ASARECA
Transforming Agriculture for Improved Livelihoods

FARMERS IN THE **DRIVER'S SEAT**

Innovation in smallholder agriculture in Burundi, Ethiopia, Kenya and Rwanda

Bertus Wennink, Mainza Mugoya, Lydia Kimenye and Helena Posthumus (editors)

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Contents

Foreword

'Farmers in the driver's seat' of agricultural value chains is a principle that both the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Eastern Africa Farmers Federation (EAFF) believe is central to addressing key challenges in smallholder agriculture in Eastern and Central Africa. For too long, farmers have not received sufficient returns to their roles in value chains. There are multiple causes of these low returns, including low productivity and lack of competitiveness in agricultural value chains. One of the main lessons from this project has been the central importance of the market. Interventions in the value chain must respond to business opportunities. Farmers should increase their productivity targeting a specific market, as opposed to producing first, and then looking for a market later. Farmer organizations need to have an understanding of the dynamics of the market, including the specific quality and quantity requirements of the buyer.

Market development needs to go hand-in-hand with increasing productivity at the farm level, especially since yield levels in the region are significantly low. According to the Food and Agriculture Organization of the United Nations (FAO), the average maize yield in the East African Community (EAC) over the period 2000-2010 was 1.4 tonnes per hectare. This is less than one third of the world average over the same period. Further, it is less than one fifth of the maize yield in Egypt, Africa's highest producer. Similarly, the average rice yield in the EAC over the same period was 2.8 tonnes per hectare, which was 30% of the yield obtained by Egypt over the same period. It is very clear that one of the main opportunities to improve the status of farmers is by increasing their productivity at the farm level. However, to do this, farmers need to have better access to technology, information, markets and research and other relevant services. Better access to technology and information as well stronger linkages with other value chain players can help trigger innovations that can bring about improvements in productivity and returns.

Another challenge facing farmers is the low levels of organization among them. Prior to start of this project, ASARECA profiled farmer organizations in six countries of East and Central Africa. The results revealed that farmer organizations lacked various capacities need for them

to support and empower their members to engage profitably in value chains. In 2013, EAFF also, profiled thirty farmer organizations in Kenya, Tanzania and Uganda engaged in the maize and rice value chains. These were registered as either co-operative societies (in Tanzania and Uganda) or self-help groups (in Kenya). The organizations were categorized at three levels, with regard to their capacity to start engaging in the value chains and doing 'real' business. The rank of three was for those organizations that had 'high' membership levels, a good organizational and governance structure to handle contracts and engage with other players, were already engaged in collective marketing for their members, and had some form of training/experience in structured trading arrangements. Out of the 30 farmer organizations, only two (2) were characterized as level three organizations. This highlighted the fact that the majority of farmer organizations are very weak institutions, and have significant capacity gaps to do business with other value chain actors.

We are very pleased that this project, appropriately titled 'Farmer Empowerment for Innovation in Small-holder Agriculture (FEISA)' attempted to address these challenges. By focusing the interventions at the organizational level, the project was able to develop the capacities of the farmers' institutions to engage with the relevant actors in selected value chains in the four countries where the interventions were targeted - Burundi, Ethiopia, Kenya and Rwanda.

The results achieved so far indicate that farmer organizations are now engaging effectively through the innovations triangles with research institutions, financial institutions, seed companies and other service providers. They also show that the knowledge gained as well as the interactions with various stakeholders around the innovation triangles have triggered various innovations which have led to improved productivity and some cases better returns.

Lastly, we would like to commend all the institutions involved in this unique project, in particular the national farmer organizations (CAPAD from Burundi, IMBARAGA from Rwanda, KENFAP from Kenya, and OCFCU from Ethiopia) for ably implementing the interventions in their countries and for preparing the case studies reported in this publication; EAFF for their role in regional coordination and sharing of experiences. We would like to thank the Royal Tropical Institute (KIT) for providing the leadership in implementation of this project, the training and coaching of the farmer organizations throughout the project and enabling the farmer organizations to tap into their vast experience in value chains and in the innovation triangles approach which proved invaluable. We hope that the case studies and lessons learnt presented in this publication will be of value not only to farmer organizations but to other stakeholders engaged in agricultural research for development in the sub-region and beyond.

Philip Kiriro
EAFF President

Fina Opio
ASARECA Executive Director

Introduction

Background

Meeting the increasing demand for food, feed, and fuel – the goal of the Comprehensive Africa Agriculture Development Programme (CAADP) of the New Partnership for Africa's Development (NEPAD) – depends very much on the productivity and market access of small-scale farms. Small-scale farms, operated by a household with limited resources, remain the most common form of organization in sub-Saharan African agriculture.

Properly functioning farmer or producer organizations[1] are key in realizing pro-poor economic growth and poverty reduction, through the transformation of smallholder agriculture into a productive and profitable enterprise. Policy makers, research institutes, input suppliers, local governments, traders, processors and financial service providers can only effectively engage with and support smallholder farmers who are well organized and truly represented. Farmer organizations that represent and empower farmers are therefore an essential partner in technical, commercial and organizational innovation in agriculture.

Farmer organizations enable collective action by smallholders, creating economies of scale, reducing transaction risks and costs and thereby improving access to agricultural input and output markets. Through these organizations, smallholder farmers gain access to production inputs such as improved seeds, fertilizers, equipment and credit; they can bulk, store and invest in quality improvements to comply with increasingly demanding market requirements. They can also develop their understanding of markets and exchange market information. With the right incentives, farmer organizations can support the generation and adoption of technological innovations that are very often embedded in and linked to organizational and institutional innovation.

[1] Producer organizations are member-based organizations with elected leaders and internal decision-making and control mechanisms.

Farmer organizations are also vehicles for smallholder farmers to voice their views, to participate in policy making and trade negotiations and to develop valuable influence. At different levels, farmer organizations increasingly engage in participatory governance and contribute to the deepening of democratic practices and more transparent accountability relations. Improving the performance of farmer organizations has become a pervasive notion in many policy documents (NEPAD, 2003; World Bank, 2008).

ASARECA

The Association for Strengthening Agricultural Research in Eastern and Central Africa, ASARECA, is a not-for-profit sub-regional organization that serves as a forum for promoting regional agricultural research and development. It brings together agricultural research for development partners including farmer organizations, national, regional and international research institutes, extension and training organizations, public and private sector actors and non-governmental organizations (NGOs), to generate, share and promote knowledge and innovations. This is done with the aim of solving common problems in agriculture in its 11 member countries: Burundi, the Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, South Sudan, Sudan, Tanzania and Uganda.

The overall goal of ASARECA is increased competitiveness of the sub-regional agricultural systems, wherein enabling farmers to practice profitable agricultural enterprises is a crucial outcome. ASARECA sees capacity development and, ultimately, improved delivery and impact of scientific knowledge, technologies and innovations as powerful instruments to drive the sub-region towards meeting CAADP objectives and the Millennium Development Goals (MDGs) of reducing poverty and hunger.

To better contribute to its goal and that of the CAADP agenda, particularly Pillar 4 on improved agricultural research, ASARECA seeks to strengthen and empower farmer organizations, through its Knowledge Management and Up-Scaling (KMUS) programme, to articulate their demands and better utilize agricultural research and development services. Farmer empowerment[2] is seen to be a precondition for developing effective, demand-driven agricultural research and services. It is also vital to ensure efficient use of public resources, to strengthen farmers' negotiating power with private suppliers and traders, and to enable farmers to be more potent actors in all areas that influence their livelihoods, including agriculture (Neuchâtel Initiative, 2004).

Strengthening farmer organizations

Capacity building in agricultural development, including by ASARECA, has mostly focused on research and extension organizations; very little attention has been given to farmer organizations.

[2] Inwent and IFAD (2006) have defined empowerment as "a process for ensuring that people have the highest possible self-drive for initiating and facilitating their development."

These organizations represent the demand side of agricultural knowledge and technology. They need to be able to articulate 'real' demand for services and goods in the agricultural system and enable their members to apply them effectively, so as to improve productivity. Without strong farmer organizations and empowered smallholders, all efforts directed at strengthening agricultural research and extension could be futile.

CAADP puts it clearly: *"The main players in broad-based economic growth are the smallholder farmers and hence there is need to strengthen their capacity and empower them to define and articulate their requirements in terms of services and technology; organize themselves to better access inputs, services and markets and conduct their own agricultural experimentation; and establish a strong voice for themselves in the policy and institutional building process"* (NEPAD, 2003:19). According to the World Bank (2008) and Beaudoux et al. (1995) farmer empowerment is widely regarded as the most sustainable approach to helping poor farmers in Africa move out of poverty.

In Eastern and Central Africa, smallholder agriculture holds tremendous opportunities for sustainable and equitable economic development. Professionally organized and empowered farmers are key actors. Therefore, well-functioning farmer organizations are instrumental in effective delivery of research, advisory, financial and business development services and to assure access to and profitable engagement in input and output markets. Without well-functioning farmer organizations, smallholder farmers are unlikely to effectively articulate their demands, influence research agendas, engage in collective marketing or gain ready access to services. Ultimately, farmer organizations need to engage in learning and innovation, in full contact with external stakeholders and in tune with the demands of members at all levels.

The FEISA project

It is in this context that the KMUS programme initiated the 'Farmer empowerment for innovation in smallholder agriculture' (FEISA) project in 2010. The initiative started with a study to profile farmer organizations in the sub-region in order to identify priority needs for farmer empowerment and organizational strengthening[3] (Box 1). The study generated comprehensive information about the functions performed by farmer organizations with respect to empowering members to improve productivity. It also recommended strategies for addressing the identified priority needs for farmer empowerment and organizational strengthening (ASARECA, 2009a). The study findings were validated in stakeholder workshops with representatives from relevant ministries, farmer organizations, research and private sector, and used to develop a concept note. KMUS subsequently used the concept note to prepare a call for project proposals that culminated in the FEISA project (ASARECA, 2009b).

[3] A strong farmer organization is expected to provide services and products (or links to providers) to its members, promote and represent those members' interests, strengthen their bargaining positions and reduce their transaction costs.

Box 1: Bottlenecks experienced by farmer organizations

The justification for this ASARECA intervention to strengthen farmer organizations drew heavily on the findings of a profiling study, a stakeholder validation workshop and a subsequent writeshop organized by KMUS to consolidate the findings into a concept note. The project concept note underlined the systemic bottlenecks on performance of farmer organizations:

- A capacity gap exists for entrepreneurial development of smallholders and there is an inability to utilize collective advantages to influence input and output markets. The competitiveness of smallholder farmers lies in their collective effort. Smallholder farmers have a huge potential to operate like commercial farmers by using the advantage of collective efforts to gain economies of scale. A well-managed farmer organization provides a platform to facilitate this. However, many organizations have a capacity gap for smallholder entrepreneurial business development and organization of farmers to benefit from economies of scale through collective efforts.

