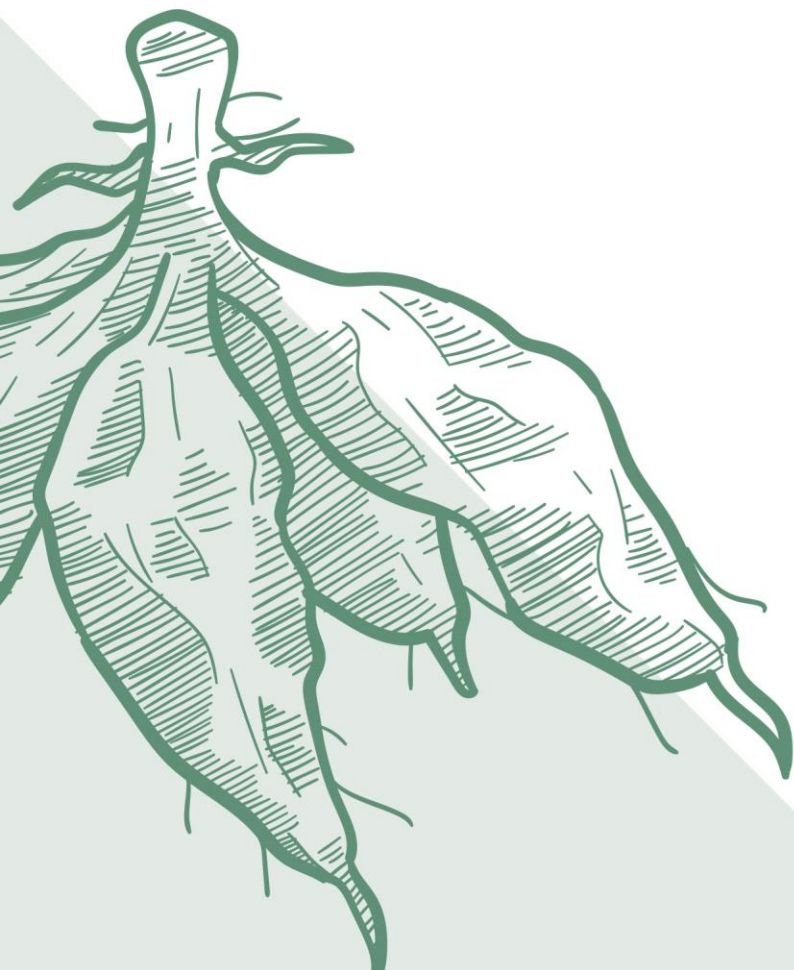




Food and Agriculture Organization  
of the United Nations

# Supporting the greening of small food enterprising in Rwanda

WORKSHOP REPORT





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Food and Agriculture Organization of the United Nations  
Rome, 2018

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## Acknowledgments

The workshop took place under the aegis of the European Union supported Project *Strengthening linkages between small actors and buyers in the Roots and Tubers sector in Africa* ([www.fao.org/in-action/african-roots-and-tubers](http://www.fao.org/in-action/african-roots-and-tubers)). The Project is implemented by the Ministry of Agriculture and Animal Resources, Rwanda (MINAGRI) and the Food and Agriculture Organization of the United Nations (FAO). The workshop was organized by Sylvain Hakizimana, project coordinator, FAO Rwanda, and Mr. Theophile Ndacyayisenga, Researcher, Kinigi Research Station, MINAGRI, with support from Jeanne Matuje, Administrative Assistance, FAO Rwanda and staff from FAO headquarters, Rome, Italy.

This report was prepared by Siobhan Kelly, Agribusiness officer, FAO, and Margherita Bavagnoli, Information and Knowledge Management consultant, FAO, based on inputs from panelists and participants' interventions during the workshop.

Many thanks go to all the panelists for their presentations and participants for their contributions during the workshop.

## Acronyms

AIP	Agricultural Innovation Platform
BTC	Belgian Development Agency
EDPRS	Economic Development and Poverty Reduction Strategy 2013-2018
EU	European Union
GCF	Green Climate Fund
GGCR	Green Growth and Climate Resilience
FONERWA	Rwanda's Green Fund
ICS	Improved Cook Stoves
IFC	International Finance Corporation
ISAR	The National Agricultural Research Institute
LPG	Liquefied Petroleum Gas
MINAGRI	Ministry of Agriculture and Animal Resources
MINEACOM	Ministry of Trade and Industry
MININFRA	Ministry of Infrastructure
NPC	Nyabihu Potato Company
PDF	Private Sector Federation
RAB	Rwanda Agricultural Board
RPT	Regional Potatoes Trading
REMA	Ministry of Natural Resources
R&T	Roots and Tubers
SME	Small and Medium Enterprise
SVO	Straight Vegetable Oil
FAO	Food and Agriculture Organization of the United Nations
UNIDO	United Nations Industrial Development Organization
WCO	Waste Cooking Oil

## Executive summary

The workshop on “Supporting the greening of small food enterprising in Rwanda” was organized as part of the Project “Strengthening Linkages between Small Actors and Buyers in the Roots and Tubers sector in Africa, funded by the European Union (EU) and implemented by Ministries of Agriculture and FAO in Rwanda, Uganda, Malawi, Cameroon, Ghana, Benin and Cote D’Ivoire.

The objective of the workshop was to catalyze sustainability measures and cost efficiency drivers in food value chains in Rwanda, using crisp manufacturers in the Irish potato value chain, as an entry point in the sector.

The workshop brought together public and private sector stakeholders in the potato value chain. Presentations and discussions centered on four themes: appraising the enabling environment for sustainability and green growth in the agricultural sector; the Business Case for Sustainability; recycling waste for renewable energy in the potato supply chain; the role of value addition.

### ***a) Appraising the enabling environment for sustainability and green growth in the agricultural sector***

Rwanda has taken a series of important steps to promote businesses’ engagement in environmental issues. The National vision 2020<sup>1</sup> aims to transform Rwanda from a subsistence agriculture to a middle income country, recognizing sustainable environmental and climate change management as a cross-cutting pivotal area to the realization of this aspiration. To achieve so, the Government developed the Green Growth and Climate Resilience (GGCR) National Strategy for Climate Change and Low Carbon Development<sup>2</sup>.

However, participants highlighted several challenges preventing from the implementation of the strategy. The main issues reported are: lack of ownership of the sustainability concept and tools outside those institutions directly aligned with environmental protection; misconception by the private sector that sustainability and environmental protection mostly involve trade-offs; basic chain inefficiencies including, lack of organized linkages between small farmers and buyers, good storage practices and facilities to reduce waste, and manage market prices.

### ***b) The Business Case for Sustainability***

Population growth, rapid urbanization and a growing middle-class around the world are increasing pressure on natural resources, impacting the quality of life for all and in particular small farmers through climate change. Production systems are increasingly less reliable and security of supply is under pressure as demand for food grows.

Governments, supranational bodies, large, medium and small enterprises engaged in the agrifood sector are developing solutions to the challenges.

Nonetheless, participants suggested a series of interventions for effectively promoting sustainable food value chains in Rwanda: adapting sustainability tools to attract investment - prioritizing public investment support in sustainable packaging technologies; promoting a unified sustainability vision and strategy for farmers and small food processors partnership; developing policies that specifically target the small food companies and that prioritize convergence between sustainability and competitiveness; establishing dialogue platforms between research institutes, farmer and processors for sustainable seed systems; moving

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<sup>1</sup> <https://repositories.lib.utexas.edu/bitstream/handle/2152/5071/4164.pdf?sequence=1>

<sup>2</sup> <http://cdkn.org/wp-content/uploads/2010/12/Rwanda-Green-Growth-Strategy-FINAL1.pdf>



initiatives that support innovation and sustainability beyond dialogue on productivity, through Agricultural Innovation Platforms (AIPs).

### *c) Using waste cooking oil to produce energy in Rwanda*

The Government of Rwanda aims to ensure that energy produced in the country is used efficiently by promoting new initiatives of energy savings, reducing consumption and imports of fossil fuels.

However, Rwanda is still highly dependent from the intense use of nonrenewable resources for energy, pointing to an energy crisis in the country.

