



cutting through complexity

Industrial Master Plan for the Agro- Processing Subsector (2014 - 2020)

Ministry of Trade and Industry
(MINICOM)



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List of Acronyms

AAA	Agricultural Adjustment Act
AGCO	Allis-Gleaner Company
AGRA	Alliance for a Green Revolution in Africa
BMGF	Bill and Melinda Gates Foundation
BSE	Bovine spongiform encephalopathy
CAADP	Comprehensive Africa Agriculture Development Programme
CAGR	Compound Annual Growth Rate
CIS	Commonwealth of Independent States
COMESA	Common Market for Eastern and Southern Africa
CTC	Crush Tear and Curl
DTIS	Diagnostic Trade Integration Study
EAC	East African Community
EABL	East African Breweries Limited
EBRD	European Bank for Reconstruction and Development
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation)
EPDRS	Economic Development and Poverty Reduction Strategy
ETG	Export Trading Group
EU	European Union
FDI	Foreign Direct Investments
FWC	Fully Washed Coffee
GAFSP	Global Agriculture and Food Security Program
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GM	Genetically Modified
GMOs	Genetically Modified Organisms
GOR	Government of Rwanda
ICT	Information Communication Technology
IFPRI	International Food Research Institute
IMF	International Monetary Fund
INEAC	Institut National d'Etudes Agronomiques du Congo
ISAR	Institut des Sciences Agronomiques du Rwanda
ISAE	Institute of Agriculture and Animal Husbandry
IT	Information Technology
KIST	Kigali Institute of Science and Technology
kWh	Kilowatt hours
LDC	Less Development Countries
MIGEPROF	Ministry of Gender and Family Promotion
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINIAGRI	Ministry of Agriculture
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Natural Resources
MSME	Micro Small and Medium Enterprises
MT	Metric Tonne
MVA	Manufacturing Value Added
MW	Megawatts
NISR	National Institute of Statistics Rwanda
NUR	National University of Rwanda
OECD	Organization of Economic Co-operation and Development
PE	Private Equity
PESTEL	Political Economic Social Technological Environmental and Legal

PSD	Production Supply and Distribution
PSF	Private Sector Federation
PPP	Public Private Partnerships
PRAN	Programme for Rural Advancement Nationally
RALGA	Rwanda Association of Local Government Authorities
RARDA	Rwanda Animal Resources Development Authority
RBS	Rwanda Bureau of Standards
RCA	Rwanda Cooperative Agency
RDB	Rwanda Development Board
R&D	Research and Development
RHODA	Rwanda Horticulture Development Authority
RLDSF	Rwanda Local Development Support Fund
RRA	Rwanda Revenue Authority
RSSP	Rural Sector Support Project
SEZs	Special Economic Zones
SFSA	Syngenta Foundation for Sustainable Agriculture
SMART	Specific Measurable Attainable Relevant and Time-bound
SME	Small and Medium Enterprises
SOPYRWA	Société de Pyrèthre au Rwanda
SPS	Sanitary and Phytosanitary Standards
SWOT	Strengths Weaknesses Opportunities and Threats
ToR	Terms of Reference
UBPR	Union des Banques Populaires du Rwanda
UHT	Ultra High Temperature
UN	United Nations
UN FAO	United Nations Food and Agriculture Organization
UNIDO	United Nations Industrial Development Organization
US	United States
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VCA	Value Chain Analysis
WTO	World Trade Organization

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1 Executive Summary

1.1 Background of the study

MINICOM engaged KPMG to conduct a comprehensive mapping of the industrial resource base for the agro-processing sub-sector and carry out prefeasibility studies for the development of resource based industries. The master plan aims at improving industrial production and address the human resource scarcity problem in the selected industrial subsectors. It also identifies ways of creating an enabling environment for the private sector, improve the competitiveness of the agro-processing subsector and build consensus among all stakeholders around a plan to improve the industrial sector in general. More specifically, the assignment entailed the following:

- Assessment of Rwanda’s districts with regards to the agro-processing sub-sector. The master plan detail opportunities in different districts, map up the industrial zones in each district and propose the type of industries that need to be promoted according to inputs availability and possible linkages, as well as indicate the requisite infrastructure development plan, and this has been done in consultation with relevant stakeholders.
- Provides a database, which will be updated depending on the changes which may occur, and will contribute to the development of the industrial sector in Rwanda by showing all potential areas for the agro-processing subsector where industrial activities throughout the country may be carried out

1.2 Study Methodology

The practical methodology employed by KPMG Rwanda Limited, hereafter referred to as “KPMG”, was based on our global master plan development best practices and was customized to suit MINICOM’s specific needs. We developed the Master plan in six main phases as summarized below;

Phase 1: Project Initiation and preparatory work

Phase 2: Review of Agro-processing Industrial Subsector “As-Is” Environment (Situational Analysis)

- Desktop Review
 - i. Gathered relevant documents for review
 - ii. Developed review framework and parameters
 - iii. Identified necessary improvements to the policy and Institutional contexts
 - iv. Developed draft framework for institutional analysis and private sector development
- Institutional Analysis
 - i. Mapping and description of institutional structure
 - ii. Assessed performance of the relevant Institutions
 - iii. Identified necessary improvements to the institutional environment and arrangements
 - iv. Develop an implementation plan for the proposed institutional changes
- Value Chain Analysis (VCA)
 - v. Mapped the actors, with emphasis on the private sector
 - vi. Identified market related constraints at each stage of the chains
 - vii. Identified marketing options and responses to market requirements and quality standards
 - viii. Description of governance and linkages structures
 - ix. Assessed resource productivity and environmental performance

- x. Analysed options for development, innovation and upgrading
- xi. Analysed actual and future income distribution

Phase 3: Development of a draft Master Plan

Phase 4: Draft Master Plan validation workshop

Phase 5: Development of the final Master Plan

Phase 6: Master Plan finalisation and presentation to stakeholders

1.3 An overview of the study

Rwanda's Vision 2020 seeks to transform the nation fundamentally into a middle-income country by the year 2020. This requires achieving an annual per capita income (GDP per capita) of US\$ 900 (US\$ 630 in 2013), a poverty rate of 30% (44.9% in 2012) and an average life expectancy of 55 years (64 years in 2013). Rwanda has had an average per capita growth of around 8% for the last decade, but given that the rate of population has increased by 2.7%, this growth rate would need to be accelerated further to achieve sustained poverty reduction in order to achieve its vision. Currently, the economic growth remains driven by the agriculture sector.

The diversification of the Rwanda's economy into various sectors possible is essential for attaining vision 2020 goals. The industrial sector is contributing around 15% of GDP. For Rwanda to reach Vision 2020 target, it requires among others the share of industry to increase to 20% of GDP. Achieving this significant transformation requires a dynamic and innovative industrial sector in Rwanda. Industrial policy approved in 2011 indicate potential industrial subsectors that are to be focused on for quick development of industrial sector in Rwanda; these are agro-processing, construction materials, pharmaceuticals, chemical products, biodegradable packaging and high tech industries. With a strong private sector and a well-managed public - private sector partnership, Rwanda will be able to achieve an industrial growth needed to become a middle-income country. In recognition of this, the Government of Rwanda found necessary to develop Industrial Master Plan for the Agro-industrial sub-sector.

In the recent years, Rwanda has developed and implemented several legislations and policies to create an enabling environment for investment, improve the business environment and reduce the cost of doing business in Rwanda. As a result, in Sub-Saharan Africa, Rwanda is currently ranked second easiest country to do business. Key planning documents of the government have identified the agro-processing industry as one of the key drivers to transforming Rwanda's economy.

Rwanda's Vision 2020 and the EPDRS 2 identify agriculture and agro processing industry as key drivers for the country's growth. Transforming agriculture into a productive high value sector through supporting manufacturing was identified as a key driver for this growth. The vision is also embedded in key policy documents and strategies such as the National Industrialisation Policies that focuses on ensuring a competitive and advanced services sector envisaged to produce over \$1.5 billion of exports by 2020 while increasing the number of off farm jobs. Rwanda also has availability of a large workforce in the rural areas and labour costs remain very low. This provides availability of unskilled labour for simple factory jobs.

Currently, the country's GDP is driven predominantly by the agriculture sector. The national Agricultural Policy was issued in 2004 with the objective of improving food security and the nutritional status of the population, and increasing income levels of the rural households. The agricultural policy focuses on promoting "intensification" to increase productivity through the application of more advanced technologies. The main aim of the Agricultural Policy 2004

of MINAGRI is to increase animal production, modernize farming, reduce poverty, ensure food security and have surplus for the market. The diversification of the Rwanda's economy into various sectors possible is essential for attaining vision 2020 goals.

Small and Medium Enterprise (SME) Policy (2010) The SME policy has a vision to create a critical mass of viable and dynamic SMEs significantly contributing to the national economic development and a mission to stimulate growth of sustainable SMEs through enhanced business support service provision, access to finance and the creation of a conducive legal and institutional framework. The purpose of the SME Policy is to foster job creation and an increase in the tax and export base through the promotion of competitive new and existing SMEs mainly in value added sectors.

1.4 Key findings and recommendations

Agro-processing subsector, a subset of the country's entire agribusiness sector where raw agricultural materials, originating from agriculture, livestock, forestry and fisheries are transformed into finished and semi-finished agricultural products, has the potential to produce goods which can then be sold to both local and international consumers. As a developing country with large rural communities, Rwanda suffers from inadequate access to agro-processed food and low employment levels in regards to the agro-processing sub-sector. The many problems of poverty, low productivity, inadequate infrastructure and poorly integrated markets faced by the country are exacerbated by an underdeveloped agro-processing sub-sector. Inadequate attention to the agro-processing sector in the past in Rwanda has put both the producers and the consumers at a disadvantage through underutilisation of resources, wastage and low quality products. Although Rwanda is endowed with animal and plant resources, the country experiences a limited supply of land as compared to its neighbours and competitors. An analysis of Rwanda's agricultural resources is a crucial step in strategically investing in the agro-processing subsector.

With a strong private sector and a well-managed public - private sector partnership, Rwanda will be able to achieve an industrial growth needed to become a middle-income country. In recognition of this, the Government of Rwanda found it necessary to develop an industrial master plan for the agro-processing sub-sector. Rwanda's agro-processing subsector strategic direction for 2014 – 2020 focuses on production of high quality agro-processing products. In order to achieve this, the country will focus on specialisation by district/province (industrial clusters), by trade destination and by industry. The key to achieving this level of specialisation lies in analysing Rwanda's agricultural resources and prioritising them based on Rwanda's Vision 2020. In addition, controlled experimentation through use of pilot projects in order to continuously innovate and adapt Rwanda's agro-processing subsector to changes in its environment remain necessary.

The agro-processing subsector in Rwanda needs to undergo a structural transformation to focus on high quality agro-processing products. This will create jobs hence income generation and to ensure food security that is so badly needed by the country's growing population. Rwanda's agro-processing subsector will focus on high quality agro-processing products taking into account the limited supply of land, which limits volumes of agro-processing products which can be produced. The pace of change in the entire agribusiness value chain around the world is accelerating rapidly. If Rwanda is to benefit from these changes, the agro-processing industry needs to undergo a structural transformation. In fact, in terms of the transformation of the economy, structural change in farming and agro-processing are tightly interrelated and cannot be analysed independently of one another.

A transformation of the entire agribusiness sector involves increasing the productivity of activities at each stage of the different agriculture-based value chains, while simultaneously

improving coordination among those stages. Improved vertical coordination is critical to achieving timely flow of productivity-enhancing inputs to farmers and of quality agricultural raw materials to the agro-processing industry. At the same time, production must be closely aligned with the rapidly evolving demands of consumers. Growth of vibrant agro-processing industries is essential to offer employment for a large number of smallholder farmers who are unlikely to farm their way out of poverty. In order to carry out its mission thereby achieving its vision, Rwanda's agro-processing subsector Master plan is based on eight strategic pillars:

- 1) Boosting agricultural productivity
- 2) Upgrading agro-industrial value chains
- 3) Enhancing Capacity for market access
- 4) Strengthening technological efforts and innovative capabilities
- 5) Promoting effective and innovative financing
- 6) Promoting private sector participation
- 7) Improving infrastructure and access to energy
- 8) Developing Institutional Capacities

Rwanda agro-processing sector will focus on increasing agricultural productivity and reverse the current perennial low productivity in subsistence farming (low yields/output). The drivers for addressing low agricultural productivity include the following: promoting use of fertilizers, agricultural machinery, water & irrigation, reducing post-harvest losses, and addressing impact of climate change. The transformation of agricultural raw materials into industrial products depends on the capacity of entrepreneurs in Rwanda to supply global, regional and local value chains with products matching specific standards, volume and packaging requirements, at particular times, and under strict logistics and time to market demands placed by buyers.

New opportunities for upgrading into value added production and/or processing of agricultural products have emerged, though in some value chains such as tea, coffee and horticulture, actors are under pressure from competition in other developing regions of the world and from increasing demands or decreasing prices applied by retailers and processors in developed countries. Successful upgrading in value chains depends not only on a business-friendly operating environment for private sector players but also on specific opportunities that may be linked to a particular product or product form, to the emergence of particular technologies, to changes in international trade rules, or to the emergence of niche markets. Such windows of opportunity are often time bound: first-mover advantage is important, and abrupt changes in price and/or quality demands mean that rewards may be limited in time. Restructuring within value chains will also quickly reverse any previous gains, while advantages secured by some stakeholders will entail losses for others. This entails an agro-processing master plan built upon a flexible structure involving the private sector, industry associations, regulators and civil society actors.

Despite agriculture's importance to the economy of Rwanda, the country's progress in diversifying from bulk agricultural exports towards processed, higher-value and quality-differentiated products has not been good enough. Rwanda's ability to meet the growth and poverty reduction targets under Vision 2020 and the EDPRS will depend largely on exploiting the emerging opportunities in domestic, regional and international markets for processed and higher-value agro-industrial products. Diversification towards these market dynamic products has not been fully exploited in the past, but the challenges are not

insurmountable. Better policies can help to eliminate or attenuate the challenges that have been identified. At the national level, policies to reduce supply-side constraints and improve business environment and incentive structure for agribusiness must be at the centre of growth and trade promotion strategies.

Promoting agricultural productivity and productive capacities depends on the country's ability to invest in production technology and promote relevant innovations. Strengthening such capacity calls for technological advancement and skills development. This will in turn help in adding value to commodities and building comparative advantage. New learning and innovation platforms involving regional integration and increasing funding for science, technology and innovation are necessary ingredients for catching up. However, this must be done in the framework of public private partnership and by linking research to agro-processing sub-sector.

In order for the agro-processing subsector development to act as the engine of economic growth for Rwanda, the sector requires capital. However, investment levels are frequently suboptimal, partly because the sector is perceived as risky and yielding unattractive returns. Traditional and innovative sources of financing that have impact at the enterprise level, and mobilization of large-scale resources, will constitute one of the key pillars for agribusiness development in Rwanda, particularly in the agro-processing industry. As with any business, all forms of finance for entire agribusiness value chain will be either in the form of equity or debt, or a blend of both. Additionally, innovative financing primarily through the SACCO movement will play crucial in the development of agro-processing industries that fall within the SMEs category.

The private sector has emerged as an increasingly important element in stimulating economic growth in developing countries, in response to opportunities for investment and business innovation, created by globalization and technological advances. Consequently, private sector development (PSD) has become a major focus of strategies for economic diversification and transformation, broadly endorsed by multilateral and regional development institutions, donor agencies and governments to foster economic development. Rwanda's agro-processing subsector will focus on enhancing the management of firms responsible for the supply and transformation of agro-processing products from primary commodities to consumables, to meet consumers' requirements in terms of quantity and price. The aim of this objective is to match demand and supply with minimal effort and thus gain competitive advantages over competitors in crucial activities along the agribusiness value chain. Enhanced supply chain management will also focus on customer relationship management in order to better understand and meet the needs of Rwanda's agro-processing subsector customers.

Infrastructure plays a key role to a country's economic activities. Such infrastructure includes energy, mostly electricity generation and distribution; water, waste and sanitation management and transport infrastructure such as roads, railways and airports. This infrastructure shapes the possibilities for what can be produced within a country and in the long-run it is therefore intimately linked to investment and growth. Below are the initiatives for infrastructural development. The relevant infrastructure for agro-industrial development includes energy, transport and water supply. They are considered vital social capital and because of their broad availability, it is expected that the Government of Rwanda should provide such infrastructure from its national income or foreign direct investment to accelerate industrial development and improve standards of living. In the recent past, information technology (IT), telephones, and internet facilities have also been considered as essential aspects of infrastructure required for agro-industrial development.

Policy interventions and Institutional capacity development

Strong, well-functioning institutions are central to sustaining agro-industrial growth. The need for policy to target microeconomic foundations within the context of a sound macroeconomic strategy and the pivotal role of institutions are the platform for modern-day agenda for policy action. In this regard, five levels of policy level interventions are necessary: (1) Improving trade logistics- infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs; (2) Further enhancement of microeconomic business environment; (3) Enabling measures to foster the upgrading of agro-industrial clusters; (4) Targeted science, technology and training policies towards stronger focus on skill development and better organisational capability, especially on-the-job, in-house skills development rather than national level education strategies; and (5) Supporting the strengthening of institutions that will develop and implement policies.

Institution capacity development encompasses a range of initiatives cutting across leadership, systems, structures, skills, resources, strategy and incentives. There needs to be a structure in place to manage the capacity development process, which requires a defined process, analysis tools, appropriate delegation of authority and resources. There have been efforts to develop capacity within agro-processing related institutions in the recent years with some successful projects and steady growth. However, institutional challenges still remain which will be addressed through a comprehensive approach to both capacity development and institutional coordination. Below are the initiatives.

It is expected that implementation of Rwanda's Agro-processing Masterplan will bring positive outcomes to the country's efforts. The income at each level of selected agricultural value chains and different groups of actors (small, medium, large) are expected to increase, mainly through product development and diversification and other value added activities. Positive impacts are expected in food security and poverty reduction through reduction of post-harvest losses and by job creation. Employment will be created at each level of the chain with growth over time. Increased Participation of women and other rural communities in general in activities will be fostered at each level of the value chain. Rural and farm areas will be opened up agribusiness and job employment opportunities while boosting resilience and a reduction of vulnerability to social shocks.

1.5 Implementation of chain development strategies – Pilot projects

Below are some of the pilot projects that have been proposed and emphasised by the Master plan. These projects have been broken down into specific activities and divided into short, medium and long term.

1. Building Competitiveness of the Staple Foods for Trade and Development

The main objective of the project is to upgrade the staple foods value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the staple foods value chain through increased domestic and foreign direct investments in staple foods production and processing processes
- Exploiting national, regional and international demand for staple foods products through competitiveness and compliance with market access requirements

2. Building Competitiveness of the Fruit and Vegetable Sector for Increased Trade and Development

The main objective of the project is to upgrade the fruit and vegetable value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the fruit and vegetable value chain through increased domestic and foreign direct investments in fruit and vegetable production and processing processes
- Exploiting national, regional and international demand for fruit and vegetable preparations through increased competitiveness and compliance with market access requirements

3. Building Competitiveness of the Dairy Industry for Increased Trade and Development

The main objective of the project is to upgrade the milk value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the milk value chain through increased domestic and foreign direct investments in milk production and processing processes
- Exploiting national, regional and international demand for milk and milk products through increased competitiveness and compliance with market access requirements

4. Building Competitiveness of the Fisheries Sector for Trade and Development

The main objective of the project is to upgrade the fish value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the fish value chain through increased domestic and foreign direct investments in fish production and processing processes
- Exploiting national, regional and international demand for fish and fishery products through increased access to markets

5. Rationalisation of Rwanda's Agro-processing Policies for Improved Productivity and Competitiveness

The main objective of the project is to update the policy and regulatory frameworks affecting production, processing and marketing of Rwanda's agro-industry products. More specifically, the project aims at

- Improve agro-processing and trade logistics- infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs;
- Further enhance microeconomic business environment
- Create enabling measures to foster the upgrading of agro-industrial clusters;
- Strengthen technology centres through targeted science, technology and training

6. Strengthening Rwanda's Agro-processing Institutions that will implement Policies for Increased Productivity and Competitiveness

The main objective of the project is to upgrade agro-industry value chains in Rwanda as a path out of poverty. More specifically, the project aims at

- Updating the policy and regulatory frameworks affecting production, processing and marketing of agro-industry products.
- Boosting productivity of agro-industry value chains in Rwanda through increased domestic and foreign direct investments in fruit and vegetable production and processing processes
- Exploiting national, regional and international demand for Rwanda's agro-industry products through increased access to markets

2 Introduction

2.1 Background

The Republic of Rwanda is endowed with abundant agricultural resources and significant labour force offering a viable basis for development of agro-based industries. Agro-industries provide employment for local population and generate value added for rural areas which usually face pervasive problems of food insecurity, poverty, malnutrition, low productivity and poorly integrated markets. Not much attention has usually been given to the value chain through which agricultural commodities and products reach final consumers within the country and abroad. A clear trend exists towards diets that include more animal products such as fish, meat and dairy products, which in turn increases demand for feed grains and oil crops, as bio-energy production feedstock.

Agro-processing is defined as a set of techno-economic (manufacturing) activities carried out for conservation and handling of agricultural produce in order to make it usable as food, feed, fibre, fuel or industrial raw material. Hence, the scope of the agro-processing sub-sector encompasses all operations from the stage of harvest till the material reaches the end users in the desired form, packaging, quantity, quality and price. Agro-processing converts agricultural products into the much needed consumer goods such as foodstuff, textiles, leather products, wooden articles and composite products. At the same time, international competitiveness admits only safe, quality and reliable products with consistent supply, which calls for well-organised, knowledge-based, environmentally sound product development, production technology and quality assurance systems.

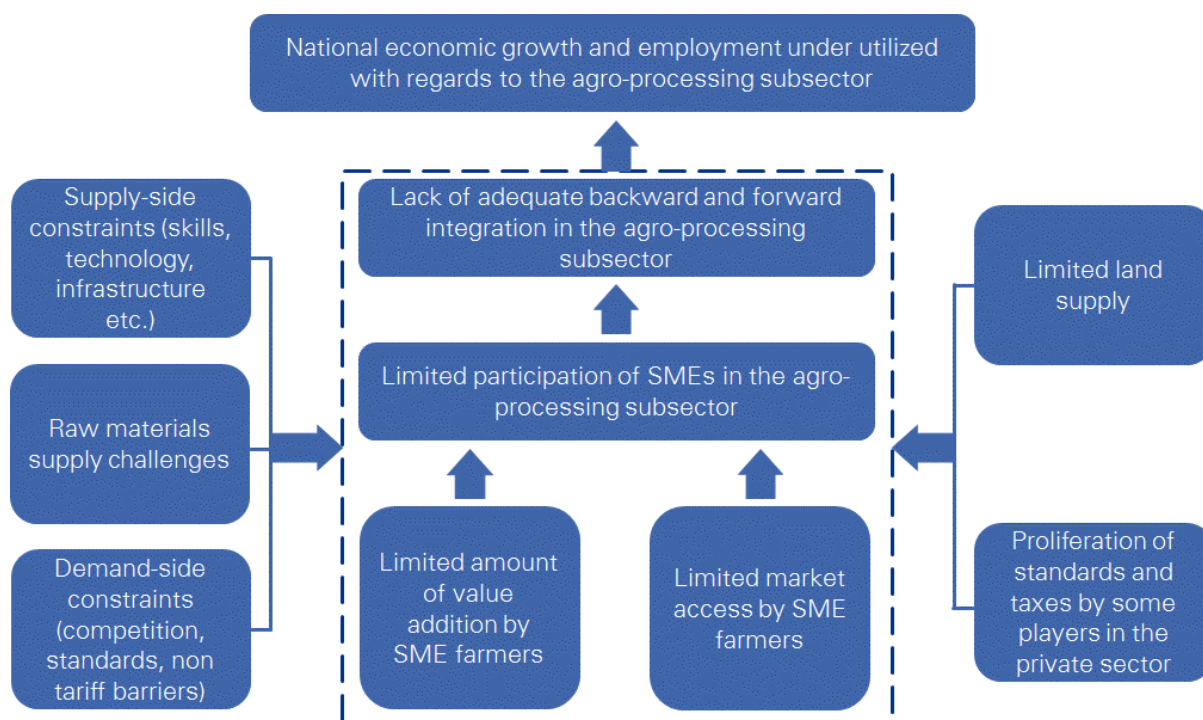
Inadequate attention to the agro-processing sector in the past both globally and in Rwanda has put both the producers and the consumers at a disadvantage through underutilisation of resources, wastage and low quality products. The diversification of the Rwandan economy into various sectors is essential for attaining Vision 2020 goals with the industrial sector contributing around 15% of GDP. The industrial policy approved in 2011 indicates potential industrial subsectors to be focused on for quick development of the industrial sector in Rwanda; these are Agro-processing, Construction material, Pharmaceuticals, Chemical products, Biodegradable packaging and High-tech industries.

With a strong private sector and a well-managed public - private sector partnership, Rwanda will be able to achieve an industrial growth needed to become a middle-income country. In recognition of this, the Government of Rwanda found it necessary to develop an industrial master plan for the agro-processing sub-sector.

2.2 Challenge

As a developing country with large rural communities, Rwanda suffers from inadequate access to agro-processed food and low employment levels in regards to the agro-processing sub-sector. The many problems of poverty, low productivity, inadequate infrastructure and poorly integrated markets faced by the country are exacerbated by an underdeveloped agro-processing sub-sector. The problem is worsened further by the dependence on outdated and inefficient technologies leading to poor productivity and slow economic growth. Moreover, although agriculture-based industrial products account for more than half of Rwanda's exports, less than 30% of those exports involve processed goods compared to 98% in the developed world. The challenges facing Rwanda's agro-processing subsector are summarised in the figure 2 below:

Figure 2: Graphical Illustration of the Challenges Facing Rwanda’s Agro-Processing Subsector



2.3 Purpose of the Agro-processing Masterplan

The agro-processing master plan aims to achieve the following objectives:

- 1) Strengthen supply side productive capacities through improved agricultural productivity.
- 2) Promote investments in the agro-processing subsector which are necessary for reducing post-harvest losses and for value addition.
- 3) To develop policies and support services necessary for market access for Rwanda’s agro-industry products

2.4 Approach of the Agro-processing Masterplan

To realise these objectives, the agro-processing subsector in Rwanda needs to undergo a structural transformation to focus on high quality agro-processing products. This will create jobs hence income generation and to ensure food security that is so badly needed by the country’s growing population. Rwanda’s agro-processing subsector will focus on high quality agro-processing products taking into account the limited supply of land, which limits volumes of agro-processing products, which can be produced. Growth of vibrant agro-processing industries is essential to offer employment for a large number of smallholder farmers who are unlikely to farm their way out of poverty. In this regard, strategies to implement Rwanda’s agro-processing subsector masterplan are based on eight strategic pillars:

- 1) Boosting agricultural productivity
- 2) Upgrading agro-industrial value chains
- 3) Enhancing Capacity for market access
- 4) Strengthening technological efforts and innovative capabilities
- 5) Promoting effective and innovative financing

- 6) Promoting private sector participation
- 7) Improving infrastructure and access to energy and
- 8) Policy reforms and Institutional capacities for agro-processing developed

They have been classified indicating timelines and the organizations responsible for their implementation.