- There is a lack of beneficial and attractive services that are the basis for the formation of farmer organizations. Without beneficial services (e.g. facilitating access to extension, credit, marketing and evidence-based advocacy and lobbying), the organizations are unable to attract and retain members. Because farmer organizations lack the capacity to generate and analyze data as supportive evidence, many are unable to lobby, advocate and negotiate to influence policies and structures that provide conducive environments for their survival.

- There is a lack of skills to facilitate planning, priority setting and articulation of demands. The strength of a farmer organization lies in its capacity to articulate demands, based on realistic priority development plans. Demand for services is not obvious; it requires rigorous planning based on analysis of the potentials and constraints of different categories of members. The capacity to generate differentiated demand, and to aggregate and articulate it to the service providers in an inclusive manner is paramount.

- Weak linkages and partnerships between farmer organizations and service provider organizations, including the private sector, are prevalent. Farmer organizations should serve as service brokers to their membership. In this regard, they must have the capacity to initiate, manage and negotiate beneficial partnerships, especially those that link their members to the input and output markets and industry. Networking also requires proficiency in communication and application of ICT. The partnerships create platforms for interaction, exchange of knowledge and technologies, and joint learning, enhanced by effective feedback between smallholder farmers and service providers. The capacity of farmers to innovate can be stimulated and enhanced by partnerships, as conduits for knowledge and technology.

Source: ASARECA (2009a and 2009b)

Within ASARECA, the KMUS programme oversaw the development and implementation of the FEISA project, whose output has led to this publication. The project is a priority intervention area under the strategic theme on 'Capacity development for agricultural product value chain actors' in the KMUS programme strategy 2009-2014 (ASARECA, 2010) and contributes to the programme and ASARECA purpose 'Enhanced utilization of agricultural technologies and innovations in East and Central Africa'.

The FEISA project was implemented as part of a strategy to empower smallholder farmers to improve their productivity in selected value chains. The FEISA project provided farmer organizations in Burundi, Ethiopia, Kenya and Rwanda with the tools and skills to assess their functioning, followed by tools for improved service delivery to members, in order to improve the participation of their members in value chains. The project aimed to enhance collaboration with service providers from the public, private and non-governmental sectors, as well as private enterprises, in a multi-stakeholder process around selected value chains, where learning and innovation are essential. FEISA also aimed to provide lessons and build the capacity of farmer organizations to provide market access services to members. The experiences will shed light on best-bet choices for in- or outsourcing of services by farmer organizations and will facilitate the replication of success factors in other ASARECA member countries.

The innovation triangle approach

Agricultural innovation

Markets and innovation

For several decades agricultural research and extension focused on improving production and productivity through the development and dissemination of improved technologies. More recently, market orientation and access have become equally important and a leading principle for farmers, their organizations, and support services such as research and extension (World Bank, 2008).

Effective market access is essential for two main reasons. First of all, it provides smallholder farmers with opportunities to increase their incomes and improve their livelihoods. Increased income is also needed to support agricultural intensification, which is key to creating profitable smallholder farming systems. Secondly, income through markets is more sustainable than grants from donors, providing a solid basis for financial autonomy. However, most farmer organizations remain largely dependent on financial support by donors.

In order to sustain income generation through their marketing, farmers and their organizations need to maintain their competitiveness by producing products that respond to the preferences of consumers and are offered at competitive prices. Consumer preferences change over time and competitors entering the market may offer better products or lower prices. It is therefore vital for farmers to have the capacity to continuously innovate (Maatman, 2011).

Innovation as a process

While innovation can be defined as the effective and sustained use of new knowledge that contributes to socioeconomic progress, the notion of 'new' is relative. Something can be 'new' in a given context while it is already 'old', and a common practice, in another context (Nederlof et al., 2012). Agricultural research was – and still is – considered to be the main and sole source of innovation in agriculture, particularly when it comes to production. However,

many new technologies developed by agricultural research are never used by farmers and thus never become an innovation. This is the case of the famous 'on-the-shelf technologies' which are waiting for 'uptake'.

This common scenario has led to an increased questioning of the way agricultural innovation is organized: researchers develop a new technology, extension agents disseminate it to farmers through information campaigns and training sessions, and finally farmers are expected to apply the new technology. However, when successful innovations are examined, the following factors stand out (Nederlof et al., 2012).

In successful innovation processes, farmers, researchers and extension agents communicate with each other and, in particular, farmers provide feedback to research and extension. This process allows for adapting the way technologies are disseminated, e.g. development of information and training materials, adapting the technology, or even abandoning the technology if it does not solve a problem encountered by farmers. Successful innovation therefore requires continuous interaction between all stakeholders, who learn from each other by providing feedback from their experiences of the technology.

This approach demonstrates the need for farmers to be at the centre of the agricultural innovation process. As the backbone of national economies, farmers are the ones who need to innovate. Farmers are also familiar with their own environments, having knowledge on soils, crops and so forth, much of which has been passed down from previous generations. This knowledge is the reason that many researchers prefer testing technologies through on-farm trials before releasing them.

Markets as main driver of innovation

The most important lesson learnt from successful agricultural innovations in sub-Saharan Africa is that farmers immediately use new technologies when they contribute to income improvement. The uptake of the technology is immediate and effective if farmers have access to markets where products are sold for profitable prices. Many successes in agricultural innovation are related to cash crops for which effective market access and marketing have been achieved, e.g. coffee, cocoa, cotton, etc. (Gabre-Madhin and Haggblade, 2001). Very often, parastatals have been responsible for coordinating and organizing marketing for smallholder farmers. However, the situation is different for food crops, where farmers, processors and traders have to develop and maintain their business relations and coordinate their activities to effectively market the products.

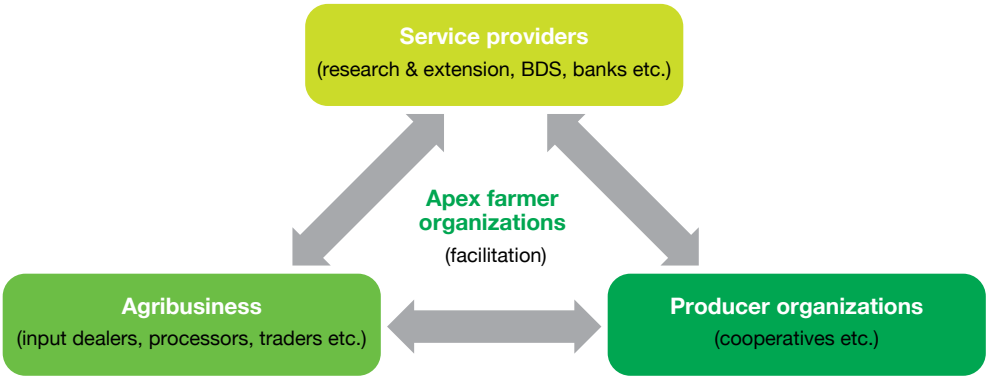
The market is very often the trigger for agricultural innovation. To make the most of market opportunities, smallholder farmers need to change their ways of working, while also engaging with processors, traders and buyers, who generally have a better understanding of market demands. Changing their way of working goes beyond production and post-harvest practices (technological innovations). It also includes training and coaching farmers (knowledge), and the way farmers organize themselves to sell their products (organizational innovation) and deal with buyers, researchers and extension in order to keep business going (institutional innovation). Successful technological innovations are very often embedded in innovative organizational and institutional arrangements.

The basic principles of innovation triangles

Innovation triangles as value-chain-specific, multi-stakeholder platforms

Innovation triangles are essentially composed of farmer organizations, agri-business (input traders, processors and output traders), and service providers (technical and managerial support to farmers, Farmer organizations and agri-business; banks and other financial institutions; and agricultural research and extension) (Figure 1). These stakeholders work together in value-chain-specific, multi-stakeholder platforms, or innovation triangles, where they define and coordinate activities in order to seize market opportunities for specific products, exchange knowledge and information, and learn from each other (learning-by-interaction) and the activities undertaken (learning-by-doing).

Figure 1: The innovation triangle



Addressing burning issues to benefit from market opportunities

It is essential that innovation triangles address market opportunities, since these are a guarantee of sustainable income for smallholder farmers. This approach goes beyond a simple needs assessment, which often leads to a 'shopping list'. Furthermore, these opportunities for doing business together, whether between farmers and agri-business or between farmers and service providers, is the main motivation for stakeholders to participate in the platform. Therefore the platform addresses 'burning issues' that constrain potential benefits resulting from market opportunities and whose resolution, often through targeted support by service providers, results in quick wins for the farmers and other value chain actors.

Facilitation of innovation triangles by apex farmer organizations

A basic principle of farmer organizations is that of subsidiarity; all tasks that can be dealt with at lower levels of organization are best implemented at that level. Higher levels provide support to grassroots organizations, which are often business partners of agri-businesses in value

chains. Apex organizations, which play no direct role as stakeholders in the value chain, facilitate innovation triangles to ensure the enhanced participation of smallholder farmers in value chains through improved service delivery by themselves or other service providers.

Implementing the approach

Assessing apex farmer organizations for service delivery to members

Apex farmer organizations play a key role in implementing the innovation triangles approach: besides the facilitation and service provision roles, they strengthen the capacity of grassroots organizations in accessing markets. These capacities include knowledge of markets, management and entrepreneurial skills, and links with business partners. These capacity strengthening services are a relatively new development for many apex farmer organizations and became one of the main strategies underlying the FEISA project.

A team from the Royal Tropical Institute (KIT) in Amsterdam, the Centre for Development Innovation (CDI) and the Social-economic Research Institute (LEI) from Wageningen University and Research (WUR) trained and coached staff members of the apex organizations to become innovation triangle facilitators. The consortium members provided initial training on: the self-assessment of farmer organizations; participatory mapping and analysis of value chains, with a strong emphasis on visualization tools; identification of 'burning issues' in value chains; and the basic attitudes and skills for effective facilitation. More importantly, the consortium coached staff members regularly during innovation triangles meetings and equipped them with simple tools to help stakeholders think and work together. These meetings were 'on-the-job-training' and 'learning-by-doing' events for the staff members of the apex organizations.

A first activity of the FEISA project was a self-assessment by farmer organizations. Selected staff from apex organizations were trained and coached in carrying out an assessment of their organizations. Leaders, members and staff gave their views, based on a series of statements that covered several areas:

- Internal functioning of the organization (governance and management);
- Services provided to members and member organizations (facilitation of research development and action research, support to production, post-harvest handling and marketing);
- Collaborative relations with other stakeholders in the agricultural sector.

Results of the assessment were presented and discussed during a meeting with membership, leadership and staff representatives, which allowed for the identification and prioritization of areas for organizational change of each farmer organization.

