural Development, *Formulating and Implementing Sector-wide Approaches in Agriculture and Rural Development: A Synthesis Report*, 2007.

⁷¹ Op. cit.

III.1.5 A note on PSTA I and PSTA II

As commented early in this document, the strategic and budgetary framework of the original Strategic Plan (PSTA I) has been adopted for this PSTA II. The bulk of the effort has been put into updating PSTA I, developing the sub-programme specifications more fully in a number of areas, and describing the activities in as concrete a manner as possible in the context of a medium-term planning document. This has been seen as necessary in order to facilitate implementation, and especially in order to promote the development of a SWAp with all its attendant agreements on co-operation in particular areas.

This more detailed approach has required a few slight modifications of the structure and titles of sub-programmes as they were originally conceived in PSTA I. A comparison of the old and new structures by programme is as shown in the following charts:

Programmes	PSTA I and PSTA II (unchanged)
P1	Intensification and development of sustainable production systems
P2	Support to the professionalisation of the producers
P3	Promotion of commodity chains and agribusiness development
P4	Institutional development

Sub-programmes of Programme 1		
	PSTA I	PSTA II
SP1.1	Sustainable management of natural resources and soil conservation	Sustainable management of natural resources and water and soil preservation
SP 1.2	Integrated system of intensive agricultural, livestock production	Integrated systems of crops and livestock
SP1.3	Marshland development	Marshland development
SP1.4	Irrigation development	Irrigation development
SP1.5	Supply and use of soil fertilisers and mechanisation	Supply and use of agricultural inputs
SP1.6	Food security and vulnerability management	Food security and vulnerability management

Sub-programmes of Programme 2		
	PSTA I	PSTA II
SP2.1	Promotion of farmers organisations and capacity building of producers	Promotion of farmers' organisations and capacity building for producers
SP2.2	Restructuring services in proximity to producers and rural innovation	Restructuring proximity services for producers
SP2.3	Promotion of research for agriculture and livestock development	Research for transforming agriculture
SP2.4	Rural financial systems and agriculture credit development	(Moved to SP 3.6)

Sub-programmes of Programme 3		
	PSTA I	PSTA II
SP3.1	Creation of an environment conducive to business and entrepreneurship promotion	Creating a conducive environment for business and entrepreneurship development and market access
SP3.2	Promotion and development of specialist crops	Development of traditional exports
SP3.3	Transformation and competitiveness of agricultural and animal products	Development of non-traditional high-value export products
SP3.4	Rural infrastructure for support to producers	Production and value addition for domestic staple products
SP3.5		Market-oriented rural infrastructure
SP3.6		Strengthening rural financial systems

Sub-programmes of Programme 4		
	PSTA I	PSTA II
SP4.1	Management support	Institutional strengthening and capacity building
SP4.2	ICT development in agriculture sector	The policy and regulatory framework for the sector
SP4.3	Planning, coordination in the agricultural sector	Agricultural statistics and ICT
SP4.4		M&E systems and coordination of the agricultural sector
SP4.5		The decentralisation programme in agriculture

Chapter III.2 Indicative Financing for the Strategy and Its Components

Table 12 below summarizes the budgetary implications of the Strategy. In total, its cost is estimated at approximately US\$617.23 million. The largest single component is Programme 1, owing to the high cost of soil conservation and irrigation works. A disaggregated budget by activity is found in the Annex 1 immediately following Table 12.

Table 12. Indicative Financing for the Strategy by Programme and Sub-Programme

Programme and Sub-Programme	Amount, USD
Programme 1: Intensification & development of sustainable production systems	448,823,771
SP 1.1. Sustainable management of natural resources and water and soil preservation	214,571,429
SP 1.2. Integrated systems of crops and livestock	60,481,118
SP 1.3. Marshland development	51,188,900
SP1.4. Irrigation Development	223,190,000
SP 1.5. Supply and use of agricultural inputs	56,690,211
SP 1.6: Food security and vulnerability management	42,702,113
Programme 2: Support to the professionalisation of the producers	91,950,157
SP2.1. Promotion of farmers' organisations and capacity building for producers	12,555,000
SP2.2 Restructuring proximity services	15,935,000
SP2.3. Research for transforming agriculture	63,460,157
Programme 3: Promotion of commodity chains and agribusiness development	125,214,526
SP3.1 Creating conducive environment for business development and market access	13,248,000
SP3.2 Development of traditional exports	39,105,471
SP3.3 Development of non-traditional high-value export products	10,085,000
SP3.4 Production and value addition for domestic staple products	14,522,417
SP3.5 Market-oriented rural infrastructure	26,653,638
SP3.6 Strengthening rural financial systems	21,600,000
Programme 4: Institutional development	19,520,000
SP4.1 Institutional strengthening and capacity building	11,450,000
SP4.2 The policy and regulatory framework for the sector	330,000
SP4.3 Agricultural statistics and ICT	5,190,000
SP4.4 M&E systems and coordination of the agricultural sector	1,050,000
SP4.5 The decentralisation programme in agriculture	1,500,000
TOTAL PROGRAMMES 1-4 OF PSTA II	885,508,445