The key elements recommended from participants to address energy issues in Rwanda are: to regulate green charcoal supplies combined with mainstreaming trainings on forest management capacities for public and private sectors; support and investment for private sector led Improved Cooking Stoves; further feasibility analysis for alternative energy solutions

### *d) The role of value addition*

Unfortunately, along the potato chain, value is currently not only captured, but also lost or destroyed. In order to support small crisp manufacturing companies and workshop participants applying a sustainability lens to business models between farmers and small food companies, attendants have been asked to list the main stakeholders engaged in the potato value chain and reflect on value lost, captured and destroyed at each segment.

The exercise resulted in discovering value creation opportunities such as: recycling waste peel into animal feed or fertilizers and waste cooking oil into electricity, soap or biodiesel; upscaling good agricultural practices with farmers to address premature harvesting and mix variety production; branding on sustainability; investments in innovation; and products development.

### *Possible follow-up actions*

For Government, a possible next step could be to increase the ownership of the GGCR Strategy by institutions, from national to local level, not directly aligned with its mandate but nonetheless central to its successful implementation. Capacity building, provided by REMA, need to be upscaled from central government down to grassroots level.

For research, product development has been highlighted as next step, to enable farmers accessing different niche markets. Thus, as suggested during the previous workshop on quality seeds potato<sup>3</sup>, a next step for research could be to test and introduce varieties that are better suited for processing activities, while continuing to seek ways of reducing the number of years it takes for a potential variety to be tested and listed.

### **Possible support of the Project to various areas**

Since the Roots and Tubers Project targets also cross sectoral collaboration for the potato value chain - including downstream actors -, possible support may concern ensuring the inclusion of potato processors in the AIPs, usually left out parties in the dialogue.

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<sup>3</sup> <http://www.fao.org/3/a-bo106e.pdf>



# 1. Introduction

*Rwanda's Vision 2050*<sup>4</sup> envisages the country as a developed climate-resilient, low-carbon economy, with agriculture and industry having minimal impact on the environment within the next 35 years. To realize this vision, the Government is implementing the *Green Growth and Climate Resilience (GGCR) National Strategy for Climate Change and Low Carbon Development* (2011). The strategy sets out a framework to support industry, including agriculture and the food industry, to adapt to climate change and reduce pressure on the environment, while developing a competitive economy that is inclusive of the rural and urban poor.

The Ministry of Agriculture and Animal Resources (MINAGRI) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) with the support of the European Union (EU) is contributing to GGCR and Vision 2050 under the aegis of the Sub-Saharan Africa regional Project on "*Strengthening linkages between small actors and buyers in the Roots and Tubers sector in Africa*"<sup>5</sup>. The Project aims to improve the livelihoods of small producers engaged in the roots and tubers value chains in seven African countries<sup>6</sup> through the promotion of linkages to domestic and regional markets. In Rwanda and Uganda the Project focuses on the Irish potato sector under the following outputs:

- 1) National and regional strategies are aligned for improved regional market integration;
- 2) The competitiveness and viability of Roots and Tubers(R&T) value chains is strengthened;
- 3) Access to information services and finance is improved for smallholders;
- 4) Small producers have access to climatic risk management instruments.

On 21 February 2017, a three-days-workshop was held in Kigali to support the role of small and medium sized agri-food enterprises (SMEs) that link smallholders to sustainable markets under Output 2 of the Project. The workshop focused on strengthening the capacities of SMEs in the potato value chain, such as small crisp manufacturers, to identify sustainable practices that improve competitiveness, add value to the chain, while also developing business models that are inclusive of small farmers.

SMEs form an important bridge between agriculture and industry and the surge in domestic demand for fresh and processed food, based on population growth, provides opportunities to small rural food companies to contribute to more inclusive rural transformation. For instance, rural small and medium agri-food companies (SMAEs) are 'close-to-home' buyers for poor farmers, providing important market bridges between local production and rising urban demand. They are familiar with local tastes and dietary habits, and can offer a variety of affordable and nutritional foodstuffs locally. They can also offer jobs to young people, allowing them to remain close to the rural family network, instead of emigrating or moving to overcrowded cities. If located in rural communities, SMAEs can also create demand for investment in modern utilities such as energy, water and infrastructure.

As suppliers of up to 90 of processed food on local markets, these firms operations also contribute significantly to the sector's Greenhouse Gas emissions (GHG) emanating from activities such as fuel fired boilers, heating systems, electric motors, refrigerating equipment and air compressors etc.

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<sup>4</sup> [www.oecd.org/dac/environment-development/Peter%20Katanisa,%20Rwanda%20Green%20Grwoth%20Strategy.pdf](http://www.oecd.org/dac/environment-development/Peter%20Katanisa,%20Rwanda%20Green%20Grwoth%20Strategy.pdf)

<sup>5</sup> [www.fao.org/in-action/african-roots-and-tubers](http://www.fao.org/in-action/african-roots-and-tubers)

<sup>6</sup> The Project is being implemented from 2014-2018 in seven African countries: Benin, Cameroon, Ghana, Côte d'Ivoire, Malawi, Rwanda and Uganda.

Despite the pivotal role of small food enterprises in directly contributing to five of the Sustainable Development Goals (SDGs) on reducing poverty (SDG1), hunger(SDG2), energy(SDG7), work(SDG8) and industry(SDG9), the enabling and policy environment for these actors is typically overlooked, falling between the crevices of agricultural, food safety, trade, or agro-industrial policy. Against this background workshop objectives aimed at:

- Identifying challenges constraining the public and private sectors in implementing the GGCR Strategy, including implications for the sustainable development of SMEs in the agrifood sector and in particular the potato value chain
- Sharing good practice cases of SMEs that have adopted sustainability in the agri-food sector
- Identifying innovations that could be adapted to strengthen the sustainability of the agrifood sector in Rwanda, such as recycling waste oil from potato chip processing for energy

The event brought together public and private sector actors relevant to agri-food systems development in Rwanda. Participants included; senior representatives from the Ministries of Agriculture and Animal Resources (MINAGRI), Trade and Industry (MINEACOM), Natural Resources (REMA), and Infrastructure (MININFRA), Development partners, research institutes, Non-Governmental Organizations, the private sector including processing companies, and representatives of farmer organizations. See annex C for the complete list of participants.

## 2. Opening session

*Mr. Thophile Ndacyayisenga*, in charge on research of Irish potatoes production at the Rwanda Agriculture Board (RAB), welcomed participants to the workshop on “Supporting the greening of small food enterprises in Rwanda” introducing the objectives and agenda of the event.

*Mr. Attaher Maiga*, *FAO Representative to Rwanda*, *Mr. Arnaud de Vanssay*, *Head of Section Rural Development in Delegation of the European Union to Rwanda*, and *Mr. Jean Claude Kyisinga*, *Permanent Secretary of the Minister of Agriculture and Animal Resources (MINAGRI)* provided opening remarks.

In his remarks, *Mr. Attaher Maiga*, thanked the European Union, for its support, while emphasizing the problems caused by the extensive pressure that population growth and demand for food is placing on water, energy, land, and other resources. He stressed the need to integrate small farmers and food enterprises into food systems while reducing the sector’s ecological footprint. In doing so, farmer and small and medium enterprises (SMEs) can leverage growing domestic demand for food. However, applying a sustainability lens to food value chains means also that small farmers and food enterprises can become more competitive and innovative as they identify ways to manage inputs and resources more efficiently. The relevance of MINAGRI’s and FAO’s work falls under the aegis of the Sustainable Development Goals and in particular SDGs 1, 2, on reducing poverty and hunger<sup>7</sup>.

*Mr. Arnaud de Vanssay*, highlighted the importance of Irish potato for the country’s food security. He emphasized the need to support farmers and food SMEs build resilience to shocks through the adoption of more sustainable practices. He welcomed the workshop as an opportunity for sharing ideas, and to contribute to building an enabling and effective policy environment for the private sector operating in the agricultural sector.

*Mr. Jean Claude Kyisinga* on behalf of MINAGRI welcomed all participants. He introduced the importance of the National Strategy for Climate Change and Low Carbon Development of 2011 (GGCR) in ensuring Rwanda achieves the goals outlined in the Vision 2050 strategy. Educating small farmers and enterprises on the benefits of operating more sustainably is an important part of the strategy, and necessary for adding value locally to the country’s green growth agenda.