Building innovation triangles

In each of the four countries under the FEISA project, the apex farmer organization selected value chains and localities to initiate innovation triangles. The basis for selecting value chains

was that they should relate to commodities with a high potential for improving smallholder income. Localities were limited to regions where at least one primary cooperative was already involved in the value chain activities, particularly in business-type activities such as producing and selling products, or processing and selling products.

For example, CAPAD[1] in Burundi has built six innovation triangles, three in each of the two selected value chains: rice and potatoes. OCFCU[2] in Oromia State, Ethiopia selected one value chain, coffee, within which it created two innovation triangles. In Kenya, KENAFF[3] facilitated the creation of three triangles, one in each of the selected value chains, maize, potato and banana (tissue culture). IMBARAGA[4] in Rwanda built three innovation triangles, two in the pineapple value chain and one in the potato value chain (Table 1).

Table 1: Farmer organizations engaged in value chain innovation triangles

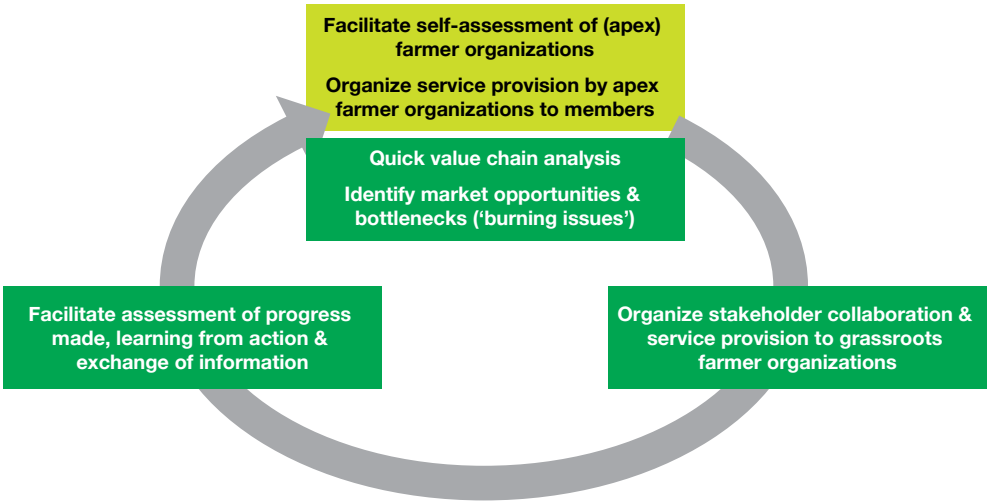
Farmer organization	Value chain	Locality	Grassroots organizations
OCFCU, Ethiopia	Coffee	Jimma Zone (Oromia State)	Omo Bako and Ambuye cooperatives
		Borena Zone (Oromia State)	Killenso Ressa and Neggele Gorbitu cooperatives
CAPAD, Burundi	Rice	Mutimbuzi District (Bujumbura Rural Province)	Girumwete Dukore cooperative
		Mpanda District (Bubanza Province)	Terimbere cooperative
		Mugina District (Cibitoke Province)	CAPRIMU cooperative
	Potato	Gatara District (Kayanza Province)	Kirinzara cooperative
		Kayanza District (Kayanza Province)	Jijuka cooperative
		Muruta District (Kayanza Province)	Turahiriwe cooperative
KENAFF, Kenya	Maize	Marakwet District (Rift Valley Province)	Marakwet Branch
	Potato	Kiambu District (Central Province)	Kiambu Branch
	Banana (tissue culture)	Meru District (Eastern Province)	Meru Central Branch
IMBARAGA, Rwanda	Potato	Kinigi District (Northern Province)	KOABIKI
	Pineapple (production)	Gakenke Distrtict (Northern Province)	COAFGA
	Pineapple (processing)	Gakenke Distrtict (Northern Province)	COVAFGA

[1] Confédération des Associations des Producteurs Agricoles pour le Développement (CAPAD, Burundi).
[2] Oromia Coffee Farmers Cooperative Union (OCFCU Ethiopia).
[3] Kenya National Farmers' Federation (KENAFF, Kenya) which was till recently known as Kenya National Federation of Agricultural Producers (KENFAP).
[4] Rwanda Farmers Federation (IMBARAGA, Rwanda).

Making innovation triangles work

The apex farmer organization played the role of convener and facilitator of the multi-stakeholder process at the level of the innovation triangle. Selected staff members from the apex organization were responsible for organizing multi-stakeholder sessions, inviting members, facilitating the sessions and monitoring the follow up (Figure 2).

Figure 2: The innovation triangle approach



In an initial meeting in 2010, the stakeholders made a rapid analysis of the value chain, identified and confirmed market opportunities, identified key bottlenecks ('burning issues') and defined actions to be undertaken. Very often, the activities required collaboration between at least two stakeholders, which was an opportunity to build new relationships.

Between 2011 and 2013, the innovation triangles regularly met (two to three times a year) to assess and learn from the progress made in tackling bottlenecks, exchange information and decide how to tackle other bottlenecks. Learning was important, since not all priority bottlenecks were immediately resolved and the stakeholders involved needed to adapt the activities.

Providing services to grassroots farmer organizations

Besides facilitating the innovation triangles, the selected staff members from the apex organizations were also responsible for organizing support services to farmers. These were intended to strengthen farmers' professional and entrepreneurial skills and aid them in tackling the bottlenecks that were constraining their access to market opportunities.

In practice, this meant that staff had to facilitate contacts between grassroots organizations and service providers after the innovation triangle meetings, help farmers to articulate their

needs, contract service providers and co-organize training sessions. Since the FEISA project only provided small grants for service provision to farmers, staff often linked the FEISA project to other ongoing projects and programmes that already funded support to farmers, such as the International Fertilizer Development Center (IFDC) funded Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability[5] project in Burundi and the Agriterra funded micro projects and Enhancement of Farmer Entrepreneurship for Development (EFED) project of KENAFF in Kenya.

Building the facilitation capacity of apex farmer organizations

Staff members are acquainted and skilled to implement support projects and programmes for grassroots farmer organizations. Often these support initiatives have pre-defined steps to be taken, and target a sole group of beneficiaries, smallholder farmers. FEISA's market-oriented, multi-stakeholder-driven innovation approach was rather new for many staff. The approach requires facilitation skills and not just project management, involves several stakeholders instead of only farmers, and is about business and not just development. For many of the staff, the approach was completely different to anything they had previously undertaken. The goal of FEISA is that ultimately, the apex farmer organizations will be able to maintain the ongoing operation of the innovation triangles without support.

Learning through sharing and documenting experiences and results

Sharing and learning activities assured that the activities supported by the FEISA project had relevance beyond the direct intervention countries and localities. With support from the Eastern Africa Farmers Federation (EAFF), the experiences with practical tools (self-assessment tools for farmers' organizations, facilitation of innovation triangles) and agricultural innovation processes and results were shared. EAFF organized a series of regional workshops and peer review missions in which all four national farmer organizations participated. The final and closing workshop was dedicated to documenting and analyzing a series of case studies which helped to draw lessons and define the way forward for sustaining and scaling out the innovation triangle approach.

[5] Catalist promotes agribusiness cluster development, market integration and agricultural intensification to improve the livelihoods of smallholder farmers.

Countries, selected value chains and apex farmer organizations

Burundi

The economy of Burundi is recovering from the conflict situation, which negatively affected its performance over several years. Since 2007, the economy has shown improvement, with industry and services increasingly contributing to the Gross Domestic Product (GDP). However, the national economy is still highly dependent on agriculture, which is dominated by smallholder farmers, who work on landholdings of around 0.5 hectares (ha) per household. In 2009, 94% of the country's population was actively engaged in agriculture, producing 90% of the food supplied in the country and contributing to more than 90% of foreign earnings (NEPAD, 2009). In 2010, the sector contributed 34.8% of GDP.

Rice is a major crop in Burundi. In the first decade of the millennium, the country produced around 75,000 tonnes of rice annually, and imported around 40,000 tonnes. Rice in Burundi is grown in both irrigated and non-irrigated wetlands, as well as in lowlands. The River Imbo plain, including its irrigated wetlands, is the most important rice producing region in the country. The region benefits from important public investments in infrastructure and technical support services. It is estimated that some 12,000 farmer households cultivate rice on 1 ha farms that have been distributed to them by a parastatal which manages an irrigation scheme of 4,850 ha. Virtually all households are members of local farmer associations which, in collaboration with the parastatal, organize input supply and marketing of rice. The Imbo irrigation scheme produces some 25,200 tonnes of paddy rice (14,500 tonnes of white rice) annually with an estimated average yield of 5.5 tonnes per ha (NEPAD, 2009).

While Kenya, Rwanda and Uganda are major producers of Irish potato, it is regarded as a minor food crop in Burundi, related to the fact that suitable production zones are limited to high altitude regions. In 2008, national production was estimated to be around 25,000 tonnes per year. Production has since increased in response to rising demand for Irish potato, which is now both a cash crop and food crop for smallholder farmers, who sell part of their production through informal marketing systems (IFAD, 2008). It is an attractive cash crop for smallholders

from an economic point of view, as any investment in mineral fertilizer is rapidly recouped. However, potato farmers in Burundi face fierce competition from Rwandan potatoes, which are flooding the Bujumbura market.

La Confédération des Associations des Producteurs Agricoles pour le Développement (CAPAD) is an apex farmer organization in Burundi, registered as a non-profit organization. CAPAD was formed in 2000 and formally registered in 2003. It has a membership of 72 cooperatives, consisting of 21,130 farmers. CAPAD activities cover 12 out of the 17 provinces across Burundi [1].

Ethiopia

The Ethiopian economy is one of the fastest growing economies in Africa; in 2012, real GDP growth of 7% was the second highest in Eastern Africa, after Rwanda (AfDB, 2013). The agriculture sector is an important driver of growth. Between 2003 and 2009, agriculture was the largest contributor to the Ethiopian economy, annually contributing over 40% of the country's GDP (AfDB, 2010). In 2008/2009, the agricultural sector – with a growth rate of 6.4% – was the third fastest growing sector behind services and industry. Agriculture is also a major employer in the country, employing up to 85% of the rural population, and contributing up to 80% of the country's export sales (BMGF, 2010). Agriculture is clearly one of the priority sectors for the government. According to the African Union Commission, Ethiopia was one of five African countries that – on average – allocated at least 10% of the national budget to the agricultural sector between 2003 and 2009.