2.5 Methodology for Agro-processing Masterplan Development

Rwanda's agro-processing subsector master plan was developed through a consultative process with the subsector's stakeholders from both the public and private sectors. It analyses and prioritises the following:

- 1) Rwanda's district resources (industries) mapping.
- 2) Rwanda's industrial clusters' (parks) agro-processing resources (industries) mapping.
- 3) Rwanda's priority target markets with regards to agro-processing.
- 4) Rwanda's priority agro-processing industries.
- 5) Rwanda's pilot projects with regards to the agro-processing subsector.

2.6 Justification for agro-processing Master plan for Rwanda

The prospects for continued demand for value-added food and agricultural products through agro-processing constitute an incentive for increased attention to agro-industries development within the context of economic growth, food security and poverty fighting strategies. With their forward and backward linkages, agro-industries have high multiplier effects in terms of job creation and value addition. However, the potential that agriculture contributes to development in Rwanda has not been fully utilized. Agriculture provides three pathways out of poverty:

Firstly, focus should be directed at building competitiveness particularly where agricultural production is dominated primarily by smallholders. It is necessary to implement programmes for boosting agricultural productivity and quality improvement for key agro-processing sectors.

Secondly, as with many developing countries, Rwanda is endowed with a wealth of agricultural resources and cheap labor. Promoting agro-processing industries will open up the rural labor markets and generate diverse agro-products and services for income generation. The country should increase investments in the agro-processing subsector which are necessary for reducing post-harvest losses through agro-processing and value addition.

Thirdly, as Rwanda's agricultural sector is dominated by smallholder producers, the country should develop policies and strategies for commercialization of smallholder farming and access to domestic, regional and global markets. Programmes to assist smallholder producers in skills development, adoption of modern technologies, good agricultural practices (GAP) and implementation of sanitary and phytosanitary (SPS) standards necessary to produce safe agro-processed products should be implemented.

Accelerated growth of agro-industries may also pose a risk in terms of equity, sustainability and inclusiveness. Although agro-industries have the potential to provide a reliable and stable outlet to agricultural products, the need to ensure competitiveness favours farmers with larger quantities and better quality of products. Where there is unbalanced market power in agro-food chains, value addition and capture through agro-processing can be concentrated among a few chain participants to the detriment of others. There is need,

therefore, for the country to develop agro-processing policies and strategies that, while promoting agro-processing, take into account issues of competitiveness, equity and inclusiveness.

3 Overview of Rwanda's Agro-Processing Subsector

Rwanda's industrial sector of which the agro-processing subsector is a part of, has gone through three distinct phases: In the 1960s, in the immediate aftermath of independence, the country's policies were relatively open, hampered by simmering social conflicts and weak integration. Between 1973 and 1994, the period was characterised by import-substitution. After 1995, there was rapid regional integration based on an improving investment climate that is still ongoing today. The breaks between these periods are marked crises and dips in the levels of new firm creation in the industrial sector, namely in the early 1970s, following ethnic violence in Burundi and the military takeover by Juvenal Habyarimana in 1973, and during the 1994 genocide crisis.

Rwanda's industrial sector was severely damaged during the period between 1990 and 1994. It has gone from reconstruction to renewed growth and from a state-driven system to greater liberalization & privatization. These economic policies have contributed to three main phases in the development of Rwanda's industrial sector since 1994:

Phase 1 – the reconstruction effort (1994–2004): The decade from 1995 to 2004 was a period focused on recovery and reconstruction, with the key characteristics being the initial restoration of production capacity and the entry of a limited number of new firms.

Phase 2 – acceleration of the privatization of state enterprises in the manufacturing and agribusiness sectors (2005–12). Due to the state of the economy in the immediate aftermath of the genocide and the complications involved in the process, the implementation of the 1996 Privatization and Public Investment Law only gathered traction after 2005. It has played a key role in attracting private investment and large players – both domestic and foreign – to the industrial sector.

Phase 3 – growth, consolidation and entry into the East African Community (EAC) (2006–12). Towards the end of the decade, new business creation and investment in growth took over from reconstruction as the main driver of growth in Rwanda's industrial sector.

The factors affecting Rwanda's agro-processing subsector are highlighted below;

3.1 Political

Rwanda has achieved impressive development progress since the 1994 genocide and civil war. It is now consolidating gains in social development and accelerating growth while ensuring that they are broadly shared to mitigate risks to eroding the country's hard-won political and social stability. The country's long term development goals are embedded in Vision 2020. The vision is to transform Rwanda from a low income agriculture based economy to a knowledge based service oriented economy by 2020.

A medium term strategy, the Economic Development and Poverty Reduction Strategy 2 (EDPRS 2), has been developed to support the achievement of the long term goals as stated in Vision 2020. The EDPRS 2 covers the period 2013 – 2018 with its highest priority being growth acceleration and poverty reduction through its four thematic areas: economic transformation, rural development, productivity and youth employment and accountable governance. The EDPRS 2 aims to achieve the following goals by 2018: Increasing GDP per capita to \$1,000; Reducing the poverty rate to below 30%; and Reducing extreme poverty rate to below 9%

An underlying macroeconomic assumption is to accelerate annual GDP growth to 10% over the period 2013-2018. The last decade has seen enormous successes including high

growth, rapid poverty reduction and reduced inequality. As per a World Bank report, between 2001 and 2012, real GDP growth averaged 8.1% per annum. The poverty rate dropped from 59% in 2001 to 45% in 2011 while inequality reduced from 0.52 in 2005 to 0.49 in 2011.

3.2 Economic

Rwanda's economy is heavily based on agriculture, subsistence farming in particular, which makes a significant contribution to GDP. Main crops include coffee, tea, pyrethrum, bananas, beans, sorghum and potatoes. Because of its subsistence nature, agriculture in Rwanda is domestic-market oriented and most agricultural products are consumed domestically. Agriculture remains a source of livelihood to the vast majority of the population. As a landlocked country with rather poor infrastructure, including road conditions, Rwanda's trading costs are high. Two traditional cash crops, tea and coffee account for 80% of agriculture exports. On the other hand, although agriculture employs a high percentage of the labour force, some food products must be imported to meet domestic demand: imports of wheat, maize and rice accounted for 20-36% of domestic consumption. The fishing subsector is small and fish production is low. Fishing is conducted on 17 inland lakes, using nets and sailboats.

Reducing the country's dependency on foreign aid (40% of the current budget) through a mobilization of domestic resources is critical. The country remains vulnerable to fluctuations in aid flows. Starting in mid-2012, Rwanda experienced a sudden and sharp decline in aid. Through appropriate fiscal and monetary policies, high growth and stability prevailed throughout 2012 (economic growth was 7.3 percent and inflation below 6 percent). However, starting mid-2013, Rwanda experienced lagged impact of foreign aid shortfall, causing economic growth to decelerate to 4.6 percent. The government has successfully increased the domestic revenues to GDP ratio in the past several years, but the level is still far below the regional average.

The Rwandan economy grew by 6.8% in 2012/13 compared to the previous fiscal year, with industry growing at 11.3% and services growing by 7.7%. Industry has been the highest growth sector since 2010/11, with services the largest sector at 45% of GDP. Gross investment was 22.9% of GDP in 2012, with private investment accounting for 10.2%. A quarter of private investment (\$160m) came through foreign direct investment (FDI). Investment registered by Rwanda Development Board (RDB) has been increasing substantially over the last few years. In 2012/13, registered investment amounted to \$1.9 billion, meaning 67 per cent higher than in the 2012 calendar year. The industrial sector comprises 16% of national GDP, with construction accounting for more than half of this. Aggregated turnover grew by 11% in 2012 in the sampled industrial firms (RIS 2012), with average capacity utilization of 65%. Capacity underutilization was considered particularly problematic for firms in manufactured consumer goods, construction materials and construction services. Average labour productivity for the sampled firms rose 6.7% in 2012.

3.3 Social

The population of Rwanda has grown at an average population growth rate of 2.6% annually from 2002 to 2012 reaching a total resident population of 10,537,222 people as of August 15th 2012, this is a 29.6% increase from 2002. The population growth rate was highest in the Eastern Province (4.3%) and lowest in the Northern Province (1.0%), with a national average sex ratio of 93 males for every 100 females, with Kigali city having more males than females compared to other districts where the sex ratios vary between 86-99. At the provincial level, the Eastern Province has the highest population of about 2,600,814 people,

followed closely by the Southern Province and the Western Province with 2,594,428 and 2,476,943 people respectively, whilst Kigali City, with 1,135,428 people, has the lowest population.

The density of the rural population is projected to increase over time but at a slower pace than the urban population, according to the World Bank and UN statistics, 18.1% of the total population live in the urban areas and the larger 81.9% reside in the rural areas. The Rwandan population density has increased from 321 persons per sq.km in 2002 to 416 in 2012 at national level; the highest in the East African Region and quite high compared with other countries globally. With the exception of Kigali City whose density exceeds a thousand people per sq.km, the highest densely populated province is the Northern Province with 528 persons per sq.km, whilst the province with the lowest density is the Eastern Province with 275 persons per sq.km.

The Rwandan working age population has increased consistently over time. However, the pace of the increase in the active population between 2002 and 2012 was almost the same as that of the working-age population (16+) with an economic activity rate of 85%. The annual growth of the population aged 16 years and above was 3.0% while the one for the active population was 2.9%. The gap between the working-age population and active population, which represents the inactive population, was broadening with the time which may be explained by the increasing number of students in secondary schools and universities.

3.4 Technology and Innovation

Rwanda was named the East Africa's number one Information Communication and Technology (ICT) nation by the United Nations Conference on Trade and Development (UNCTAD) and with the massive development in its ICT infrastructure, Rwanda will become a regional ICT hub soon. The Rwandan capital city, Kigali joined the ranks of "digital cities" such as Bangkok and Taipei, among others, launching free wireless Internet in specific areas around the city in September 2013 under the "Smart Kigali" initiative. Under this initiative, free broadband Wi-Fi Internet is accessible in public places that include commercial buildings, hotels, restaurants, bus stations, airport, in public transport. ICT is a central engine to driving Rwanda's transformation to a knowledge based economy, with the Government of Rwanda (GoR) investing more in ICT. The country's current ICT sector budget is on par with nations of the Organization of Economic Cooperation and Development (OECD), a grouping of 30 rich nations, at 1.6 percent, far above the African average. Rwanda continues to be one of the fastest growing African countries in ICT and there are several avenues for growth for the ICT sector from e-commerce and e-services, mobile technologies, applications development and automation to becoming a regional centre for the training of top quality ICT professionals and research. Launching programmes in scientific research and education, technological innovation, and telecommunications distribution, Vision 2020 aimed to produce "highly-skilled scientists and technicians to satisfy the needs of the national economy" that would be integrated into the larger framework of economic and social development for the greater Rwandan population.

MTN Rwanda, Airtel and TIGO are the leading mobile network providers with a network coverage accounts for 99.79% of the country and the current subscriber base is at 63.5% (6,689,158 subscribers December 2013). The improvement in mobile phone and fibre optic networks as well as computer usage and internet access has enabled both international public and private firms to enhance development in the country. Rwanda has benefited from ICT-based investments by lucrative international players such as Microsoft, Nokia, and Terracom. Rwanda's internet penetration grew from less than 1% in 2000 to 13% at the end of December 2013. In addition to existing ICT infrastructure as well as access network

rollout program, investment in a 4G LTE network is expected to increase penetration to at least 95% by end of 2016.

3.5 Environment and Climate Change

Rwanda is highly dependent on natural resources and agriculture. Given its very small land holdings, insufficient investments in soil & water conservation and Rwanda's topography, soil and nutrient erosion has been a constraint to agricultural growth and a pressing environmental problem that also affects downstream countries. Climate change is likely to add to existing pressures including erosion through more intense rains, since Rwanda is strongly reliant on rain-fed agriculture for rural livelihoods and exports of tea and coffee. As a leader in environment and climate change awareness, Rwanda has become a natural centre for green investments. Rwanda has taken important steps at a high level to recognize the importance of the environment and climate change. The adoption of the National Green Growth and Climate Change Adaptation Strategy highlighted the centre stage this issue has taken up by the GoR. With the changing international environment giving more recognition of climate change as a global issue, Rwanda stands to gain by moving rapidly and quickly to ensure sustainability of interventions through environment mainstreaming, ecosystem protection and rehabilitation as well as tapping into the growing international pool of green investments.

Environment and climate change issues to a great degree have been integrated in key planning documents including the EDPRS 2, Vision 2020 and the Millennium Development Goals. On environmental performance, progress has been rather slow but reassuring. At the policy and strategy level, protection of environment and sustainable natural resources management is one of the three crosscutting areas in Vision 2020. In the EDPRS 2, environment is both a pillar and a crosscutting issue. The seventh Millennium Development Goal focuses specifically on the environment and ensuring sustainability for the future. This encompasses:

- Sustainable development to reverse environmental resource loss; reduction of the amount and rate of biodiversity loss by 2010
- An increase in the population with access to safe drinking water and basic sanitation facilities by half and significantly improving the lives of at least 100 million slum residents by 2020

Considerable efforts continue to be applied including promotion of tree planting and construction and rehabilitation of anti-erosion structures on steep slopes. There are also efforts in the conservation of biodiversity through strengthened protected area management. The GoR also incorporates a 'green economy' approach to economic transformation, targeting to reduce economic costs and benefiting future generations through exploiting new 'green' economic opportunities. Significant resources are allocated to a number of high impact interventions in priority sectors.

4 Rwanda's Agro-Processing Institutional Environment

4.1 Policies Relevant to Agro-processing in Rwanda

The Vision 2020 is Rwanda's development blueprint. It contains Rwanda's long-term development goals and aims to transform Rwanda from a low-income agriculture-based economy to a knowledge-based, service-oriented economy by 2020. Rwanda's Vision 2020 seeks to transform the nation fundamentally into a middle-income country by the year 2020. This requires achieving an annual per capita income (GDP per capita) of US\$ 900 (US\$ 630 in 2013), a poverty rate of 30% (44.9% in 2012) and an average life expectancy of 55 years (64 years in 2013). Rwanda has had an average per capita growth of around 8% for the last decade, but given that the rate of population has increased by 2.7%, this growth rate would need to be accelerated further in order to achieve sustained poverty reduction.

The Vision 2020 identifies agriculture and agro processing industry as key drivers for the country's growth. Transforming agriculture into a productive high value sector through supporting manufacturing was identified as a key driver for this growth. The vision is also embedded in key policy documents and strategies such as the National Industrialisation Policies that focuses on ensuring a competitive and advanced services sector envisaged to produce over \$1.5 billion of exports by 2020 while increasing the number of off farm jobs. Rwanda also has availability of a large workforce in the rural areas and labour costs remain very low. This provides availability of unskilled labour for simple factory jobs.

Currently, the country's GDP is driven predominantly by the agriculture sector. The national Agricultural Policy was issued in 2004 with the objective of improving food security and the nutritional status of the population, and increasing income levels of the rural households. The agricultural policy focuses on promoting "intensification" to increase productivity through the application of more advanced technologies. The main aim of the Agricultural Policy 2004 of MINAGRI is to increase animal production, modernize farming, reduce poverty, ensure food security and have surplus for the market. The diversification of the Rwanda's economy into various sectors possible is essential for attaining vision 2020 goals.

The industrial sector currently contributes around 15% of GDP. For Rwanda to reach Vision 2020 target, it requires among others the share of industry to increase to 20% of GDP. This will oblige the industrial sector to outstrip services and agriculture by recording at least 14% growth annually. Achieving this significant transformation requires a dynamic and innovative industrial sector in Rwanda. In April 2011, the Industrial Policy (2011) was launched, under which the Government proposes to improve infrastructure to facilitate the development of the manufacturing sector. Key among the strategic issues is to allocate land for manufacturing industries, such as industrial parks and special economic zones (SEZs) and agro-processing parks, and connecting farms with agro-processing hubs. The Industrial Policy identified ten clusters, mostly manufacturing industries as priority industries for the short, medium and long term. The short-term priorities focus mainly on agro-processing for pyrethrum, dairy, vegetable oil, soaps and detergents; textiles (including silk) and leather.

Small and Medium Enterprise (SME) Policy (2010) The SME policy has a vision to create a critical mass of viable and dynamic SMEs significantly contributing to the national economic development and a mission to stimulate growth of sustainable SMEs through enhanced business support service provision, access to finance and the creation of a conducive legal and institutional framework. The purpose of the SME Policy is to foster job creation and an

increase in the tax and export base through the promotion of competitive new and existing SMEs mainly in value added sectors.

Rwanda is in the process of finalising draft law on competition and consumer protection. At the same time, steps are underway at the EAC and COMESA levels, to put in place common competition regimes. Currently, competition is regulated under Law No. 15 of 28 January 2001 Concerning the Organization of Internal Trade. Trade must follow the principles of competitiveness and free market, and prices of goods and services must be regulated by free market competition.

Table below summarises various Government Policy Documents that support agro-processing in Rwanda:

Table 1: Agro-Processing Subsector Related Policies

Policy	Goals
The Vision 2020	The Vision 2020 defines Rwanda's long-term development goals and aims to transform Rwanda from a low-income agriculture-based economy to a knowledge-based, service-oriented economy by 2020.
The National Agricultural Policy (2004)	The main aim of the Agricultural Policy 2004 of MINAGRI is to increase animal production, modernize farming, reduce poverty, ensure food security and have surplus for the market.
National Industrial Policy (2011)	In April 2011, the Industrial Policy (2011) was launched, under which the Government proposes to improve infrastructure to facilitate the development of the manufacturing sector. Key among the strategic issues is to allocate land for manufacturing industries, such as industrial parks and special economic zones (SEZs) and agro-processing parks, and connecting farms with agro-processing hubs. The Industrial Policy identified ten clusters, mostly manufacturing industries as priority industries for the short, medium and long term. The short-term priorities focus mainly on agro-processing for pyrethrum, dairy, vegetable oil, soaps and detergents; textiles (including silk) and leather.
The National Trade Policy (2010)	The Trade Policy document sets out five objectives: increased productivity and diversified sustainable productive capacities for trading nationally, regionally, and internationally; enhanced participation of importers and exporters of goods and services in regional and international trade, taking advantage of trade opportunities; increasing investment, including foreign direct investment, in production of competitive goods and services for the export market; increased human resources skills in trade and development through training and retraining in private and public institutions; and strengthened science, technology, and innovation policies, strategies, and institutions including intellectual property laws, in support of industrial development and creative knowledge-based industries.
Small and Medium Enterprise (SME) Policy (2010)	The SME policy has a vision to create a critical mass of viable and dynamic SMEs significantly contributing to the national economic development and a mission to stimulate growth of sustainable SMEs through enhanced business support service provision, access to finance and the creation of a conducive legal and institutional framework. The purpose of the SME Policy is to foster job creation and an increase in the tax and export base through the promotion of competitive new and existing SMEs mainly in value added sectors.
Competition and Consumer Protection Policy (2008)	Rwanda is in the process of finalising draft law on competition and consumer protection. At the same time, steps are underway at the EAC and COMESA levels, to put in place common competition regimes. Currently, competition is regulated under Law No. 15 of 28 January 2001 Concerning the Organization of Internal Trade. Trade must follow the principles of competitiveness and free

Policy	Goals
	market, and prices of goods and services must be regulated by free market competition.

4.2 Government Strategies to Promote Agro-processing in Rwanda

The Economic Development and Poverty Reduction Strategy (EDPRS) is a medium-term strategy towards attainment of the long-term Rwanda Vision 2020 objectives. The priority areas identified under the EDPRS1 (which ran from 2008-2012) were: poverty and vulnerability reduction; institutional capacity building and social capital formation; sustainable management of the natural environment; good governance and enhanced efficiency and accountability of the public sector; enhanced performance of the private sector, focusing on ICT; economic infrastructure development: (transport, energy, water, and ICT); and rural development and agricultural transformation.

Following the issuance of the National Agricultural Policy in 2004, Rwanda adopted the Strategy for Transformation of Agriculture (2009). The Strategy seeks to transform agriculture into a modern, professionally operated and market-oriented system. Through the Strategy, the Government is to promote professionalism, specialization, innovation, and public-private partnerships in the transformation process. Various programmes have been implemented with the aim of improving food security, income levels, and agricultural productivity. The Government implemented such programmes as the One Cow per Poor Family Programme (GIRINKA), the Crop Intensification Programme (CIP), and the Land Husbandry, Water Harvesting and Hillside Irrigation (LWH) Programme. As a result, according to the authorities, agriculture grew at an annual average rate of 5% between 2006 and 2012 and agricultural productivity has increased.

In addition, Rwanda has coined Agriculture Mechanization Strategy 1 & 2. The 1st strategy formulated by the Government of Rwanda aims that 25% of farm operations will be mechanized by 2017, allowing one in every four Rwandan farmers to either own and/or hire mechanization services in their farm. Enabling access to the various farm mechanization options, development of technical ability and knowledge on farm machineries and implements, and improved agro-processing through mechanization will serve as the key drivers in this transformation. Through a 2nd Strategy, the Government seeks to transform farming into a productive, high value, market oriented sector by modernizing 50% of its agriculture by 2020, and thereby improve livelihoods of rural population, achieve food security and increase exports of agricultural products as reflected in the millennium development goals (MDG) and New Partnership for Africa's Development.

The Ministry of Trade and Industry's Strategic Plan (2008-2012) is now outdated and should be replaced. The Strategic Plan covers five key components: (i) to increase the value of existing exports; (ii) to diversify the export base, particularly in manufacturing and services; (iii) to promote and facilitate all Rwandan traders; (iv) to increase investment which drives growth and job creation; and (v) to provide an environment for the private sector that facilitates its growth. The Government has tried to integrate in its trade policy other key trade-related issues and strategies developed by other ministries with a view to ensuring coherence in trade policy.

In October 2012, Rwanda launched the National Cross-Border Trade Strategy (2012-2017), which supports Rwanda's exports to neighbouring countries- Burundi, Democratic Republic of Congo (DRC), Tanzania and Uganda. It focuses on both formal and informal trade in agricultural and manufactured goods as well as re-exports. The strategy has a strong gender

component with interventions to support informal trade and elaborates interventions to support large firms in Rwanda to benefit from markets in neighbouring countries. For agro-products, the benefits of cross-border trade can be achieved by addressing the non-tariff barriers (NTBs) which are limiting Rwanda's cross border trade. The EAC, for example, has identified the following NTBs as major obstacles to regional trade: poor port infrastructure; police roadblocks and excessive weighbridges; non-harmonised technical regulations; sanitary and phytosanitary measures; and poor application of rules of origin, among others.

Table 2 below summarises different government strategies supporting Rwanda's agro-processing sector.

Table 2: Agro-Processing Subsector Related Strategies

Strategy	Focus
The Economic Development and Poverty Reduction Strategy (EDPRS) 1 & 2	The goal of the EDPRS2 focuses on the following 5 priority areas: 1) Increasing the domestic interconnectivity of the Rwandan economy through investments in hard and soft infrastructure; 2) Increasing the external connectivity of Rwanda's economy and boosting exports; 3) Transforming the private sector by increasing investment in priority sectors; 4) Transforming the economic geography of Rwanda by facilitating and managing urbanisation for increased growth countrywide; and 5) Pursuing a 'green economy' approach to economic transformation. On agro-processing, the EDPRS2 seeks to increase the external connectivity of Rwanda's economy and boost exports through strengthening export promotion, while investing in soft and hard sector-specific infrastructure to accelerate growth in the commodity and tourism sectors, and facilitating the increasing export orientation of firms in Rwanda's manufacturing and agro-processing sectors.
MINICOM Strategic Plan (2008-2012)	The Ministry of Trade and Industry's Strategic Plan (2008-2012) is now outdated and should be replaced. The Strategic Plan covers five key components: (i) to increase the value of existing exports; (ii) to diversify the export base, particularly in manufacturing and services; (iii) to promote and facilitate all Rwandan traders; (iv) to increase investment which drives growth and job creation; and (v) to provide an environment for the private sector that facilitates its growth.
Strategy for Transformation of Agriculture (2009)	Following the issuance of the National Agricultural Policy in 2004, Rwanda adopted a strategy to transform agriculture into a modern, professionally operated and market-oriented system. Through the Strategy, the Government is to promote professionalism, specialization, innovation, and public-private partnerships in the transformation process.
Cross-Border Trade Strategy (2012)	The National Cross-Border Trade Strategy (2012-2017) aims at supporting Rwanda's exports to neighbouring countries- Burundi, Democratic Republic of Congo (DRC), Tanzania and Uganda. It focuses on both formal and informal trade in agricultural and manufactured goods as well as re-exports. The strategy has a strong gender component with interventions to support informal trade and elaborates interventions to support large firms in Rwanda to benefit from markets in neighbouring countries. For agro-products, the benefits of cross-border trade can be achieved by addressing the non-tariff barriers (NTBs) which are limiting Rwanda's cross border trade.
Rwanda Agriculture Mechanization Strategy 1 & 2	The 1 st strategy formulated by the Government of Rwanda aims that 25% of farm operations will be mechanized by 2017, allowing one in every 4 Rwandan farmers to either own and/or hire mechanization services in their farm. Through the 2 nd Strategy, the Government seeks to transform farming into a productive, high value, market oriented sector by modernizing 50% of its agriculture by 2020, and thereby improve livelihoods of rural population, achieve food security and increase exports of agricultural products as

Strategy	Focus
	reflected in the millennium development goals (MDG) and New Partnership for Africa's Development.