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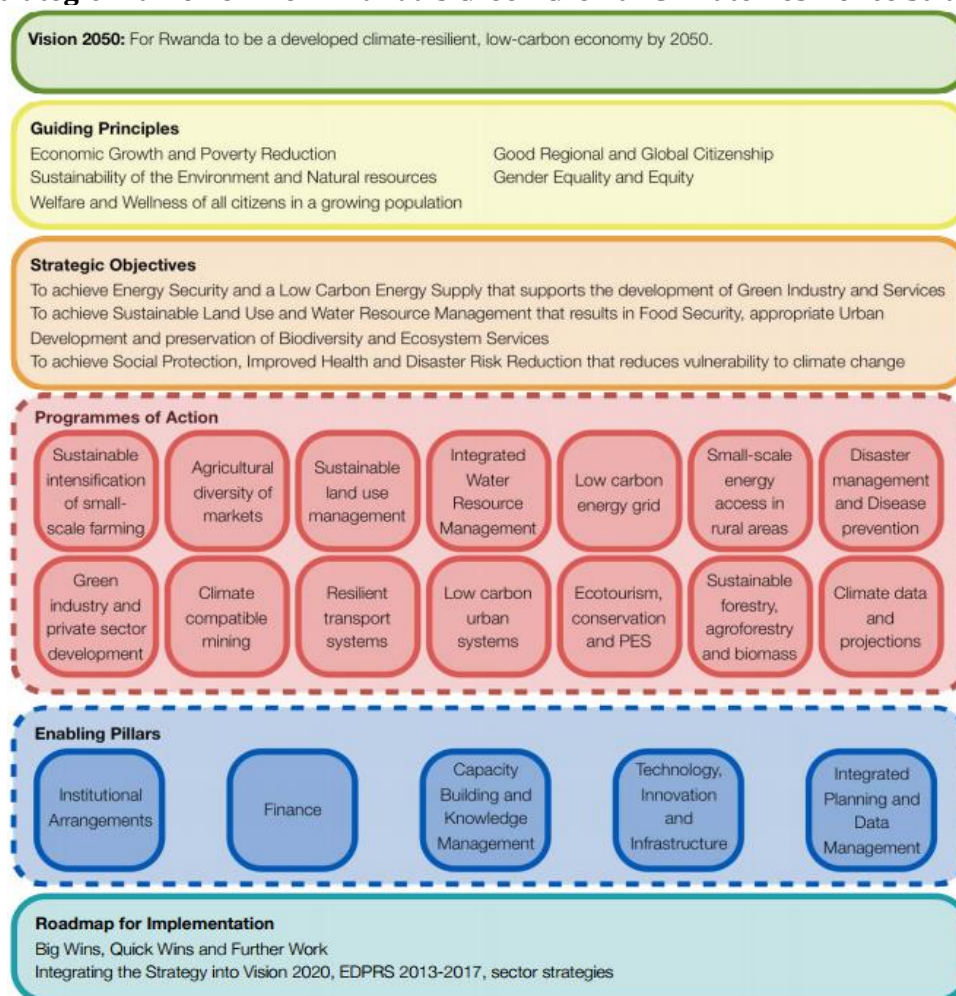
<sup>7</sup> [www.fao.org/sustainable-development-goals](http://www.fao.org/sustainable-development-goals)

### 3. Session I: Appraising the enabling environment for sustainability and green growth in the agricultural sector

Session objective: to identify the role sustainability in the enabling environment for food value chains and associated challenges.

Rwanda's Vision 2050<sup>8</sup> aims to shift from a subsistence agricultural economy to a knowledge based economy and a middle income country based on a thriving private sector. The objective of the GGCR Strategy, described in the introduction, is to ensure that this transition takes place sustainably, by mainstreaming tools that facilitate sustainability across sectors (Figure 1). The Strategy is led by the Ministry of Natural Resources (REMA), which regulates for the country's environmental protection, conservation, promotion and overall management. This includes advisory services to the Government on all matters pertinent to the environment and climate change.

**Figure 1 : Strategic Framework for Rwanda's Green Growth Climate Resilience Strategy**



Source: Rwanda Environment Management Authority, Gouvernement of Rwanda 2011

REMA emphasized cross sectoral implementation and coordinating engagement across Ministries - including agriculture, transport, industry, energy, and tourism - and the private sector, as central tenets of a successful Strategy. The coordination needs to result in cross-

<sup>8</sup> [www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Vision\\_2020\\_.pdf](http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Vision_2020_.pdf)



fertilization among the country's main economic and development strategies, with the results filtering down into how the private sector carries out its business.

Environmental sustainability is also a fundamental pillar of the Government's *Strategic Plan for the Transformation of Agriculture in Rwanda (Phase III 2013-2018)*. In addition to embedding sustainability into new agricultural initiatives, there is also emphasis on recuperating the existing degraded resource base. Under the current phase activities contribute to the GGCR Strategy by focusing on efficiencies in value chains and functioning markets supported by research, technology transfer, professionalization of farmers, private-sector investments, and cross-sectoral coordination.

Representatives of Ministries discussed their contribution to the implementation of the GGCR Strategy, including the Ministry of Agriculture and Animal Resources (MINAGRI), Rwanda Agricultural Board (RAB), Trade and Industry (MINEACOM) and Infrastructure (MININFRA), the Private Sector Federation (PDF) and the Regional Potatoes Trading (RPT).



Workshop panelists – Session 1

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MINAGRI is responsible for Programmes 1 and 2 of the GGCR Strategy, respectively on Sustainable Intensification of Agriculture; Agricultural Diversity in Local and Export Markets; and supports programmes 4, 7, 12 and 13 on Integrated Approach to Land Use Planning and Sustainable Land Use Management; Green Industry and Private Sector Development; Sustainable Forestry, Agroforestry and Biomass Energy; Disaster Management and Disease Prevention (Figure 1).<sup>9</sup>

Programme 2 for instance, aims to expand both local and export food markets through the development of improved and diversified crop varieties, with local value addition through the manufacturing of food products, based on sustainable intensification and climate resilience for small farmers. As such, it involves producers, processors, village-based agricultural processing centres of staple food, and niche export crops under organic and fair-trade branding. Greening and strengthening the sustainability of the potato value chain contributes to the objectives of this programme of work.

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<sup>9</sup>Republic of Rwanda, 2011. Green Growth and Climate Resilience - National Strategy for Climate Change and Low Carbon Development.

MINEACOM contributes to the Strategy through its work on Green Industry and Private Sector Development, such as the Rwanda Resource Efficiency and Cleaner Production Project (RECP)<sup>10</sup>. The objective of the Project is to build skills in energy efficiency especially in lighting, heating, cooling, air compression and pumping system, to improve productivity in public and private institutions. The Project also targets resource efficiency in SMEs. It serves as a space for public-private sector dialogue on the integration of environmental sustainability under the Economic Development and Poverty Reduction Strategy 2013-2018 (EDPRS)<sup>11</sup> which is framed under four thematic areas covering; (i) economic transformation, (ii) rural development, (iii) productivity and youth employment, (iv) accountable governance. Box 1 describes Priority 5 on Economic Transformation, which places ‘a green economy’ approach at the heart of the Strategy.

#### **Box 1 : EDPRS 2013-2018 - Priority 5**

Priority 5: Pursue a ‘green economy’ approach<sup>12</sup> to economic transformation. The green economy approach favours the development of sustainable cities and villages. Key innovations include: piloting a green city, piloting a model mine, attracting investors in green construction, interventions will focus on green urbanisation and the promotion of green innovation in industrial and private sectors.

The Private Sector Federation (PSF) is a professional organization representing the interests of the Rwandan business community, under the aegis of the Poverty Reduction Strategy (EDPRS). To support the GGCR Strategy, PSF has invested in a series of green projects such as; renewable energy, waste management, forest protection, agriculture, transport, and construction that promote resilience to climate change. The Federation can also engage with the public sector on the GGCR Strategy under the RECP. The section below discusses some of the challenges that were raised during the plenary discussion.

#### **4.1 *Challenges associated with embedding sustainability into the enabling environment governing food systems***

Panelists’ interventions and session discussions identified the following challenges for mainstreaming sustainability and green growth in the agricultural sector:

##### **Lack of ownership of the sustainability concept and tools outside those institutions directly aligned with environmental protection**

The main challenge associated with the success of the GGCR Strategy is its lack of ownership by public and private sector institutions. As the Strategy is led by REMA, it is perceived as lying mostly within its remit and of those institutions closely aligned to environmental protection. It lacks engagement by institutions, from national to local level, not directly aligned with its mandate but nonetheless central to its successful implementation.