Coffee is one of Ethiopia's main crops in terms of employment and production. In the 2011/2012 season, Ethiopia's Central Statistics Agency (ECSA) estimated that more than 4 million farmers were engaged in coffee production, implying that coffee was the seventh highest employer of all crops in the country. The total land size dedicated to coffee is estimated at around 515,000 ha, accounting for 3.8% of the total area under crop cultivation (ECSA, 2012). According to the International Coffee Organization (ICO), in 2012, Ethiopia was the fifth leading producer of coffee globally, and the leading producer in Africa. That year, the country produced 8.1 million bags of coffee, accounting for about 5.6% of total global coffee production. In the 2011/2012 season, Ethiopia was the second leading exporter of coffee from Africa. That year, the country exported 2.5 million 60 kg bags of coffee (150,000 tonnes), accounting for around 2.4% of global coffee exports (ICO).

Oromia Coffee Farmers' Co-operative Union (OCFCU) was registered in June 1999 and is one of the most successful cooperative societies in Eastern Africa. OCFCU started with a membership of 34 primary cooperatives, 22,500 individual coffee farming households, and an initial capital outlay of US$90,000. OCFCU's membership has since grown to 217 primary cooperatives and 202,000 coffee households in 2011. The Union's sales have grown 300-fold from 2.3 million Ethiopian Birr in 2001 to 699 million Ethiopian Birr in 2011[2].

[1] Website http://www.capad.info/?lang=fr [last accessed in November 2013].
[2] Website http://www.oromiacoffeeunion.org/ [last accessed in November 2013].

Kenya

Kenya is the most economically developed country in the East African Community (EAC), contributing 40% of the region's GDP in 2011 (EAC, 2012). Agriculture is an important sector in the economy in terms of contribution to its GDP, exports and employment. In 2010, the agriculture sector directly contributed 22% of the national GDP, and accounted for 65% of total exports, 18% of formal employment and 70% of informal employment. The majority of farmers in Kenya are smallholder farmers, with land-holdings ranging from 0.1 to 1.5 ha. Smallholder farmers account for 75% of total agricultural output in the country. In addition, they account for 70% of total marketed agricultural output (GoK, 2010).

Maize is the staple food. The Kenya Institute for Public Policy Research and Analysis (KIPPRA) estimates that maize is grown on up to 56% of all cultivated land in the country. KIPPRA also estimates that 98% of all smallholder farmers are engaged in maize production, providing 70% of all maize produced. Since maize is the country's staple crop, the demand for the commodity is very high and, as a result, the country is a net importer of maize in most years. Kenya's annual maize production ranges from 2.3 million to 3.3 million 90kg bags (207,000 to 297,000 tonnes). This is below the estimated annual consumption.

Irish potato is the second most important food crop in Kenya after maize. An estimated 790,000 smallholder farmers are involved in potato production, with an additional 1.5 million people involved in other stages of the value chain. In total, the sector employs up to 2.5 million people and the industry generates about US$560 million annually in sales.

Bananas are one of the major food and fruit crops. The Africa Harvest Biotech Foundation International (AHBFI) estimates that bananas account for 7.4% of the total cropped area, and 55% of the area under fruit in Kenya (AHBFI, 2008). Bananas are cultivated by around 389,000 farmers in the country, mainly on small landholdings. Banana cultivation on less than 0.5 ha contributes up to 83% of the banana production. The crop is a major contributor to food security, accounting for 25% of the total calorie intake by Kenyan consumers.

The Kenya National Farmers' Federation (KENAFF) is the apex farmer federation representing the interests of approximately 1.8 million farming families in Kenya. KENAFF was established in 1946 as a farmers' union representing the interests of large-scale white farmers. In 2003, it underwent an institutional transformation from a farmers' union to a federation. Its membership consists of area-based farmer organizations (area branch enterprises), commodity associations and cooperatives across the country[3].

[3] Website http://www.kenfap.org/ [last accessed in November 2013].

Rwanda

Rwanda has made significant development strides over the past two decades. The country recorded an average GDP growth of 7.3% between 1995 and 2006 (Xinshen et al., 2010). More recently, between 2008 and 2011, Rwanda was the fastest growing economy in the East African Community, with an average 8.4% growth in real GDP (EAC, 2012). In 2012, the African Development Bank (AfDB) estimated that Rwanda was the fastest growing economy in Eastern Africa, and the eighth fastest in Africa (AfDB, 2013). Rwanda's economic growth is driven largely by the agricultural sector. In 2012, FAO estimated that the agricultural sector contributed 33% of the country's overall GDP, second to the services sector. However, such growth is constrained by the limited availability of land. Rwanda's population density has increased from 345 people per km^2 in 2000 to 416 per km^2 in 2012 (FAO), which is the highest population density in Africa. This is a major challenge, as 90% of the country's population is employed in agriculture (Xinshen et al., 2010).

Irish potato is one of the major food and income-generating crops. Its production increased from 626,509 tonnes in 2008 to 1,789,404 tonnes in 2010, and to 2.17 million tonnes in 2011 (NISR, 2012). It is estimated that around 200,000 farmer households grow potatoes, mainly in the higher and cooler regions in northern and western Rwanda. Compared to a country like Kenya, Rwanda's potato business is rather 'simple', since there is no storage or processing of any importance (BPR, 2012). However, Irish potato has always received particular attention and support through national policies because of the country's suitability for the crop. Main market outlets for Irish potatoes are urban centres, such as the capital city Kigali, and neighbouring countries such as Burundi.

Pineapple, avocado and banana, are the top three fruits produced in Rwanda, where conditions are particularly suitable for horticulture production. Despite pineapple being promoted by the government, the National Institute of Statistics Rwanda (NISR) estimates that national pineapple production in Rwanda is around 73,400 tonnes per year. Compared with national demand, this implies a gap of around 43,000 tonnes which is filled by imports from neighbouring countries (Burundi, Democratic Republic of Congo and Uganda). Pineapple has some potential advantages for smallholder farmers as the crop yields more per unit area cultivated and earns higher prices per unit weight compared to other crops. The fruit also provides income year-round, particularly during periods when the availability of other agricultural products for sale is low (Kayitesi, 2011). The country's growing population, especially the urban middle class, is increasingly demanding processed horticulture commodities. Basic processing units are operating at village level while medium and large-scale operations are supplying supermarkets, hotels, restaurants etc. in urban centres (KIT, 2011).

The IMBARAGA Federation was created in March 1992 at the initiative of farmers and stockbreeders in Rwanda. IMBARAGA was legally recognized as a professional agricultural organization in September 2006 and is an apex organization of national scope, i.e. its operational zone covers the entire country. IMBARAGA aims to ensure protection and safeguarding of socio-economic interests of farmers and stockbreeders in general, and especially those of its members. From the last census in 2007, IMBARAGA had 25,000 members of which about 60% were women. The membership currently consists of 850 farmer groups spread across 25 of Rwanda's 30 districts[4].

[4] Website http://www.imbaraga.org/ [last accessed in November 2013].


OCFCU
Y/Cheffe-2
Cert No-0260
320-Bags

Self-assessment of farmer organizations

The FORCE tool

Farmers are often treated as passive target groups or beneficiaries of development projects. However, policies and agribusiness realities are rapidly changing, such that governments, donors and private companies increasingly perceive small farmers and their organizations as partners. This raises the need to engage with farmers and their organizations as autonomous actors and to develop operational practices that reflect the new recognition of farmers as active participants in their own development.

With support from the FEISA project, apex farmer organizations were acquainted with a self-assessment tool that treats farmers and their organizations as entrepreneurs and as development and business partners. During a 2-day workshop, the tool was used by each apex organization and the results were presented and discussed by the members.

Known as FORCE – Farmers' Organizations Reviewing their Capacities and Entrepreneurship – the tool allows farmer organizations to quickly map out how their members perceive the organization and its relations with other stakeholders in value chains and commodity sectors. Eventually the members, with help from outside facilitators, apply the tool themselves. This is fundamentally different from the use of a tool by outsiders that seek to evaluate a farmer organization (Schrader, 2010).

FORCE aims to contribute to more sustainable and inclusive value chain development. The tool seeks to induce self-propelled change processes within farmer organizations leading to capacity strengthening and performance improvement, and dialogue and collaboration between farmers and other stakeholders in the agricultural sector.

Self-assessment results are based on the assessments of members themselves and are presented in easy-to-read graphs that provide an image of how members perceive the current capacities and performance of their organization. This perception is a good starting point for discussing

priorities for organizational capacity development and how the organization could contribute to improving the business relations of farmers or farmer groups.

Use of the tool

The application of the tool followed seven steps (Table 2). The methodology itself was the result of a gradual tool development process.

Table 2: Basic steps for the self-assessment of farmer organizations with the FORCE tool

No	Steps	Supporting material
1	Customization and organization	
2	Identifying indicators and formulating statements	Statements relating to selected performance areas and indicators
3	Introducing the self-assessment to farmers	Introductory note
4	Farmers scoring the statements	Scoring form with statements
5	Data processing	Excel worksheets for data entry and processing, and for preparing graphs
6	Preparing debriefing report and meeting	Format for debriefing report
7	Sharing and discussing self-assessment results	Graphs with self-assessment results

Within the context of the FEISA project, the facilitator of the self-assessment exercise was generally a staff member of the apex organization. He or she had a key role in introducing the self-assessment exercise to farmers.

The actual content of the self-assessment varies with the specific situation at hand. Needs of farmer organizations differ according to: their level of intervention; the services they provide to their members; and the commodity sector in which they operate, in terms of organizational challenges and business relations with other stakeholders.

Due to the differences in the organization of farmers in Burundi, Ethiopia, Kenya and Rwanda, the self-assessment targeted different levels. Burundi (CAPAD) and Rwanda (IMBARAGA) have a similar organizational form: local groups (associations, cooperatives), and even individual farmers in Rwanda, are the members of these apex organizations, which directly provide services to these members. The assessment therefore targeted the national organizations, CAPAD and IMBARAGA. Ethiopia (OCFCU) and Kenya (KENAFF) present a different image: these are multi-tier organizations where second-level organizations (cooperatives in Ethiopia, area branches in Kenya) provide services to local groups. The assessment therefore targeted the second-level organizations (Table 3).

Table 3: Farmer organizations that applied the FORCE tool			
Country	**Value chains**	**Farmer organizations assessed**	**Number of respondents**
Burundi	Rice Irish potato	CAPAD	17
Ethiopia	Coffee	Omo Bako and Ambuye cooperatives Killenso Ressa and Neggele cooperatives	±131 (11 groups)
Kenya	Maize Irish potato Banana (tissue culture)	Marakwet Area Branch Kiambu Area Branch Meru Central Area Branch	28 27 34
Rwanda	Irish potatoes Pineapple	IMBARAGA	27

In order to facilitate multi-stakeholder-driven and farmer-led innovation in value chains, the following areas for self-assessment were identified: (1) membership; (2) governance of the organization; (3) management of the organization; (4) innovation systems; (5) participatory research; (6) production and productivity; (7) storage, processing and marketing; and (8) representation (Table 4).