5 Mapping of Agro-processing Resources

Agro-processing subsector is a subset of the country’s entire agribusiness sector where raw agricultural materials, originating from agriculture, livestock, forestry and fisheries are transformed into finished and semi-finished agricultural products, which are then sold to both local and international consumers. Taking into account the critical part the rest of the agribusiness sector value chain components play in the agro-processing subsector, an analysis of the entire agribusiness value chain is necessary. Rwanda’s agribusiness value chain is illustrated in figure 3 below:

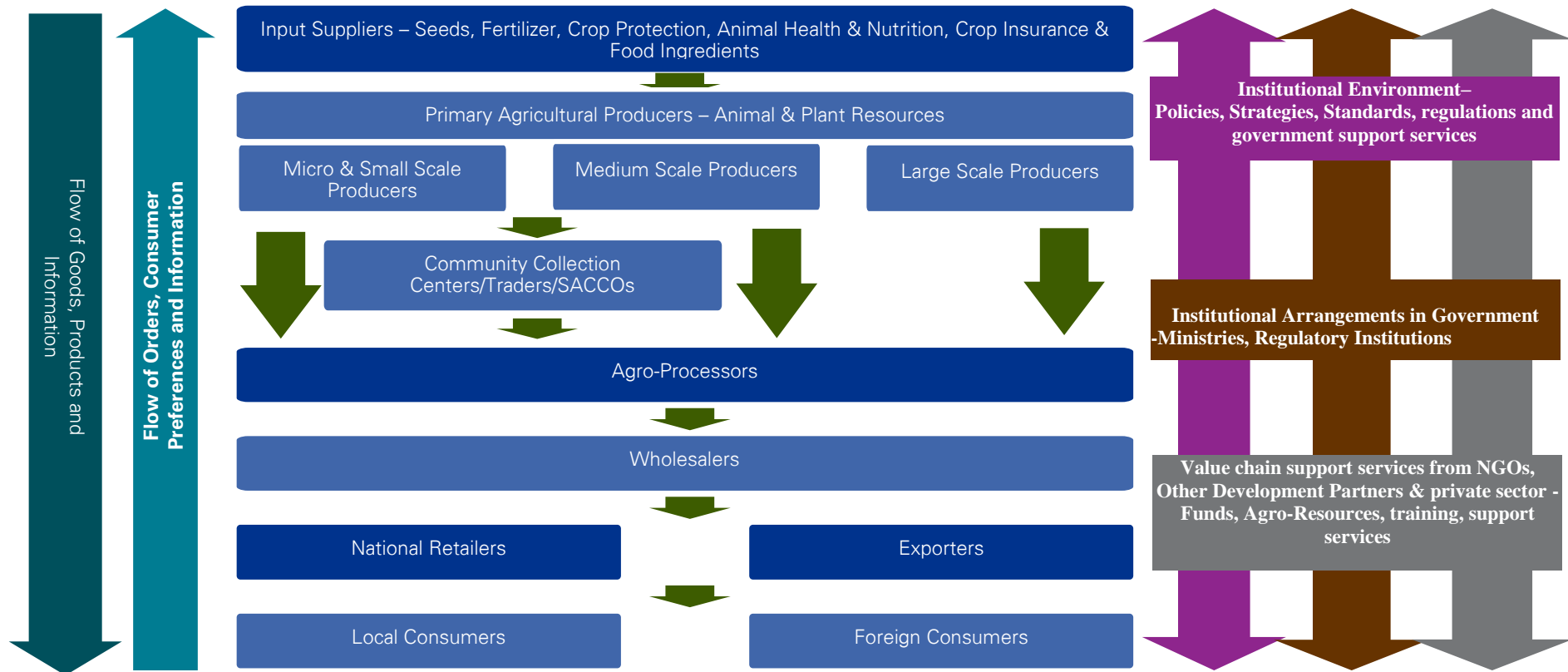


Figure 3: Rwanda’s Agribusiness Value Chain

5.1 Mapping of Rwanda's Agricultural Resources

Rwanda's ambitious agro-processing subsector strategic direction for 2014 – 2020 focuses on production of high quality agro-processing products. In order to achieve this, the country will focus on specialisation by district/province (industrial clusters), by trade destination and by industry. The key to achieving this level of specialisation lies in analysing Rwanda's agricultural resources and prioritising them based on Rwanda's Vision 2020. In addition, controlled experimentation through use of pilot projects in order to continuously innovate and adapt Rwanda's agro-processing subsector to changes in its environment remain necessary. Although Rwanda is endowed with animal and plant resources, the country experiences a limited supply of land as compared to its neighbours and competitors. An analysis of Rwanda's agricultural resources is a crucial step in strategically investing in the agro-processing subsector.

Rwanda's plant-based agricultural resources are distributed across the country determined by the following factors: suitable climate, suitable soils, availability of market and competitiveness. Rwanda's plant resources include food crops, traditional export crops, horticultural crops and forestry & agro-forestry products. Animal resources include livestock, fish & fish products, poultry, swine and sheep & goats. This section will cover an analysis of livestock and fish & fish products taking into account their strategic importance concerning resources available.

Food Crops

Ensuring food security of the population is a key aim of Rwanda's agricultural policy. Food crops constitute 84% of agricultural GDP, and 67% of the cultivable land, reflecting the subsistence nature of agriculture in Rwanda. Since the launch of the National Agricultural Policy in 2004, the cultivable area has increased by 2%, while food crop output has achieved average growth of 7% per year, reflecting improved productivity, through the implementation of various programmes. Food imports have been increasing along with food crop production. The increased food imports is related to a shift in food consumption patterns where richer urban households increasingly consume imported food products, such as rice and sugar, while rural subsistence households continue to consume traditional staples, such as cassava and bananas.

5.1.1.1 Maize

Ten years ago, maize was not a significant crop in Rwanda, but MINAGRI statistics show that production has increased substantially during the last five years. This growth is because of increased emphasis placed by MINAGRI on maize as a Crop Intensification Program (CIP) crop that can underpin national food security. To encourage production, new varieties have been introduced, a subsidized inputs program has been implemented and cultivation patterns have been shifted from mixed cropping to consolidated monoculture. While Rwanda remains a net importer of maize, this assessment suggests that there is some potential to develop the export market for maize meal and to achieve further import substitution for maize itself.

5.1.1.2 Beans

Beans are a key staple of the Rwandan diet, and the bean crop is the largest of all the agricultural commodities produced in the country. While official price and trade data classifies all beans in a single category, three genera of beans are grown in the country i.e. ordinary beans, climbing beans and soya beans.

Traditionally, beans were grown as a staple crop to ensure household food security. Strategies of staggered and mixed sowings of beans, and the use of local landraces, are common mechanisms to reduce the risk of interrupted rainfall or disease. However, these practices also reduce the commercial utilization of the crop, and may explain why it has been difficult to develop commercial markets and common nomenclatures for the different strains and mixtures of beans. Nevertheless, the assessment of cross-border markets (particularly those in Uganda) suggests that exports of beans can increase substantially if issues of marketing are successfully addressed.

5.1.1.3 Irish Potatoes

Irish potatoes are the second most important staple in Rwanda. As per the National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011 data indicates that they constitute 7.6% of all food purchases, and 8.3% of all food consumption. The country produces a number of different potato varieties, some of which are recognized throughout the region. These vary in taste and cooking characteristics as well as their adaptation to specific soil types. The variety Chinije is particularly prized for its taste and chipping characteristics. This assessment suggests that while further market development is possible in Burundi and the DRC, greater possibilities exist in both Tanzania and Uganda if the utilization of existing return haulage capacity is to be improved.

5.1.1.4 Cassava

Cassava has always been a significant staple crop in Rwanda, but only recently has attention been focused on its increased production. MINAGRI statistics show that production has increased substantially since 2008. This increase has been driven by an increased emphasis on cassava as a CIP crop that can contribute to both human and animal feed requirements.

To encourage production, milling capacity has been enhanced, new extension services developed, and the use of crop inputs has been encouraged. Nevertheless, although cassava is a resilient crop to grow, it can be subject to a number of post-harvest problems, including cyanogenesis, rapid physiological degeneration, and both bacterial and fungal decay. These issues limit the tradability of raw and even milled cassava, which must be properly processed soon after harvest if it is to be sold in an international market. For these reasons, cross border trade in cassava currently represents only a very small proportion of local production and consumption. Nevertheless, the prices of cassava and cassava flour in neighbouring countries, especially Burundi, suggest that increased exports might be commercially feasible if these constraints could be overcome.

5.1.1.5 Wheat

As a CIP crop, Rwanda's wheat yields have doubled since 2008, although the domestic market has remained small. A Rwanda Agricultural Board (RAB) program has been ongoing since 2008, with the goal of introducing new varieties and increasing the use of inputs. However, the market has been constrained by the genetic makeup of Rwandan wheat. With low protein levels (approximately 9%) and poor protein quality, Rwandan wheat is unsuitable as bread wheat. Instead, it is used for making chapatis, biscuits, porridge, or for blending with higher quality wheat. As a result, the two large commercial wheat mills in Rwanda cannot use the domestic production at all, and are obliged to import grain from abroad (primarily from Russia, currently).

5.1.1.6 Rice

Rice is a relatively new crop to Rwanda, having been introduced only in the last 60 years. Nevertheless, rice is widely consumed and considerable volumes are imported from neighbouring countries and from Asia.

As a CIP crop, the Government of Rwanda (GoR) has supported rice production. The GoR has administered the construction of community-based irrigation systems in the valley floors, is continuing to introduce new varieties suitable to the soils and climate of the country and installing mills in many of the main production districts.

Traditional Export Crops

5.1.1.7 Coffee

Coffee is Rwanda's traditional export product. About 400,000 farmers (20% grouped into cooperatives) grow coffee in an area of about 35,000 ha. With 80% of the country's 11.7 million population engaged in agriculture, this means coffee growers account for about 4% of the agricultural population. These coffee growers are generally smallholders with small, scattered farms. NAEB analysis, based on the 2009 National Coffee Survey, showed that the minimum economically viable individual coffee plot size is 0.25 ha, although 90% of coffee farmers (work 33,000 ha) have less than 0.25 ha each. Fully washing would enable producers to sell their coffee as high grade Arabica, at higher prices. The Government has been trying to increase farmers' income by helping farmers to participate in the whole value chain, including production, processing, and export. Currently farmers sell their coffee cherries to coffee-washing stations owned either by cooperatives or by private investors. The target is to have at least 80% (from 20%) of coffee farmers grouped into cooperatives, and all coffee cooperatives owning a coffee washing station. Rwanda's National Coffee Strategy 2009-2012, issued in December 2008, aimed at producing 33,000 tonnes of coffee by 2012, with 19,000 tonnes (58%) fully washed. Under the strategy, revenue from coffee exports is to reach US\$115 million. In 2012, coffee production was 16,000 tonnes, with 4,400 tonnes fully washed, and total export revenue was US\$74 million.

The coffee sector needs urgent reorganisation and upgrading. One continuing concern is that farmers are producing less high-quality coffee, partly because few are able to implement good farming practices, and partly because the prices paid to farmers do not provide sufficient incentive for them to focus on quality. At the beginning of the coffee-harvesting season, the NAEB, the sector regulator under the Ministry of Agriculture and Animal Resources (MINAGRI), sets minimum prices for washing stations to purchase cherries. In some areas, prices paid by washing stations to farmers do not reflect the quality of cherries, and thus farmers do not concentrate on quality; washing station personnel may also need additional training to ensure they consistently identify higher quality beans.

5.1.1.8 Tea

Since its introduction in the 1960s, tea has been one of Rwanda's strongest export sectors. In accordance with Law No. 39/2010 of 25 November 2010 establishing the National Agricultural Export Development Board (NAEB), NAEB is responsible for overseeing the functioning of the tea industry through policy guidance and tea certification. Tea is cultivated mainly on large plantations owned and managed by about 11 factories that process green tea into black tea. Almost a third of the tea produced in Rwanda is grown on industrial estates belonging to private investors and the remainder produced by small-scale private growers. Tea certification and quality control by the NAEB includes controlling conformity of all grades produced and commercialized. After harvesting, tea leaves are sold to factories. Some 99% of tea produced in Rwanda is transported to Mombasa market for export through auction or direct sales, and only 1% is for local sale.

The 2008 Rwanda Tea Strategy identified the need to improve yields and quality, through better fertilizer application, plucking and pruning training, and improved transportation, as well as long-term efforts to consolidate land plots. It also identified the need for increased investment in factories, both in terms of expanding factory capacity to process green

leaves, and in terms of processing new tea types to ensure product diversification. The strategy emphasized the need to improve marketing of teas by targeting specific channels for high-end markets. Privatization of tea plantations and factories was concluded with the privatization of the two remaining tea factories in April 2012. According to the authorities, the tea sector is attracting investors that can bring in new technologies and provide access to established distribution chains. Several private firms are moving to higher value and organic teas.

5.1.1.9 Pyrethrum

Pyrethrum is one of the important cash crops in Rwanda grown mainly in Musanze, Burera and Nyabihu Districts. Mainly smallholder producers, providing them with employment and income opportunities, grow the crop. Smallholder producers in Rwanda have succeeded in growing pyrethrum for several reasons. The pyrethrum plant thrives at high altitudes and in volcanic soil, and there regions in Rwanda with good combinations of altitude, rainfall and soil conditions. Additionally, the people living in many of these areas grow the crop to supplement subsistence farming. The cash earned from pyrethrum funds school uniforms, books, supplies and other essentials.

Rwanda has made great strides to rebuild its pyrethrum production capacity. Currently, SOPYRWA contracts growers to cultivate in excess of 1500 metric tonnes of pyrethrum flowers a year. The product is extracted and refined in SOPYRWA's processing plant and formulated to exacting conditions to be exported for manufacturing of pyrethrum-based products for the world market. In 2012, pyrethrum exports earned Rwanda US\$ 7.3 million. In Rwanda pyrethrum is used to produce refined pale extracts (used for aerosols and liquid insecticides), crude oleo resin (used in mosquito coils formulation) and pyrethrum marc (filler material for powder insecticides). Plans are underway to produce aerosols, crop protection and public health insecticides for local consumption.

The total production of major cash crops (in Tons) is highlighted in table 3 below:

Table 3: Production of Major Cash Crops (in Tons)

Crop	2005	2006	2007	2008	2009	2010
Coffee	17,414	22,223	14,683	20,724	16,000	19,312
Tea	16,458	16,976	20,474	19,965	20,535	22,248
Sugar cane	58,665	58,011	97,010	63,001	100,663	115,304
Total	92,537	97,210	132,167	103,690	137,198	156,864

Source: United Nations Food and Agriculture Organization (FAO)

Horticultural Crops

The horticulture subsector includes fruits, vegetables, nuts, flowers and ornamentals. It has been developing rapidly, and the Government considers that Rwanda has competitive advantage in the horticulture sector. The Government wishes to encourage the long-term development of this sector, through land consolidation, as well as the use of agricultural extension agents. The Government considers that this subsector can develop through value addition and diversification, such as focusing on organic and value-added products including juices and dried fruits/chillies. Production of horticulture crops is mostly by small-scale growers, making it difficult to produce large volumes with the necessary quality standards, or to meet the SPS requirements of the international market. Key constraints also include lack of adequate land to achieve economies of scale, and lack of knowledge on crop cultivation and fertilizer and pest management, export procedures and requirements, and the low ratio of agronomists to farmers.

Forestry and Agro-Forestry Products

The forestry sector plays a key role in supporting the livelihood of all Rwandans; it provides most of the energy consumed by the majority of the population, prevents soil erosion, protects water, and supplies ecological services. Currently, national forests cover a total of 553,098 ha, or 21% of the country (natural forest: 8% and man-made forests: 13%). Man-made forest is composed of forest plantations (one third), and the other forest resources (two thirds). While natural forests are protected, man-made forests provide wood for fuel, building materials, and raw material for furniture. Forests contribute around 80% of total energy needs (wood fuel, 57%; and charcoal, 23%). The forestry sector is regulated by the Ministry of Natural Resources (MINIRENA). The first national forestry policy was put in place in 2004. Since then, the gap between wood supply and demand has continued to widen. The forestry and agro-forestry products statistics are detailed in table 4 below:

Table 4: Forestry and Agro-Forestry Statistics

Year	1960	1970	1980	1990	2000	2002	2007	2008	2009
Natural forest areas ('000 ha)	634	592	514	451	221	221	221	221	221
Man-made forest areas ('000 ha)	24.5	27.2	80	247	282	113	125	145	153
Sustained yield ('000 m3)	368	407	1,200	3,713	2,261	902	1,021	1,159	1,228
Needs ('000 m3)	2,695	3,763	4,832	7,158	8,247	8,979	9,900	10,467	10,781
Balance ('000 m3)	-	-	-	-	-	-	-	-9,308	-9,553
	2,327	3,366	3,632	3,445	5,987	6,719	7,879		

Source: National Forestry Policy, MINIRENA (2010)

Both the Vision 2020 and the EDPRS set objectives for the forestry sector to play a bigger role in the economy, and increase national forest cover. In 2010, MINIRENA issued Rwanda's second National Forestry Policy, aimed at ensuring that the present forest cover is maintained, well managed and increased to 30% of the total area of the country in 2020, by creating an average of 23,700 ha of forests every year from 2010.

Due to the high population density (387 habitants/km² in 2009), there is strong competition for land between forestry, agriculture, and other activities. Against this background, the Government proposes to achieve its objectives through: encouraging private-sector investment in forestry to reduce poverty, create employment and improve livelihoods, through sustainable use, conservation, and management of forests and trees; contributing to sustainable land use through soil, water, and biodiversity conservation, and tree planting; and promoting farm forestry to produce timber, wood fuel and other forest products.

Livestock

The livestock subsector contributes both to food security and to income generation, since it remains an important source of milk, meat, and other animal products. There is increasing demand in livestock and for livestock products and the industry face various constraints: the use of animals with poor genetic potential, inadequate feeding, animal pests and diseases, and poor management and hence low farm-level productivity. To overcome these hurdles, the Government has launched several programmes, such as the cattle-breeding research programme, the animal nutrition programme, and the small-ruminant breeding programme. Rwanda produces about 160 million litres of fresh milk, of which, 48% is produced under traditional or extensive grazing systems. 39% of milk produced is consumed on-farm. Poor infrastructure, especially road networks between production areas and the market are a major constraint for milk producers. Dairy farmers depend largely on bicycle transport. Consequently, 35% of the raw milk is spoilt before reaching the market or

being processed, due to prolonged exposure to the sun and being shaken on the corrugated pathways. Rwanda livestock production by type (in '000) is highlighted in table 5 below:

Table 5: Rwanda Livestock Production by Type ('000 head)

Year	2005	2006	2007	2008	2009	2010
Cattle	1,040	1,059	1,147	1,295	1,219	1,335
Sheep	580	584	704	718	743	799
Goats	1,464	1,659	2,238	2,520	2,735	2,971
Pigs	391	427	571	587	602	706
Rabbits	474	469	423	451	790	8,447
Poultry	2,075	1,913	1,868	2,218	2,848	4,081

Source: United Nations Food and Agriculture Organization (FAO)

Livestock production is highly dependent on the availability of water, which is greatly affected by the seasons. During Rwanda's rainy season, there is abundant green grass and drinking water, while during the dry season, animals have to trek several kilometres in search of water, leading to loss of production and productivity. Average milk production falls by as much as 60% during the dry season. The Government is considering projects to conserve rainwater for use during the dry periods.

In the areas where there is limited value addition to a product such as meat basic meat products, improved quality can be targeted as a strategy for growth. The Rwanda Agricultural and Livestock Inspection and Certification Services (RALIS) aims to promote international trade in high-quality commodities while trying to avoid the introduction of pests and diseases into the country. Currently, animals from nearby countries are banned from entering Rwanda, due to diseases like foot-and-mouth disease. The authorities indicate that under the One-Cow-Per-Poor-Family (Girinka) Programme, the Rwanda Agriculture Board (RAB) sends veterinary physicians to the animal exporting countries to take samples for analysis before the animals are imported.

Fish and Fishery Products

The fishing subsector is small and fish production is low. Fishing is conducted on 17 inland lakes, using nets and sail boats. Fish farmers are grouped into cooperatives that manage either lakes or fish ponds. The Rwanda Agriculture Board (RAB) oversees the industry. According to MINAGRI the national fish production in 2012 was estimated at 19334 tons of which capture fisheries contributed 18,928.6 tons and aquaculture 414.6 tons. Rwanda is a net importer of fish from neighboring Uganda and Tanzania. However, Rwanda re-exports most of the imported fish to DRC. In general, fishing in Rwanda is artisanal and characterized by smallholder fishers and farmers. To improve productivity, it is necessary to organize the smallholders in cooperatives.

5.2 Rwanda's District Resource (Industries) Agro-Processing Mapping

In general, Rwanda's agricultural resources are spread out across different districts. District resource mapping identifies the agricultural resources in each district that support the agro-processing subsector. The table below highlights the agricultural resources in each district. This is based on the data that was provided by MINICOM's district RSME facilitators in the various Rwanda's districts. The focus of the masterplan will be on the agro-processing subsector priority areas are based on Rwanda's current resources, market availability and value of the products. Rwanda's district resource mapping identifies the agricultural resources in each district that support the agro-processing subsector.

Prioritization Matrix

Rwanda's agro-processing subsector industrial resource mapping strategy's primary purpose is allocation and focus on the most suitable (optimal) agro-processing resources and markets to fulfil both the supply and demand requirements. The strategy constitutes the following key elements:

- 1) Rwanda's district resources (industries) mapping
- 2) Rwanda's industrial clusters' (parks) agro-processing resources (industries) mapping
- 3) Rwanda's priority target markets with regard to agro-processing.
- 4) Rwanda's priority agro-processing industries

In developing of the industrial resource mapping strategy, the elements mentioned above, and the following criteria were used: Resources (raw materials, skills and infrastructure) currently available in Rwanda; Rwanda's existing/current trading partners; Existing regulatory environment such as VAT in Rwanda and its trading partners; Africa and other high growth countries across the globe with large consumer bases in relation to Rwanda's agro-processing industry; Africa and other high growth countries across the globe that have significant agro-processing resources as compared to Rwanda's agro-processing industry.

High level business cases have been developed to accompany the national resource (industries) mapping, industrial cluster (parks) resource mapping and the district resources (industries) mapping. At a high level, an evaluation of Rwanda's national agro-processing resources (industries) was based on existing market potential (business cases) guided by the steps highlighted below:

- 1) Definition of the market segment (target market)
- 2) Definition of the geographic boundaries of the market
- 3) Definition of the market size
- 4) Current and trending trade status

The table below highlights the agricultural resources in each district. This is based on the data that was provided by MINICOM's district RSME facilitators in the various Rwanda's districts. Table 6 below highlights the agricultural resources in each district:

Table 6: Agricultural Resources in Each District

Province	District	Resources
East	Bugesera	Beans, Sorghum, Sweet potatoes, Bananas, Peanuts, Cassava, Soy beans, Potatoes, Yams
	Gatsibo	Rice, Coffee, Cattle, Cassava, Maize, Honey
	Kayanza	Cattle, Banana, Potatoes, Cassava, Rice
	Kirehe	Rice, Coffee, Maize, Beans, Sorghum, Pineapple, Cattle, Fish, Goats, Poultry, Swine
	Ngoma	Bananas, Pineapples, Rice, Maize, Cassava, Beans, Fish, Coffee
	Nyagatare	Maize, Beans, Cassava, Potatoes, Sorghum, Rice, Banana, Pineapple, Passion fruit, Vegetables
	Rwamagana	Maize, Rice, Banana, Pineapples, Cassava, Potatoes, Soybeans, Cattle, Papyrus
Kigali	Gasabo	Beans, Avocado, Sugar canes, Papaya, Coffee, Sunflower, Rice, Maize, Cattle, Goats & sheep, Swine, Rabbits, Poultry

Province	District	Resources
	Kicukiro	Banana, Passion fruit, Poultry, Mushrooms
	Nyarugenge	Maize, Beans, Cassava, Banana, Mushrooms, Coffee, Sugarcane, Cattle, Poultry, Goats, Swine
North	Burera	Potato, Beans, Wheat, Maize, Cattle, Fish, Banana
	Gakenke	Coffee, Maize, Beans, Wheat, Cassava, Banana, Pineapple, Passion fruits, Potatoes, Cattle, Goats, Pigs, Sheep, Rabbits, Honey, Fish
	Gicumbi	Beans, Potatoes, Maize, Wheat, Banana, Cattle, Goats, Pigs, Poultry
	Musanze	Potato, Beans, Wheat, Maize, Cattle, Fish, Banana
	Rulindo	Banana, Potatoes, Beans, Wheat, Maize, Fish
South	Gisagara	Cattle, Poultry, Maize, Cassava, Beans, Coffee, Banana Avocados
	Huye	Fish, Goat, Cattle, Cassava, Maize, Coffee, Beans, Rice
	Kamonyi	Beans, Rice, Maize, Cattle, Poultry, Fish, Pigs
	Muhanga	Cattle, Poultry, Swine, Cassava, Maize, Coffee
	Nyamagabe	Tea, Coffee, Potatoes, Wheat, Swine
	Nyanza	Cassava, Maize, Coffee, Rice, Banana, Beans, Sorghum, Cattle, Fish
	Nyaruguru	Tea, Wheat, Maize, Coffee, Potatoes, Beans, Cattle, Banana
	Ruhango	Cattle, Goats & sheep, Pigs, Rabbits, Poultry, Cassava, Beans, Maize, Rice, Beans, Potatoes, Sorghum, Coffee,
West	Karongi	Banana, Potatoes, Tea, Maize, Beans, Cassava, Banana, Coffee
	Ngororero	Beans, Cassava, Maize, Wheat, Potatoes, Coffee, Cattle, Poultry, Goats, Banana
	Nyabihu	Potatoes, Maize, Tea, Coffee, Cattle, Banana, Cassava
	Nyamasheke	Coffee, Tea, Maize, Banana, Beans, Rice, Cassava, Cattle, Goats, Swine, Fish
	Rubavu	Fish, Meat, Beans, Potatoes, Maize, Cassava, Banana
	Rusizi	Rice, Cassava, Wheat, Banana, Coffee, Tea, Maize
	Rutsiro	Coffee, Tea, Maize, Cassava, Potatoes, Tomatoes, Cattle, Goats, Poultry, Fish

5.3 Rwanda's Agro-Processing Subsector Priorities

Agro-industry Value Chain Selection

The government has declared the agro-processing subsector a priority to achieving economic and development goals of Rwanda and key to reducing poverty. This has led to the creation of an enabling environment for investment and growth in the sector. The

existing regulatory and institutional frameworks are strong creating a good foundation for the sector's growth.

Considering Rwanda's agricultural resource base, the government through the Ministry of Trade and Industry (MINICOM) has identified agro-processing subsector as a key driver of industrialisation. Developing competitive agro-processing subsector is crucial for generating employment and income opportunities for the people of Rwanda. Rwanda currently has an active agro-processing subsector. However, the full potential of the subsector as an engine for economic development is yet to be realized. A review of the agro-processing policies and strategies reveals diverse development goals that have to be addressed through agro-processing.

Table 7: Development Goals informing Value Chain Selection

	Development Goal	Relevant Policies and Strategies	Agro-Industry Relevant Value Chains/ Priorities
1	Reduction of poverty in general	Vision 2020, EDPRS	transform Rwanda from a low-income agriculture-based economy to a knowledge-based, service-oriented economy by 2020
2	Income generation and employment creation	Agricultural Policy and Strategy	to increase animal production, modernize farming, reduce poverty, ensure food security and have surplus for the market
3	Promotion of economic growth through the creation of competitive industries and businesses in certain regions and/or sectors of the economy	Industrial Policy, Competition and Consumer Protection Policy	Priority Value Chains: Pyrethrum; Dairy; Vegetable oil; Soaps and detergents; Textiles (including silk); and Leather
4	Development of productive firms, especially small-to-medium sized, and their involvement/inclusion in local and global value chains	National Trade Policy, National SME Policy, National Cross-Border Strategy,	Stimulate growth of sustainable SMEs through enhanced business support service provision, access to finance and the creation of conducive legal and institutional frameworks.

In addition to the above goals, it is necessary that the agro-processing subsector remains sustainable through *Promotion of cleaner production and better environmental performance* including the application of standards for increased environmental sustainability. With a variety of agricultural value chains to consider, the country will concentrate on developing value chains with potential for growth and competitiveness, job and income creation, impact on beneficiaries, and contribution to other development objectives such as conflict mitigation, women empowerment, food security or natural resource management. The selection process followed a clear analytical process of the agro-processing subsector.