Working across sectors towards a common goal of sustainability requires a behavioral change in institutional mindset. This bottleneck may reflect a lack of understanding of the Strategy. Capacity building - provided by REMA - with staff from other public sector institutions does take place, in an effort to demonstrate the relevance of the Strategy to the goals of respective

<sup>10</sup>[http://www.rema.gov.rw/fileadmin/templates/Documents/rema\\_doc/rgg\\_crs2011/Final\\_Draft\\_RECP\\_Mainstreaming\\_Strategy\\_Rwanda.pdf](http://www.rema.gov.rw/fileadmin/templates/Documents/rema_doc/rgg_crs2011/Final_Draft_RECP_Mainstreaming_Strategy_Rwanda.pdf)

<sup>11</sup> [http://www.rdb.rw/uploads/tx\\_sbdownloader/EDPRS\\_2\\_Main\\_Document.pdf](http://www.rdb.rw/uploads/tx_sbdownloader/EDPRS_2_Main_Document.pdf)

<sup>12</sup> [http://www.rsb.gov.rw/~rbs/fileadmin/user\\_upload/files/EDPRS\\_2\\_Abridged\\_Version.pdf](http://www.rsb.gov.rw/~rbs/fileadmin/user_upload/files/EDPRS_2_Abridged_Version.pdf)



institutions at national and sub-national levels. However, the training needs to be upscaled, championed by senior management in the respective institutions, and delivered from central government down to the grassroots.

Senior management of the institutes responsible for the mainstreaming the Strategy need to be convinced of the benefits and understand the concept, before its application can trickle down to grassroots public institutes and NGOs that work at farm level and in rural communities.

Cross-ministerial sharing of interrelated strategies also needs to take place to ensure that references to the GGCR Strategy is appropriately embedded. For instance, the legal framework promoting sustainability, need to go in hand with capacity development at producers' and processors' levels to ensure that value chain actors have a clear understanding of how sustainability will concretely improve their livelihoods in the short to medium term.

### **The misconception by the private sector that sustainability and environmental protection mostly involve trade-offs**

Discussions highlighted the misconception that growth in production and environmental protection are competing concepts. Participants argued that at the farm and factory levels one of the main challenges is the difficulty in communicating the merits of more sustainable production practices in reducing vulnerability and strengthening the competitiveness farming and food systems in the long term. For most cash strapped farmers and small enterprises, adding a sustainability lens to their operations is not a priority when they already face a range of constraints that include: access to inputs and finance, access to reliable and high quality produce from smallholders, finding and retaining qualified staff, outdated processing equipment, adhering to food safety and quality standards and so forth.

At the farm level, there is limited ownership of the notion of sustainability, preventing farmers' from contributing to the realization of the country's vision of green growth. In this respect, non-governmental partners are instrumental for sensitizing farmers to the merits of adopting sustainable farming techniques, but extensionists, NGOs and civil society representatives are themselves not always aware of the correlation between investment in sustainability and higher financial returns in the medium to longer term.

At the same time, farmers also require urgent support to help them combat the effects of climate change which ultimately is unfairly placed at their feet. Erratic rains erode soils leading farmers to intensify fertilizer usage, degrading natural resources, increasing costs of production and in the longer term lead to lower yields.

Tools, such as crop insurances, can practically mitigate some of the risks associated with climate change. The mainstreaming of affordable products, requires a lot of engagement with the financial sector, and the public sector can play its role by demonstrating the nexus between production-protection and profitability.

Participants also argued that discussions on sustainability and green value chains need to go beyond the farm gate and production, reaching actors that add value to agricultural commodities, such as food processors. This will attract foreign direct investment for building a domestic food industry. As such, midstream actors are import influencers in the agri-food sector, also for mainstreaming sustainability into the rest of the chain.

At the midstream level, food manufacturing is core to the success of the GGCR Strategy, but *"...they are resisting change as sustainability is seen as a cost rather than an opportunity."* Ownership by the private sector requires that businesses are convinced of the benefits of engaging in the Strategy.

Participants highlighted that the food manufacturing sector is still in its infancy and needs to mature. The Strategy demonstrates the public sector's vision and a commitment to growing green, which will attract more responsible investment. However, while the number of financial funds targeting farmers and food processors are increasing, actors are often not aware of their availability, or may lack the capacity to access these resources. The National Climate Fund (FONERWA) for instance mobilizes resources for public and private sector actors and civil society, directly contributing to sustainability and climate change. The challenge is communicating the availability of these finance opportunities and building farmers and other value chain actors' capacity to access the resources according to the pre-established criteria.

### **Addressing basic chain inefficiencies is a first step for improving sustainability**

Inefficiencies in the potato value chain include, for instance, a lack of organized linkages between small farmers and buyers, good storage practices and facilities to reduce waste, and manage market prices. Both farmers and processors suffer from a lack of access to reliable information on market prices for potatoes and quantities of varieties available. Information gaps hinder management of production planning, harvesting and processing operations, causing inefficiencies and ultimately a loss of business. All of these short-comings contribute to a waste of natural and economic resources. Participants pointed that making Rwanda's economy grow while protecting the environment, needs production systems working at their best capacity.

Deliberations from actors in the potato value chain provided examples of the mismatch between embedding sustainable practices in the chain and the absence of basic systems that are impeding efficiency. For instance, problems with potato production and processing repeatedly revert back to an absence of a functioning seed potato chain<sup>13</sup>.

Box 2 describes briefly how the lack of suitable seed potato varieties for processing increases the level of waste, consumes more energy, and ultimately hinders the growth of the enterprise and demand for smallholders' supply.

#### **Box 2 : Improving Potato seeds varieties**

The potato seed value chain in Rwanda is primarily informal and hindered by a weak regulatory framework. As a result, high quality seed for a range of suitable varieties is not available on markets, causing disease, low yields, and low quality potatoes. A lack of suitable varieties also cause price volatility in the market for both farmers and buyers. The varieties available are also limited, and not suitable for processing. In the crisp manufacturing sector for instance, small companies buy the varieties relative to the price and quality available at the time of sale. For instance, the popular Kinigi variety, used in Rwanda, contains excessive starch content for crisp processing. Their unsuitable shape also causes high volumes of waste. The National Agricultural Research Institute (ISAR), in charge of agriculture research and the release of new seeds, is currently testing varieties more suitable for processing. However, the timespan may take two years or more before they become available on the market: which is not viable for potato processors with an immediate market to satisfy.

The Government and the private sector have attempted to address inefficiencies in the potato value chain, with the creation of the Regional Potatoes Trading Limited (RPT). As described in

<sup>13</sup> MINAGRI and FAO convened a workshop in February 2017 to identify strategies to strengthen the potato seed sector in the East Africa region. Proceedings of the workshop can be found at <http://www.fao.org/3/a-bo106e.pdf> A policy brief highlighting recommendations made can be found at <http://www.fao.org/3/a-i7166e.pdf>

Box 3, ultimately the aim of the Platform is to improve coordination among potato chain actors, and in particular between potato producers and traders. In doing so, costs can be reduced, such as through collective transport arrangements, and production can respond more accurately to demand reducing waste and losses: a series of activities which will reduce pressure on the environment.

**Box 3 : The Regional Potatoes Trading platform**

The Regional Potatoes Trading platform brings producers and traders together in a jointly owned cooperative, which since 2015 manages the new Irish potato wholesale market located in Nyarugenge District of Kigali City. The Platform's objective is to promote transparency by sharing benchmark prices at every selling point in the chain, based on inputs, labour, and the going market rate. Supporting coordination across the potato value chain, and in particular between potato producers and traders and between rural potato collection centres in potato growing areas and urban wholesale markets, means that production is more likely to respond to demand, reducing waste and losses along the chain.

## 4. Session II: Understanding the business case for sustainability in agriculture

Session objective: To explore concepts related to green growth and identify sustainability drivers for food value chains in Rwanda, including the potato value chain.

Ms. Siobhan Kelly, Agribusiness Officer, FAO discussed how population growth, rapid urbanization and a growing middle-class around the world are increasing pressure on natural resources. The impact of this growing pressure is impacting the quality of life for all and in particular small farmers through climate change. Production systems are increasingly less reliable and security of supply is under pressure as demand for food grows. As a result, governments and supranational bodies, such as the EU and the United Nations<sup>14</sup>, are introducing regulation on agricultural, industry and other sectors to ensure resources are managed more efficiently, with the setting of targets for the reduction of greenhouse gas emissions. These initiatives are also contributing to sensitizing consumers on the importance of sustainability. As such, they are creating market demand for sustainably produced products, including food.