Table 4: Areas of self-assessment and elements covered by statements		
No	**Area of self-assessment**	**Statements on**
1	Membership	• Rights and duties of members • Database on members • Gender sensitivity of the organization
2	Governance	• Vision and mission of the organization • Decision-making procedures • Information flows within the organization
3	Management	• Training and coaching policy • Financial management (mobilization of resources) • Strengthening of members' entrepreneurial skills
4	Innovation systems	• Collaboration with research & extension • Partnerships for innovation with private sector • Dissemination of technologies
5	Participatory research	• Setting of research agendas • Initiation of on-farm research • Collaborative impact assessment of technologies
6	Production and productivity	• Seed multiplication by farmers • Collective procurement of agricultural inputs • Access to credit (seasonal loans)
7	Storage, processing and marketing	• Investment in reducing post-harvest losses • Assessment of value addition opportunities • Collective marketing of agricultural products
8	Representation	• Networking with other farmer organizations • Organization of publicity events • Use of ICT

Once the main areas had been established, the indicators were defined and statements were formulated. For every assessment area, the facilitator, in close collaboration with the farmer organization, defined the most important indicators. Basic models on farmer organization dynamics inspired the identification of indicators for organizational functioning and performance. Indicators for stakeholder relations were generally commodity and country-specific.

Once the indicators had been identified, they were translated into statements that were to be scored by members. Statements were positively stated and in the active tense as options for positive change. Statements were phrased either from the viewpoint of the farmer group ('we') or from the viewpoint of an individual farmer ('I'). Statements formulated in the passive tense, negatively phrased statements and 'If-then' type statements were avoided, as being potentially more difficult for participants to score (Box 2). The number of indicators and related statements was flexible. However, it was thought useful to have at least eight indicators per assessment area.

About 10-20 respondents, including board members and ordinary members, female as well as male, scored the statements, using a 5-point scale[1]. For each statement, they were advised to ask themselves two basic questions: "Is this statement true or not true?" and "To what extent is it true or not true?" (Box 2). In this manner, the level of agreement (score towards 5) or disagreement (score towards 0) with statements was approximately measured. The scores obtained were subjective and time-bound: every respondent compared the current situation with what he or she thought it could or should be.

Box 2: Examples of a scoring form and method

No	Statement	Score					
6	Production and productivity						
6.4	"Our organization facilitates access to credit and other financial services"	0	1	2	3	4	5
6.5	….	0	1	2	3	4	5

			Not true ←		→ True		
Scores	**0**	**1**	**2**	**3**	**4**	**5**
	Absolutely not true	Not true	Not really true	A bit true	True	Absolutely true

The facilitator used Excel work sheets for quick data entry, automatically generating different graphs, which were used in the plenary sessions with members. Average scores per statement

[1] This is a so-called Likert scale: respondents give a score according to their level of agreement or disagreement on a symmetric agree-disagree scale (0-5) for each statement. The score indicates their feeling or opinion on a statement.

or assessment area were transformed into scores on a 0-100 scale. Average scores per area which deviated from the overall average score for all areas were indicators of the need for change. Since statements were formulated as options for change, an average area score that was superior to the overall average score indicated that members felt that change was needed in this particular area. The scores for specific statements helped to specify the change required (Tables 5-7).

Results and follow up of the self-assessments

The apex farmer organizations in Burundi (CAPAD) and Rwanda (IMBARAGA) are perceived by members as organizations that are adequately managed (Table 5). In fact, these organizations have extensive experience with working with donors and implementing donor-funded projects. This allowed – and forced – them to put in place appropriate management systems which are, in turn, requirements for attracting other donor funds.

On the other hand, these apex organizations struggle with conceiving and organizing services that support the economic activities of their members. Both apex organizations started as organizations that lobbied to get issues of smallholder farmers on the policy agenda of their governments, in which they succeeded. Nowadays, national policies in Burundi and Rwanda consider smallholder farmers and their organizations as key actors in economic development, and rely on them to provide collective economic services (procurement of inputs, marketing of products) for farmers.

Table 5: Assessment scores (1-100) for each area and priorities for change for CAPAD and IMBARAGA

Areas	Internal organization			Innovation		Service delivery			
	Membership	Governance	Management	Innovation systems	Participatory research	Production and productivity	Storage, processing and marketing	Representation	
CAPAD, Burundi									
Score*	71	65	66	73	76	79	76	72	
Priority areas									
IMBARAGA, Rwanda									
Score**	74	73	75	76	77	79	78	80	
Priority areas									

* *Average score for all areas was 72.*
** *Average score for all areas was 76.*

No priority
Priority
High priority

Table 6: Assessment scores (1-100) for each area and priorities for change for OCFCU cooperatives in Ethiopia

Areas	Internal organization			Innovation		Service delivery		
	Membership	Governance	Management	Innovation systems	Participatory research	Production and productivity	Storage, processing and marketing	Representation
OCFCU, Ethiopia								
Score*	61	56	65	78	79	68	64	72
Priority areas								

* *Average score for all areas was 67.*

No priority
Priority
High priority

The OCFCU cooperatives in Ethiopia present a similar picture (Table 6). Their strength in management and internal organization is the result not of donor support, but of being a major actor in the coffee sector, which is a vital sector of the national economy. This requires appropriate management and organization, which is also closely monitored by government services in Ethiopia. The self-assessment by members clearly points to the need for enhanced innovation for the benefit of smallholder coffee farmers who feel that their production and processing activities could benefit from more structured and intensive collaboration with research and extension services.

Table 7: Assessment scores (1-100) for each area and priorities for KENAFF Area Branches in Kenya

Areas	Internal organization			Innovation		Service delivery		
	Membership	Governance	Management	Innovation systems	Participatory research	Production and productivity	Storage, processing and marketing	Representation
Marakwet Area Branch (maize)								
Score*	84	87	85	77	77	83	88	81
Priority areas								
Kiambu Area Branch (Irish potatoes)								
Score**	80	88	86	70	73	86	82	78
Priority areas								
Meru Central Area Branch (banana)								
Score***	81	90	83	82	84	94	82	76
Priority areas								

* *Average score for all areas was 83.*
** *Average score for all areas was 81.*
*** *Average score for all areas was 84.*

No priority
Priority
High priority

The three KENAFF Area Branches present a rather diverse picture, which is related to their experience (age and maturity of the organization), local leadership and tendency to cover a wide range of activities without a clear focus on a specific commodity (Table 7). Two of the assessed branches feel that the management of their organization needs be improved and one points to the need for closer collaboration with research in order to innovate. But all share the need for improving services to members: storage, processing and marketing services for maize and Irish potato and production support services for banana.

During the self-assessment, farmer leaders participated in the discussions and committed themselves to feeding the assessment results and conclusions into future strategic plans of the organizations and discussions with board members. Three out of the four apex organizations had started, or were already discussing their future status (IMBARAGA) and strategies to support the development of economic services by their member organizations (CAPAD and KENAFF). These discussions were triggered by national policies which emphasize market access for smallholder farmers. The results of the self-assessments, voicing the needs of members, were a valuable input.

The innovation triangles largely confirmed the need for developing economic services by smallholder farmer organizations, and defined activities that were to be practical learning experiences for both the farmer organizations and other stakeholders in the selected value chains.

CASES FROM BURUNDI, ETHIOPIA, KENYA AND RWANDA

Burundi

Cases written by Jean Marie Ndayishimiye (CAPAD)

Making business out of seed potatoes

The Irish potato value chain

Irish potatoes are grown in the high altitude region of north-west Burundi, in Kayanza Province. Because of its temperate climate and suitable rainfall, the region is ideal for growing potatoes. Urban, as well as rural households consume potatoes on a daily basis. The main markets for potatoes are Kayanza, Ngozi and the capital city, Bujumbura. Other outlets are so-called 'institutional buyers', such as schools, universities, military camps and prisons. The main stakeholders in the potato value chain are producers, who are organized in cooperatives, the national research institute (ISABU), which produces quality potato seeds, and traders who buy potatoes from the producers (Table 8).

The Turahiriwe cooperative

Potato farmers formed the Turahiriwe cooperative in Muruta district, Kayanza Province in 2007. The cooperative has around 500 members including 264 women, 216 men, 6 young women and 14 young men. The cooperative is organized in 50 member groups of around 10 households each. All cooperative members are smallholders, who grow potatoes in small plots of 20 m x 15 m. Plots are small because of the high population density in the region. The cooperative organizes collective action for accessing finance and agricultural inputs.

The burning issue: lack of quality potato seed

The lack of quality seeds is the main constraint for farmers in their efforts to benefit from the increasing demand for potatoes. This is remarkable, since ISABU produces seeds, which it supplies to seed multipliers, who produce certified seeds. However, the seed quantities produced are not sufficient to cover the demand. This constraint came out as 'the burning issue' in the potato value chain during the multi-stakeholder workshop, which gathered members

from the Irish potato innovation platform and was facilitated by CAPAD in September 2010. The constraint has an impact on the entire value chain, as the supply of potatoes for consumption does not meet consumer demand. An additional problem is that the potato varieties currently being grown do not always meet consumer preferences, e.g. varieties suitable for making fried potatoes. Because of these flaws in potatoes supplied by Burundian farmers, imported potatoes from Rwanda get higher prices (450 Burundi Franc (Fbu) – 500 Fbu per kg) than potatoes from Burundi (350 Fbu – 400 Fbu per kg)[1].

The innovation process and results

In order to tackle the problem of suitable potato seeds, Turahiriwe cooperative members started multiplying seeds that they gathered from former onion plots. They call these seeds *'Ingabire Y'imana'* or *'Impanoyimana'* (gift from God), since these seeds appear spontaneously in the field. In this way the farmers managed to produce 56 kg of seeds, although the actual demand from amongst the 500 cooperative members is much higher. This variety provides higher yields (17.2 tonnes per ha) and 50-70% higher market prices than other varieties and is thus much appreciated by farmers, as well as by consumers.

In order to make potato production a profitable business for the Turahiriwe cooperative, CAPAD, in collaboration with other stakeholders, initiated two activities under the FEISA project.

1. CAPAD trained and coached representatives from the cooperative in how to develop business plans in July 2011. As a result, Turahiriwe cooperative now has its own business development plan. This allowed them to obtain a loan of 3,000,000 Fbu from the National Federation of Savings and Credit Cooperatives (FENACOBU) for pre-financing production and marketing of potatoes. The cooperative also used 3,400,000 Fbu from its own funds to buy land (0.72 ha) for plots to demonstrate new production technologies.

2. In September 2011, CAPAD and ISABU trained farmers in new production technologies, including seed production and helped farmers identifying plots that are suitable for seed multiplication. Farmers were acquainted with three new technologies: positive selection of seed potatoes (pure varieties), recognition and treatment of potato diseases, and production of seed potatoes on small plots. The cooperative produced 25 tonnes of potato seed during the 2012/2013 season. The seed is sold to members and non-members at an average price of 1,000 Fbu per kg.