Annex 1 Budget by Programme, Sub-Programme and Activity

PSTA II Budget Table, Programme 1	
Intensification and development of sustainable production systems	
Sub-programmes and actions	Amount (USD)
SP 1.1. Sustainable management of natural resources and water and soil preservation	214,571,429
1.1a. Construct 50 valley dams and reservoirs with conveyance structures for irrigating 3,570 hectares and catchment protection (6-yr. budget for 70 dams: 180,000,000)	134,571,429
1.1b. Participatory watershed management plans and protection of 20% of the land against erosion via progressive terraces (increasing protected percentage from 30% to 50%), radical terraces, living barriers, contour planting, shift to crops suitable for erosion control on steeper slopes, etc. (Allocating US\$5,000,000 for the plans.) 8-yr. budget: 110,000,000.	60,000,000
1.1c. Create effective buffer zones around national parks	20,000,000
SP 1.2. Integrated systems of crops and livestock	60,481,118
SP 1.2.1 Crop diversification and intensification	31,167,600
1.2.1.a. Replicate the systems of integrated livestock and cropping until the approach is fully internalised by farmers and farmer organisations	6,000,000
1.2.1.b. Link integrated crop development to pilots on pressurized irrigation	600,000
1.2.1.c. Scale up the One Cow per Poor Family programme, including the improvement of the milk marketing chain and construction of a further 70 MCCs	24,567,600
SP 1.2.2 Livestock development	29,313,518
1.2.2.a Animal disease control operations: control posts and monitoring; vaccinations	1,640,832
1.2.2.b Better, more complete veterinary services	1,140,000
1.2.2.c Artificial insemination and training	2,142,000
1.2.2.d Breed improvement programme for all species	2,500,000
1.2.2.e Livestock watering facilities	1,500,000
1.2.2f Farmer training in intensive animal husbandry, incl. fodder supply	3,971,000
1.2.2.g Management of internal lakes & aquaculture development	12,819,686
1.2.2.h Support for beekeeping, including for organic honey	3,600,000
SP 1.3. Marshland development	51,188,900
1.3a Complete the marshland development plan and feasibility studies for 3,975 has.	1,188,900
1.3b Develop 8,000 hectares of marshlands with irrigation systems, including drainage systems and measures for protection of catchment areas and farmer training	40,000,000
SP1.4. Irrigation Development	23,190,000
1.4a Complete development of irrigation master plan	150,000
1.4b. Formulate regulations and/or legislation that defines farmers' water use rights and defines tenure rights over the irrigation systems, and finish legally structuring water user associations (WUAs)	110,000
1.4c Promote the formation of WUAs and train their members	400,000

1.4d Develop 13,000 has of hillside irrigation systems (including irrigation of the Nasho Valley)	222,530,000
1.4e Implement on a pilot basis pressurized irrigation systems on hillside terraces and contours, with fertigation	20,000,000
SP 1.5. Supply and use of agricultural inputs	56,690,211
SP 1.5.1 Fertiliser and agrochemical supply and use	49,525,211
1.5.1a Establish long-term approach for fertilizer imports	20,000
1.5.1b Continuation of voucher programme with wider coverage	48,000,000
1.5.1c Fertiliser demonstration plots on farmer fields, participatory fertilisation trials	375,211
1.5.1d Sustainable agrochemicals distribution network	n.c.
1.5.1e Fertiliser quality control system	100,000
1.5.1f Negotiate free EAC market in agricultural inputs	30,000
1.5.1h Studies for development of methane-based fertiliser production	1,000,000
SP 1.5.2 Certified seeds and other inputs	7,165,000
1.5.2a Legal and institutional framework for certified seeds	100,000
1.5.2b Expanded production of basic seeds	4,115,000
1.5.2c Seed multiplication and distribution	2,200,000
1.5.2d Promote demand for certified seeds	300,000
1.5.2e Development of private nurseries	250,000
1.5.2f Development of agricultural mechanisation policy and machinery enterprises	200,000
SP 1.6: Food security and vulnerability management	42,702,113
1.6a Regional and national early warning systems on food	300,000
1.6b Wider coverage of hermetic storage facilities + training	2,552,113
1.6c Strengthen household nutrition, health training, programmes	10,500,000
1.6d Gender-friendly crops and livestock	4,000,000
1.6e More efficient fuelwood stoves (promotion)	350,000
1.6f Potable water sources for households	25,000,000
TOTAL FOR PROGRAMME 1	648,823,871