As reported by International Finance Corporation (IFC), "Sustainability is about ensuring long-term business success while contributing towards economic and social development, a healthy environment and a stable society".

As a result, whether it's due to regulation, demand from consumers, or security of supply, small medium and large enterprises, in all sectors - including agriculture - are increasingly taking a long-term view on how

they manage environmental and social risks.

In doing so, many companies are recognizing that, by addressing environmental and social issues, they can achieve better growth and cost savings, improve their brand and reputation, strengthen external stakeholder relations, and boost their bottom line. Large companies that have strategically integrated sustainability into their company's activities, find that it prepares them to better anticipate and understand long-term trends and the effect of resource use, and to address external expectations.

Box 4 for instance outlines drivers of sustainability identified by international food companies. (According to a 2011 McKinsey Survey, 76 percent of CEOs consider that strong sustainability performance contributes positively to their businesses in the long term and as a result is becoming an important factor in business strategy.)

### **Box 4 : Drivers of Sustainability**

Business competitiveness opportunities, related to sustainability which global food industry is facing today include:

Reputation: Studies have shown that companies with strong reputation equity can outperform the market by over 100. Reports cite reputation as accounting for 21 to 45 of the total market value of companies. When discussing sustainability strategy, Starbucks CEO Howard Schultz has said "This is not altruistic; this is business."

Differentiation: Sustainability offers food companies an opportunity to differentiate themselves from the competition. Studies show that sustainability also drives innovation within firms, another key differentiator.

<sup>14</sup> The UN conference on Climate Change in Paris 2015 succeeded in developing a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C.

Consumer Demand: Producing goods sustainably also meets consumer demand. A multitude of surveys illustrate consumers' preference willingness to pay more for sustainable products. Tesco acknowledge that there's an expectation on companies, from consumers, that they are sourcing products that have been produced in a responsible, way.

Thus, excerpts from cases of SMEs in developing countries that have integrated sustainability into business model strategies were shared with participants. The cases highlighted the benefits from cost reductions in inputs such as fuel, energy, water through eco-efficiency tools. Applying sustainability lens also enabled the companies to identify additional revenue streams through waste recycling, and increased market share through branding.

Participants also heard from *Mr. Romain Kasema, Deputy Director of Shekina Enterprise*, a small Rwandan food company which has grown its company's business model on the sustainability concept, embedding both environmental and social sustainability into its operations. Box 5 describes how the company processes previously discarded cassava leaves into high nutritional instant flour. The company also employs young women from the community to coordinate the collection of cassava leaves and act as liaison between cassava farmers and the enterprise.

### Box 5 : Case Study Shekina Enterprise

#### Processor's Perspective

Mr. Romain Kasema presented *Shekina Enterprise*, a going-concern Rwandan Food Processing Company, is a successful example of how a sustainable business produces social, environmental and economic benefits.

Though innovative drying mechanism of production, it recycles cassava leaves which were thrown away, making a dried cassava product with a shelf life of 2 years, easy to transport, easy to cook and less energy consuming.

Furthermore, *Shekina* is a social business with big impact on the community: to address gender inequalities in horticulture work, it created new roles for women beyond unpaid or poorly paid labor at production level, which also has low social status.

*Shekina* has a well-organized supply chain where farmers are grouped in cooperatives each of them with a collection center facility which reduce the distance farmers have to travel to deliver their produce. Women are appointed to liaise between the Enterprise and the farmers on the quantity of cassava leaves required, to match demand with supply. The decentralized collection centers allow leaves and stems to be separated before they are transported to the factory, reducing transport volumes and lowering costs.

The firm designed a machine to dry fruit through electricity, which cut the high costs of electricity in Rwanda making the business viable.

Thus, the CEO is working to launch a new product with high nutrition values, which will help to fight malnutrition "Instant cassava leaves".

Its Dried Cassava Leaves are very successful both on the local and international markets, exporting to the United States, Canada, United Kingdom and Europe.

Lessons learned include the importance of: transforming value lost in value captured (cassava leaves: from waste to main product); Job creation and women inclusion; economic benefits of innovating (new machinery to recycle; new machinery to reduce electricity costs); economic benefits of efficient value chains (organized value chains to reduce costs, ensure meeting supply/demand); branding (the company exports its products under the brand AKEZA).

In addition to companies, some countries are also developing sector wide sustainability programmes with the aim of engaging all food value chain actors to commit to the goal. One such country is Ireland, an industrialized small economy highly dependent on its agri-food sector and small family farming based system. A video was shown describing the programme which embellishes a clear and unified public-private vision for a sustainable agriculture (Box 6).

#### **Box 6: Showing success, Origin Green - Sustainable family farming systems in Ireland**

The Origin Green is the only nation and sector-wide sustainability programme in the world that has a public- private sector unified vision for sustainability. The Programme is led by the Irish Food Board. Independently verified, it enables Ireland's farmers and food processors to set and achieve measurable sustainability targets – reducing environmental impact, serving local communities more effectively and protecting the extraordinarily rich natural resources that the country enjoys. Members of the Origin Green commit to developing more stringent ways of working, with the vision that 100 of Ireland's food and drink exports will be signed up on a journey to sustainability.

The country's dependency from the intense use of nonrenewable resources for energy, points to an energy crisis in Rwanda which may cause accelerated deforestation, a biomass energy deficit and deterioration in electricity generation and distribution systems. Wood and imported petroleum products consume more than 40 per cent of foreign exchange affecting the economic viability of crisp entrepreneurs and all small and large food manufacturing companies.

Due to the growing population and the shortage of energy availability in rural areas, fuel from wood is a key energy carrier in Rwanda. The sustainability of the forests in the country will depend on the use of the resources available,

According to *Mr. Vincent Nsabuwera, BTC*, the country is: " running to negative wood supply. We have the capacity to supply 3.5 million tones but the demand is 4.5 for the consumption. There is already a gap." BTC is strengthening small forest associations with training on best practices on sustainable forest management. Private companies can play an important role to manage national forests. He called for 'political will' to promote energy production and diversify into alternative energy sources discouraging the use of charcoal.

MINIFRAG have a different number of programmes to promote the environmentally sustainable use of biomass fuel. This include extracting methane from Lake Kivu and investing in more hydro power. Delivering rural electrification through enhanced distribution networks, micro hydro, and solar power is also a priority as well as wood and charcoal efficiency, and substitution strategy to counter the deforestation crisis.

UNIDO is also implementing several energy-related interventions for SMEs promoting the use of sustainable charcoal in value chains to reduce the use of woods as well as community power plants to also reduce charcoal dependency. UNIDO also promotes the use of animal waste to generate biogas, by building digester machineries that can separate waste, and projects which aim to provide solar cooling machines for food preservation.

It is expected that Rwanda will progressively suppress the use of firewood with the introduction of liquefied petroleum gas (LPG) and other alternatives including solar and thermal applications.

### **5.1 Drivers of sustainability for the agri-food sector in Rwanda**

Within the next thirty years the global population is expected to reach 9.7 billion and two thirds of the world population will be living in cities. With it, global demand for food will rise by 50 and food production in the developing world will need to double.

A number of complex challenges encircle these numbers: The food insecure will shoulder most of the burden as pressure on natural resources increases and climate change makes food production less predictable. Finding decent jobs for the unprecedented number of young



people living today is a major task, and failing to do so will complicate other challenges, like migration flows and social instability. These same numbers also present opportunities.

For instance, in Rwanda growing urban population is boosting food markets which is driving demand for traditional processed food staples, which in Sub-Saharan Africa is expected to grow six-fold by 2025. The nascent staples processing sector, represented in the workshop by the small potato crisps manufacturers, offer a pathway for the transformation of the staples value chains. Despite their pivotal role in linking farmers to markets, providing off-farm income for the rural poor, and their influence on natural resource usage, small food enterprises are typically overlooked in dialogue on sustainable development.