Estimating the market potential will allow Rwanda to present possible markets for investors who wish to produce for the local market and/or the export market. Generally, the market potential is the highest estimated net revenue that the investors can realise from a specific market segment. Considering diversity in animal and plant-based resources, the Agro-processing Subsector Masterplan prioritises the following agro-industry value chains:

- Staple Foods
- Fruits & Vegetables
- Fish and fishery products
- Milk and Milk Products

While tea and coffee remain an important traditional export sectors which provide high economic performance compared to other industrial crops, the agro-processing masterplan focuses on diversification of the industrial product base. In this regard, there is direct emphasis on new non-traditional agro-industry sectors as listed above. However, some high potential products such as fats and oils will require a gradual approach in development because of the technological and raw material supply gaps that currently exist. Emphasis will be on developing pilot community processing units while promoting foreign direct investments in this area.

6 Agro-processing Value Chain Analysis

6.1 Sourcing of Inputs and Supplies

The primary products used for agro-processing in Rwanda are of ordinary nature and produced locally by smallholder producers in within the country. Some supplies (e.g. wheat) are imported by private sector operators for large scale processing because the local supply capacities are either too little or inconsistent with processing demands in terms of quality and regular availability. The main suppliers of agricultural raw materials are smallholder producers, organised in cooperatives. Fish farmers, for example are grouped into cooperatives to manage their fishponds and coffee farmers sell their cherries through cooperatives. However, agricultural production capacities remain low due to limited land holdings and the cost of supplies is expensive due to high farm production cost. In addition, smallholder production systems are still largely subsistent in nature, with low business acumen by farmers.

Contractual arrangements for inputs and supplies are important because they assure the availability of materials for production and determine the size of inventory that needs to be kept. However, contractual arrangements between smallholder producers/suppliers and the agro-processors in Rwanda are underdeveloped, and in majority of cases missing. In this way, the agro-processors have limited control over the quality and volumes of supplies they receive from the suppliers. On the hand, smallholder producers are at risk of price volatility and possibly being locked out of the supply-chain because they do not have enforceable supplier contracts.

Logistics, which involves managing interactions with input providers and optimal organization of transport and use of supplies, can provide value to buyers and sellers by making a product available for purchase at the right time (time utility) at the right place (place utility). In Rwanda, logistics are arranged by agro-processors themselves. However, owing to poor road infrastructure on farms, producers bring their produce to collection centres owned by their cooperatives. Transport costs are particularly high due to poor rural road quality, high vehicle costs and high fuel prices.

The infrastructure and transport facilities in Rwanda are generally poor. Roads account for 90% of transport in the country. With the exception of the paved national roads, the majority of roads are in a bad condition, especially the feeder roads. Because of the mountainous terrain and associated rainfall erosion, the maintenance cost of the road network is twice as high as that of most sub-Saharan countries. The majority of road investment is focused on already-paved national roads, while neglecting district feeder roads. Rwanda is 1,740 km from the Port of Mombasa and 1,480 km from Dar-es-Salaam. There are significant difficulties and costs in transporting imported raw material supplies. Transport costs are further exacerbated by unequal flows on the trading route; many vehicles bringing goods to Rwanda have no goods to take back to Kenya and Tanzania, which increases overall costs. In addition, with various NTBs in the EAC region, there are many costs associated with procedures, compliance to standards and unnecessary delays at ports of entry/clearance.

High transport costs therefore remain a major constraint faced by businesses in Rwanda. The MINICOM Investor Perception Index 2010 found that only 22 per cent of industrial firms ranked the cost of transport services as low or very low. Transport costs are further exacerbated by the quality of roads. Furthermore, the majority of investments geared towards the road network are focused on national roads, which are often times already paved. As a result, district feeder roads are often neglected by investment programmes,

thereby causing extra costs for agricultural suppliers to markets and to industrial buyers. While poor quality of roads can increase the costs for businesses, particularly traders, high vehicle operating costs are also a problem. The 2005 DTIS report quoted a domestic freight rate of \$0.20 per ton/km, which is more than twice the rate for international transportation.

The supply chains are currently poorly organised, and often private sector has to source and transport the raw material supplies for processing. The main challenges in sourcing for raw materials supplies and technology are highlighted in table 7 below:

Table 7: Main Challenges in Sourcing of Raw Materials Supplies and Technology

Priority Products	Challenge	Processing/ Management
Processed Fruits & Vegetables	Available period of a material is commonly short with wide annual fluctuation.	Very costly packaging materials relative to material costs, poor processing skill may erode export competitiveness
Tea	Low quality, low yield of smallholders raw material opposition to machine-cutting	Majority exported as semi- products, difficulty in establishing Rwandan brand
Coffee	Highly variable quality among producers Rapid decline of material supply	Majority exported as semi- products, difficulty in manufacturing finished ones
Dairy Products & Meats	Meat-cattle herds are expanding but dairy herds level off. Still epizootic problem continues	Slaughtering and processing are not satisfactory for export quality
Hides and Skins	Low quality due to hurts over the skin surface	Domestic processing is affected by aggressive exports of raw hide
Leather	Enough raw materials but mostly salted and exported	Processing requires dear inputs of foreign origin
Fish and fishery products	Resources are depleting Aquaculture promising but problem of fish feed	Hygiene management poor for both aquaculture and capture fish. Minimal processing save for smoking Untreated wastes heap up
Cereals, Feeds	Domestic materials are procurable but it takes time to collect large amount at a time	Many small millers are competing but processing machines are cheap

6.2 Production Capacities and Technology

The capacity of firms in the value chain relates to their endowment of physical installations, machines, equipment and space for production and their ability to extend those in the short run. Production capacity of agro-processing firms in Rwanda is variable depending on level of investment and subsector. In general the installed capacities of large firms in dairy or cereals is underutilised due to insufficient or irregular supplies. Considering that the government is implementing measures to promote supply capacities, the production capacity of various plants may be well utilised. However, if several investors will get involved, the problem of underutilised capacities may persist.

Agro-processing Capacities

Rwanda presently has one special economic zone (SEZ) in Kigali and four industrial parks have been identified each per province. These initiatives aim at making it easier for investors to get land and other services such as infrastructure and energy among others, which will greatly reduce their investment costs. The zones are:

1. Kigali special economic zone
2. Bugesera industrial park
3. Huye industrial park
4. Rusizi industrial park
5. Nyabihu industrial park

Based on the resources currently available in the districts and as per the national industrial policy, specific agro-processing industries have been allocated to the SEZ. Additionally, pilot animal/crop resources have been identified in the SEZ and all the industrial parks taking into account their high value in the global market. The pilot projects if successful will be duplicated in other industrial parks. The mapping of the agro-processing industries per SEZ and industrial parks is highlighted in the table 8 below:

Table 8: Rwanda’s Industrial Cluster (Parks) Agro-Processing Resource Mapping

SEZ and Industrial Park	Agro-Processing Industry
Kigali special economic zone	
Bugesera industrial park	Rice processing industry Fish processing industry Sorghum processing industry
Huye industrial park	Coffee processing industry Rice processing industry Cattle related processing industry Swine related processing industry Poultry related processing industry
Rusizi industrial park	Fish processing industry Coffee processing industry Tea processing industry Cattle related processing industry Wheat processing industry
Nyabihu industrial park	Sorghum processing industry Wheat processing industry Pyrethrum processing industry Fish processing industry
Agro-processing industries that will be present in the SEZ and all the industrial parks	Cassava processing industry Banana processing industry Maize processing industry Pulses related processing industry Potatoes related processing industry

SEZ and Industrial Park	Agro-Processing Industry
	Nuts processing industry Yam processing industry Pineapple processing industry Passion fruits processing industry

Production Technologies

Agro-processing achieves two main functions in the value chain. Firstly, it transforms perishable products into forms that have a longer shelf life. Secondly, it provides opportunity for producing diverse value added products targeting different markets. The technologies for agro-processing are diverse and sometimes sophisticated. For cereals, products are derived either from the processing of grain through one or more mechanical or chemical operations, or from the processing of flour, meal or starch. Each cereal product is listed after the cereal from which it is derived. Many products can be developed from cereals through agro-processing technologies.

The main objective of fruit and vegetable processing is to supply wholesome, safe, nutritious and acceptable food to consumers throughout the year. Fruit and vegetable processing can replace imported products like squash, yams, tomato sauces, pickles, etc., besides earning foreign exchange by exporting finished or semi-processed products. Processing can also develop diverse value added products. Practically any fruit and vegetable can be processed, but some important factors that determine whether it is worthwhile are the demand for a particular fruit or vegetable in the processed form; the quality of the raw material, i.e. whether it can withstand processing; regular supplies of the raw material.

Milk processing allows the preservation of milk for days, weeks or months and helps to reduce food-borne illness. Processing of dairy products gives small-scale dairy producers higher cash incomes than selling raw milk and offers better opportunities to reach regional and urban markets. Milk processing can also help to deal with seasonal fluctuations in milk supply. The transformation of raw milk into processed milk and products can benefit entire communities by generating off-farm jobs in milk collection, transportation, processing and marketing.

Fish is an extremely perishable food, and so most fish become inedible within twelve hours at tropical temperatures. Spoilage begins as soon as the fish dies, and processing should therefore be done quickly to prevent the growth of spoilage bacteria. Fish is a low acid food and is therefore very susceptible to the growth of food poisoning bacteria. This is another reason why it should be processed quickly. Some methods of preservation cause changes to the flavour and texture of the fish, which result in a range of different products. These include cooking (for example, boiling or frying); lowering the moisture content (by salting, smoking and drying collectively known as curing) and lowering the pH (by fermentation).

Production technologies used affects both the characteristics of the end-product and the costs of the production process. A product can be technology-intensive, meaning it is produced with the help of many technological devices, or it can be basic using less sophisticated methods of production. In Rwanda, existing firms generally use modern cost technologies requiring skills. The challenge is the limited level of expertise in Rwanda to operate sophisticated technologies in plants. A number of investors are currently using

skilled labour from neighbouring countries, which is generally expensive compared to local technologists. The government has conducted a skills utilisation assessment and is currently addressing the skills and gaps through training and development of technology centres.

Strides have been made in the area of education in recent years, with the share of students of secondary school age enrolled moving from 7% to 14% from 2001 to 2008. However, this is still very low when compared internationally, as is the share enrolled in higher education. The Rwanda skills survey for the manufacturing sector, conducted by RDB identified that there is need for concerted, coordinated and comprehensive effort to enhance skills development for the sector. The overall technical skills gap identified is 7,568 labour units; existing employees also require training in soft skills.

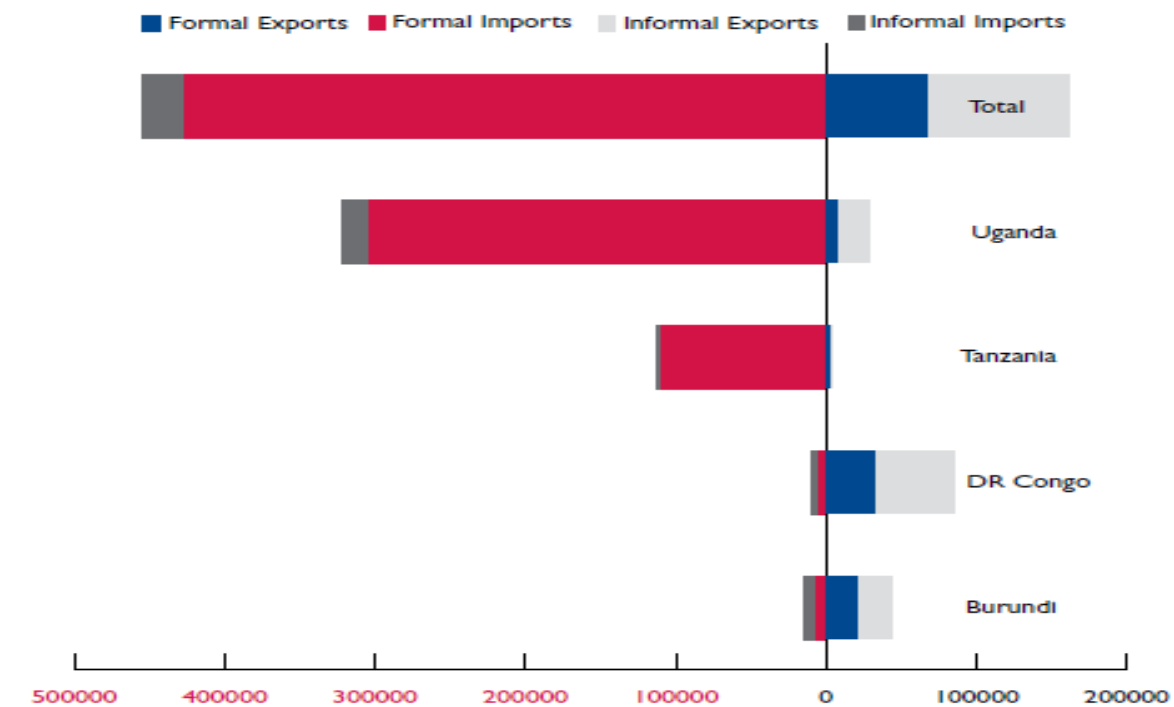
6.3 End-Markets and Trade¹

Rwanda's Trade Flows

Rwanda operates an open economy, with trade representing almost one-third of gross domestic product. Rwanda's main trading partners are the EAC (inclusive of DRC) and the European Union (EU). Rwanda's traditional export sectors include coffee, tea and minerals. According to official Rwandan trade statistics, total cross-border trade exports in 2011 were \$88 million, accounting for 23 % of total exports. Of this amount, \$35 million was traded formally and \$53 million was traded informally. Cross-border imports over the same period were \$260 million, with \$258 million traded formally. Rwanda is thus running a substantial formal trade deficit, but an informal trade surplus. Informal cross-border exports are predominately-agricultural produce (40%) and livestock (26%). The overall trade deficit results in a substantial volume of empty haulage capacity exiting in Rwanda, equivalent to at least 3,500 MT per day. Figure 4 below summarises total Cross-Border Trade in agro commodities for the year 2009-2012.

¹ Rwanda Cross-Border Agricultural Trade Analysis, USAID (2013)

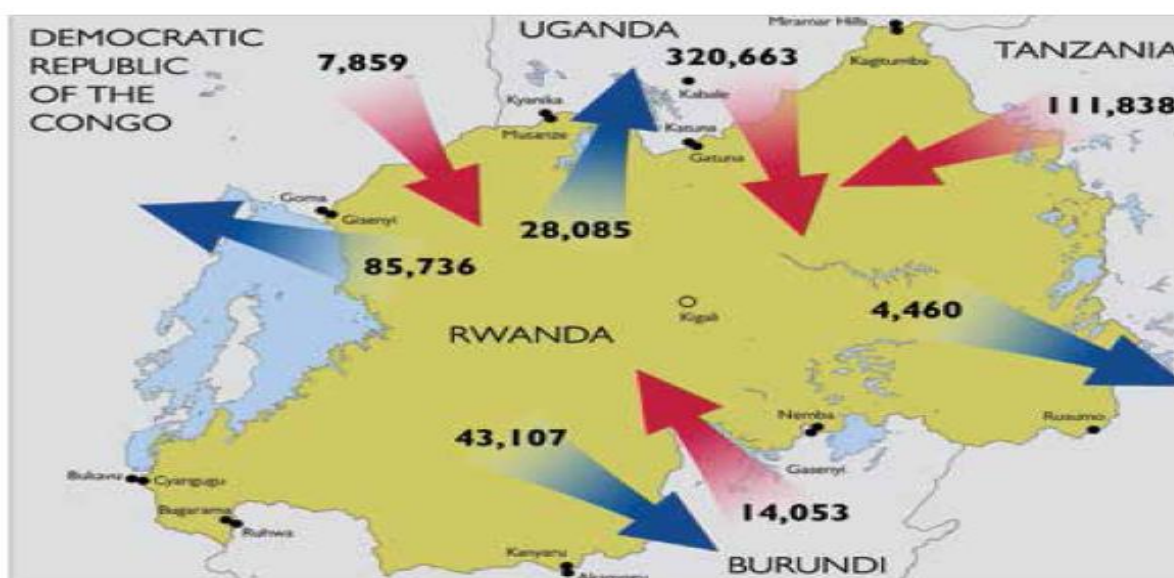
Figure 4: Total Cross Border Trade in CIP Agricultural Commodities, 2009-2012



Source: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade

The DRC is Rwanda’s largest regional export market, with both formal and informal exports accounting for the majority of Rwanda’s cross-border exports. The markets at Goma and Bukavu in the DRC represent vast markets for Rwandan agriculture, with a combined regional population of over 1.8 million. Integration with the East African Community (EAC) also provides Rwanda with a ready market for agricultural trade, although this presents challenges as well as opportunities. Rwanda, Burundi, and Uganda are all part of the EAC. Among the steps taken to lower barriers to cross-border trade, a common external tariff (CET) introduced in 2009 removed virtually all internal tariffs. Additionally, simplified trade regimes introduced through the EAC and the Common Market for Eastern and Southern Africa (COMESA) to support small-scale traders, including a minimum threshold of \$2,000 for customs duties, simplified rules of origin, trade information desks, and special processes and formalities. The highlights of Rwanda’s cross border trade are illustrated in Figure 5 below:

Figure 5: Trade Flows of CIP Agricultural Commodities, 2009–2012 (MT)



Source: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade

In summary:

Rwanda's International Trade: Rwanda is a member country of the World Trade Organisation (WTO) and has been active in the negotiations under the Doha Development Agenda. In the negotiations on trade facilitation, it is one of the proponents of the proposals on freedom of transit (TN/TF/W/133 and TN/TF/W/39). In the agriculture negotiations, Rwanda is seeking improved market access and the reduction of trade-distorting subsidies and tariff peaks, and elimination of tariff escalation. It has also called for duty-free-quota-free treatment for all exports from LDCs. In the Non-Agriculture Market Access (NAMA) negotiations, Rwanda is looking for the reduction of non-tariff barriers. In services negotiations, it supports the LDCs Services waiver. Rwanda has also called for technical assistance and capacity building through the Enhanced Integrated Framework and Aid for Trade.

Regional Trade: Rwanda is one of the five EAC partner states having acceded to the EAC Treaty on 18 June 2007. Rwanda became a full member of the Community on 1 July 2007. Rwanda began implementing EAC Customs Union in July 2009 and the Common Market in July 2010. It is also a member of the Common Market for Eastern and Southern Africa (COMESA), and initialled an interim Economic Partnership Agreement with the EU under the East African Community in November 2007. Rwanda is also a member of the Economic Community of the Great Lakes Countries (CEPGL).

Rwanda's Priority Target Markets for Agro-Processed Products

Rwanda's priority target markets are those countries that Rwanda's agro-processing subsector will export to / trade with, inclusive of supply to the local market. The priority target markets are based on the following Criteria: Rwanda's resources; Rwanda's current trade partners; Africa and other high growth and high value agro-processing industries/products across the globe; Africa and other high growth countries with regards to population, GDP and imports across the globe; Market potential (value in US\$ of what the target market agro-processing related imports from the rest of the world exclusive of agro-processing related imports from Rwanda).

In this regard, the following countries, in order of priority, were identified as Rwanda's potential priority target markets in agro-processing exports:

6.3.1.1 Democratic Republic of Congo (DRC)

The Democratic Republic of Congo is heavily dependent on exports from other countries, Rwanda being a key trading partner. Aside from mining, DRC's economy is largely a mixture of subsistence hunting and agriculture, an industrial sector based largely on petroleum extraction & support services, and government spending. At the end of 2012, the value of all Rwandan exports to DRC was US\$ 165 million (agro-processing export value was US\$ 84 million) while the value total imports to DRC was US\$ 11.7 billion.

The key elements that make DRC a target market are:

- Market potential of US\$ 1.794 billion with regard to agro-processing related imports as at the end of year 2012
- Expected population increase to 81.3 million by 2020 from 67.5 million in 2013
- Expected increase in GDP to US\$ 115.7 billion by 2020 from US\$ 24.2 billion in 2013.
- Less stringent trade barriers
- Low transport costs compared to Rwanda's other trading partners (apart from Burundi)
- Low agro-processing production capacity in DRC

The key imports from Rwanda to DRC are:

- Cereals and their respective milling products
- Animal and vegetable fats and oils
- Tobacco and manufactured tobacco substitutes.
- Coffee and tea

6.3.1.2 Burundi

There is minimal industry in Burundi except in the processing of agricultural exports. This industry is however still underdeveloped thus necessitating the need for agro-processing imports. As at the end of 2012 the value of all Rwandan exports to Burundi was US\$ 13.3 million (agro-processing export value was US\$ 3.9 million) while the value of total imports to Burundi from the world was US\$ 1 billion. The key elements that make Burundi a target market are:

- Market potential of US\$ 303 million with regard to agro-processing related products as at the end of year 2012
- Low agro-processing production capacity in Burundi
- Expected population increase to 12.6 million by 2020 from 10.2 million in 2013
- Expected increase in GDP of US\$ 6.1 billion by 2020 from US\$ 3.6 billion in 2013
- Lowest transport costs compared to all Rwanda's trading partners
- Ease of EAC common market access

The key imports from Rwanda to Burundi are:

- Cereals and their respective milling products
- Beverages and spirits
- Edible vegetables and roots & tubers
- Dairy products, eggs and honey

6.3.1.3 Uganda

The Ugandan economy is poised for strong growth over the next few years. A combination of heavy public investment in infrastructure, surging foreign investment into the nascent oil sector and a buoyant consumer segment will see the economy grow by an average of 7.1% annually between 2014 and 2020. As at the end of 2012 the value of all Rwandan exports to Uganda was US\$ 64.4 million (agro-processing exports value was US\$ 51.6 million) while the value of total imports to Uganda from the world was US\$ 6 billion. Uganda as a target market is characterised by the following key elements:

- Market potential of US\$ 846.7 million with regards to agro-processing related products as at the end of year 2012
- Expected population increase to 47.1 million by 2020 from 33.9 million in 2013
- The value of goods and services imported by Uganda are expected to increase to US\$ 17 billion by 2020 from US\$ 8 billion in 2013
- Expected increase in GDP to US\$ 57.7 billion by 2020 from US\$ 22.9 billion in 2013
- Low transport costs
- Ease of EAC common market access

The key imports from Rwanda to Uganda are:

- Coffee and tea
- Raw skins and hides
- Cereals and their respective milling products
- Edible vegetables, roots and tubers

6.3.1.4 Tanzania

Tanzania has largely completed its transition to a liberalized market economy, though the government still retains presence in sectors such as telecommunications, banking, energy, and mining. As at the end of 2012 the value of all Rwandan exports to Uganda was US\$ 164.7 million (agro-processing exports value was US\$ 33.2 million) while the value of total imports to Tanzania from the world was US\$ 11.7 billion. Tanzania as a target market is characterised by the following key elements:

- Market potential of US\$ 1.2 billion with regards to agro-processing related products as at the end of year 2012
- Expected population increase to 60.4 million by 2020 from 49.3 million in 2013
- The value of goods and services imported by Tanzania are expected to increase to US\$ 26.3 billion by 2020 from US\$ 13.5 billion in 2013
- Expected increase in GDP to US\$ 70.1 billion by 2020 from US\$ 33.6 billion in 2013
- Low transport costs
- Ease of EAC common market access

The key imports from Rwanda to Tanzania are:

- Coffee and tea
- Cereals and their respective milling products
- Raw skins and hides
- Beverages and spirits

6.3.1.5 Kenya

Kenya maintains a liberalised external trade system. Its economy is market-based with a few state-owned infrastructure enterprises. The country is generally perceived as Eastern and central Africa's hub for Financial, Communication and Transportation services. As at the end of 2012 the value of all Rwandan exports to Kenya was US\$ 94.8 million (agro-processing exports value was US\$ 84.3 million) while the value of total imports to Kenya from the world was US\$ 15.1 billion. Kenya as a target market is characterised by the following key elements:

- Market potential of US\$ 1.8 billion with regards to agro-processing related products as at the end of year 2012
- Expected population increase to 52.9 million by 2020 from 44.4 million in 2013
- The value of goods and services imported by Kenya are expected to increase to US\$ 30.2 billion by 2020 from US\$ 18.8 billion in 2013
- Expected GDP increase to US\$ 102.4 billion by 2020 from US\$ 43.5 billion in 2013
- Ease of EAC common market access

The key imports from Rwanda to Kenya are:

Coffee and tea

Raw hides and skins

Residue and wastes of the agro-processing industry

Cereals and their respective milling products

6.3.1.6 South Sudan

The economy of South Sudan is one of the world's most underdeveloped. South Sudan has little existing infrastructure, which has resulted in a dependence on other countries for products and services. Her primary economic activity is mining of oil. South Sudan as a target market is characterised by the following key elements:

- Low agro-processing production capacity in South Sudan
- Expected population increase to 13.9 million by 2020 from 11.3 million in 2013
- Expected increase in GDP to US\$ 35.6 billion by 2020 from US\$ 13.1 billion in 2013
- South Sudan is in the process of being integrated into the EAC leading to ease of market access

The key imports from Rwanda to South Sudan are:

- Dairy products and honey
- Edible vegetables, roots & tubers

6.3.1.7 South Africa

South Africa is ranked as an upper-middle income economy by the World Bank, and is considered to be a newly industrialised country. Its economy is the second largest in Africa, and the 28th-largest in the world. At the end of 2012 the value of all Rwandan exports to South Africa was US\$ 700 thousand (agro-processing exports value was US\$ 40 thousand) while the value of total imports to South Africa from the world was US\$ 101.6 billion. South Africa as a target market is characterised by the following key elements:

- Market potential of US\$ 7.1 billion with regards to agro-processing related products as at the end of year 2012
- Expected population increase to 55.1 million by 2020 from 52.8 million in 2013

- The value of goods and services imported by South Africa are expected to increase to US\$ 250.1 billion by 2020 from US\$ 119.1 billion in 2013
- Expected increase in GDP to US\$ 747.6 billion by 2020 from US\$ 350.8 billion in 2013
- Lower transport costs as compared to the European Union (EU), Asia, America, Middle East and Oceania

The key imports from Rwanda to South Africa are:

- Vegetables and fruits
- Dairy products eggs and honey
- Sugars and sugar confectionary

6.3.1.8 United States of America (USA)

The USA is a developed country and has the world's largest national economy, with an estimated GDP in 2013 of \$16.8 trillion – 23% of global nominal GDP and 19% at purchasing-power parity. The economy is fuelled by an abundance of natural resources and the world's highest worker productivity, with per capita GDP being the World's eighth-highest in 2013. As at the end of 2012 the value of all Rwandan exports to USA was US\$ 6.3 million (agro-processing exports value was US\$ 5.6 million) while the value of total imports to USA from the world was US\$ 2.3 trillion. USA as a target market is characterised by the following key elements:

- Market potential of US\$ 141.1 billion with regards to agro-processing related products as at the end of year 2012
- Presence of the AGOA treaty which provides preferential treatments for some of Africa's exports (primarily agro-processed exports) to USA
- Higher trade barriers for other EAC countries (as at end of 2013, importation for some products from Kenya, Uganda and Tanzania is banned)
- Expected population increase to 338.0 million by 2020 from 320.1 million in 2013
- The value of goods and services imported by USA are expected to increase to US\$ 250.1 billion by 2020 from US\$ 119.1 billion in 2013
- Expected increase in GDP to US\$ 22.9 trillion by 2020 from US\$ 16.8 trillion in 2013

The key imports from Rwanda to USA are:

Vegetables and fruits

6.3.1.9 Belgium

Rwanda has close ties with Belgium due to Rwanda's former status as a Belgian colony. Belgium's location at the heart of a highly industrialized region helped make it the world's largest trading nation. The economy is characterized by a highly productive work force, high GNP and high exports per capita. Belgium's main imports are raw materials, machinery and equipment, chemicals, raw diamonds, pharmaceuticals, foodstuffs, transportation equipment, and oil products. As at the end of 2012 the value of all Rwandan exports to Belgium was US\$ 3.6 million (agro-processing exports value was US\$ 484 thousand) while the value of total imports to Belgium from the world was US\$ 437.9 billion. Belgium as a target market is characterised by the following key elements:

- Market potential of US\$ 40.5 million with regards to agro-processing related products as at the end of year 2012
- Close ties as the former coloniser of Rwanda

- Expected increase in population to 11.4 million by 2020 from 11.1 million in 2013
- The value of goods and services imported by Belgium are expected to increase to US\$ 525.9 billion by 2020 from US\$ 433.7 billion in 2013
- Expected increase in GDP to US\$ 567.5 billion by 2020 from US\$ 503.4 billion in 2013

The key imports from Rwanda to Belgium are:

- Coffee and tea
- Pulses
- Vegetables and fruits
- Cereals and their respective milling products

6.3.1.10 France

France is a member of the G8 group of leading industrialised countries and is ranked as the World's seventh largest & the EU's second largest economy by purchasing power parity. Having 39 of the 500 biggest companies in the world in 2010, France ranks fourth in the Fortune Global 500, ahead of Germany and the UK. As at the end of 2012 the value of all Rwandan exports to France was US\$ 2.9 million (agro-processing exports value was US\$ 91 thousand) while the value of total imports to France from the world was US\$ 663.3 billion. France as a target market is characterised by the following key elements:

- Market potential of US\$ 63.9 million with regards to agro-processing related products as at the end of year 2012
- Expected increase in population to 11.4 million by 2020 from 11.1 million in 2013
- The value of goods and services imported by France are expected to increase to US\$ 894.9 billion by 2020 from US\$ 629.5 billion in 2013
- Expected increase in GDP to US\$ 3.2 trillion billion by 2020 from US\$ 2.8 trillion in 2013

The key imports from Rwanda to France are:

- Edible vegetables and fruits
- Coffee and tea

6.3.1.11 United Kingdom (UK)

The UK has the sixth-largest economy in the world and the third largest in Europe after Germany and France. In the UK, agriculture is intensive and highly mechanised, producing about 60% of its food needs. As at the end of 2012 the value of all Rwandan exports to the UK was US\$ 2.5 million (agro-processing exports value was US\$ 219 thousand) while the value of total imports to UK from the world was US\$ 689.1 billion. The UK as a target market is characterised by the following key elements:

- Market potential of US\$ 66.4 million with regard to agro-processing related products as at the end of year 2012
- Expected population increase to 65.6 million by 2020 from 63.1 million in 2013
- The value of goods and services imported by the UK are expected to increase to US\$ 1.2 trillion by 2020 from US\$ 826.3 billion in 2013
- Expected GDP increase to US\$ 4.0 trillion billion by 2020 from US\$ 2.5 trillion in 2013

The key imports from Rwanda to France are:

- Coffee and tea
- Edible vegetables and fruits

6.3.1.12 Switzerland

Switzerland has a stable, prosperous and high-tech economy. It has the world's nineteenth largest economy by nominal GDP and the thirty-sixth largest by purchasing power parity. As at the end of 2012 the value of all Rwandan exports to Switzerland was US\$ 7.6 million (agro-processing exports value was US\$ 2.6 million) while the value of total imports to Switzerland from the world was US\$ 200.5 billion. Switzerland as a target market is characterised by the following key elements:

- Market potential of US\$ 14.1 million with regard to agro-processing related products as at the end of year 2012
- Expected population increase to 8.6 million by 2020 from 8.6 million in 2013
- The value of goods and services imported by Switzerland are expected to increase to US\$ 345.8 billion by 2020 from US\$ 271.1 billion in 2013
- Expected GDP increase to US\$ 707.9 billion by 2020 from US\$ 655.7 billion in 2013

The key imports from Rwanda to Switzerland are:

- Coffee and tea
- Edible vegetables and fruits

6.3.1.13 China

As at the end of 2013, China has the world's second-largest economy in terms of nominal GDP. Since economic liberalization began in 1978, China has been among the world's fastest-growing economies, relying largely on investment- and export-led growth. As at the end of 2012 the value of all Rwandan exports to China was US\$ 3.3 million (agro-processing exports value was US\$ 677 thousand) while the value of total imports to China from the world was US\$ 2.4 trillion. China as a target market is characterised by the following key elements:

- Market potential of US\$ 133.1 million with regard to agro-processing related products as at the end of year 2012
- China's population size is expected to increase to 1.4 billion by 2020 from 1.4 billion in 2013
- The value of goods and services imported by Switzerland are expected to increase to US\$ 345.8 billion by 2020 from US\$ 271.1 billion in 2013
- Expected GDP increase to US\$ 16.5 trillion by 2020 from US\$ 9.1 trillion in 2013

The key imports from Rwanda to China are:

- Coffee and tea

6.3.1.14 India

With 1.2 billion people and the world's fourth-largest economy, India's recent growth and development has been one of the most significant achievements of our times. Over the six and half decades since independence, the country has brought about a landmark agricultural revolution that has transformed the nation from chronic dependence on grain imports into a global agricultural powerhouse that is now a net exporter of food. As at the end of 2012 the value of all Rwandan exports to India was US\$ 246 thousand (agro-processing exports value was US\$ 0) while the value of total imports to India from the world was US\$ 488 million. India as a target market is characterised by the following key elements:

- Market potential of US\$ 18.6 million with regard to agro-processing related products as at the end of year 2012
- India's population size is expected to increase to 1.4 billion by 2020 from 1.3 billion in 2013
- The value of goods and services imported by India are expected to increase to US\$ 1.5 trillion by 2020 from US\$ 626.7 billion in 2013
- Expected GDP increase to US\$ 3.8 trillion by 2020 from US\$ 1.8 trillion in 2013

The key imports from Rwanda to India are:

- Coffee and tea.

Trade Standards

Today, markets change fast and competition is everywhere. If firms want to benefit from value addition and stay in business, they must ensure their products and services reach end-markets and meet standards as well as end-buyer and consumer demands. The Rwanda Bureau of Standards (RBS) was established in 2002 as the National Standards Body (NSB). The Law Establishing the Rwanda Bureau of Standards (Law No. 03/2002 of 19 January 2002) regulates standards, quality testing, certification, and metrology. In addition, the Rwanda Quality Policy passed by the Cabinet in 2010, guides standardization activities. The Rwanda Bureau of Standards (RBS) is responsible for promoting standards, quality management and metrology activities, and ensuring that they are properly applied. Notices on standards and technical regulations adopted by the RBS are published in the Official Gazette. Since 2002, the RBS has published 780 national standards, voluntary. The RBS is also making efforts towards harmonizing Rwandan standards with EAC and COMESA standards; currently, 528 are EAC harmonized, and 304 are harmonized with COMESA standards.

The procedure to develop standards was revised in 2008 to "mirror international best practices". Standards are developed through RBS technical committees (TCs), which are made up of representatives from both the public and private sectors. Technical regulations in agro-processing may be developed and administered by the ministries (responsible for agriculture, industry environment, health and trade), and a number of regulatory bodies. In accordance with RBS Instruction No. 02/2005, Rwanda has 67 technical regulations (compulsory standards), covering food, mineral water, drinking water, alcoholic beverages, liquor, grains, coffee, tea and milk.

Export Expansion and Import Opportunities

In summary, based on an analysis of the Rwanda's trade with regard to agro-processing related products, the following export expansion and import opportunities have been identified as;

- Maize – The potential to increase Rwanda's maize exports is limited, but increased import substitution is possible. This will likely be more cost-effectively achieved through improved post-harvest handling and storage than through increased production.
- Beans – Rwandan beans can be produced at a price that is competitive in neighbouring markets, especially in Uganda. The main constraint to increased export trade lies in the cost of accumulating a marketable volume of beans of consistent quality. Increased exports will be possible if the transaction costs between the farm-gate and exporter can be reduced.

- Potatoes – Rwandan potatoes can be produced at a price that is competitive in neighbouring markets. The main constraint to increased export trade appears to lie in the development of efficient trade networks into Uganda and Tanzania and to take advantage in particular of the substantial haulage capacity that is returning empty through Kampala and Mwanza.
- Cassava – The potential to increase exports of cassava out of Rwanda is limited by the perishability of the product. Nevertheless, marginal increases in import substitution are possible. Given the dramatic increase in productivity that has been achieved to date, it now appears reasonable to look for further gains from improved post-harvest handling and processing, especially the drying of fresh cassava and the production of garri.
- Rice – Though Rwanda is unlikely to be able to develop a substantial export market for rice, there is scope to increase the degree of import substitution. However, since the productive area for rice is inherently limited and yields are already high, reduced imports would result mainly from reduced post-harvest losses in Rwanda itself.
- Milk – Rwanda produces a surplus of milk, which appears likely to grow as increases in demand lags behind increasing supply. Irrespective of cost, Rwandan UHT milk and cheese have established and receptive markets in the DRC, Burundi, and Uganda. There is an advantage to be gained from developing brand awareness of Rwandan dairy products. There is also a need to strengthen the supply chains in Rwanda and neighbouring countries to ensure the consistency of supply.

6.4 Value Chain Governance

Firms of a certain size and market share can influence the conditions under which business partners in the value chain operate. For example, such lead firms can set product specifications for suppliers, even detailed product blueprints prescribing the production process and the application of certain technological, environmental or labour standards, and how much is to be produced, including scheduling and logistics. The dominant actor could be an end-buyer or retailer in which case one would talk about a buyer-driven value chain. In other cases, a manufacturer or a supplier of primary materials “drives” the value chain, making it a supplier-driven value chain. However, there are also value chains where many firms operate in parallel and no dominant player exists. As mentioned earlier, Rwanda’s agro-processing sector is at a nascent stage of development with minimal actor domination. There are some dominant players such as in tea, coffee, pyrethrum, maize, wheat and dairy value chains. While domestic industries may drive the chains at home, Rwanda’s linkage to dominant transnational corporations (TNCs) is minimal.

6.5 Sustainable Production and Energy Use

In general all agro-processing activities use a certain amount of materials. This does not necessarily mean that these materials are used efficiently. Often, in fact, the final product contains only a low percentage of the original raw materials and the rest is waste. Important materials include biomass (animal feed, food and forestry). However, most agro-processing requires energy for transformation of raw materials to finished products. There are several challenges with regard to energy use. Firstly, electricity is not available in many rural areas where agricultural production takes place, requiring that agro-processing activities be located away from source of raw materials. Even where there is electricity, the supply is rather erratic and occasioned by frequent power-cuts. Existing agro-processing plants have to either use standby diesel engines or stop their production frequently.

Challenges to rapid industrialization in Rwanda are mainly linked to serious inadequacy of national energy supplies. Electricity has been identified as the biggest challenge to the growth and performance in Rwanda (NSIR 2006). Most of the agro-processing industries including tea processing and coffee washing stations use fuel wood as a source of energy. Rwandans also use a lot of wood for fuel wood. Estimates from 1992, the last year for which figures are available put the amount at 3,510 million kg of wood fuel (Chemonics International Inc. 2008). Most of this wood is consumed by homes, though large quantities are also consumed by a variety of commercial users, such as tea factories. This poses issues of land degradation through accelerated erosion with adverse environmental and agricultural productivity impacts. Biomass, such as wood, charcoal and peat accounts for 85% of Rwanda's energy supply. The remaining share of energy is from petroleum (11%), and electricity (3%). Rwanda has an installed 95.24 Megawatts (MW) of electricity capacity, whereas the available capacity currently stands at 84.85 MW.

The country has low per capita electricity consumption relative to the East Africa Community: only 13% of the population has access to electricity, and there are reported power outages. Electricity generation cost is high and the feed in tariff of power is high with 112 RWF/kWh for households and RWF 102/kWh for industries, despite the Government subsidizing the utility. Rwanda's electricity cost at \$0.24/Kwh is at least double that of its neighbours. The 2008 Business Investment Climate Survey found that 64% of businesses surveyed cited access and cost of electricity as a major constraint. Rwanda has a per capita energy consumption of 20-kilowatt hours (kWh). This is very low compared to other LDCs, with just over 50 kWh in Tanzania and Uganda, and a 112 kWh average for all LDCs and 125 kWh per capita for Kenya. Energy costs are double that of EAC partner states and poses a severe competitive disadvantage for Rwandan business.

6.6 Value Chain Finance

Under Banking Law in 2007 and the Law on the Organization of Banking in 2008, National Bank of Rwanda (NBR) is now the sole regulator and supervisor of the financial sector, except for securities markets. Rwanda has nine commercial banks; one development bank, which merged with the mortgage financing bank in 2011; three microfinance banks (Urwego Opportunity Bank, UNGUKA Bank Ltd., and AGASEKE Bank Ltd.); and one cooperative bank (Zigama CSS). Rwanda Development Bank is wholly owned by the Government, and four commercial banks are wholly foreign-owned (Kenya Commercial Bank, Equity Bank (Kenya), FINA Bank (Kenya), and ECOBANK (Togo)).

Rwanda's financial sector provides a significant constraint, particularly to the MSME sector. The savings rate is amongst the lowest in the world. The low level of private savings is generally attributed to low real deposit rates combined with poor outreach of banking services. According to the 2008 Finscope Financial Access Study in Rwanda, more than half of the Rwandan adult population (52%) manage their lives without using any kind of financial product (formal or informal). More than half (54%) of the 47% of Rwandan adults who do use financial products, use informal products. Of those who are using formal financial products, most (67%) are using formal bank products.

Bank usage is dominated by the Union des Banques Populaires du Rwanda (UBPR). Excluding UBPR, only 1% of the adult population use commercial bank products. Just over half a million adults in Rwanda are banked. Rwandans cite saving (69% —banked adults) and getting access to credit (52%) as the main reasons for having bank accounts. While the Doing Business indicators show that Rwanda has made remarkable progress in terms of registering property, accessing to credit, and protecting investors, there is still room for improvement in sub-areas such as the number of days to register property (55 in Rwanda vs. the OECD average of 25), the development of credit registries (which until recently

existed in much of sub-Saharan Africa, but not Rwanda), and in shareholders' rights to sue officers and company directors for misconduct (Rwanda lags both in Sub-Saharan Africa and the OECD). This impacts the long-term investment and financing levels in the country, and will need to be addressed to unlock financing in Rwanda's private sector.

The 2010 Investor Perception Index Report found access and cost of finance to be the single most problematic issue for both domestic and foreign investors in Rwanda. Over two-thirds of businesses queried in the Private Sector Federation's 2008 Business Investment Climate Survey, cited finance as a major challenge. Lack of collateral is ranked as the biggest challenge, but there are additional constraints including high interest rates, lack of detailed business plans, lack of information and a lack of understanding by banks.

Rwanda has been establishing savings and credit cooperatives (SACCOs) to increase access to financial services in rural areas. For crop production, the Government adopted a fertilizer voucher system for some farmers under the Crop Intensification Programme. Dealers deliver fertilizer to farmers at a predetermined price, and obtain the subsidy from the microfinance institutions. Farmers wishing to take loans are advised to work in cooperatives to minimise risk. Investors in agro-processing take loans at commercial banks at market rates.

7 2014 – 2020 Strategic Direction

Agriculture and industry have traditionally been viewed as two separate sectors both in terms of their characteristics and in terms of their role in economic growth. Agriculture has been considered the hallmark in the first stage of development, while the degree of industrialization has been taken to be the most relevant indicator of a country’s progress along the development path. Moreover, proper strategy for growth has often been conceived as one of a more or less gradual shift from agriculture to industry, with the onus on agriculture to finance the shift in the first stage.

The GoR has identified the agro –processing sector as one of the key drivers to decrease poverty levels in the country and promote economic development. The GoR is committed to develop the agro-processing sector. The National Industrial Policy developed in 2011, identifies diversification of the Rwandan economy into new sectors of activity as essential to meeting the goals of Vision 2020.

The vision for the industrial sector is to have “competitive and advanced services sector producing over \$1.5 billion of exports by 2020, while increasing the number of off farm jobs.” Rwanda being a small country with limited access to raw materials for agro-processing production, has identified improved quality of goods rather than strive to produce quantity as the strategy for Rwandan processed goods. Figure 6 below is an illustration of Rwanda’s agro-processing subsector overall strategy.

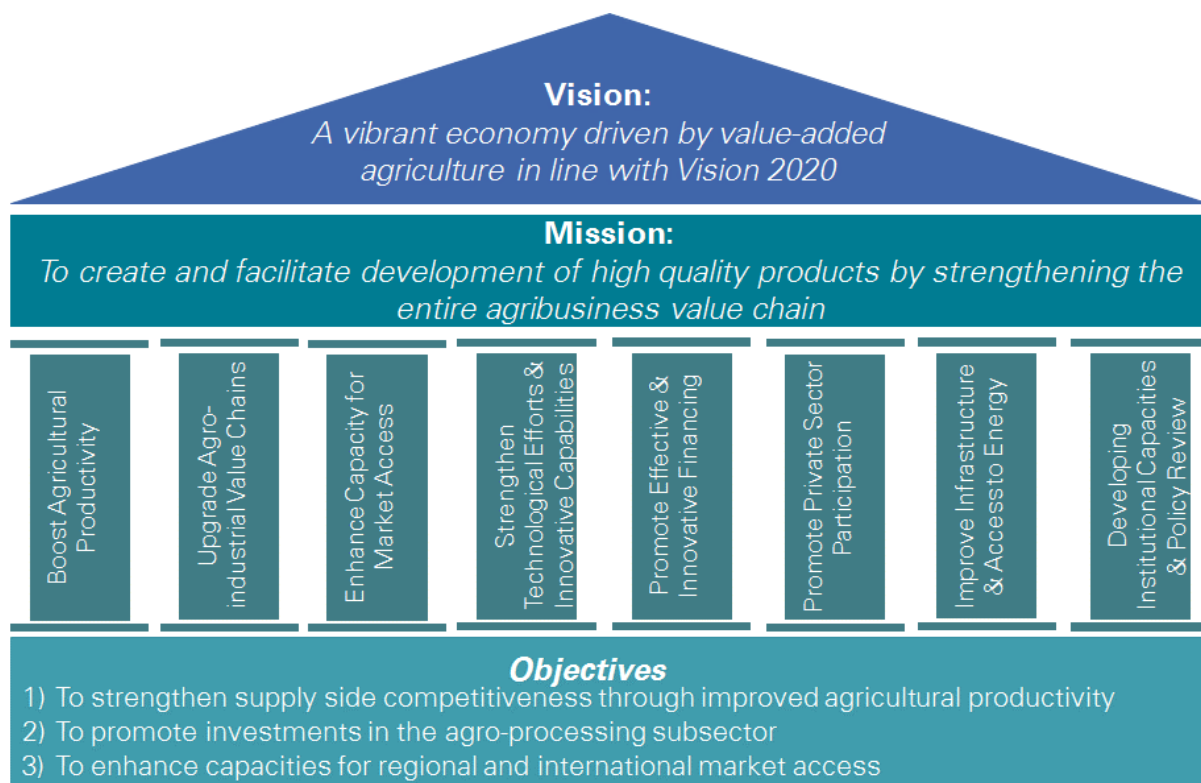


Figure 6: Rwanda’s Agro-Processing Subsector Strategy at a Glance

7.1 The Vision for Rwanda’s Agro-Processing Subsector

“A vibrant economy driven by value-added agriculture in line with Vision 2020”

7.2 The Mission and Strategic Pillars for Rwanda’s Agro-Processing Subsector

“To create and facilitate development of high quality products by strengthening the entire agribusiness value chain”

7.3 Purpose of the Master Plan

The purpose of this masterplan is to develop a sustainable agro-processing subsector in Rwanda that will enhance economic growth and reduce poverty through job and income creation in line with Rwanda’s Vision 2020.

7.4 Objectives of the Masterplan

The agro-processing master plan aims to achieve the following:

- 1) To strengthen supply side productive capacities through improved agricultural productivity.
- 2) To promote investments in the agro-processing subsector which are necessary for reducing post-harvest losses and for value addition.
- 3) To develop policies and support services necessary for market access for Rwanda’s agro-industry products

7.5 Strategic Pillars

The agro-processing subsector in Rwanda needs to undergo a structural transformation to focus on high quality agro-processing products. This will create jobs hence income generation and to ensure food security that is so badly needed by the country’s growing population. Rwanda’s agro-processing subsector will focus on high quality agro-processing products taking into account the limited supply of land, which limits volumes of agro-processing products which can be produced.

The pace of change in the entire agribusiness value chain around the world is accelerating rapidly. If Rwanda is to benefit from these changes, the agro-processing industry needs to undergo a structural transformation. In fact, in terms of the transformation of the economy, structural change in farming and agro-processing are tightly interrelated and cannot be analysed independently of one another.

A transformation of the entire agribusiness sector involves increasing the productivity of activities at each stage of the different agriculture-based value chains, while simultaneously improving coordination among those stages. Improved vertical coordination is critical to achieving timely flow of productivity-enhancing inputs to farmers and of quality agricultural raw materials to the agro-processing industry. At the same time, production must be closely aligned with the rapidly evolving demands of consumers.

Transformation of the agribusiness sector is inextricably linked. Growth of vibrant agro-processing industries is essential to offer employment for a large number of smallholder farmers who are unlikely to farm their way out of poverty. In order to carry out its mission thereby achieving its vision, Rwanda’s agro-processing subsector is based on eight strategic pillars:

- 1) Boosting agricultural productivity
- 2) Upgrading agro-industrial value chains
- 3) Enhancing Capacity for market access
- 4) Strengthening technological efforts and innovative capabilities
- 5) Promoting effective and innovative financing
- 6) Promoting private sector participation
- 7) Improving infrastructure and access to energy
- 8) Developing Institutional Capacities

Boosting Agricultural Productivity

Rwanda is endowed with a wealth of diverse plant and animal-based agricultural resources on which to build the country's agro-industries across different districts. Although Rwanda is a small country with an area of 26,336 km², the total arable land is about 1.4 million hectares, which is 52% of the total surface area of the country. However, the actual area cultivated has exceeded 1.6 million ha in recent years. Another 0.47 million ha is under permanent pasture, so well over 70 per cent of the country's total land surface is exploited for agriculture. Rwanda has about 165,000 ha of marshlands of which 93,754 ha (57%) have been cultivated. However, only 5,000 ha have been developed and can be cultivated throughout the year while the rest are arbitrarily cultivated by peasants grouped in organizations or by cooperatives without any technical skills. In addition, Rwanda's temperate, climate and plentiful rain and sunshine, and its slopes make it perfect for growing a number of crops including tea and coffee. However, agricultural production capacities remain low due to limited land holdings and the cost of supplies is expensive due to high farm production cost. In addition, smallholder production systems are still largely subsistent in nature, with low business acumen by farmers.

Rwanda agro-processing sector will focus on increasing agricultural productivity and reverse the current perennial low productivity in subsistence farming (low yields/output). The drivers for addressing low agricultural productivity include the following: promoting use of fertilizers, agricultural machinery, water & irrigation, reducing post-harvest losses, and addressing impact of climate change.

Upgrading Value Chains

The transformation of agricultural raw materials into industrial products depends on the capacity of entrepreneurs in Rwanda to supply global, regional and local value chains with products matching specific standards, volume and packaging requirements, at particular times, and under strict logistics and time to market demands placed by buyers. While spot transactions are still common in value chains, catering for local and national consumption over the past two decades have become driven by retailers and branded manufacturers/processors in developed countries and also by regional and local actors, such as retail groups. New opportunities for upgrading into value added production and/or processing of agricultural products have emerged, though in some value chains such as tea, coffee and horticulture, actors are under pressure from competition in other developing regions of the world and from increasing demands or decreasing prices applied by retailers and processors in developed countries.

Successful upgrading in value chains depends not only on a business-friendly operating environment for private sector players but also on specific opportunities that may be linked to a particular product or product form, to the emergence of particular technologies, to changes in international trade rules, or to the emergence of niche markets. Such windows of opportunity are often time bound: first-mover advantage is important, and abrupt changes in price and/or quality demands mean that rewards may be limited in time. Restructuring within value chains will also quickly reverse any previous gains, while advantages secured by some stakeholders will entail losses for others. This entails an agro-processing master plan built upon a flexible structure involving the private sector, industry associations, regulators and civil society actors.

The main goal of Rwanda's Vision 2020 is to transform the country into a middle-income economy by improving the country's competitiveness as well as ensuring unity and comprehensive growth and development. The following initiatives will warrant improved agro-processing investment climate with a view to mobilizing and increasing FDI flows into Rwanda and enhancing their impact on the local economy.

Enhancing Capacity to Exploit Regional and International Demand

Despite agriculture's importance to Rwanda economy, the country's progress in diversifying from bulk agricultural exports towards processed, higher-value and quality-differentiated products has not been good enough. Low-value primary commodities still account for a significant proportion of total exports. Yet profound changes in domestic, regional and international markets are creating new opportunities for trade in value added agricultural products and for agribusiness. These changes, driven by rising incomes, faster urbanization, trade liberalization, foreign and domestic investment and technological advances are increasing demand for high-value commodities, processed foods and agro-industrial products.

In general, trade growth increases with technology intensity. But the bulk of Rwanda's trade growth in recent years has been driven by commodity exports, especially oil, with little evidence that the continent's exporters are moving upmarket into more high-technology activities. While long-term projections suggest that global growth in demand for agricultural products will be weaker than what was experienced before the 2008 economic downturn, World Bank forecasts suggest that three quarters of global demand for food between now and 2030 will emanate from developing countries (World Bank 2009). This implies that regional and domestic markets in developing countries, in addition to global markets, will continue to offer growing opportunities for Rwanda's food and agro-processing products.

Rwanda's ability to meet the growth and poverty reduction targets under Vision 2020 and the EDPRS will depend largely on exploiting the emerging opportunities in domestic, regional and international markets for processed and higher-value agro-industrial products. Diversification towards these market dynamic products has not been fully exploited in the past, but the challenges are not insurmountable. Better policies can help to eliminate or attenuate the challenges that have been identified. At the national level, policies to reduce supply-side constraints and improve business environment and incentive structure for agribusiness must be at the centre of growth and trade promotion strategies.

Strengthening Technological efforts & Innovation capabilities

Promoting agricultural productivity and productive capacities depends on the country's ability to invest in production technology and promote relevant innovations. Strengthening such capacity calls for technological advancement and skills development. This will in turn help in adding value to commodities and building comparative advantage. New learning and innovation platforms involving regional integration and increasing funding for science, technology and innovation are necessary ingredients for catching up. However, this must be done in the framework of public private partnership and by linking research to agro-processing sub-sector.