[1] 1 US$ = 1,550 Fbu (November 2013).

Storing rice for higher prices

The rice value chain

There are three rice growing systems in Burundi: irrigated rice in lower altitude regions; rain-fed rice; and valley rice in middle altitude regions. Irrigated rice is mainly being grown in the Imbo plain in the Bujumbura Rural, Bubanza and Cibitoke Provinces, north of the capital city Bujumbura. The plain is particularly suitable for rice production because of its warm climate, suitable rainfall, fertile soils and adequate irrigation infrastructure. Part of the rice produced is being consumed by the farmers themselves whilst some is sold in Bujumbura, and in other markets in Burundi, the Democratic Republic of Congo and Rwanda. Compared to other food value chains, the rice value chain is fairly well organized: farmers organize themselves to plan and market their production while local millers process the rice. Key stakeholders in the chain are: local cooperatives of rice farmers (such as the Girumwete Dukore cooperative), which are members of CAPAD; processors and traders; and microfinance institutions such as savings and loans cooperatives (which are organized in a national federation, FENACOBU) (Table 8).

The Girumwete Dukore cooperative

The Girumwete Dukore cooperative has been operating in the Mutimbizi District in the Bujumbura Rural Province since 2006. It has around 670 members, including 400 women, 245 men and 25 young men. At grassroots level, the cooperative consists of 67 local groups, with an average of 10 members in each group. All members are smallholder farmers: they grow rice on small plots on a total area of 1,300 ha, producing around 6,500 tonnes of paddy (unhusked) rice per year. The cooperative helps its members to pre-finance rice production, including seeds, fertilizer and pesticides, and organizes the marketing of paddy rice, white rice and rice husk.

The burning issue: access to credit for marketing of rice

Producing rice in the appropriate way requires external inputs from sowing to harvesting which are not always immediately available for smallholder farmers. During the value chain stakeholder meetings in May 2010 that were initiated with support from the FEISA project and facilitated by CAPAD, stakeholders identified access to credit for farmers to be a burning issue. In order to finance their activities, farmers were taking out loans with rice traders. They were then obliged to sell their harvest to the trader (with whom they had a debt) when there was a glut of rice and prices were relatively low. At harvest time, paddy rice is sold at 400 to 600 Fbu per kg; three months later, prices rice to 1,000 Fbu per kg. Because they are forced to sell the rice at low prices, farmers make little or no profit and the same cycle of debt starts again the next growing season.

The innovation process

The Girumwete Dukore cooperative, CAPAD, rice traders and the FENACOBU have started to work together on these issues, since it concerns the financing of smallholder rice production, selling of rice at the right time and market intelligence. FENACOBU proposed to introduce the

warehouse receipt system, which is already used in other areas in Burundi. This system allows rice to be stored until market prices are high, and at the same time permits farmers to receive credit to finance their activities. The system is based on the principle that farmers receive credit based on the value of their harvest (collateral), so they are less dependent on traders. Harvested rice is stored under specific conditions and can be sold at times of favourable market prices. Another partner of CAPAD, the International Fertilizer Development Center (IFDC) also has considerable experience of the warehouse receipt system, and helped CAPAD to introduce the system to the cooperatives.

The micro-finance institution, FENACOBU, set some conditions before engaging in the system: the cooperative and the farmers involved needed to open an account with the institution; to provide a warehouse which was in good shape; and to provide a stock of rice, which served as collateral. Once these conditions were met, CAPAD organized a series of meetings with the rice farmers to inform them about the advantages of the warehouse receipt system and how to ensure the system functioned correctly. Another series of workshops was organized by CAPAD to set out, with input from the farmers, the foundations of the system. These included: defining rice production costs, in order to set a minimum sales price so that farmers make some profit; identifying market outlets for rice; and defining principles for establishing contracts between farmers and traders and between the cooperative and FENACOBU.

The farmers take their paddy rice to the warehouse, have it weighed, bagged and registered. The cooperative stores the bags in the warehouse, ensuring that each bag is marked with its weight and the name of the farmer. FENACOBU then gives credit to the farmer based on the estimated value of the rice that he or she has stored in the warehouse. This credit can equal up to 60% of the value of the rice stored, according to prevailing market prices at harvest time. Credit payments go through the accounts which the farmers opened with FENACOBU. The warehouse doors are locked with two padlocks: one is owned by the cooperative, the other one by FENACOBU.

Some two or three months after harvest, when market prices for rice are increasing, the cooperative and FENACOBU can decide to sell part of the stored rice. Buyers are asked to transfer the money to the cooperative's account. The cooperative in turn will pay the individual farmers, having first subtracted the amount of credit they received.

The results

In 2011, 68 rice farmers were actively involved in the warehouse receipt system, cultivating some 105 ha and producing 512.5 tonnes of rice, with an average yield of 4.9 tonnes per ha. They deposited 417.5 tonnes of rice in the warehouse, for which they received a total credit of 75,405,000 Fbu, an average of 180 Fbu per kg, which represented 60% of the value at harvest. The farmers subsequently sold the stored rice for 900 Fbu per kg, which represents an increase of almost 400 Fbu per kg compared to sales immediately after harvest. This increase allowed them to largely cover production costs, which were estimated at 420 Fbu per kg.

Table 8: Overview of selected value chains, identified burning issues, innovations and actors involved in Burundi

Value chain	Burning issue	Innovation	Stakeholders involved	
Rice	Pre-finance marketing of paddy rice	Access to credit (micro-finance institution, MFI) using a warehouse receipt system	PO*	Girumwete Dukore cooperative
			Operators	SADA
			FI**	FENACOBU
			Supporters	International Rice Research Institute, IRRI (research) IFDC (NGO)
			Enablers	-
	Turn marketing of rice into a profitable business for the cooperative	Development of a bankable business plan	PO	Girumwete Dukore cooperative
			Operators	-
			FI	-
			Supporters	CAPAD (training & coaching)
			Enablers	-
Irish potato	Plot sizes limit increase of potato seed production	Use of new technology for planting of potato seeds on small plots	PO	Turahiriwe cooperative
			Operators	Collectif des Producteurs des Semences du Burundi, COPROSEBU (seed traders)
			FI	-
			Supporters	Institut des Siences Agronomique du Burundi, ISABU (research)
			Enablers	-
	Turn potato seed production into a profitable business for the cooperative	Development of a bankable business plan	PO	Turahiriwe cooperative
			Operators	-
			FI	-
			Supporters	CAPAD (training & coaching)
			Enablers	-

* PO: Producer Organization
** FI: Financial Institution


OCFCU

Ethiopia

Case written by Worku Kassaye (OCFCU)

Improving the fundamentals for coffee production

The coffee value chain

In the Oromia region, coffee supports the livelihoods of more than 745,000 farming households. According to recent estimates, 433,100 ha of land is covered with coffee trees, managed by households engaged in small-scale coffee production. The apex organization, OCFCU, is an autonomous member organization working to improve the livelihoods of coffee farmers. OCFCU buys coffee from farmers through primary cooperatives and exports the processed coffee to international markets at premium prices. In 2012, a total of 4,938 tonnes of processed coffee was exported from 173 primary cooperatives.

The chain operators are farmers and primary cooperatives, while the chain supporters are the Agricultural Development Office (ADO) and the Cooperative Promotion Agency (CPA). ADO is supporting farmers by providing extension services at grassroots level. CPA assists cooperatives in developing business plans and exercises regulatory services for processing, storage and supply of coffee to markets (Table 9). Primary cooperatives are buying red cherries from farmers to pulp in processing factories and supply parchment coffee (unhulled coffee beans) to market. Smallholder farmers clear and prepare land, plant and maintain the coffee plants, and finally pick the coffee bean to supply the primary cooperatives.

The primary cooperatives of coffee farmers

The four primary cooperatives involved in the innovation triangles were Killenso Ressa, Neggele Gorbitu, Omo Bako and Ambuye. In 2011, the total number of members of these four cooperatives reached 6,102 farmers (including 279 women). Killenso Ressa and Neggele Gorbitu primary cooperatives are located in the southern part of the Oromia region. They participate in the Borena innovation triangle and produce Sidamo and Yirgachaffee coffee

varieties, respectively. The Omo Bako and Ambuye primary cooperatives participate in the Jimma innovation triangle, which is located in the western part of the Oromia region, producing Jimma coffee variety.

The burning issue: demand for quality coffee seeds exceeding supply

Even though marketing conditions are improving, the quantity and quality of coffee supplied needs improvement through increased production and productivity. Coffee production and productivity at smallholder level have, over the years, remained low. It is recommended that farmers prune coffee trees 8 to 10 years after planting in order to produce 800 kg per ha. However, farmers often wait for 15 to 20 years before pruning their trees, which results in reduced productivity at around 500 kg per ha. A value chain assessment carried out by OCFCU identified shortage in the supply of quality seed as a major underlying cause.

The volume of basic seed supplied by agricultural research centres to farmers is too small. In fact, for the Jimma innovation triangle, only 10% of the demand for coffee seed was supplied, while for the Borena innovation triangle, supply was nonexistent. Also farmers' efforts to prepare local coffee seed have been limited by poor knowledge on seed preparation requirements, particularly on the quality of seed.

Smallholders also need support in managing nursery sites. Even though ADO possesses public nursery sites with a mandate to supply coffee seedlings to farmers, most are underutilized. The interaction between primary cooperatives and ADO with regard to seed supply and seedling production is not well coordinated. ADO and the cooperatives are both working on sustainable coffee production: cooperatives are assisting farmers to get a premium for their coffee, whilst ADO is equipped with sites and technical experts. Their interaction could solve the seedling supply problem that farmers currently face.

Furthermore, leadership of the primary cooperatives had not realized the importance of cooperative involvement in coffee seed preparation, such as in training of farmers to prepare seed and to prepare and manage nursery sites. They assumed the supply of seed was the responsibility of ADO. The primary cooperatives had been concentrating on marketing only, without developing strategies to increase product volumes.

On the other hand, ADO has limited funds to meet demand for seed in the region. In addition, ADO has not been able to train farmers to prepare coffee seed at individual level. As a result, farmers are keeping low productivity and poor quality old trees, which limits the supply of coffee to the market and farmers' profits remain low.

The innovation process

Stakeholders involved in this innovation are the primary cooperatives, ADO and the CPA. During joint planning, initiated by the FEISA project and facilitated by OCFCU, the primary cooperatives, ADO and CPA in the respective districts developed an action plan to improve the availability of local seed and increase access to improved seed. This involved training and

harmonizing of coffee seedling preparation on public nursery sites and encouragement for the creation and development of private nurseries.