In response to the presentations and the case study provided under Session 2, participants' interventions pointed to the following recommendations for promoting sustainable food value chains in Rwanda:

### **Adapting sustainability tools to attract investment**

To attract responsible domestic and international investment that priorities sustainability, food SMEs need to demonstrate that they have compelling business models capable of contributing to poverty reduction, food security, with low carbon footprints and sustainable resource management tools in place. Participants also suggested prioritizing public investment support in sustainable packaging technologies that can compete with conventional forms, as currently biodegradable food packaging is imported from Uganda and China.

### **Promoting a unified sustainability vision and strategy for farmers and small food processors partnership**

Farmers and small food processors have an interdependent relationship, but there is very little real collaboration or dialogue between the two. Sustainability may be more successful if adopted in partnership by these actors. For instance, [sustainable agricultural practices](#), reduce soil erosion and fertility decline, making farms more resilient to climate change while improving agricultural productivity at a lower cost. Despite the merits, farmers struggle to continue with their adoption after subsidies or projects end due to a lack of market incentives.

### **Developing policies that specifically target the small food companies and that prioritize convergence between sustainability and competitiveness**

The discussion on Rwanda's law which prohibits the use of plastic packaging highlighted the difficulties policy makers face when addressing sustainability<sup>15</sup>. While the law is a successful example of how the Government is contributing to environmental sustainability, many actors in the food industry that rely on packaging have seen their costs rise, making it difficult for them to compete with imports. For instance, Rwandan crisps are packaged in expensive biodegradable bags and compete on supermarket shelves with the less expensive imports from Kenya which are sold in cheaper plastic bags. Participants called for regulation that supports small companies engage in environmentally responsible practices, while also allowing them to compete favorably.

### **Establishing dialogue platforms between research institutes and farmer and processors for sustainable seed systems**

Reiterated comments underlined that sustainability begins with the seed, and the potato value chain is unlikely to progress without mechanisms that accelerate the release of new varieties. Improved consultation between food processors and research institutes was also emphasized

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<sup>15</sup> The law to ban polythene bags from Rwanda was enacted in 2008 (REMA) prohibits the manufacturing, importation, use and sale of polythene bags in the country, with the result that in a couple of years from its enactment plastic bags disappeared from Rwanda's landscape.



so that the eventual release of new varieties properly responds to the needs of the market and the nascent food processing industry. Regulation that allows seed potatoes – not mini-tubers – to be imported was also suggested as well as the promotion of a domestic seed breeders industry to improve the local varieties.

### **Moving initiatives that support innovation and sustainability beyond dialogue on productivity to the rest of the chain through the Agricultural Innovation Platforms**

The Agricultural Innovation Platforms (AIPs), supported by the RAB, support the convergence of cross-disciplinary research and collaboration. While the platforms are open to partnerships with all factions of the private sector, typically it includes only farmers. Processors, traders, transporters and other private sector agents instrumental for adding value to agricultural commodities do not participate. The Roots and Tubers Project supports cross sectoral collaboration along the potato value chain, contributing to mobilize inputs for the AIPs from downstream actors, including potato processors, frequently excluded from the dialogue.

The following session presents a research case on the viability of renewable energy from small potato crisp manufacturers using their waste cooking oil as an example of sustainable innovation in food value chains.

## 5. Session III: Case study on sustainability and innovation in the potato value chain - Using waste cooking oil to produce energy in Rwanda

Session Objective: to demonstrate how a sustainability lens in the agri-food sector can promote innovation and cost savings

Mr *Manas Puri, Bioenergy Specialist - FAO* led the session, remarking that under the aegis of the GGCR Strategy, Rwanda intends to reduce GHG by promoting renewable resources and energy efficiency. The country imports high volumes of petroleum products. The Government aims to ensure that energy produced in the country is used efficiently by promoting new initiatives of energy savings, reducing consumption and imports of fossil fuels. By 2020 biomass is intended to be reduced by 50. To achieve this goal, investments in renewable energies need to be promoted. However, efforts to reduce biomass use need to include the promotion of new ways of doing business, improving charcoal value chains and facilitate actors of the value chain in this transition.

For the purpose of demonstrating new ways of doing business, the case of waste cooking oil from potato crisp manufacturing was presented as an example of the myriad of low cost benefits and innovations that can result from a food company applying a sustainability lens.

Overall, potato processing is estimated to be one of the larger contributors to food manufacturing emissions, in industrialized countries emitting 5.5 of the total. One ton of potato crisps is estimated to be responsible for 2.3 tons of Co2 emissions, with frying consuming more than 80 of the total processing energy requirements.

In preparation for the case, a preliminary study on the area of waste disposal for sustainable energy production in the food value chain, took place. This involved assessing the potential use of waste cooking oil generated from the three-main potato producing industries to produce electricity and biodiesel in Rwanda. Thus, a techno-economic analysis has been conducted to assess if the use of the waste oil for either of the above stated purposes is economically viable under the existing conditions.

Findings from the study showed that, based on conservative assumptions of the operations of three small crisp manufactures in Rwanda, potato crisp producers have the potential to produce straight vegetable oil (SVO)/Biodiesel from their waste cooking oil (WCO), electricity on site, or for sale and Biodiesel for the transport sector, at country level. The study also shows that production from domestic consumption is more viable than exporting due to high transport costs. However, much of the viability is based on the price per liter of WCO if sold.

The evidence shows that with the right tools and strategies in place, processors have the potential to simultaneously reduce the costs of energy by using WCO oil as diesel for an on-site generator, while also reducing GHG emissions. However, the extent of its feasibility requires further investigation into the current market price of waste cooking oil, much of which is currently sold on local food markets; current waste disposal management practices for WCO. Other possible low cost uses of waste cooking, and solutions for collecting waste cooking oil, could create jobs for the local population and reduce CO<sub>2</sub> emissions by replacing fossil fuels with biodiesel.

Building on the presentation's findings a panel discussion and plenary on the Role of Energy in the GGCR Strategy, led by MININFRAG REMA, the United Nations Industrial Development Organization (UNIDO) and Belgian Development Agency (BTC) highlighted the following:

The country's dependency from the intense use of nonrenewable resources for energy, points to an energy crisis in Rwanda which may cause accelerated deforestation, a biomass energy deficit and deterioration in electricity generation and distribution systems. Wood and imported

petroleum products consume more than 40 per cent of foreign exchange affecting the economic viability of crisp entrepreneurs and all small and large food manufacturing companies.

Due to the growing population and the shortage of energy availability in rural areas, fuel from wood is a key energy carrier in Rwanda. The sustainability of the forests in the country will depend on the use of the resources available.

According to *Mr. Vincent Nsabuwera, BTC*, the country is: " running to negative wood supply. We have the capacity to supply 3.5 million tones but the demand is 4.5 for the consumption. There is already a gap." BTC is strengthening small forest associations with training on best practices on sustainable forest management. Private companies can play an important role to manage appropriately national forests. He called for 'political will' to promote energy production and diversify into alternative energy sources discouraging the use of charcoal.

MININFRAG have a different number of programmes to promote the environmentally sustainable use of biomass fuel. This include extracting methane from Lake Kivu and investing in more hydro power. Delivering rural electrification through enhanced distribution networks, micro hydro, and solar power is also a priority as well as wood and charcoal efficiency, and substitution strategy to counter the deforestation crisis.

UNIDO is also implementing several energy-related interventions for SMEs promoting the use of sustainable charcoal in value chains to reduce the use of woods as well as community power plants to also reduce charcoal dependency. UNIDO also promotes the use of animal waste to generate biogas, by building digester machineries that can separate waste, and projects which aim to provide solar cooling machines for food preservation.

It is expected that Rwanda will progressively suppress the use of firewood with the introduction of liquefied petroleum gas (LPG) and other alternatives including solar and thermal applications.

### **6.1 Options for addressing Energy issues in Rwanda**

The following were the main recommendations from the session discussions:

#### **Regulate green charcoal supplies combined with mainstreaming training on forest management capacities for public and private sectors**

Green charcoal should be regulated on the market to compete with non-green charcoal. Thus, the public sector should support education on green energy management strategies to all the actors operating in the potato sector. Forest management is vital in this regard to retain existing resources and for reforestation.

#### **Support and investment for private sector led Improved Cooking Stoves**

However, due to the uncertainty on the introduction of LPG and solar thermal applications, the role of Cooking Stoves should be maintained and improved. Improved Cook Stoves (ICS) on a sustained business model, will keep the supply and demand balanced.