PSTA II Budget Table, Programme 2	
Support to the professionalisation of the producers	
Sub-programmes and actions	Amount (USD)
SP2.1. Promotion of farmers' organisations and capacity building for producers	12,555,000
2.1a Strategy and programme for capacity building in farmer and village organisations	6,830,000
2.1b Local points for training farmers, sharing experiences	2,650,000
2.1c Train abattoir operators and selected groups of farmers in proper care of livestock skins and hides	75,000
2.1d Train farmers in agronomic and quality issues for coffee	3,000,000
SP2.2 Restructuring proximity services for producers	15,935,000
2.2a Develop and promote a system through which farmers contract with the farm advisors or extension agents. 6-yr. budget: 15,000,000.	8,000,000
2.2b Establish a permanent training service for extension agents	3,000,000
2.2c Implement on farms participatory research-cum-extension approaches such as farm field schools	4,250,000
2.2d Programme of certifying farmers as trainers and facilitators	135,000
2.2e Programmes of mass extension messages, strengthen CICA	550,000
SP2.3. Research for transforming agriculture	13,460,157
2.3a Programme of participatory research with farmers on their plots	475,000
2.3b Involve farmers in local research agendas for innovation centres	60,000
2.3c Mechanism for competitive award of research funding	2,650,000
2.3d Strategy to secure long-term funding support for public-sector agricultural research	n.c.
2.3e Programmes of international cooperation and staff exchange and capacity building for senior research scientists	2,015,000
2.3f Increase adaptive research on varieties imported from the region	175,000
2.3g Maintain and operate ISAR's in vitro laboratories	8,055,157
2.3h Strengthen ISAR's collaboration with other institutions and activities	30,000
TOTAL PROGRAMME 2	41,950,157

PSTA II Budget Table, Programme 3	
Promotion of commodity chains and agribusiness development	
Sub-programmes and actions	Amount (USD)
SP3.1 Creating a conducive environment for business and entrepreneurship development and market access	13,248,000
3.1a Young Entrepreneurs Training Programme	1,200,000
3.1b Train women's organisations in entrepreneurship	900,000
3.1c Strengthen the sanitary, phytosanitary and food safety (SPS) system	750,000
3.1d Improve the laboratories and capacity used for sanitary, phytosanitary and food safety analyses (to ISO 17025 certification)	2,170,400
3.1e Harmonise sanitary and phytosanitary policies and legislation and inspection and certification procedures in the EAC region	n.c.
3.1f Support part of producers' costs of obtaining quality certifications	400,000
3.1g Configure Kigali Airport as an effective horticulture hub	827,600
3.1h Accord with Uganda and Kenya for use of international airports	n.c.
3.1i Government guarantee for air cargo space	7,000,000
SP3.2 Development of traditional exports	39,105,471
SP3.2.1 Coffee	23,762,085
SP3.2.1a System to improve input distribution for coffee, and monitoring that distribution (chemical inputs, seedlings), introducing private modalities, and to increase use of organic fertiliser and shade trees.	200,000
SP3.2.1a Identify causes of and solution for the "potato taste" problem that is reducing market acceptance of Rwanda's specialty coffee.	250,000
SP3.2.1c Turn-around programme for washing stations including upgrading infrastructure	11,659,620
SP3.2.1d Control of coffee leaf rust and other diseases and adaptive research on coffee varieties	2,500,000
SP3.2.1e Improve international marketing of coffee including initiating toll roasting and partnerships with major buyers abroad and establishing joint ventures with importers in Dubai.	4,152,465
SP3.2.1f Rehabilitate coffee plantations, establish multiplication centres. To facilitate the rehabilitation, carry out a census of all coffee-producing areas	5,000,000
SP3.2.2 Tea	14,293,386
SP3.2.2a Privatised tea estates with farmer shareholdings	n.c.
SP3.2.2b Pre-feasibility, feasibility studies and investment for tea estates in Karongi, Gatware and elsewhere, with cost sharing	14,293,386
SP3.2.2c Research program on high-quality clones of tea varieties	450,000
SP3.2.2d Tea marketing strategies (including a tea blending and packaging facility and the establishment of a cargo company to transport goods to and from Dubai)	2,680,000
SP3.2.3 Pyrethrum	1,050,000
SP3.2.3a Install solar dryers	150,000
SP3.2.3b Develop export markets for high value distillates	250,000
SP3.2.3c Research on varieties with high pyrethrin content	600,000
SP3.2.3d Strengthen distribution of seeds with high pyrethrin content	50,000
SP3.3 Development of non-traditional high-value export products	10,085,000