ADO already interacts with farmers in providing extension services through its field agents. It has also developed manuals and conducted training for farmers on local seed production. The training covered major areas such as: mother tree selection, duration of picking coffee beans for seed, position of good seed on a branch, removal of the parchment, and best practices for preparing quality seed. In turn, the primary cooperatives leaders selected and mobilized farmers to participate in the trainings. They also allocated the budget, arranged meeting places and communicated with ADO to provide training.

Concerning nursery sites, Bule Hora District ADO agreed to share its nursery with Killenso Ressa to grow seedlings on this public site with a production capacity of 70,000 seedlings. The cooperative leaders assigned a budget for the development of a nursery site, covering purchase of equipment such as watering cans and digging tools. The other primary cooperatives, Neggele Gorbitu and Ambuye, established new nursery sites with technical assistance from ADO in terms of site selection, nursery bed preparation, sowing methodology, watering, shading, etc. The Neggele Gorbitu site has a production capacity of 250,000 seedlings and the Ambuye site, a capacity of 30,000 seedlings. The district CPAs also assisted in encouraging the primary cooperatives to incorporate nursery sites in their business plans and to allocate a budget to them.

The results

Members of three primary cooperatives, Killenso Ressa (60 farmers, of which 5 were women), Neggele Gorbitu (80 farmers, of which 5 were women) and Omo Bako (7 farmers) were trained in accordance with the action plan. The allowance for trainees was covered by the cooperatives. In total, 147 farmers (including 10 women) were trained in seed preparation. From these trainees, 59 farmers succeeded in preparing a total of 102 kg of coffee seed to distribute to others. However, more than half of the trainees failed to produce any seed. It was found that the knowledge grasped within the short training period was insufficient and there was inadequate monitoring by experts afterwards. Furthermore, some farmers worried about the cost of seed production. Nevertheless, as a result of the training, 750 farmers accessed seed prepared by these innovative farmers and coffee production has increased. It is expected that 357 ha will be covered with new coffee trees grown from good quality seed locally produced by the trained farmers.

Follow-up and repeated training sessions, as well as continuous monitoring during seed preparation to support farmers in local seed production, remain important. This will enable knowledge gaps to be filled and will particularly help farmers in keeping down seed production costs.

Killenso Ressa, Neggele Gorbitu and Ambuye primary cooperatives have prepared 61,000, 128,000 and 22,200 seedlings respectively. The ADO coffee expert makes regular visits to the nursery sites, providing technical assistance and guidance on nursery management. In total,

211,200 seedlings have been prepared (sufficient to cover 143 ha of land), and distributed to 402 farmers (including 17 women) by the three cooperatives involved. The seedlings were sold to the farmers at a price of 1 Birr, compared to a market price of 2 to 3 Birr[2].

OCFCU plans to scale out the nurseries by encouraging more primary cooperatives to include nursery site development in their plans based on the experience gained from the FEISA project. It will also identify partners working on coffee development in order to establish more nursery sites and strengthen existing private and public nursery sites.

[2] 1 US$ = 19 Birr (November 2013)

Table 9: Overview of selected value chains, identified burning issues, innovations and actors involved in Ethiopia

Value chain	Burning issue	Innovation	Stakeholders involved	
Coffee	Limited knowledge of producing quality planting material	Use of a new technology for seed selection (criteria) for coffee trees	PO*	Killenso Resso, Neggele Gorbitu and Omo Bako cooperatives
			Operators	-
			FI**	-
			Supporters	Jimma AR (research) Agricultural Development Office, ADO (extension)
			Enablers	Cooperative Promotion Agency, CPA (regulation)
	Limited capacity to manage coffee nurseries	Management of coffee nurseries by primary cooperatives	PO	Killenso Resso, Neggele Gorbitu and Ambuye cooperatives
			Operators	OCFCU (processor)
			FI	-
			Supporters	ADO (extension)
			Enablers	CPA (regulation)

* PO: Producer Organization
** FI: Financial Institution

Kenya

Cases written by Edward Kateiya (KENAFF)

Boosting quality banana production

The banana tissue value chain

Banana is a horticultural crop grown in most parts of Kenya. The crop is adapted to various agro-ecological zones and mainly grown in Central, Eastern, Western, Nyanza and Coast regions. Banana plays a key role in the economy and food security, as a cash and food crop. Most of the banana grown in the country is consumed locally. The main producers of tissue culture bananas are private enterprises and the main buyers of tissue culture banana plantlets are farmers and their development partners, including NGOs (Table 10). It is estimated that about 10,000 farmers require 50 plantlets each for 0.4 ha, resulting in a total demand of 500,000 plantlets per season.

The Meru Central Area Branch

The Meru Central Area Branch is located in the Eastern region on the slopes of Mount Kenya. The Area Branch (AB) has a catchment of 7,063 smallholder farmers (4,762 women and 2,301 men), who practice mixed farming on land averaging 2 ha each. They have organized themselves in common interest groups (CIGs), which are formally registered as self-help groups. Each group comprises 30 members. The AB facilitates collective business transactions in order to reach economies of scale and reduce transport cost.

The burning issue: access to clean and improved planting material

Meru Central AB organized the farmers and held a consultative meeting with key value chain stakeholders including KENAFF, Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya Agricultural Research Institute (KARI), TechnoServe, the Ministry of Agriculture (MOA), Constituency Development Fund (CDF), Kenya Bureau of Standards (KEBS), traders, and other service providers. Farmers prioritized access to high quality, quick maturing banana

planting material as a major issue. KARI develops new technologies, including banana varieties, which are key inputs for banana farmers. NGOs, such as TechnoServe, support the marketing of bananas by facilitating market linkages and establishing collection centres.

Lack of clean and improved planting material, coupled with poor input and output marketing infrastructure, has resulted in a reliance on local cultivars which take a long time to mature (8-12 months). The yields of these local cultivars are also low (4.5-10 tonnes per ha) and the size of the fingers are small, hence farmers obtain low prices on the market. Additional marketing challenges include inadequate or seasonal availability and increasing costs for disease and pest control.

Farmers therefore prefer tissue culture banana cultivars such as Dwarf Cavendish, Williams, Grand Nain and Giant Cavendish, among others. These improved cultivars have several advantages, such as: early maturing (eight months), rapid seedling multiplication, healthy planting material free of disease and pests, minimal maintenance requirements after planting and higher yields (30-40 tonnes per ha).

The innovation process

The Meru Central AB categorized stakeholders according to their roles in the supply of quality planting material: KENAFF, Meru Central AB, JKUAT, KARI and MOA. More importantly, the AB then decided to link up with an ongoing initiative which included the same key stakeholders. The AB had already established a hardening nursery and procured high quality tissue culture banana plantlets, which mature within eight months, from JKUAT. The AB entered a partnership agreement with the CDF to produce 3,500 plantlets and distribute these to farmers. With support from the FEISA project, KENAFF strengthened facilitation of the overall process and provided technical support to the AB, in collaboration with public and NGO service providers such as TechnoServe (which already facilitated the formation of new banana farmer groups and collection centres in order to support the marketing of bananas). Banana plantlets are raised in a nursery for three months and then sold to farmers to plant in their own farms. The nursery produces 500,000 plantlets per year.

The results

The Meru Central AB established a tissue culture banana hardening nursery to operate at village level. The nursery handles 500,000 plantlets per season at a price of Ksh 75 to 100 per plantlet, compared to Ksh 150 to 200 per plantlet provided by private enterprises[3]. The hardening nursery is easily accessible for all members. From its inception (in 2008) to date, over 10,000 farmers have benefited from the tissue culture plantlets of improved cultivars, including the 7,973 AB members.

[3] 1 US$ = 87.1 Kenya Shillings (November 2013).

Yields have increased substantially since the innovation began. Compared with local cultivars, which yield around 5.5 tonnes per ha, farmers have obtained yields of 38.5 tonnes per ha and 42.9 tonnes per ha for the Grand Nain and Williams cultivars respectively, resulting in an increase in gross margins from Ksh 74,000 to Ksh 472,000 per ha. The size of the banana bunches also increased, from small bunches weighing 10-20 kg at most, to bunches weighing 30-80 kg. Consequently, the pricing system changed from price per bunch to per kilogramme.

Organizing input supply for improved maize production

The maize value chain

Maize is the main source of farmers' livelihoods in Kenya, acting both as a cash crop and food crop depending on the volume produced. Maize is a staple food in Kenya, and thus important for the national strategic food reserve. The crop is mainly grown in the Rift Valley. Smallholder farmers contribute 75% of the total maize production in the country. There are many actors involved in maize value chain: seed developers and suppliers of certified seed at the pre-production stage; farmers at the production stage; middlemen; millers at the processing stage; traders at the marketing stage; and rural and urban households at the purchasing stage (Table 10). Other important actors include the Ministry of Agriculture (MOA), which provides extension services.

The Marakwet Area Branch

The Marakwet AB is one of the 60 KENAFF branches spread over 43 counties. The AB has 22,352 members (14,373 women and 7,979 men), who practise mixed farming, with an average farm size of 4 ha. Members are grouped into CIGs, which are formally registered as self-help groups. Each group comprises 30 members. The AB facilitates collective business transactions concerning agricultural inputs as well as products. The Marakwet AB, located in the central maize growing region, is the country's second largest producer of maize after the Trans Nzoia branch.

The burning issue: high costs for accessing quality maize seeds and inputs

The AB categorized stakeholders according to their roles in the value chain – operators (agro-dealers), enablers (national and local authorities) and supporters (banks) – and invited them to a consultative meeting. Together, they defined access to quality maize seeds, with associated farm inputs, as an important issue to address for value chain development, and identified the key stakeholders involved.

Marakwet AB members have faced the challenge of high costs for inputs sourced from agro-dealers, and high transport costs of seed and other farm inputs from Eldoret (distance of 70 km). The road is impassable during the wet season and there was no local supplier of quality certified seeds in the area, forcing farmers to use poor quality local seeds or buy adulterated seed at exorbitant prices from hawkers in local markets. This has led to low production levels,

perpetuating poverty in the region. Though Marakwet is the second largest producer of maize in Kenya, maize yields in the area are very low. For example, farmers in Marakwet harvest on average 1.1 tonnes per ha but potential yield is 4.5 tonnes per ha; there is thus a yield gap of 3.4 tonnes per ha.

Together with the stakeholders, the AB conducted a SWOT analysis (strengths, weaknesses, opportunities and threats) of the identified option – the establishment of a farm inputs shop in the Marakwet area – and developed an action plan.

The innovation process

The AB rented premises and hired an attendant to manage the shop, under supervision of the executive committee of the AB. With facilitative support from KENAFF, the shop was licensed by the Pest Control Products Board (certification of agro-chemicals), the Kenya Plant Health Inspectorate Service (certification of seeds) and local authorities. The KENAFF district coordinator facilitated the procurement of stocks; the Kenya Seeds Company was identified as the principal supplier of certified seed, and the Twiga Chemical Supply for fertilizer. In addition, the National Cereal and Produce Board provided subsidized fertilizers, the MOA provided extension services to the farmers, while Equity Bank provided banking services.