Promoting Effective and Innovative Financing

In order for the agro-processing subsector development to act as the engine of economic growth for Rwanda, the sector requires capital. However, investment levels are frequently suboptimal, partly because the sector is perceived as risky and yielding unattractive returns. Traditional and innovative sources of financing that have impact at the enterprise level, and mobilization of large-scale resources, will constitute one of the key pillars for agribusiness development in Rwanda, particularly in the agro-processing industry. As with any business, all forms of finance for entire agribusiness value chain will be either in the form of equity or debt, or a blend of both. Additionally, innovative financing primarily through the SACCO movement will play crucial in the development of agro-processing industries that fall within the SMEs category.

Ultimately, the onus of increasing investment and facilitating financing of agro-processing in Rwanda lies with policymakers, by making the sector more attractive and sustainably profitable. Micro-level financing tools and innovative models play a great role, but the policy environment and large-scale resource mechanisms, such as umbrella funding that aligns public and private sector activities, are important. An important point to remember in building public-private partnership mechanisms for agribusiness development, particularly in the agro-processing subsector, is that such mechanisms work best where the private sector is left to do what it does best, and the public sector plays a facilitative role.

Promoting Private Sector Participation

The private sector has emerged as an increasingly important element in stimulating economic growth in developing countries, in response to opportunities for investment and business innovation, created by globalization and technological advances. Consequently, private sector development (PSD) has become a major focus of strategies for economic diversification and transformation, broadly endorsed by multilateral and regional development institutions, donor agencies and governments to foster economic development. In Asia, for example, private enterprises are playing a crucial role in transforming fast-growing economies with significant employment creation and poverty reduction benefits.

Rwanda's agro-processing subsector will focus on enhancing the management of firms responsible for the supply and transformation of agro-processing products from primary commodities to consumables, to meet consumers' requirements in terms of quantity and price. The aim of this objective is to match demand and supply with minimal effort and thus gain competitive advantages over competitors in crucial activities along the agribusiness value chain. Enhanced supply chain management will also focus on customer relationship management in order to better understand and meet the needs of Rwanda's agro-processing subsector customers.

Increased volatility, complexity and scrutiny of Rwanda's agribusiness value chain to which the agro-processing subsector belongs have necessitated greater collaboration between private and public sector (Public Private Partnerships – PPPs). These PPPs have the following key advantages: PPPs provide greater visibility and foresight along the agro-processing value chain; PPPs affords greater influence for both the public and private sectors with regards to key components of the agro-processing value chain such as quality standards,; and PPPs provide greater access to new skills & resources and promote innovation.

Improving Infrastructure and Access to Energy

Infrastructure enhances the competitiveness of an economy and generates a business environment that is conducive to agro-industrial growth and development. Good infrastructure efficiently connects agro- industrial firms to their customers at the market end and suppliers from the production end and enable the use of modern production technologies. The level of infrastructure development greatly influences trade flows, costs, and competitiveness. Access to reliable and appropriate infrastructure is an essential enabler in the agribusiness value chain. On the other hand, deficiencies in infrastructure create barriers to productive opportunities and increase costs for all levels (small, medium or large-scale) and types of agro-industrial firms.

Infrastructure plays a key role to a country's economic activities. Such infrastructure includes energy, mostly electricity generation and distribution; water, waste and sanitation management and transport infrastructure such as roads, railways and airports. This infrastructure shapes the possibilities for what can be produced within a country and in the long-run it is therefore intimately linked to investment and growth. Below are the initiatives for infrastructural development.

The relevant infrastructure for agro-industrial development includes energy, transport and water supply. They are considered vital social capital and because of their broad availability, it is expected that Government of Rwanda should provide such infrastructure from its national income or foreign direct investment to accelerate industrial development and improve standards of living. In the recent past, information technology (IT), telephones, and internet facilities have also been considered as essential aspects of infrastructure required for agro-industrial development.

However, it is more realistic to expect different impacts from the different types of infrastructure investments, and under different investment circumstances, because the size of opportunity costs varies according to the types of infrastructure engaged and circumstances concerned, such as geography, economic and institutional development stage. Infrastructure requirements also vary depending on the market orientation of the agro-industry. For export-oriented agribusinesses, cold storage and refrigerated transport facilities, railroads and ports are crucial.

Institutional Capacity Development for agro-processing in Rwanda

Strong, well-functioning institutions are central to sustaining agro-industrial growth. The need for policy to target microeconomic foundations within the context of a sound macroeconomic strategy and the pivotal role of institutions are the platform for modern-day agenda for policy action. In this regard, five levels of policy level interventions are necessary:

- 1) Improving trade logistics- infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs
- 2) Further enhancement of microeconomic business environment

- 3) Enabling measures to foster the upgrading of agro-industrial clusters
- 4) Targeted science, technology and training policies towards stronger focus on skill development and better organisational capability, especially on-the-job, in-house skills development rather than national level education strategies
- 5) Supporting the strengthening of institutions that will develop and implement policies

Institution capacity development encompasses a range of initiatives cutting across leadership, systems, structures, skills, resources, strategy and incentives. There needs to be a structure in place to manage the capacity development process, which requires a defined process, analysis tools, appropriate delegation of authority and resources. There have been efforts to develop capacity within agro-processing related institutions in the recent years with some successful projects and steady growth. However, institutional challenges still remain which will be addressed through a comprehensive approach to both capacity development and institutional coordination. Below are the initiatives.

Human capital and skills are a key driver of economic development and the achievement of major strategic objectives. Human capital skills development is paramount to achieving the overall goal of economic development. Science, technology and innovation is a key aspect of the human resource capabilities that must be looked at in harmony.

Lack of skilled labour is caused by few prevailing Technical and Vocational Education and Training (TVET) schools in the country, and lack of skills building initiatives such as thorough on-job-training. Public institutional efforts to increase capacity and skills are mainly offered to the public employees without giving much attention to local community's capacity and skills. Highlighted below are the initiatives that will strengthen human Capacities for Technology and Innovation.

8 Implementation of Chain Development Strategies – Pilot Projects

8.1 Project 1 – Staple Foods

Project Name: Building Competitiveness of the Staple Foods for Trade and Development

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

Introduction

Ensuring food security of the population is a key aim of Rwanda's agricultural policy. Food crops constitute 84% of agricultural GDP, and 67% of the cultivable land, reflecting the subsistence nature of agriculture in Rwanda. Since the launch of the National Agricultural Policy in 2004, the cultivable area has increased by 2%, while food crop output has achieved average growth of 7% per year, reflecting improved productivity, through the implementation of various programmes. Food imports have been increasing along with food crop production. The increased food imports is related to a shift in food consumption patterns where richer urban households increasingly consume imported food products, such as rice and sugar, while rural subsistence households continue to consume traditional staples, such as cassava and bananas.

Maize production has increased substantially during the last five years. This growth is because of increased emphasis placed by MINAGRI on maize as a Crop Intensification Program (CIP) crop that can underpin national food security. To encourage production, new varieties have been introduced, a subsidized inputs program has been implemented and cultivation patterns have been shifted from mixed cropping to consolidated monoculture. While Rwanda remains a net importer of maize, this assessment suggests that there is some potential to develop the export market for maize meal and to achieve further import substitution for maize itself.

Beans are a key staple of the Rwandan diet, and the bean crop is the largest of all the agricultural commodities produced in the country. Traditionally, beans were grown as a staple crop to ensure household food security. Strategies of staggered and mixed sowings of beans, and the use of local landraces, are common mechanisms to reduce the risk of interrupted rainfall or disease. However, these practices also reduce the commercial utilization of the crop, and may explain why it has been difficult to develop commercial markets and common nomenclatures for the different strains and mixtures of beans. Nevertheless, the assessment of cross-border markets (particularly those in Uganda) suggests that exports of beans can increase substantially if issues of marketing are successfully addressed.

Irish potatoes are the second most important staple in Rwanda. As per the National Institute of Statistics of Rwanda, they constitute 7.6% of all food purchases, and 8.3% of all food consumption. The country produces a number of different potato varieties, some of which are recognized throughout the region. These vary in taste and cooking characteristics as well as their adaptation to specific soil types. This assessment suggests that while further market development is possible in Burundi and the DRC, greater possibilities exist in both Tanzania and Uganda if the utilization of existing return haulage capacity is to be improved.

Cassava has always been a significant staple crop in Rwanda, but only recently has attention been focused on its increased production. MINAGRI statistics show that production has increased substantially since 2008. This increase has been driven by an increased emphasis

on cassava as a CIP crop that can contribute to both human and animal feed requirements. To encourage production, milling capacity has been enhanced, new extension services developed, and the use of crop inputs has been encouraged. Nevertheless, although cassava is a resilient crop to grow, it can be subject to a number of post-harvest problems, including cyanogenesis, rapid physiological degeneration, and both bacterial and fungal decay. These issues limit the tradability of raw and even milled cassava, which must be properly processed soon after harvest if it is to be sold in an international market. For these reasons, cross border trade in cassava currently represents only a very small proportion of local production and consumption. Nevertheless, the prices of cassava and cassava flour in neighbouring countries, especially Burundi, suggest that increased exports might be commercially feasible if these constraints could be overcome.

Rwanda's wheat yields have doubled since 2008, although the domestic market has remained small. A Rwanda Agricultural Board (RAB) program has been ongoing since 2008, with the goal of introducing new varieties and increasing the use of inputs. However, the market has been constrained by the genetic makeup of Rwandan wheat. With low protein levels (approximately 9%) and poor protein quality, Rwandan wheat is unsuitable as bread wheat. Instead, it is used for making chapatis, biscuits, porridge, or for blending with higher quality wheat. As a result, the two large commercial wheat mills in Rwanda cannot use the domestic production at all, and are obliged to import grain from abroad (primarily from Russia, currently).

Rice is a relatively new crop to Rwanda, having been introduced only in the last 60 years. Nevertheless, rice is widely consumed and considerable volumes are imported from neighbouring countries and from Asia. As a CIP crop, the Government of Rwanda (GoR) has supported rice production. The GoR has administered the construction of community-based irrigation systems in the valley floors, is continuing to introduce new varieties suitable to the soils and climate of the country and installing mills in many of the main production districts.

Many products can be developed from cereals through agro-processing technologies. Current status of trade in cereals and staple food products is summarised below:

Possible Agro-products	International HS Product Code	Current Value (USD) of exports from Rwanda
Maize (corn)	'1005	2,507
Rice	'1006	12,248
Buckwheat, millet and canary seed	'1008	7
Wheat or meslin flour	'1101	13,225
Maize Flour	'1102	8,597
Cereal grouts, meal and pellets	'1103	1,600
Cereal grain, worked post hulling, excluding rice	'1104	53
Flour, meal and flakes of potatoes	'1105	1
Flour and meal of vegetables, roots and tubers or fruits	'1106	495
Starches; inulin	'1108	168
Wheat gluten, whether or not dried	'1109	1
Malt extract; food preparations of flour, meal, starch or malt extract	'1901	86
Pasta & couscous	'1902	194
Breakfast cereals & cereal bars	'1904	7

Bread, biscuits, wafers, cakes and pastries	'1905	3,582
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Project Purpose

The main objective of the project is to upgrade the staple foods value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the staple foods value chain through increased domestic and foreign direct investments in staple foods production and processing processes
- Exploiting national, regional and international demand for staple foods products through competitiveness and compliance with market access requirements

Beneficiaries/ Target Groups

The project targets staple foods producers and both large and small-scale staple foods processors and regulatory agencies along the staple foods value chain.

Approach/Strategy

On the one hand the project will focus on reviewing and updating of the policy and institutional frameworks in Rwanda to provide an enhancing environment to the performance of the staple foods industry. MINICOM will play the overall coordination role to bring together various governmental ministries and agencies responsible for research and development, policy review, development of standards and technical regulations, quality assurance, metrology and testing. On the other hand the project will foster backward and forward linkages along the staple foods value chain through public-private partnerships in order to boost overall productivity and competitiveness of the staple foods value chain. As a priority, the project will strengthen supply side capacities through improved production skills and value added technologies while implementing quality, safety, environmental and social standards. The project will also focus on building clusters and linkages at all levels of production, processing and marketing of staple foods.

Anticipated Results

Impacts

The project is expected to increase growth and competitiveness of the staple foods industry, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of staple foods will contribute to the Rwanda's development objectives such integration of into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the staple foods value chain in Rwanda

Expected Outputs

- Productivity of staple foods in Rwanda is improved
- Access of staple foods products to domestic, regional and global markets increased

Major Activities

Output 1.1	Productivity of the staple foods industry in Rwanda is improved	
Activity 1.1.1 : Strengthen Supply side productive capacities		
Sub-activities	Establish and /or strengthen smallholder producer cooperatives	MINAGRI, RAB, PSF

	Facilitate dialogue and contractual arrangements between producer cooperatives and buyers of their products	MINAGRI, RAB, PSF
	Develop and implement training programme of production, handling and marketing of staple foods	MINAGRI, RAB, PSF
	Conduct risk assessments and develop industry production and marketing guides/ codes of practice based on risk profiles	MINAGRI, RAB, PSF
	Implement use of improved production technologies and inputs	MINAGRI, RAB, PSF
	Establish facilities for hygienic handling of products	MINAGRI, PSF
	Develop public-private partnerships for supply-chain management and traceability system	MINAGRI, PSF
Activity 1.1.2 : Strengthen Agro-processing capacities		Collaborating institutions
Sub-activities	Pilot Community Processing Centres for small-scale staple foods processing in selected regions	MINICOM, MINAGRI, RAB, RBS, PSF
	Develop and implement training and skills development for staple foods processing	MINICOM, MINAGRI, RAB, RBS, PSF
	Strengthen product design, technology, upgrading and quality control through development of industrial processing guides.	MINICOM, MINAGRI, RAB, RBS, PSF
	Provide access to acceptable recognized forms of packaging at competitive prices	MINICOM, RBS, RDB, PSF
	Facilitate acquisition of finance and equity funds by domestic processors.	MINICOM, MINECOFIN, RDB, RAB, PSF
	Promote investments foreign direct investments in industrial processing of staple foods	MINICOM, MINECOFIN, RDB, RBS, RAB, PSF
	Foster SME networks and subcontracting and partnership exchanges between SMEs and large firms	MINICOM, RDB, RBS, RAB, PSF
	Develop a detailed database and investment monitoring platform for agro-processors in Rwanda	MINICOM, RDB, PSF
	Conduct public-private programmes on industrial processing and business excellence through annual award schemes.	MINICOM, RDB, RBS, PSF

Output 1.2	Access of staple foods products to domestic, regional and global markets increased	
Activity 1.2.1 : Build capacity to comply with product quality and safety standards and other requirements for market access		Collaborating institutions
Sub-activities	Develop awareness programmes on standards and requirements for market access	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish a programme for training of trainers in standards and other TBT/SPS market access requirements	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish and/or strengthen public-private platforms to discuss industry-wide issues, particularly on competitiveness of the industry and market access challenges	MINICOM, MINAGRI, RAB, RBS, NAEB, PSF
	Support pilot staple foods-processing plants to compliance with relevant standards as well as packaging and labelling requirements	RBS, RAB, PSF
Activity 1.2.2: Provide export promotion services		
Sub-activities	Establish trade information centre and/or strengthen national TBT/SPS enquiry points to provide relevant trade information.	MINICOM, NAEB, PSF
	Establish SME clusters for staple foods traders and implement a code of practice on trade of staple foods	MINICOM, NAEB, PSF
	Establish export consortium for exporters of staple foods products	MINICOM, NAEB, PSF
	Link domestic SME clusters and export consortium to global supply chains (specific trading blocs) where Rwanda has competitive advantage.	MINICOM, NAEB, PSF
	Leverage on existing relationships with other countries to build the country (Made in Rwanda) brand.	MINICOM, NAEB, MINEAC, MINAFFET, PSF
	Develop strong relationships with end markets and invest in best practice processing technologies and methods.	MINICOM, NAEB, MINEAC, MINAFFET, PSF

8.2 Project 2- Fruits and Vegetables

Project Name: Building Competitiveness of the Fruit and Vegetable Sector for Increased Trade and Development

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

The horticulture subsector includes fruits, vegetables, nuts, flowers and ornamentals. It has been developing rapidly, and the Government considers that Rwanda has competitive advantage in the horticulture sector. The Government considers that this subsector can develop through value addition and diversification, such as focusing on organic and value-added products including juices and dried fruits/chillies. Production of horticulture crops is mostly by small-scale growers, making it difficult to produce large volumes with the necessary quality standards, or to meet the SPS requirements of the international market. Key constraints also include lack of adequate land to achieve economies of scale, and lack of knowledge on crop cultivation and fertilizer and pest management, export procedures and requirements, and the low ratio of agronomists to farmers.

Fruit and vegetable production is a major economic activity in Rwanda. Both established and planned fruit and vegetable processing can solve a very clearly identified development problem. This is that due to insufficient demand, weak infrastructure, poor transportation and perishable nature of fruits and vegetables, the grower sustains substantial losses. During the post-harvest glut, the loss is considerable and often some of the produce has to be fed to animals or allowed to rot. Fruit and vegetable processing can replace imported products like squash, yams, tomato sauces, pickles, etc., besides earning foreign exchange by exporting finished or semi-processed products. Processing can also develop diverse value added products. Practically any fruit and vegetable can be processed, but some important factors that determine whether it is worthwhile are the demand for a particular fruit or vegetable in the processed form; the quality of the raw material, i.e. whether it can withstand processing; regular supplies of the raw material. For Rwanda, the aim will be to strengthen and broaden the existing processing capacities and product diversity of products produced and traded by the country. Current status of exports of fruits and vegetable products is shown below:

Possible Agro-products	International HS Product Code	Current Value (USD) of exports from Rwanda
Cucumbers, gherkins and onions preserved by vinegar	'2001	1
Tomatoes prepared or preserved	'2002	18
Mushrooms & truffles, prepared or preserved	'2003	0
Prepared or preserved vegetables (incl. frozen)	'2004	1
Prepared or preserved vegetables (excl. frozen)	'2005	7
Sugar preserved fruits and nuts	'2006	0
Jams, fruit jellies & marmalades	'2007	0
Preserved fruits	'2008	24
Fruit & vegetable juices, unfermented	'2009	732

Project Purpose

The main objective of the project is to upgrade the fruit and vegetable value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the fruit and vegetable value chain through increased domestic and foreign direct investments in fruit and vegetable production and processing processes
- Exploiting national, regional and international demand for fruit and vegetable preparations through increased competitiveness and compliance with market access requirements

Beneficiaries/ Target Groups

The project targets fruit and vegetable producers and both large and small-scale fruit and vegetable processors and regulatory agencies along the fruit and vegetable value chain.

Approach/Strategy

On the one hand the project will focus on reviewing and updating of the policy and institutional frameworks in Rwanda to provide an enhancing environment to the performance of the fruit and vegetable industry. MINICOM will play the overall coordination role to bring together various governmental ministries and agencies responsible for research and development, policy review, development of standards and technical regulations, quality assurance, metrology and testing. On the other hand the project will foster backward and forward linkages along the fruit and vegetable value chain through public-private partnerships in order to boost overall productivity and competitiveness of the fruit and vegetable value chain. To operate a fruit and vegetable processing centre efficiently it is of utmost importance to pre-organise growth, collection and transport of suitable raw material, on either the nucleus farm basis or using out growers. As a priority, the project will strengthen supply side capacities through improved production skills and value added technologies while implementing quality, safety, environmental and social standards. The project will also focus on building clusters and linkages at all levels of production, processing and marketing of fish.

Anticipated Results

Impacts

The project is expected to increase growth and competitiveness of the fisheries industry, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of fruit and vegetable will contribute to the Rwanda's development objectives such integration of into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the fruit and vegetable value chain in Rwanda

Expected Outputs

- Productivity of the fruit and vegetable industry in Rwanda is improved
- Access of fruit and vegetable preparations to domestic, regional and global markets increased
- Supply of wholesome, safe, nutritious and acceptable food to consumers is available throughout the year.

Major Activities

Output 1.1	Productivity of the fruit and vegetable industry in Rwanda is improved	
Activity 1.1.1 : Strengthen Supply side productive capacities		
Sub-activities	Establish and /or strengthen smallholder producer cooperatives	MINAGRI, RAB, PSF
	Facilitate dialogue and contractual arrangements between producer cooperatives and buyers of their products	MINAGRI, RAB, PSF
	Develop and implement training programme of production, handling and marketing of fish	MINAGRI, RAB, PSF
	Conduct risk assessments and develop industry production and marketing guides/ codes of practice based on risk profiles	MINAGRI, RAB, PSF
	Implement use of improved production technologies and inputs	MINAGRI, RAB, PSF
	Establish facilities for hygienic handling of products	MINAGRI, PSF
	Develop public-private partnerships for supply-chain management and traceability system	MINAGRI, PSF
Activity 1.1.2 : Strengthen Agro-processing capacities		Collaborating institutions
Sub-activities	Pilot Community Processing Centres for small-scale fruit and vegetable processing in selected regions	MINICOM, MINAGRI, RAB, RBS, PSF
	Develop and implement training and skills development for fruit and vegetable processing	MINICOM, MINAGRI, RAB, RBS, PSF
	Strengthen product design, technology, upgrading and quality control through development of industrial processing guides.	MINICOM, MINAGRI, RAB, RBS, PSF
	Provide access to acceptable recognized forms of packaging at competitive prices	MINICOM, RBS, RDB, PSF
	Facilitate acquisition of finance and equity funds by domestic processors.	MINICOM, MINECOFIN, RDB, RAB, PSF
	Promote investments foreign direct investments in industrial processing of fruits and vegetables	MINICOM, MINECOFIN, RDB, RBS, RAB, PSF
	Foster SME networks and subcontracting and partnership exchanges between SMEs and large firms	MINICOM, RDB, RBS, RAB, PSF

	Develop a detailed database and investment monitoring platform for agro-processors in Rwanda	MINICOM, RDB, PSF
	Conduct public-private programmes on industrial processing and business excellence through annual award schemes.	MINICOM, RDB, RBS, PSF

Output 1.2	<i>Access of fruit and vegetable preparations to domestic, regional and global markets increased</i>	
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Activity 1.2.1 : Build capacity to comply with product quality and safety standards and other requirements for market access		Collaborating institutions
Sub-activities	Develop awareness programmes on standards and requirements for market access	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish a programme for training of trainers in standards and other TBT/SPS market access requirements	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish and/or strengthen public-private platforms to discuss industry-wide issues, particularly on competitiveness of the industry and market access challenges	MINICOM, MINAGRI, RAB, RBS, NAEB, PSF
	Support pilot fish-processing plants to compliance with relevant standards as well as packaging and labelling requirements	RBS, RAB, PSF
Activity 1.2.2: Provide export promotion services		
Sub-activities	Establish trade information centre and/or strengthen national TBT/SPS enquiry points to provide relevant trade information.	MINICOM, NAEB, PSF
	Establish SME clusters for fruit and vegetable traders and implement a code of practice on fruit and vegetable trade	MINICOM, NAEB, PSF
	Establish export consortium for exporters of fruit and vegetable preparations	MINICOM, NAEB, PSF
	Link domestic SME clusters and export consortium to global supply chains (specific trading blocs) where Rwanda has competitive advantage.	MINICOM, NAEB, PSF
	Leverage on existing relationships with other countries to build the country (Made in Rwanda) brand.	MINICOM, NAEB, MINEAC, MINAFFET, PSF
	Develop strong relationships with end markets and invest in best practice processing technologies and methods.	MINICOM, NAEB, MINEAC, MINAFFET, PSF

8.3 Project 3- Dairy Industry

Project Name: Building Competitiveness of the Dairy Industry for Increased Trade and Development

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

Introduction

The livestock subsector in Rwanda contributes both to food security and to income generation, since it remains an important source of milk, meat, and other animal products. Livestock production is highly dependent on the availability of water, which is greatly affected by the seasons. During rainy season, there is abundant green grass and drinking water, while during the dry season, animals have to trek several kilometres in search of water, leading to loss of production and productivity. Average milk production falls by as much as 60% during the dry season. Rwanda produces about 160 million litres of fresh milk, of which, 48% is produced under traditional or extensive grazing systems. 39% of milk produced is consumed on-farm. Poor infrastructure, especially road networks between production areas and the market are a major constraint for milk producers. Dairy farmers depend largely on bicycle transport. Consequently, 35% of the raw milk is spoilt before reaching the market or being processed, due to prolonged exposure to the sun and being shaken on the corrugated pathways.

Milk is a valuable nutritious food that has a short shelf life and requires careful handling. Milk is highly perishable because it is an excellent medium for growth of microorganisms, particularly bacterial pathogens, which can cause spoilage and diseases in consumers. Milk processing allows the preservation of milk for days, weeks or months and helps to reduce food-borne illness. Processing of dairy products gives small-scale dairy producers higher cash incomes than selling raw milk and offers better opportunities to reach regional and urban markets. Milk processing can also help to deal with seasonal fluctuations in milk supply. The transformation of raw milk into processed milk and products can benefit entire communities by generating off-farm jobs in milk collection, transportation, processing and marketing. Current state of trade in milk and milk products is summarised below:

Possible Agro-products	International HS Product Code	Current Value (USD) of exports from Rwanda
Milk and cream, not concentrated nor sweetened	'0401	235
Milk and cream, concentrated or sweetened	'0402	23,610
Buttermilk and yogurt	'0403	383
Whey and natural milk products	'0404	4
Butter and other fats and oils derived from milk	'0405	0
Cheese and curd	'0406	0

Project Purpose

The main objective of the project is to upgrade the milk value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the milk value chain through increased domestic and foreign direct investments in milk production and processing processes
- Exploiting national, regional and international demand for milk and milk products increased competitiveness and compliance with market access requirements

Beneficiaries/ Target Groups

The project targets milk producers and both large and small-scale milk processors and regulatory agencies along the milk value chain.

Approach/Strategy

On the one hand the project will focus on reviewing and updating of the policy and institutional frameworks in Rwanda to provide an enhancing environment to the performance of the dairy industry. MINICOM will play the overall coordination role to bring together various governmental ministries and agencies responsible for research and development, policy review, development of standards and technical regulations, quality assurance, metrology and testing. On the other hand the project will foster backward and forward linkages along the milk value chain through public-private partnerships in order to boost overall productivity and competitiveness of the milk value chain. As a priority, the project will strengthen supply side capacities through improved production skills and value added technologies while implementing quality, safety, environmental and social standards. The project will also focus on building clusters and linkages at all levels of production, processing and marketing of milk.