SP3.3a Specialised technical assistance for horticulture farmers and for marketing, including organic production and processing (e.g. PPP for juice concentrate plant)	3,875,000
SP3.3b Increase ISAR's capacity in horticulture research; disease control in high-value products	2,210,000
SP3.3c Continued development of sericulture	1,800,000
SP3.3d Cost-sharing for greenhouse cultivation	2,200,000
SP3.4 Production and value addition for domestic staple products	14,522,417
SP3.4a Integrated programme for cassava development	1,377,731
SP3.4b Integrated programme for cereal development	150,000
SP3.4c Key supply-side interventions in domestic market crops	175,000
SP3.4d Development of the fish commodity chain in Lake Kivu	12,819,686
SP3.5 Market-oriented rural infrastructure	26,653,638
SP3.5a Technical assistance for feasibility studies of new agro-processing facilities and government cost-sharing for investment in the facilities (including the establishment of a flower park)	6,745,800
SP3.5b Modernisation of slaughterhouses and tanneries	1,200,000
SP3.5c Improved collection and hygienic transport of raw milk, including the construction of a milk processing plant at Mukamira	5,209,838
SP3.5d Cold storage and transport facilities including ice-making capacities at all fisheries sites	2,800,000
SP3.5e Plan for rural electrification with agricultural priorities	98,000
SP3.5f All-weather agricultural marketing roads ⁷²	10,000,000
SP3.5g Refrigerated lorries	600,000
SP3.6 Strengthening rural financial systems	21,600,000
SP3.6a Strengthen programmes for diversified rural financial services	1,000,000
SP3.6b Loan guarantees	5,000,000
SP3.6c Risk mitigation products, incl. pilot for a weather insurance programme for	760,000
SP3.6d Value chain finance including warehouse receipts, factoring regulations	317,600
SP3.6e Finance for productive investment, incl. grants-loan programme, credit lines, leasing, venture capital	12,000,000
SP3.6f Financial literacy and preparing the demand side for agricultural credit	2,000,000
TOTAL PROGRAMME 3	125,214,526

⁷² Perhaps this budget would be administered through MININFRA.

PSTA II Budget Table, Programme 4	
Institutional development	
Sub-programmes and actions	Amount (USD)
SP4.1 Institutional strengthening and capacity building	11,450,000
SP4.1a Create mechanism for venture capital investments in agriculture and agro-processing	200,000
SP4.1b Create an autonomous service responsible for monitoring, controls and international communications for sanitary, phytosanitary and food safety issues	4,500,000
SP4.1c Create independent seed certification service	300,000
SP4.1d Assess training needs in the agricultural public sector and formulate and implement a programme for technical capacity building in the sector	5,000,000
SP4.1e Develop a sector-wide gender strategy	300,000
SP4.1f Leadership and Strategic Management Development Programme	500,000
SP4.1g Develop a new plan for personnel management	250,000
SP4.1h Consolidate and implement the Management Information System	400,000
SP4.2 The policy and regulatory framework for the sector	330,000
SP4.2a Policy framework for management of irrigation water and soils	160,000
SP4.2b Policy framework for agro-export development	120,000
SP4.2c Decree on land consolidation	50,000
SP4.2d Agrochemicals Law	n.c.
SP4.3 Agricultural statistics and ICT	5,190,000
SP4.3a Reinforce production survey methodologies with updated sampling procedures designed to cover more specialised crops	1,500,000
SP4.3b Develop procedures for and train staff in timely analysis of survey data for policy makers plus collection and analysis of crop budgets	350,000
SP4.3c Establish a sector-wide ICT system with real-time market information and network of local meteorological stations	3,340,000
SP4.4 M&E systems and coordination of the agricultural sector	1,050,000
SP4.4a Put in place a SWAp structure	25,000
SP4.4b PSTA II monitoring system	175,000
SP4.4c Procedures for obtaining feedback regarding agricultural programmes and projects from farmers and other stakeholders	100,000
SP4.4d Put in place an evaluation system with baselines	750,000
SP4.5 The decentralisation programme in agriculture	1,500,000
SP4.5a Implement the recent recommendations for improving fiscal decentralisation in agriculture	500,000
SP4.5b Strengthen Joint Action Forums in the districts and to strengthen the capacity of secteur-level authorities to collaborate with farmers	1,000,000
TOTAL FOR PROGRAMME 4	19,520,000