#### **Further feasibility analysis for alternative energy solutions**

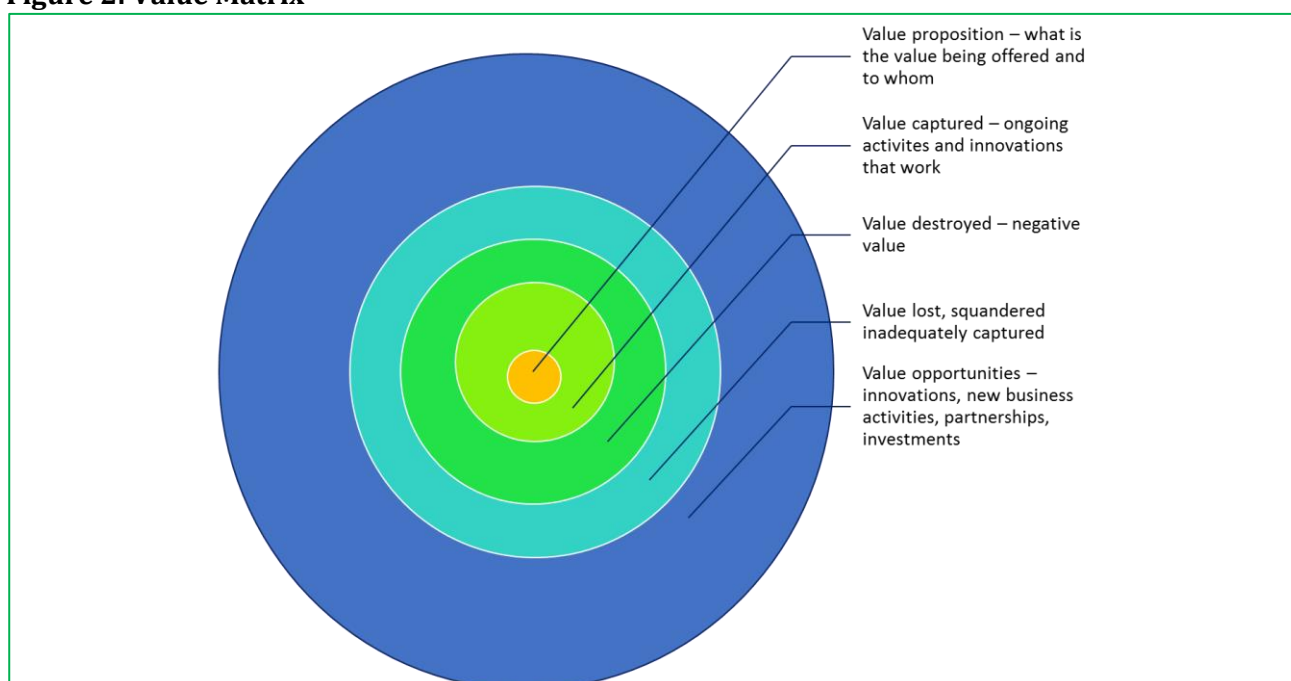
In addition to further research on feasibility analysis at country and firm level for alternative energy solutions, energy saving strategies, including feasibility studies for the profitability of waste residues recycling are needed.

## 6. Session IV: How value can be lost, captured or destroyed in the potato value chain

Session objective: To support small crisp manufacturing companies and workshop participants apply a sustainability lens to business models between farmers and small food companies.

A group activity led participants through a process of identifying where value is lost, captured and destroyed in value chains. Participants were spilt into three groups representing each of the three small crisp companies. Each group had one representative from the respective company, farmer representatives, and representatives from the private sector. The three groups were asked to list their companies' main stakeholders for each segment of the potato value chain following the matrix below.

**Figure 2: Value Matrix**



*Source: Author's own elaboration*

Participants worked from the core circle, which reflects the value the company is offering to its customers and society, to the outer circles. The light green circle refers to value captured to ongoing activities and innovations that work for the firm. The value destroyed circle reflects negative value that cannot be recouped and transformed into any other benefit directly by the companies. Value lost or inadequately captured helps firms identify areas that could possibly be addressed in the next circle on 'value opportunities' such as innovations, new business from recycling waste partnerships and investments. The following describes the findings from each of the groups.

## Group 1: The Nyabihu Potato Company (NPC)

The NPC identified 11 key stakeholders engaged in the crisp value chain in Rwanda, from research stations, seed multipliers to the community (consumers). The value activities identified for each stakeholder by the group, highlighted the importance of efficient value chain linkages as strategies for sustainability. One example is the nexus between research stations developing and supplying clean planting materials to seed multipliers - which grow the right varieties demanded by the fresh potato market and the processing market. Currently, the lack of chain coordination between the potato seed value chain and the potato value chain leads to numerous losses and waste.



Participants of group 1

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## Group 2: Hollanda fair food

Group two looked at the crisp value chain from the perspective of the company *Hollanda fair food*. The main stakeholders identified for the company were: : potato farmers, cooperatives, collection centres, traders – supplying oil or ingredients from Uganda, and the buyers, including supermarkets and small kiosks located in the country. The company contributes to job creation by employing around 30 full time workers, including an agronomist, researchers and finance specialists, but also part time employers supporting the company during busy periods. The enterprise established partnerships with national universities for internship programmes and PhD research on potato variety improvements.

The value lost is caused by the processing of unsuitable varieties on a daily basis. The most suitable variety available on the market has high water content creating excessive energy consumption during cooking, and waste during the peeling process.

Value is destroyed due to competition from cheaper crisp producers from Uganda and Tanzania, under the East African Community agreement<sup>16</sup>, who benefit from lower packaging costs, which is outside the direct control of the company.



Participants of group 2

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<sup>16</sup> [www.eac.int/sites/default/files/docs/treaty\\_eac\\_amended-2006\\_1999.pdf](http://www.eac.int/sites/default/files/docs/treaty_eac_amended-2006_1999.pdf)



### Group 3: NDYO Chips Company

The group focused on potato processors more broadly. Stakeholders identified by the group, and not included by groups 1 and 3, were suppliers of flavorings, packaging, electricity, water.

Value loss making activities identified are broken chips that cannot be packaged; and water used to clean the potatoes.



*Participants of group 3*

©FAO/Margherita Bavagnoli

Value destroying activities identified were:

- The heat used for frying. However with the right technology participants argued that it could be recovered by making electricity which can be used and sold in the market.
- A lack of reliable information on the prices of potatoes and quantities available in the market which make forecasting costs of processors difficult, a constraint which is outside the direct control of the firm.

Value creating opportunities identified were: resources allocation for technologies, as part of a group investment with producers, to recycle waste potatoes; and expanding market share through branding on sustainability.

To conclude the group stressed the role of innovation. Value-addition technologies are still underutilized due to a lack of clear guidelines on standards and supportive policies. Value addition through product development can enable farmers to access different niche markets.

#### 7.1 Findings from group work

- All groups identified local communities and farmers as core stakeholders for their companies, demonstrating the embeddedness of their operations in the local rural fabric.
- All companies employ a variety of skills from agronomists to food safety experts, providing important employment opportunities to young local people, including graduates.
- The only value destroying element identified, involved activities where companies had little control over competition policies, showing that most of the value wasted can be reused and recaptured at the firm level. An example is producing heat from frying oil or waste peels. A lack of investment for technologies or awareness of technology prevents companies from tapping into these valuable 'losses'.
- The market pull for 'sustainably' produced products is very small in Rwanda and would need to be developed. This can only be done at the industry level.
- All groups identified how farm inefficiencies influence losses in food processing, highlighting the necessity for these actors to better communicate needs and to coordinate productivity and processing.

## 7. Closing remarks

Ms. Siobhan Kelly, on behalf of FAO, commended all participants for their engagement and valuable interventions. Main take away messages identified for the speaker were:

The impetus that Rwanda has taken with the GGCR Strategy provides an excellent strategic platform from which to build a sustainable agricultural sector. But more work is needed to mainstream the strategy across all ministries, and to engage the private sector in order to establish a unified vision for the development of a sustainable agri-food sector working for small farmers and processors.

The sustainability concept needs to be promoted as an opportunity for innovation; a way for attracting responsible investments; improving competitiveness through resource efficiency and as a tool for marketing Rwanda agri-food sector's as progressive in the region.

The case on recycling waste oil in the potato value chain demonstrated the innovations and cost opportunities that can be had from applying a sustainability lens.