Anticipated Results

Impacts

The project is expected to increase growth and competitiveness of the dairy industry, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of milk will contribute to the Rwanda's development objectives such integration of into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the milk value chain in Rwanda

Expected Outputs

- Productivity of the dairy industry in Rwanda is improved
- Access of milk and milk products to domestic, regional and global markets increased

Major Activities

Output 1	Productivity of the dairy industry in Rwanda is improved	
Activity 1.1: Strengthen Supply side productive capacities		
Sub-activities	Establish and /or strengthen smallholder producer cooperatives	MINAGRI, RAB, PSF

	Facilitate dialogue and contractual arrangements between producer cooperatives and buyers of their products	MINAGRI, RAB, PSF
	Develop and implement training programme of production, handling and marketing of milk and milk products.	MINAGRI, RAB, PSF
	Conduct risk assessments and develop industry production and marketing guides/ codes of practice based on risk profiles	MINAGRI, RAB, PSF
	Implement use of improved production technologies and inputs	MINAGRI, RAB, PSF
	Establish facilities for hygienic handling of products	MINAGRI, PSF
	Develop public-private partnerships for supply-chain management and traceability system	MINAGRI, PSF

Output 2	Dairy value Chain in Rwanda is improved	
Activity 2 .1: Strengthen Agro-processing capacities		Collaborating institutions
Sub-activities	Pilot Community Processing Centres for small-scale milk processing in selected regions	MINICOM, MINAGRI, RAB, RBS, PSF
	Develop and implement training and skills development for milk processing	MINICOM, MINAGRI, RAB, RBS, PSF
	Strengthen product design, technology, upgrading and quality control through development of industrial processing guides.	MINICOM, MINAGRI, RAB, RBS, PSF
	Provide access to acceptable recognized forms of packaging at competitive prices	MINICOM, RBS, RDB, PSF
	Facilitate acquisition of finance and equity funds by domestic processors.	MINICOM, MINECOFIN, RDB, RAB, PSF
	Promote investments foreign direct investments in industrial processing of milk	MINICOM, MINECOFIN, RDB, RBS, RAB, PSF
	Foster SME networks and subcontracting and partnership exchanges between SMEs and large firms	MINICOM, RDB, RBS, RAB, PSF
	Develop a detailed database and investment monitoring platform for agro-processors in Rwanda	MINICOM, RDB, PSF
	Conduct public-private programmes on industrial processing and business excellence through annual award schemes.	MINICOM, RDB, RBS, PSF

Output 3	Access of milk and milk products to domestic, regional and global markets increased	
Activity 3.1 : Build capacity to comply with product quality and safety standards and other requirements for market access		Collaborating institutions
Sub-activities	Develop awareness programmes on standards and requirements for market access	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish a programme for training of trainers in standards and other TBT/SPS market access requirements	MINICOM, MINAGRI, RAB, RBS, PSF

	Establish and/or strengthen public-private platforms to discuss industry-wide issues, particularly on competitiveness of the industry and market access challenges	MINICOM, MINAGRI, RAB, RBS, NAEB, PSF
	Support pilot milk-processing plants to compliance with relevant standards as well as packaging and labelling requirements	RBS, RAB, PSF
Activity 3.2: Provide export promotion services		
Sub-activities	Establish trade information centre and/or strengthen national TBT/SPS enquiry points to provide relevant trade information.	MINICOM, NAEB, PSF
	Establish SME clusters for milk traders and implement a code of practice on trade in milk and milk products	MINICOM, NAEB, PSF
	Establish export consortium for exporters of milk and milk products	MINICOM, NAEB, PSF
	Link domestic SME clusters and export consortium to global supply chains (specific trading blocs) where Rwanda has competitive advantage.	MINICOM, NAEB, PSF
	Leverage on existing relationships with other countries to build the country (Made in Rwanda) brand.	MINICOM, NAEB, MINEAC, MINAFFET, PSF
	Develop strong relationships with end markets and invest in best practice processing technologies and methods.	MINICOM, NAEB, MINEAC, MINAFFET, PSF

8.4 Fish and Fishery Products

Project Name: Building Competitiveness of the Fisheries Sector for Trade and Development

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

Introduction

Fish provides a good source of high quality protein and contains many vitamins and minerals. They are classified as either white, oily or shellfish. Oily fish, because of its high fat content, contains a range of fat-soluble vitamins (A, D, E and K) and essential fatty acids, all of which are vital for the healthy functioning of the body. However, fish is an extremely perishable food, and so most fish become inedible within twelve hours at tropical temperatures. Spoilage begins as soon as the fish dies, and processing should therefore be done quickly to prevent the growth of spoilage bacteria. Fish is a low acid food and is therefore very susceptible to the growth of food poisoning bacteria. This is another reason why it should be processed quickly. Some methods of preservation cause changes to the flavour and texture of the fish, which result in a range of different products. These include cooking (for example, boiling or frying); lowering the moisture content (by salting, smoking and drying collectively known as curing) and lowering the pH (by fermentation).

The fishing subsector in Rwanda is small and fish production is low. Fishing is conducted on 17 inland lakes, using nets and sail boats. Fish farmers are grouped into cooperatives that manage either lakes or fish ponds. The Rwanda Agriculture Board (RAB) oversees the industry. According to MINAGRI the national fish production in 2012 was estimated at 19334 tons of which capture fisheries contributed 18,928.6 tons and aquaculture 414.6 tons. Rwanda is a net importer of fish from neighboring Uganda and Tanzania. However, Rwanda re-exports most of the imported fish to DRC. In general, fishing in Rwanda is artisanal and characterized by smallholder fishers and farmers. To improve productivity, it is necessary to organize the smallholders in cooperatives. Current level of trade in fish and fishery products is shown below:

Possible Agro-products	International HS Product Code	Current Value (USD) of exports from Rwanda
Fish, fresh, whole	'0302	2
Fish, frozen, whole	'0303	0
Fish fillets and pieces, fresh, chilled or frozen	'0304	0
Fish, cured or smoked and fish meal fit for human consumption	'0305	140
Crustaceans	'0306	1
Molluscs	'0307	29
Extracts & juices of meat, fish, crustaceans & molluscs	'1603	238
Prepared/preserved fish & caviar	'1604	1,189
Crustaceans & molluscs, prepared/preserved	'1605	0

Project Purpose

The main objective of the project is to upgrade the fish value chain in Rwanda. More specifically, the project aims at

- Boosting productivity of the fish value chain through increased domestic and foreign direct investments in fish production and processing processes
- Exploiting national, regional and international demand for fish and fishery products through increased access to markets

Beneficiaries/ Target Groups

- The project targets fish producers and both large and small-scale fish processors and regulatory agencies along the fish value chain.

Approach/Strategy

On the one hand the project will focus on reviewing and updating of the policy and institutional frameworks in Rwanda to provide an enhancing environment to the performance of the fish industry. MINICOM will play the overall coordination role to bring together various governmental ministries and agencies responsible for research and development, policy review, development of standards and technical regulations, quality assurance, metrology and testing. On the other hand the project will foster backward and forward linkages along the fish value chain through public-private partnerships in order to boost overall productivity and competitiveness of the fish value chain. As a priority, the project will strengthen supply side capacities through improved production skills and value added technologies while implementing quality, safety, environmental and social standards. The project will also focus on building clusters and linkages at all levels of production, processing and marketing of fish.

Anticipated Results

Impacts

The project is expected to increase growth and competitiveness of the fisheries industry, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of fish will contribute to the Rwanda's development objectives such integration of into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the fish value chain in Rwanda

Expected Outputs

- Productivity of the fish industry in Rwanda is improved
- Access of fish and fishery products to domestic, regional and global markets increased

Major Activities

Output 1	Productivity of the fish industry in Rwanda is improved	
Activity 1.1: Strengthen Supply side productive capacities		
Sub-activities	Establish and /or strengthen smallholder producer cooperatives	MINAGRI, RAB, PSF

	Facilitate dialogue and contractual arrangements between producer cooperatives and buyers of their products	MINAGRI, RAB, PSF
	Develop and implement training programme of production, handling and marketing of fish	MINAGRI, RAB, PSF
	Conduct risk assessments and develop industry production and marketing guides/ codes of practice based on risk profiles	MINAGRI, RAB, PSF
	Implement use of improved production technologies and inputs	MINAGRI, RAB, PSF
	Establish facilities for hygienic handling of products	MINAGRI, PSF
	Develop public-private partnerships for supply-chain management and traceability system	MINAGRI, PSF

Output 2	<i>Fish Value Chain in Rwanda is improved</i>	
Activity 2.1: Strengthen Agro-processing capacities		Collaborating institutions
Sub-activities	Pilot Community Processing Centres for small-scale fish processing in selected regions	MINICOM, MINAGRI, RAB, RBS, PSF
	Develop and implement training and skills development for fish processing	MINICOM, MINAGRI, RAB, RBS, PSF
	Strengthen product design, technology, upgrading and quality control through development of industrial processing guides.	MINICOM, MINAGRI, RAB, RBS, PSF
	Provide access to acceptable recognized forms of packaging at competitive prices	MINICOM, RBS, RDB, PSF
	Facilitate acquisition of finance and equity funds by domestic processors.	MINICOM, MINECOFIN, RDB, RAB, PSF
	Promote investments foreign direct investments in industrial processing of fish	MINICOM, MINECOFIN, RDB, RBS, RAB, PSF
	Foster SME networks and subcontracting and partnership exchanges between SMEs and large firms	MINICOM, RDB, RBS, RAB, PSF
	Develop a detailed database and investment monitoring platform for agro-processors in Rwanda	MINICOM, RDB, PSF
	Conduct public-private programmes on industrial processing and business excellence through annual award schemes.	MINICOM, RDB, RBS, PSF

Output 3	<i>Access of fish and fishery products to domestic, regional and global markets increased</i>	
Activity 3.1 : Build capacity to comply with product quality and safety standards and other requirements for market access		Collaborating institutions
Sub-activities	Develop awareness programmes on standards and requirements for market access	MINICOM, MINAGRI, RAB, RBS, PSF
	Establish a programme for training of trainers in standards and other TBT/SPS market access requirements	MINICOM, MINAGRI, RAB, RBS, PSF

	Establish and/or strengthen public-private platforms to discuss industry-wide issues, particularly on competitiveness of the industry and market access challenges	MINICOM, MINAGRI, RAB, RBS, NAEB, PSF
	Support pilot fish-processing plants to compliance with relevant standards as well as packaging and labelling requirements	RBS, RAB, PSF
Activity 3.2: Provide export promotion services		
Sub-activities	Establish trade information centre and/or strengthen national TBT/SPS enquiry points to provide relevant trade information.	MINICOM, NAEB, PSF
	Establish SME clusters for fish traders and implement a code of practice on fish trade	MINICOM, NAEB, PSF
	Establish export consortium for exporters of fish and fishery products	MINICOM, NAEB, PSF
	Link domestic SME clusters and export consortium to global supply chains (specific trading blocs) where Rwanda has competitive advantage.	MINICOM, NAEB, PSF
	Leverage on existing relationships with other countries to build the country (Made in Rwanda) brand.	MINICOM, NAEB, MINEAC, MINAFFET, PSF
	Develop strong relationships with end markets and invest in best practice processing technologies and methods.	MINICOM, NAEB, MINEAC, MINAFFET, PSF

8.5 Project 5- Policy Reform

Project Name: Rationalisation of Rwanda's Agro-processing Policies for Improved Productivity and Competitiveness

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

Introduction

The Government of Rwanda has a strong interest and a key role in regulating and facilitating the development of the private sector. At the same time, the government has a key role in ensuring that economic growth provides opportunities for the poor to engage in productive activities. In this context, the public sector has a crucial role to promote a policy and institutional environment that enables the private sector to flourish and become an effective driver of sustainable and inclusive growth. To increase the impact of private sector development on poverty reduction MINICOM will support the efforts to improve the business environment and lay the policy and institutional foundations for the development of a vibrant private sector, as well as promoting domestic entrepreneurship and in particular development of the entrepreneurial skills of disadvantaged groups. Furthermore it is essential to link domestic enterprises to international investment and technology flows, and facilitate access to resources and support services that small and medium enterprises (SMEs) require to become more competitive. Innovation, entrepreneurship and competition are important sources of productivity growth that, with appropriate policy and incentive structures, can bring about pro-poor market outcomes in the form of more sustainable jobs and incomes as well as affordable goods and services.

The Vision 2020 is Rwanda's overall development blueprint. It contains Rwanda's long-term development goals and aims to transform Rwanda from a low-income agriculture-based economy to a knowledge-based, service-oriented economy by 2020. Rwanda's Vision 2020 seeks to transform the nation fundamentally into a middle-income country by the year 2020. This requires achieving an annual per capita income (GDP per capita) of US\$ 900 (US\$ 630 in 2013), a poverty rate of 30% (44.9% in 2012) and an average life expectancy of 55 years (64 years in 2013). Rwanda has had an average per capita growth of around 8% for the last decade, but given that the rate of population has increased by 2.7%, this growth rate would need to be accelerated further in order to achieve sustained poverty reduction.

The Economic Development and Poverty Reduction Strategy (EDPRS) is a medium-term strategy towards attainment of the long-term Rwanda Vision 2020 objectives. The priority areas identified under the EDPRS1 (which ran from 2008-2012) were: poverty and vulnerability reduction; institutional capacity building and social capital formation; sustainable management of the natural environment; good governance and enhanced efficiency and accountability of the public sector; enhanced performance of the private sector, focusing on ICT; economic infrastructure development: (transport, energy, water, and ICT); and rural development and agricultural transformation.

Overall, the policy and institutional environment for agro-processing in Rwanda does exist, but has not effectively stimulated or supported development of agro-processing sub-sector. There is a complexity of factors underpinning growth in agro-processing and there is no unique policy formula. A new industrial policy dialogue has emerged in the wake of the global economic and financial crisis of 2008, focusing on revisiting industrial policy in the post-Washington consensus period. A new policy focus is needed on green and clean industry growth within the framework of a resource-efficient and low-carbon growth trajectory.

Project Purpose

The main objective of the project is to update the policy and regulatory frameworks affecting production, processing and marketing of Rwanda's agro-industry products. More specifically, the project aims at

- Improve agro-processing and trade logistics- infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs;
- Further enhance microeconomic business environment
- Create enabling measures to foster the upgrading of agro-industrial clusters;
- Strengthen technology centres through targeted science, technology and training

Beneficiaries/ Target Groups

The project targets Rwanda's agro-industry and regulatory agencies along the agro-industry value chains.

Approach/Strategy

The main focus of this project is to foster partnerships and platforms that will lead to policy reform in agro-processing. The project will strengthen technological efforts and innovation capabilities through technological advancement and skills development. This will in turn help in adding value to commodities and building comparative advantage. The project will also develop policies to promote traditional and innovative sources of financing that have impact to agro-processing at the enterprise level. Understanding the important role private sector plays as an engine for industrial development, policies that will focus on enhancing the management of firms responsible for the supply and transformation of agro-processing products will be developed. This will help to match demand and supply with minimal effort and thus gain competitive advantages over competitors in crucial activities agro-processing. Good infrastructure efficiently connects agro- industrial firms to their customers at the market end and suppliers from the production end and enable the use of modern production technologies. The project will foster partnerships across government private sector and donors to enable access to reliable and appropriate infrastructure which is essential for agro-processing.

Anticipated Results

Impacts

The project is expected to increase growth and competitiveness of the agro-processing sub-sector, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of agro-industry products will contribute to Rwanda's development objectives, including integration into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the agro-processing sub-sector in Rwanda

Expected Outputs

- Technology and Innovation capabilities strengthened
- Improved access to effective and innovative financing

- Public –private partnerships in agro-processing stimulated
- Improved agro-processing and trade logistics with regard to infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs
- Institutions that will develop and implement policies strengthened

Major Activities

Output 4	Technology and Innovation capabilities strengthened	
Activity 4.1 : Review Industrial Masterplan to include innovation capabilities and technologies for value added		Collaborating institutions
Sub-activities	4.1.1 Incorporate science technology innovation (STI) inputs systematically into production and marketing along the agro-industrial value chain	MINICOM, MINAGRI
	4.1.2 Integrate STI agenda into public policy and private sector management	MINICOM, MINAGRI
	4.1.3 Conduct technical and market feasibility studies to identify the right agro-processing technology required.	MINICOM, MINAGRI
	4.1.4 Invest in skills that are needed to identify, acquire and operate modern technology.	MINICOM, MINAGRI, MINEDUC
Activity 4.2: Develop comprehensive STI strategy for linking research to private sector in agro-processing		
Sub-activities	4.2.1 Develop a comprehensive Science Technology Innovation (STI) -based rehabilitation programme for agro-industries.	MINICOM, MINAGRI, MINEDUC, RBS, RAB
	4.2.2 Assess human capabilities that are needed for the local and national STI infrastructure.	MINICOM, MINAGRI, MINEDUC, RBS, RAB
	4.2.3 Implement a human resources development projects especially for the food processing industry and the high-value agriculture export sector.	MINICOM, MINAGRI, MINEDUC, RBS, RAB
	4.2.4 Rally donor assistance /technical assistance towards strengthening STI capacities and developing STI infrastructure	MINECOFIN, MINICOM, RDB

Output 5	Access to effective and innovative financing improved	
Activity 5.1 : Establish/Facilitate pooled funding for agro-processing sub-sector that uses public funding to leverage resources from the private sector		Collaborating institutions
Sub-activities	5.1.1 Review investment policies to create a dedicated revolving wealth sovereign fund for agro-processing	MINECOFIN, MINICOM
	5.1.2 Develop appropriate banking models and regulations including risk mitigation through insurance and reinsurance schemes.	MINECOFIN, MINICOM
Activity 5.2: Create enabling environment for local resource accumulation and investment		
Sub-activities	5.2.1 Actively engage diaspora for local investments in agro-processing	MINECOFIN, MINICOM
	5.2.2 Expand collateralisation for agro-processing and encourage leasing	MINECOFIN, MINICOM
	5.2.3 Encourage external financing in agro-processing through large lead firms.	MINECOFIN, MINICOM

Output 6	Public –private partnerships in agro-processing stimulated	
Activity 6.1 : Create competitiveness through private enterprise development		Collaborating institutions
Sub-activities	6.1.1 Support small scale agro-processors establish industrial clusters for entrepreneurship development	MINICOM, MINAGRI, RAB
	6.1.2 Conduct bankable feasibility studies for appropriate priority agro-industries	MINICOM, RDB, MINECOFIN
	6.1.3 Provide relevant business and advisory services to SMEs in agro-processing	MINICOM, RAB, RBS
Activity 6.2: Create enabling environment for private sector participation in agro-processing		
Sub-activities	6.2.1 Review policies, strategies for agro-processing in Rwanda	MINICOM, MINAGRI,
	6.2.2 Review incentive and regulatory frameworks for private sector participation in agro-processing in Rwanda	MINICOM, MINAGRI, RBS, RAB, RDB

	6.2.3 Create secure and supportive environment for private investments in agro-processing	MINICOM, RDB
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Output 7	Infrastructure and access to affordable energy improved	
Activity 7.1 : Establish strategic investments in transport infrastructure and transit corridors		Collaborating institutions
Sub-activities	7.1.1 Improve quality of the road network, both in rural and urban areas, especially the feeder roads that link the farms.	MININFRA, MINICOM
	7.1.2 Encourage efficient supply chain management for agro-processing, particularly in sourcing inputs and supplies, and in transportation of agro-products to markets	MINICOM, MININFRA
	7.1.3 Accelerate regional integration in infrastructure and energy	MINICOM, MININFRA, MINEAC
Activity 7.2: Enhance access to energy for productive use		
Sub-activities	7.2.1 In the short term, lower power tariffs for agro-processing companies in order to reduce the cost of production for the manufacturers.	MININFRA, MINICOM, RDB
	7.2.2 Partner with private sector players, within the framework of Public Private Partnerships (PPPs) to help in the energy infrastructure development including design, build, financing, maintenance and its operation.	MINICOM, MININFRA, PSF
	7.2.3 Encourage private sector players to invest in alternative (renewable) sources of energy.	MINICOM, MININFRA, RDB, PSF
Activity 7.3 Introduce Green Certification schemes in agro-processing for sustainable production		
Sub-activity	7.3.1 Introducing energy-saving and renewable energy technologies for sustainability	MINICOM, PSF
	7.3.2 Encourage use of cleaner technologies and processes for minimizing waste and utilizing by-products from agro-processing.	MINICOM, PSF

8.6 Institutional Capacity Development for agro-processing in Rwanda

Project Name: Strengthening Rwanda’s Agro-processing Institutions that will implement Policies for Increased Productivity and Competitiveness

Implementing Agencies: MINICOM

Collaborating Agencies: MINAGRI, MINECOFIN, MINAFFET, RAB, RBS, RDB, NAEB, PSF

Implementing Period: 2014-2020

Introduction

Strong, well-functioning institutions are central to sustaining agro-industrial growth. The need for policy to target microeconomic foundations within the context of a sound macroeconomic strategy and the pivotal role of institutions are the platform for modern-day agenda for policy action.

Institution capacity development encompasses a range of initiatives cutting across leadership, systems, structures, skills, resources, strategy and incentives. There needs to be a structure in place to manage the capacity development process, which requires a defined process, analysis tools, appropriate delegation of authority and resources. There have been efforts to develop capacity within agro-processing related institutions in the recent years with some successful projects and steady growth. However, institutional challenges still remain which will be addressed through a comprehensive approach to both capacity development and institutional coordination.

Human capital and skills are a key driver of economic development and the achievement of major strategic objectives. Human capital skills development is paramount to achieving the overall goal of economic development. Science, technology and innovation is a key aspect of the human resource capabilities that must be looked at in harmony.

Lack of skilled labour is caused by few prevailing Technical and Vocational Education and Training (TVET) schools in the country, and lack of skills building initiatives such as thorough on-job-training. Public institutional efforts to increase capacity and skills are mainly offered to the public employees without giving much attention to local community’s capacity and skills. Highlighted below are the initiatives that will strengthen human Capacities for Technology and Innovation.

Project Purpose

The main objective of the project is to upgrade agro-industry value chains in Rwanda as a path out of poverty. More specifically, the project aims at

- Updating the policy and regulatory frameworks affecting production, processing and marketing of agro-industry products.
- Boosting productivity of agro-industry value chains in Rwanda through increased domestic and foreign direct investments in fruit and vegetable production and processing processes
- Exploiting national, regional and international demand for Rwanda’s agro-industry products through increased access to markets

Beneficiaries/ Target Groups

The project targets Rwanda’s agro-industry and regulatory agencies along the agro-industry value chains.

Approach/Strategy

The project will address policy issues at five levels: (1) Improving trade logistics- infrastructure, transport, energy, water and ICTs supported by reforms to make doing business more efficient at lower transaction costs; (2) Further enhancement of microeconomic business environment (3) Enabling measures to foster the upgrading of agro-industrial clusters; (4) Targeted science, technology and training policies towards stronger focus on skill development and better organisational capability, especially on-the-job, in-house skills development rather than national level education strategies; and (5) Supporting the strengthening of institutions that will develop and implement policies.

Impacts

The project is expected to increase growth and competitiveness of the agro-processing sub-sector, create jobs and incomes for the local population thereby improving rural livelihoods. Moreover, increased production, processing, sale and consumption of agro-industry products will contribute to Rwanda's development objectives, including integration into global value chains, women empowerment, food security and natural resource management.

Outcomes

The project is expected to boost productivity and competitiveness of the agro-processing sub-sector in Rwanda

Expected Outputs

- Productivity of the agro-processing sub-sector in Rwanda is improved
- Access of agro-industry to domestic, regional and global markets increased

Major Activities

Output 8	Institutional capacities for agro-processing developed	
Activity 8.1 : Create favourable institutional environment for agro-processing in Rwanda		Collaborating institutions
Sub-activities	8.1.1 Review policies and strategies for skills and human	MINEDUC, MINICOM, MINAGRI
	8.1.2 Encourage efficient supply chain management for agro-processing, particularly in sourcing inputs and supplies, and in transportation of agro-products to markets	MINICOM, PSF, MINAGRI
Activity 8.2: Build capacities of public sector organisations/agencies for effective service delivery to the agro-industry in Rwanda		
Sub-activities	8.2.1 Establish Integrated Polytechnic Regional Technical Centres (IPRC)	MINEDUC, MINICOM
	8.2.2 Establish mechanism for capturing, monitoring and updating short, medium and long term skills	MINICOM, MINEDUC

	available and requirements according to current and forecasted demand	
	8.2.3 Implement relevant training programmes for technical and business support personnel from relevant national institutions	MINICOM, MINEDUC
Activity 8.3 : Create regional and global networks to tap existing institutional capacities to support agro-processing in Rwanda		
Sub-activity	8.3.1 Establish strong partnership arrangements with universities and industrial research and development institutions in the region for skills development	MINEAC, MINAFFET, MINICOM, MINEDUC
	8.3.2 Develop and implement programme for industrial study tours and attachment programmes with agro-processing centres of excellence in the region and/or other countries	MINEAC, MINAFFET, MINICOM, MINEDUC,
Activity 8.4 : Strengthen local networks for private sector participation in skills development		
Sub-activity	8.4.1 Strengthen networking activities between universities and private sector players and engage them in lectures, company presentations and career fairs and industrial attachment/internship programmes.	MINICOM, MINEDUC, PSF
	8.4.2 Promote industry involvement by inviting private sector representatives to lectures, company presentations and career fairs, during which employers can explain their recruitment needs both to students and the academic staff.	MINICOM, MINEDUC, PSF
Activity 8.5 : Strengthen conformity assessment infrastructure relevant to agro-processing		
Sub-activities	8.5.1 Strengthen the requisite legal and regulatory framework for conformity.	MINICOM, RBS, RAB
	8.5.2 Establish recognized standards, accreditation, certification and inspection schemes relevant to agro-processing.	MINICOM, RBS, RAB
	8.5.3 Strengthen national institutions to provide internationally recognized and harmonized conformity assessment services in agro-processing.	MINICOM, RBS, RAB
	8.5.4 Upgrade RBS laboratories to provide relevant testing and calibration in agro-processing.	MINICOM, RBS

9 Implementation Plan

The implementation plan below highlights how the various initiatives will be rolled out, clearly setting the timelines and the people / institutions responsible for each initiative. Successful implementation of the initiatives strongly depends on development of strong working relationships and a shared commitment to collaboration and acting with integrity between the various stakeholders. Fostering a culture of collegiality, where there is a clear and a common understanding of the outcomes sought is also very essential for successful implementation of these initiatives.