Care needs to be taken with the terminology used. The sustainability concept refers to environmental and economic efficiencies and social inclusion. Currently, much of the work in the agricultural sector is already focussed on sustainability – improving seed systems; linking farmers to value chains; reducing food losses; sustainable production; and natural resource management. This work needs to be better coordinated so that all actors are moving in the same direction. The GGCR Strategy provides a way for achieving this objective.

Sustainability is a continuous journey with no fixed destination. Agricultural value chain actors need to be given the tools that allow them to begin their journey and to measure their contribution to reducing pressure on the environment, while escaping poverty. Small farmers and food enterprises in particular, require support in this regard.

Mr. Telesphore Ndabamenya, *Head of crop production and food security – RAB*, closed the event by reiterating that the effects of Climate Change are particularly felt by small actors operating in the value chain of agricultural commodities, such as Irish Potatoes. Farmers shoulder the burden of the losses related to climatic events. Responsible production practices could reduce their vulnerability to natural disasters while improving their economic performance. However, more work is needed for their uptake. One of the reasons, as highlighted during the workshop, could be the misconception of the role of sustainability. He recommended all actors involved in the implementation of the GGCR Strategy and the African Roots and Tubers Project to focus efforts on small farmers and enterprises, as key drivers for a climate-resilient and low-carbon economy by 2050.

He closed by thanking FAO, and particularly the Project *Strengthening linkages between small actors and buyers in the roots and tubers sector in Africa* with the support of EU, for convening this workshop to catalyze sustainability and cost efficient changes in the potato value chain in Rwanda.

## Annex A: Groupwork results

### Group 1: The Nyabihu Potato Company (NPC)

SME stakeholders	Value Activities	Value Proposition	Value Captured	Value Destroyed	Value Lost	Value Opportunities
Research Stations	Developing and supplying clean planting materials right variety for crisp processing	Value: Disease free materials To: seed multipliers Farmers Value: right variety – to processor	Cleaning the most marketable varieties	Developing planting material for varieties not marketable	Produces far below the demand levels, thus quality compromises by other sources	Commercial production of clean planting materials
Seed potato multipliers	Multiplying the right variety for crisps	Value: multiplying the right variety of clean planting materials – to farmers & processor	Using negative and positive selection to sprout more seed	Sometimes seed sprouted is already very susceptible to diseases	Due to poor seed potato storage, some rot off or eaten by pests	Managing screen houses at seed multiplier level
Potato Farmers	Growing and supplying the right varieties for crisps	Supplying right variety in required quantities	Sorting and grading at farm level, applying GAPS	Growing mixed varieties some of which do not have ready market	Poor harvesting practices; immature potatoes, cut potatoes etc..	Producing for the market
Collection centre buyers	Sorting and grading the right varieties and size of potato, transporting the potatoes	Delivering right varieties and size in good condition	Inspection of potatoes, ensuring proper storage and packaging	Improper handling of the potatoes and poor storage conditions reducing quality	Shortage of potatoes, not able to supply the agreed amounts	Cross border trade in seasons of shortage
Transporters to processor	Loading and offloading of potatoes, and transporting					
Processor	Converting the fresh potato into crisps	Adding value to the potatoes in terms of shelf life and presentation	Branding, relationshi			



<b>SME stakeholders</b>	<b>Value Activities</b>	<b>Value Proposition</b>	<b>Value Captured</b>	<b>Value Destroyed</b>	<b>Value Lost</b>	<b>Value Opportunities</b>
Suppliers factory inputs	Supply appropriate materials (packaging, flavors, oil & other ingredients) to enhance processing					
Marketing Institutions	Branding and promotion of crisps					
Distributers	Distribution of the finished product					
Wholesalers & retailers	Sell crisps to final consumer					
Final Consumer (community)	Consumes the crisps					

## GROUP 2 (HFF)

I

### Stakeholders

1. Potato farmer suppliers. Cooperatives
2. Traders:
  - oil - TUKWANDOP
  - fuel
  - ingredients: Netherlands
  - packaging materials: Netherlands
  - Kiosks - Kenya
3. Buyers:
  - schools
  - supermarkets

### II. Marketing: 202 Congo 5 Kigali - SUPANOLY

- production: agronomist 1, quality control 1, production 1, part time workers:
  - storekeeper 1
  - security 2
  - cleaner 1
  - Engineer 1
  - Driver 1
  - Intern 1
- finance
- Country manager
- General managers

### III. Contribution to the local community

Sell waste oil to the community: 1L = 800 frw: Oil used for 406  
160 liters

### IV. Suppliers: SHID - Dutch NGO -

- RAB - EET - RSB - RRA - DINICOT

### V. Competitors: - East African Community crops

- Pringles

### Value lost

### Solution

1. Potato with deep eyes → lost
2. Use inappropriately fertilizers

1. Appropriate Potato variety
2. Strengthening information
  - district
  - mobilisation
  - regular meetings
3. exchange ideas PSF & DINICOT
4. in terms of providing more support to farmers to produce quality potatoes
5. Education of farmers on use of fertilizers - Training

# Creating Value - Potato Crisp Value Chain

Value proposition: Chips

Value Captured: Transformation

Value destroyed: Smoke, destroyed chips  
Soil after washing

Value lost: potato peel, high level starch  
Oil. water

Value opportunities:

New business: potato activity [ Peeled potato  
Washed potato  
french fries

Packaging → package other products.

SME Stakeholders (Actual ones)

With regard to Chips → Customers

With regard to Value

captured → [ Employees  
suppliers

Potential stakeholders [ Distributors  
owners

Considering opportunities from [ RSB/regulator

Value <sup>Lost</sup> destroyed → Customers of potential products  
from cooked oil, potato peels, etc

Partnership [ Agro. services (Consulting)  
Capacity building (Agro. research)  
Transport.

## Annex B : Workshop Agenda

### Strengthening linkages between small actors and buyers Supporting the greening of small food enterprising in Rwanda

21<sup>st</sup> – 23<sup>rd</sup> February 2017

Day 1: The business case for sustainability for small food enterprises Why Sustainability? Training on the key drivers of corporate sustainability programmes		
Time	Activity	Facilitator/Presenter
08:30-9:00	Registration of participants	
Opening session		
09:00	Welcome to participants, Opening remarks workshop objectives and agenda	Theophile, RAB
	Opening remarks	EU delegation
09:30	Keynote address from FAO representative	FAO Representative
	Keynote address from government	MINAGRI
10:00	Round-table presentation of participants	Theophile, RAB
10:20	Group photo	
10:30	Coffee break	
11:00	<b>Panel Discussion</b> Topic: <i>Towards a sustainable agri-food sector-the policy environment and challenges for producers and SMEs</i>	Theophile, RAB
13:00	Lunch	
<b>Why sustainability?</b>		
14:00	Drivers of sustainability	Siobhan Kelly, FAO
14:30	Group case work: Shekina Enterprise	Shekina Enterprise Ltd.
16:00-17:00	Discussion	

Day 2: Recycling waste for renewable energy in the potato supply chain		
09:00	Using waste cooking oil to produce energy in Rwanda	Manas Puri, FAO
10:30	Coffee break	
11:00	Using waste cooking oil to produce energy in Rwanda	Manas Puri, FAO
13:00	Lunch	
14:00	<b>Panel discussion:</b> <u>Topic:</u> <i>Role of energy in Rwanda's low carbon development strategy</i>	Maurice Kayitare MININFRA/REG
16.00-17.00	Plenary discussion	
Day 3: How to draft a sustainability plan and reporting on progress		
09:00	Sustainability reporting Best practices and sharing local experiences	Siobhan Kelly, FAO
11:00	Coffee break	
11.15	Reporting on progress	
12.30	Discussion	Ossiniel Nshimyumukiza, MINEACOM
13:00	Lunch	Theophile, RAB
14:00	Closing session and next steps	FAO/MINAGRI



## AFRICAN ROOTS AND TUBERS PROJECT

The African Roots and Tubers Project aims at improving the livelihoods of small producers engaged in the roots and tubers value chains in selected African countries (Benin, Cameroon, Ghana, Côte d'Ivoire, Malawi, Uganda and Rwanda), increasing their access to domestic and regional markets.

### CONTACTS

[www.fao.org/in-action/african-roots-and-tubers](http://www.fao.org/in-action/african-roots-and-tubers)

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