Table 9: Implementation Plan

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
1. Increased agricultural productivity	1.Strengthen supply side productive capacities	Develop market oriented production systems such as contract farming, farming as business	Facilitate contract farming	MINAGRI, RAB			
		Increase use of farm inputs such as fertiliser and pesticides and animal feeds	Continue promoting use of farm inputs	MINAGRI, RAB			
		Increase use of new technologies including agricultural mechanisation and improved germplasm to boost production	Avail common facilities for use by producers e.g. tractors for hire	MINAGRI, RAB			
	2.Foster forward and backward linkages between agricultural production and agro-processing	Establish networks and linkages with relevant ministries and agencies on the supply side to intensify crop and livestock production systems	Establish/ strengthen sectoral platforms for priority value chains	MINAGRI, RAB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
		Implement commercial agriculture capacity building programmes including training for farmers and agricultural officers	Provide specific training on farm-productivity and market oriented agriculture	MINICOM , MINAGRI, RAB,			
2. Upgraded priority value chains, in particular dairy, fruits and vegetables, cereals	1.Strengthen Agro-processing capacities	Upgrade industrial structures and mechanisms for value addition.	Establish and/or strengthen agro-processing within the industrial parks	MINICOM, RDB, RBS			
		Strengthen product design, technology, upgrading and quality control.	Provide common manufacturing facilities for agro-processing at the industrial parks	MINICOM, RBS, MINAGRI			
		Improve business efficiency and performance, especially quality management.	Provide business support services, including ICT, accounting, marketing, etc for each industrial park	MINICOM, RDB			
	2.Set up/ upgrade District Community Processing Centres	Conduct techno-economic assessments for establishment of community processing centres.	Conduct feasibility studies for small-scale agro-processing plants based on resource maps	MINAGRI, MINICOM, RAB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
		Provide necessary physical and technological infrastructure to develop agro-processing community centre.	Assist to design and establish community centres	MINECOFIN, MINICOM			
		Establish common manufacturing facilities at each community processing centre.	Based on resource maps, provide technical and financial support to manage community power centres	MINICOM, RDB, RCA			
		Promote product development and diversification from each community processing centre.	Provide training and relevant technologies for developing agro-processed products	MINICOM, RDB			
	3.Promote Foreign Direct Investment to leverage domestic in agro-processing for growth	Carry out deliberate promotion to attract investments in agro-processing and value added	Develop strategy for promoting investments in agro-processing	RDB, MINICOM			
		Introduce SME subcontracting and partnership exchanges between SMEs and large firms.	Facilitate contractual engagements between firms at all stages of the value chains	MINICOM, MINAGRI			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014-May 2015)	(Jun 2015-May 2018)	Jun 2018 - May 2020
		Provide access to acceptable recognized forms of packaging at competitive prices	Support investments in packaging for agro-industry products	MINICOM, RBS, RDB			
		Develop links between domestic agro-processors and finance and equity funds.	Support the establishment of business/ investments partnerships	MINICOM, MINECOFIN, RDB			
		Develop a detailed database and investment monitoring platform for agro-processors in Rwanda	Assist in providing business support and linkages for actors in agro-industry	MINICOM, RDB, ICT			
3. Exploited demand for domestic, regional, international Rwanda's agro-industry products	1. Build capacity to comply with product quality and safety standards and other requirements for market access	Provide advice on food safety requirements, HACCP, TBT/SPS requirements, ISO 9001/14001	Provide training/ awareness on relevant market access requirements	RBS, MINICOM			
		Support agro-processors to compliance with packaging and labelling requirements	Develop guidelines for packaging and labelling requirements	RBS, RAB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
	2. Provide export promotion services	Introduce export support services and trade information services.	Organise trade-fairs for target markets and products	MINICOM, NAEB			
		Link to global supply chains and export consortia and cluster development.	Establish export consortia for competitiveness	MINICOM, NAEB			
		Leverage on existing relationships with other countries to build the country brand. Additionally, public funded sector level marketing campaigns need to be conducted to build brand.	Develop the 'Made in Rwanda' brand	MINICOM, NAEB, MINEAC, MINAFFET			
		Develop strong relationships with end markets and invest in best practice agro-processing methods	Support selected sectors to develop new marketing and market access programmes	MINICOM, NAEB, MINEAC, MINAFFET			
4. Strengthened Technology and Innovation capabilities	1. Develop innovation capabilities and technologies for value added	Incorporate science technology innovation (STI) inputs systematically into production and marketing along the agro-industrial value chain	Finalise and Implement STI strategy	MINICOM, MINAGRI			
		Integrate STI agenda into public policy and private sector management	Mainstream pertinent STI issues in	MINICOM, MINAGRI			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
			Rwanda's industrial policy				
		Conduct technical and market feasibility studies to identify the right agro-processing technology required.	Develop diverse business models and bankable projects in agro-processing	MINICOM, MINAGRI			
		Invest in skills that are needed to identify, acquire and operate modern technology.	Encourage and promote investments in modern processing technologies	MINICOM, MINAGRI, MINEDUC			
	2.Link research to private sector in agro-processing	Develop a comprehensive Science Technology Innovation (STI) -based rehabilitation programme for agro-industries.	Roll out STI policies and strategies	MINICOM, MINAGRI, MINEDUC, RBS, RAB			
		Assess human capabilities that are needed for the local and national STI infrastructure.	Document skills available and develop strategies as necessary	MINICOM, MINAGRI, MINEDUC, RBS, RAB			
		Implement a human resources development projects especially for the food processing industry and	Depict the technologies used in the chain and evaluate their appropriateness in view of chain development	MINICOM, MINAGRI,			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014-May 2015)	(Jun 2015-May 2018)	Jun 2018 - May 2020
		the high-value agriculture export sector.		MINEDUC, RBS, RAB			
		Rally donor assistance /technical assistance towards strengthening STI capacities and developing STI infrastructure.	Analyse and categorize firms as to their existing and utilized production and processing capacity	MINECOFIN, MINICOM, RDB			
5. Improved access to effective and innovative financing	1.Facilitate pooled funding for agro-processing sub-sector that uses public funding to leverage resources from the private sector	Create a dedicated wealth sovereign fund for agro-processing	Specify to what extent investors can financing businesses in the various segments of the chain and in the value chain as a whole	MINECOFIN, MINICOM			
		Develop appropriate banking models and regulations including risk mitigation through insurance and reinsurance schemes.	Facilitate loaning support with local banking	MINECOFIN, MINICOM			
	2.Create enabling environment for local resource accumulation and investment	Leverage diaspora for local investments in agro-processing	Understand the economic and social conditions that constrain access to finance	MINECOFIN, MINICOM			
		Expand collateralisation and encourage leasing	Establish a picture of existing funding sources and current funding practice in the value chain	MINECOFIN, MINICOM			
		Encourage external financing in agro-processing through large lead firms.		MINECOFIN, MINICOM			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
6. Stimulated public – private partnerships in agro-processing	1. Create competitiveness through private enterprise development	Support small scale agro-processors establish industrial clusters for entrepreneurship development	Reveal basic information on perceptions about risks that investors should take into consideration in financial analyses	MINICOM, MINAGRI, RAB			
		Conduct bankable feasibility studies for appropriate priority agro-industries	Commission feasibility studies and development of bankable models	MINICOM, RDB, MINECOFIN			
		Provide relevant business and advisory services to SMEs in agro-processing	Set up business advisory services for agro-process in Rwanda	MINICOM, RAB, RBS			
	2. Create enabling environment for private sector participation in agro-processing	Review policies, strategies for agro-processing in Rwanda	Revisit agro-processing Rwanda policies and harmonise them	MINICOM, MINAGRI,			
		Review incentive and regulatory frameworks for private sector participation in agro-processing in Rwanda	Develop an award scheme for high performers in different sectors	MINICOM, MINAGRI, RBS, RAB, RDB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
		Create secure and supportive environment for private investments in agro-processing	Support the establishment of value chain councils at national	MINICOM, RDB			
7. Improved infrastructure and access to affordable energy	1. Establish strategic investments in transport infrastructure and transit corridors	Improve quality of the road network, both in rural and urban areas, especially the feeder roads that link the farms.	Collaborate with other Government ministries responsible for infrastructure development	MININFRA, MINICOM			
		Encourage efficient supply chain management for agro-processing, particularly in sourcing inputs and supplies, and in transportation of agro-products to markets	Consider providing transportation for produce from cooperatives	MINICOM, MININFRA			
		Accelerate regional integration in infrastructure and energy	Articulate the need for sufficient energy for production and present it to regional forums	MINICOM, MININFRA, MINEAC			
	2. Enhance access to energy for productive use	In the short term, lower power tariffs for agro-processing companies in order to reduce the cost of production for the manufacturers.	Collaborate with relevant ministry	MININFRA, MINICOM, RDB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period			
					Short term	Medium Term	Long term	
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020	
		Partner with private sector players, within the framework of Public Private Partnerships (PPPs) to help in the energy infrastructure development including design, build, financing, maintenance and its operation.	Collaborate with relevant ministry	MINICOM, MININFRA, PSF				
		Encourage private sector players to invest in alternative (renewable) sources of energy.	Engage private sector in each step of production and agro-processing	MINICOM, MININFRA, RDB, PSF				
		3. Introduce Green Certification schemes in agro-processing for sustainable production	Introducing energy-saving and renewable energy technologies for sustainability	Gradually mainstream cleaner production technologies	MINICOM, PSF			
			Encourage use of cleaner technologies and processes for minimizing waste and utilizing by-products from agro-processing.	Gradually mainstream cleaner production technologies	MINICOM, PSF			
8. Policy reform and Institutional capacities for	1. Create favourable institutional environment for agro-processing in Rwanda	Review policies and strategies for skills and human	Organise high level policy makers meetings on policy diakogu	MINEDUC, MINICOM, MINAGRI				

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
agro-processing		Encourage efficient supply chain management for agro-processing, particularly in sourcing inputs and supplies, and in transportation of agro-products to markets	Encourage private sector to invest in efficient supply chain management systems	MINICOM, PSF, MINAGRI			
	2. Build capacities of public sector organisations/agencies for effective service delivery to the agro-industry in Rwanda	Establish Integrated Polytechnic Regional Technical Centres (IPRC)	Set up Integrated Polytechnic Regional Technical Centres structures and equip them	MINEDUC, MINICOM			
		Establish mechanism for capturing, monitoring and updating short, medium and long term skills available and requirements according to current and forecasted demand	Develop database of experts	MINICOM, MINEDUC			
		Implement relevant training programmes for technical and business support personnel from relevant national institutions	Develop and implement training programme	MINICOM, MINEDUC			
	3. Create regional and global networks to tap existing institutional capacities to support	Establish strong partnership arrangements with universities and industrial research and development institutions in the region for skills development	Establish strategic partners	MINEAC, MINAFFET, MINICOM, MINEDUC			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014- May 2015)	(Jun 2015- May 2018)	Jun 2018 - May 2020
	agro-processing in Rwanda	Develop and implement programme for industrial study tours and attachment programmes with agro-processing centres of excellence in the region and/or other countries	Promote industrial attachments and study tours	MINEAC, MINAFFET, MINICOM, MINEDUC,			
4.Strengthen local networks for private sector participation in skills development		Strengthen networking activities between universities and private sector players and engage them in lectures, company presentations and career fairs and industrial attachment/internship programmes.	Develop and build capacity of networks between research institutions and agro-processing	MINICOM, MINEDUC, PSF			
		Promote industry involvement by inviting private sector representatives to lectures, company presentations and career fairs, during which employers can explain their recruitment needs both to students and the academic staff.	Invite private sector to provide teaching /lectures	MINICOM, MINEDUC, PSF			
5.Strengthen conformity assessment		Strengthen the requisite legal and regulatory framework for conformity.	Review policies and laws on domestication of	MINICOM, RBS, RAB			

Outcome / Measure	Strategic Initiative	Activities	Actions	Responsibility	Period		
					Short term	Medium Term	Long term
					(Oct 2014-May 2015)	(Jun 2015-May 2018)	Jun 2018 - May 2020
	infrastructure relevant to agro-processing		relevant standards for agro-processing				
		Establish recognized standards, accreditation, and certification and inspection schemes relevant to agro-processing.	Support development and implementation of relevant standards for agro-processing	MINICOM, RBS, RAB			
		Strengthen national institutions to provide internationally recognized and harmonized conformity assessment services in agro-processing.	Upgrade laboratory equipment and human skills for risk based testing, inspections and certification	MINICOM, RBS, RAB			
		Upgrade RBS laboratories to provide relevant testing and calibration in agro-processing.	Training of personnel; Purchase of precision testing equipment for various food safety and environmental risks	MINICOM, RBS			

10 Monitoring and Evaluation Framework

Monitoring and evaluation framework, hereinafter referred as M&E Framework, is a critical component of any implementation plan of a strategy or master plan document. The purpose of the M&E framework is to measure the extent to which planned activities and targeted outputs are being achieved. Through M&E, MINICOM will be able to identify where the sector is and intends to be and how to get there and evaluate achievement of desired targets within the plan period.

The master plan has set goals that have to be achieved by 2020. The strategies or initiatives to achieve these goals must be implemented in an orderly and coordinated manner. Consequently, a comprehensive M&E framework must be put in place to provide the requisite feedback in the sourcing and utilization of the resources towards successful implementation. The information generated is then objectively used for critically reviewing the success of respective programs. As the master plan is a document that cuts across various ministries. Two groups should be formed to both support implementation and monitor progress. In summary MINICOM will adopt the following:

An M&E committee (internal to MINICOM) will be formed to continually monitor the progress of the strategic plan. This committee will meet once a month to monitor the progress of the agro-processing sector. Additionally, the M&E committee will update the industrial master plan for the agro-processing subsector.

An agro-processing subsector working group, that brings together key stakeholders from both the public and private sector and across all government ministries with an impact on the agro-processing master plan, such as the RAB, MINIAGRI, MININFRA, MINECOFIN, RDB, NAEB, RBS etc. The working group will meet once every quarter discuss matters affecting the agro-processing subsector.

Appoint departmental heads to champion the implementation plan.

The internal M&E Committee will report to the subsector working group on quarterly basis on the progress made towards achieving the planned objectives.

Annual reviews of the master plan are to be made by the M&E committee together with the agro-processing subsector working group so that the changes found necessary through the constant monitoring and evaluation mechanism are brought on board.

The objectives and initiatives should be cascaded to all the departments/business units concerned detailing the key activities required by the departments to be implemented.

Departmental plans should then be rolled every year and level of achievement of the goals documented. This will be guided by the agreed key performance indicators for each initiative.

11 Annexure

11.1 Rwanda's EDPRS 2 (2013 – 2018)

EDPRS 2 targets an average of 11.5% annual economic growth in order to restructure the economy towards more services and industry as Rwanda moves towards middle income country status. The main targets relate to:

Strategic infrastructure investment for exports.

Increased private sector financing for increased exports coverage of imports.

Urbanisation and green economy approach for sustainability.

The 5 priority areas that will spearhead the EDPRS 2 are:

Increase the domestic interconnectivity of the Rwandan economy.

Increase the external connectivity of Rwanda's economy and boosting exports.

Transform the private sector by increasing investment in priority sectors.

Transform the economic geography of Rwanda by facilitating urbanisation and promoting secondary cities.

Pursue a 'green economy' approach to economic transformation.

11.2 Rwanda's National Industrial Policy (2011)

Vision: "Competitive industrial and advanced services sectors producing over \$1.5 billion of exports by 2020, while increasing the number of off farm jobs."

Objectives:

Increase domestic production for local consumption.

Improve Rwanda's export competitiveness.

Create an enabling environment for Rwanda's industrialization.

11.3 Rwanda's Crop Intensification Program (CIP)

The Crop Intensification Program (CIP) was launched in September 2007, as a pilot program with the main goals of increasing agricultural productivity in high-potential food crops and ensuring food security and self-sufficiency. Key statistics are:

Funded by: Government of Rwanda.

Budget: RWF 9,092,287,371.

Timeline: Started in 2007 – on going.

Coverage: All districts.

The main activities are:

- Land use consolidation
- Improved seed and fertilizers use
- Proximity extension service by proximity service providers
- Agricultural product marketing
- Change in farmer's behaviours
- Promote agro-inputs dealer's network
- Stimulate reliable, private-sector input and output markets: through fertilizer electronic auctions.
- Food sufficiency and sovereignty of Rwanda.

11.4 Top 5 Largest Agro-Processing Industries by Turnover as at 2011

Table 10: Top 5 Largest Agro-Processing Industries by Turnover as at 2011

Company	Year Incorporated	Main Product	Reported Turnover (2010 – 11)
Bralirwa	1963	Beer and soft drinks	US\$130–135m
Pembe Flour Mills	2007	Wheat flour	US\$25–30m
Bakhresa Grain Mills	2009	Wheat flour	US\$20–25m
Rwanda Mountain Tea	2006	Black and green tea	US\$14–16m
Rwacof	1997	Coffee	US\$12–15m

Source: Understanding Rwanda's Agribusiness and Manufacturing Sectors (2013)

11.5 Phases of Rwanda's Industrial Development from 1995 to 2012

Figure 8: Phases of Rwanda's Industrial Development from 1995 to 2012

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Policies	[Shaded]																	
Phase 1	[Shaded]																	
Phase 2	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]
Phase 3	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]	[Shaded]

Phase 1: Reconstruction.

Phase 2: Rapid privatization.

Phase 3: Growth, consolidation and entry into the EAC.

11.6 Prioritization Matrix

Importing Countries for Agro-Processing Related Product Exported by Rwanda and Total Imported from the World in US\$ '000, 2012									
Source: International Trade Center									
Products	Tanzania			Congo			Kenya		
World	Imported from Rwanda	Imported from World	Difference	Imported from Rwanda	Imported from World	Difference	Imported from Rwanda	Imported from World	Difference
TOTAL IMPORTS	164,773		(164,773)	109,125	5,248,071	5,138,946	94,760	15,191,489	15,096,729
Live animals	2	1,567	1,565	1	3,821	3,820	-	2,704	2,704
Meat and edible meat offal	-	6,477	6,477	-	99	99	-	4,559	4,559
Fish, crustaceans, molluscs, aquatic invertebrates nes	7	6,091	6,084	-	7,677	7,677	-	30,960	30,960
Dairy products, eggs, honey, edible animal products nes	1	16,273	16,272	30	5,426	5,396	-	34,911	34,911
Products of animal origin, nes	-	194	194	-	31	31	-	1,122	1,122
Live trees, plants, bulbs, roots, cut flowers etc	-	1,882	1,882	-	1,151	1,151	-	9,025	9,025
Edible vegetables and certain roots and tubers	172	4,328	4,156	46	4,298	4,252	-	74,471	74,471

Edible fruit, nuts, peel of citrus fruit, melons	1	4,377	4,376	6	2,120	2,114	-	44,902	44,902
Coffee, tea, mate and spices	29,281	1,280	(28,001)	116	1,818	1,702	83,596	195,181	111,585
Cereals	421	471,666	471,245	1,193	68,634	67,441	-	548,127	548,127
Milling products, malt, starches, inulin, wheat gluten	2,334	37,618	35,284	445	13,171	12,726	20	59,251	59,231
Oil seed, oleagif fruits, grain, seed, fruit, etc, nes	1	61,328	61,327	65	9,781	9,716	-	31,758	31,758
Lac, gums, resins, vegetable saps and extracts nes	-	1,031	1,031	-	1,090	1,090	-	2,876	2,876
Vegetable plaiting materials, vegetable products nes	-	70	70	-	229	229	-	582	582
Animal, vegetable fats and oils, cleavage products, etc	-	297,957	297,957	2,746	72,780	70,034	-	237,527	237,527
Meat, fish and seafood food preparations nes	-	1,552	1,552	2	591	589	-	6,490	6,490
Sugars and sugar confectionery	-	183,787	183,787	5	49,058	49,053	-	203,313	203,313
Cocoa and cocoa preparations	-	2,744	2,744	-	284	284	-	10,207	10,207
Cereal, flour, starch, milk preparations and products	-	12,856	12,856	139	6,607	6,468	-	67,323	67,323
Vegetable, fruit, nut, etc food preparations	-	8,060	8,060	6	7,886	7,880	-	24,357	24,357
Miscellaneous edible preparations	-	16,936	16,936	27	12,573	12,546	1	54,372	54,371
Beverages, spirits and vinegar	38	70,018	69,980	7	11,427	11,420	-	62,983	62,983
Residues, wastes of food industry, animal fodder	-	6,087	6,087	5	889	884	75	70,531	70,456

Tobacco and manufactured tobacco substitutes	-	19,042	19,042	328	4,488	4,160	-	31,312	31,312
Articles of leather, animal gut, harness, travel goods	-	10,887	10,887	2	13,245	13,243	-	65,109	65,109
Raw hides and skins (other than furskins) and leather	934	102	(832)	25	84	59	643	4,064	3,421

Importing Countries for Agro-Processing Related Product Exported by Rwanda and Total Imported from the World in US\$ '000, 2012									
Source: International Trade Center									
Products	Uganda			Sudan			Burundi		
World	Imported from Rwanda	Imported from World	Difference	Imported from Rwanda	Imported from World	Difference	Imported from Rwanda	Imported from World	Difference
TOTAL IMPORTS	68,354	6,044,147	5,975,793	17,073	7,381,455	7,364,382	13,336	1,003,121	989,785
Live animals	12	2,494	2,482	-	47,571	47,571	102	2,414	2,312
Meat and edible meat offal	-	1,846	1,846	-	11,535	11,535	-	23	23
Fish, crustaceans, molluscs, aquatic invertebrates nes	-	1,834	1,834	-	1,757	1,757	5	2,056	2,051
Dairy products, eggs, honey, edible animal products nes	1	5,194	5,193	17	106,058	106,041	70	2,571	2,501
Products of animal origin, nes	-	511	511	-	273	273	-	184	184

Live trees, plants, bulbs, roots, cut flowers etc	-	1,586	1,586	-	235	235	-	10	10
Edible vegetables and certain roots and tubers	966	3,481	2,515	8	108,696	108,688	970	2,709	1,739
Edible fruit, nuts, peel of citrus fruit, melons	61	3,535	3,474	-	29,046	29,046	-	57	57
Coffee, tea, mate and spices	41,841	4,198	(37,643)	-	122,398	122,398	-	104	104
Cereals	18	276,999	276,981	-	684,248	684,248	1,486	50,495	49,009
Milling products, malt, starches, inulin, wheat gluten	199	11,593	11,394	-	51,755	51,755	89	49,043	48,954
Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	-	6,877	6,877	-	23,208	23,208	-	148,367	148,367
Lac, gums, resins, vegetable saps and extracts nes	-	401	401	-	6,420	6,420	-	1,675	1,675
Vegetable plaiting materials, vegetable products nes	-	194	194	-	1,165	1,165	-	-	-
Animal, vegetable fats and oils, cleavage products, etc	-	250,172	250,172	-	68,384	68,384	62	14,919	14,857
Meat, fish and seafood food preparations nes	-	2,943	2,943	-	8,514	8,514	-	194	194
Sugars and sugar confectionery	4	160,823	160,819	-	438,263	438,263	7	13,824	13,817
Cocoa and cocoa preparations	-	2,677	2,677	-	8,133	8,133	-	206	206
Cereal, flour, starch, milk preparations and products	-	24,616	24,616	-	34,562	34,562	80	2,231	2,151
Vegetable, fruit, nut, etc food preparations	206	8,569	8,363	-	40,649	40,649	62	2,240	2,178
Miscellaneous edible preparations	19	27,524	27,505	-	69,327	69,327	27	2,614	2,587

Beverages, spirits and vinegar	129	75,394	75,265	-	50,675	50,675	958	7,246	6,288
Residues, wastes of food industry, animal fodder	146	2,267	2,121	-	29,441	29,441	2	248	246
Tobacco and manufactured tobacco substitutes	-	11,258	11,258	-	14,045	14,045	-	3,165	3,165
Articles of leather, animal gut, harness, travel goods	-	9,820	9,820	-	50,668	50,668	-	393	393
Raw hides and skins (other than fur skins) and leather	8,019	1,527	(6,492)	-	923	923	-	6	6

11.7 Standards and Technical Requirements

Table 11: Technical Regulations (Compulsory Standards)

Reference number	Title
RS CODEX STAN 1-1985	General standard for the labelling of pre-packaged food
RS CODEX STAN 107-1981	General standard for the labelling of food additives when sold as such
RS CODEX STAN 146-1985	General standard for the labelling of and claims for pre-packaged food for special dietary uses
RS CAC/GL 1-1979	General guidelines on claims
RS CAC/GL 2-1985	Guidelines on nutrition labelling
RS CAC/GL 23-1997	Guidelines for use of nutrition claims
RS CAC/RCP 1-1969	Code of practice for food hygiene
RS 1: 2003	Specification for natural mineral water
RS 2:2003	Specification for packaged/bottled drinking water (other than packaged natural mineral water)
RS 4:2004	Specification for neutral spirit for manufacture of alcoholic beverages
RS 5:2004	Specification for gins
RS 6:2004	Specification for brandy
RS 7:2004	Specification for whisky
RS 8:2004	Specification for rum
RS 9:2004	Specification for vodka
RS 10:2004	Specification for still table wines
RS 11:2004	Specification for sparkling wines
RS 12:2004	Specification for fortified wines
RS 16: 2004	Standard specification for beer
RS 17:2004	Specification for carbonated and non-carbonated beverages
RS 18:2004	Specification for glucose based energy drinks
RS 19:2004	Specification for fruit based soft drinks part 1 and 2
RS 20:2004	Specification for cereal based alcoholic beverages
RS 21:2004	Specification for passion fruit juice preserved exclusively by physical means
RS 22:2004	Specification for mango juice preserved exclusively by physical means
RS 24:2004	Specification for sorghum grains
RS 25:2004	Specification for maize grains
RS 26:2004	Specification for wheat grains
RS 27:2004	Specification for milled rice
RS 28:2004	Specification for whole maize meal
RS 29:2004	Specification for edible maize starch
RS 30:2004	Specification for sorghum flour
RS 31:2004	Specification for whole wheat flour
RS 37:2004	Specification for black tea
RS 39:2004	Specification for roasted coffee beans and roasted ground coffee
RS 40:2004	Specification for instant (soluble) coffee
RS 41:2004	Specification for unprocessed whole milk
RS 42:2004	Specification for pasteurised liquid milk
RS 43:2004	Specification for fermented (cultured) milk
RS 44:2004	Specification for UHT milk
RS 45:2004	Specification for milk powder and cream powder
RS CODEX STAN 19-1981	Standard specification for edible oils and fats

Reference number	Title
RS CODEX STAN 211-199	Standard for named animal fats
RS 50-1: 2004	Cement, part 1: composition, specification and conformity criteria
RS 51: 2004	Specification for aggregate from natural resources for use in concrete
RS 53: 2004	Specification for concrete
RS 54: 2004	Specification for sausage, part 1
RS 55: 2004	Specification for canned corned beef
RS 57:2005	Specification for dressed poultry
RS 58:2005	Specification for fresh tomato source
RS 60:2005	Specification for yoghurt
RS 61: 2005	Specification for cheese
RS 62:2005	Specification for butter
RS 64:2005	Specification for toothpaste
RS 65:2005	Specification for cosmetic cream, lotions and gels for skin care
RS 67: 2005	Specification for canned fish in tomato sauce, part 1
RS 68:2005	Specification for soya bean
RS 69:2005	Specification for processed cereals based food for infants and children
RS 70:2005	Specification for breakfast cereals flaked cereals
RS 71: 2005	Specification for bread
RS ISO 10470: 2004	Green coffee defect reference chart
RS IEC 60086-1: 2000-11	Primary batteries part 1: general
RS IEC 60086-2: 2001-10	Primary batteries part 2: physical and electrical specifications
RS 56: 2005	Code of practice for handling, processing, and distribution of fish
RS 59:2005	Specification for fin fish
RS CAC/RCP 41:1993	Ante-mortem and post-mortem inspection of slaughter animals and ante-mortem and post-mortem judgement of slaughter animals and meat

Source: RBS Instruction No. 02/2005 Declaring Compulsory Rwanda Standards.

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