The AB signed three memorandums of understanding between the farm input shop and the Kenya Seeds Company (seed supply contracts), the mobile phone service provider Airtel (money transfer), and Twiga Chemical (supply of agro-chemicals for crop protection), to supply their services at discounted prices.

The results

The farm input shop sells a range of products which support maize production in the region, including fertilizers, fungicides, insecticides and animal feed supplies. Farmers buy from the shop because they can be confident that the products are certified and of good quality. Since the opening of the farm shop, 25,000 farmers have accessed certified maize seed. Through appointing the shop as an agent of the Kenya Seed Company, the price of planting seed diminished from Ksh 1,200 to 1,000 per 10 kg bag of certified seed. This resulted in an average yield increase from 2 to 8 90 kg bags per hectare.

In addition, the shop provides a platform for knowledge sharing among farmers, price negotiations, and improved information flows on customer requirements and quality and safety standards. The Marakwet AB provided a phone number that farmers can call to inquire and request necessary products.

The farm input shop is diversifying its services in order to spread risk and increase profits by increasing its market share. The Marakwet AB is also planning to enter into new markets by opening new outlets in other sub-districts in the near future, and by engaging in maize value-addition activities.

Table 10: Overview of selected value chains, identified burning issues, innovations and actors involved in Kenya

Value chain	Burning issue	Innovation	Stakeholders involved	
Maize	Limited access to quality seed material and agricultural inputs	Supply of quality seed Set up an input shop	PO*	Marakwet Area Branch
			Operators	Kenya Seed Company Twiga Chemicals Airtel Kenya (money transfer)
			FI**	Equity Bank
			Supporters	Ministry of Agriculture, MOA (extension) Kenya Agricultural Research Institute, KARI (research) National Cereals and Produce Board of Kenya, NCPB (cereals board)
			Enablers	MOA (standards) Kenya Plant Health Inspectorate Services, KEPHIS (inspection)
Banana (tissue culture)	Limited capacity to produce and handle planting material	Supply of high quality and quick-maturing planting material Organization of farmer groups to establish and manage hardening nurseries	PO	Meru Central Area branch
			Operators	Jomo Kenyatta University of Agriculture and Technology, JKUAT (university)
			FI	-
			Supporters	TechnoServe (NGO) MOA (extension)
			Enablers	MOA (standards)

* PO: Producer Organization
** FI: Financial Institution

Rwanda

Cases written by Cassien Niyibinzi (IMBARAGA)

Accelerating quality production of pineapple

The pineapple value chain

Pineapple is an important crop in Rwanda. There is increasing interest in pineapple cultivation in the country and proliferation of post-harvest processing businesses. Pineapple is the most cultivated crop in Gakenke District (Northern Province) and has significant potential in terms of income generation for farmers. Gakenke District is one of 30 districts in Rwanda where pineapple grows well. The main crops in the area are maize, bean, sweet potato and some fruits like passion fruit and pineapple. Pineapple is preferred by farmers because it generates income and is easy to grow, taking about 16 months to ripen from the date that suckers are planted. In Gakenke, pineapples are mainly sold at Gakenke local market to traders from Kigali and Rubavu District. At least 50 tonnes of pineapple are transported to Kigali and Rubavu each week. The main actors in the chain are producers, transporters, research institutions, NGOs, financial service providers, processors, traders and consumers.

The COAFGA and COVAFGA cooperatives

The COAFGA (fruit growers) and COVAFGA (fruit processors) cooperatives are both located in Gakenke District. COAFGA was founded in 2003 and gained legal recognition in 2006. It has 173 members, including 39 females and 134 males from six sectors in Gakenke District. The cooperative facilitates market access for its members and provides access to planting materials. COVAFGA was founded in 2007 and achieved legal recognition in the same year. It has 20 members, 7 men and 13 women. The cooperative acts as a business company, assisting its members to improve their livelihoods through generating income from processing fruits and selling fruit products.

The burning issue: limited quality planting material

Although there are opportunities for growing pineapple in Rwanda, its production is still low due to limited availability of planting materials, lack of improved cultivars, lack of knowledge on agricultural practices, including pest and diseases control, and poor awareness of its importance in human nutrition. The crop has a very low natural multiplication rate: about two suckers per year per plant. In order to meet the high demand for planting materials, the Rwanda Agricultural Board's (RAB) Horticulture Program started research in 2008 on pineapple micro-propagation technique.

In recent years, farmers in the Gakenke District have struggled to achieve pineapple yields of 30 tonnes per ha per season. Low productivity is due to limited availability of planting materials and lack of improved cultivars, which is reflected in the small size of harvested pineapples, weighing around 1 to 2 kg each. Farmers typically buy suckers (planting materials) from degenerated mother-plants, resulting in low yields. The suckers are sold at a price varying between 30 and 50 Rwandan francs (RWF) per sucker. Farmers need at least RWF 150,000 to plant around 5,000 suckers on one ha, which is a financial challenge. The problem of affordable, good quality planting materials was identified during a workshop at Musanze, initiated and funded by the FEISA project in April 2011. The workshop was facilitated by IMBARAGA staff and attended by representatives of stakeholders from the pineapple value chain.

The innovation process

A follow up meeting was held with IMBARAGA, COAFGA and RAB to find a solution to the problem. As a result, RAB trained COAFGA in pineapple micro-propagation in order to help them produce their own healthy planting materials. IMBARAGA has played a crucial role in facilitating meetings between RAB and COAFGA. IMBARAGA has also hired a trainer from RAB to train COAFGA members in the technique of multiplying high quality planting materials and monitor whether stakeholders made progress with the tasks they were assigned.

COAFGA encouraged its members to install demonstration plots for micro-propagation by providing organic manure, ploughing services, supply of crowns (upper sections of pineapple which were used for multiplication), and management of the nursery and the planting process.

RAB trained COAFGA members in micro-propagation: 90 farmers, including 26 women and 64 men, were trained in a micro-propagation technique which was practical and appropriate for small-scale farmers. RAB also conducted follow-up visits, to see if the farmers had mastered the technique.

The results

The fruits from micro-propagated materials weigh between 2.5 and 3.5 kg per pineapple, compared to 1 to 2 kg when farmers used suckers from mother plants. Production has therefore increased by 50%. Farmers are now able to produce 45 to 50 tonnes per ha per season, whereas before they hardly obtained 30 tonnes per ha per season. Farmers also fetch higher prices for larger pineapples.

Following the success of the micro–propagation technology, the Gakenke District authorities have requested the COAFGA cooperative to promote the technology in all 19 sectors of Gakenke District.

Accessing niche markets for washed potatoes

The Irish potato value chain

Irish potato is one of the most important crops grown in Rwanda and is classified among the most preferred basic foods of Rwandan people. Irish potato grows well in about eight of the 28 rural districts of Rwanda. Eighty percent of production comes from the volcanic zone in Musanze District (Northern Province). The sectors which mostly grow Irish potato are Kinigi, Nyange, Musanze, Gataraga, Busogo and Cyuve, with a population of around 8,000 households cultivating an area of 15,000 ha. Average yields are around 15 tonnes per ha, but in 2012, potato yields reached 35 tonnes per ha in Kinigi.

Irish potato is the dominant crop in Musanze District, generating income for farmers during three to four months of the year. Eighty percent of production is transported and sold in Kigali and the remaining produce is sold in other parts of the country. Washed Irish potatoes are sold to supermarkets and hotels with an added value of RWF 80-120 per kg. Currently, traders from Burundi, the Democratic Republic of Congo, Tanzania and Uganda come to buy Irish potato in Rwanda.

The main actors in the value chain are producers, seed multipliers, transporters, agro-input dealers, the Ministry of Agriculture and Animal Resources, research institutions, NGOs, financial services, traders, consumers and private companies such as hotels and supermarkets.

The KOABIKI cooperative

KOABIKI is a cooperative engaged in Irish potato production and marketing in Musanze District. The cooperative was established by farmers in order to increase the value of Irish potato. The cooperative has 76 members (39 women and 37 men). Its members mainly grow Irish potato, with maize as a rotation crop. KOABIKI is registered by the Rwanda Cooperative Agency (RCA) and gained legal recognition in 2006. The cooperative helps its members in collective marketing of potatoes to Kigali.

The burning issue: supply exceeding demand in bulk markets

Before the FEISA project, farmers used to sell dirty, unwashed Irish potatoes in local markets in Musanze. However, the supply of Irish potato on the local market was exceeding demand, resulting in surplus and subsequent low prices. In addition, urban customers were reluctant to buy dirty Irish potatoes fearing health risks, and it was difficult to sell the potatoes to buyers such as supermarkets and hotels, who could afford to pay higher prices. IMBARAGA and the potato producers of KOABIKI cooperative realized that the idea of identifying new markets, including niche markets, could improve the marketing of Irish potato. IMBARAGA took the

initiative of accompanying farmers to sell washed Irish potato to hotels and supermarkets in Kigali, and the number of customers steadily increased. This value adding has been developed by IMBARAGA over several years, well before the FEISA project. IMBARAGA built a demonstration washing station on its premises in Musanze.

The innovation process

IMBARAGA plays an important role in the value chain through its technical support to farmers in producing Irish potatoes, and accompanying them in finding niche markets. Since 2010, it has also played a role in the facilitation of contracts between suppliers and buyers, i.e. between hotels or supermarkets and farmers. The KOABIKI cooperative encouraged its members to grow potatoes, wash them, package them using baskets made of banana leaves, and market the cleaned potatoes. Transporters were hired to transport washed Irish potatoes in a lorry from Musanze town to Kigali. Chez Lando hotel, Ninzi hotel and Gorilla hotel were the main buyers. Nakumatt, Ndoli and La Galette supermarkets were also major regular buyers.

The innovation was the accessing of niche markets such as hotels, supermarkets and modern restaurants. Before, such markets were not accessible because Irish potatoes were not washed and packaged; only local street markets were accessed. The cooperative later abandoned the business of washing potatoes and selling them in Kigali, but this was continued by some of its members, including a woman farmer and trader, with more success. In fact, she became a major trader. She and some other members also took the role of finding markets for farmers and organizing transport of potatoes from Musanze to Kigali, where there are good buyers, with some paying RWF 20-30 per kilogram more than other traders[4].

In 2010, one of the women members of the KOABIKI cooperative started her own business by selling 800 kg per week (at RWF 180 per kilogram) at a Kigali supermarket, obtaining a net profit of RWF 80 per kilogram. As time went by, the market was expanded in collaboration with IMBARAGA, who assisted in the identification of, and creation of linkages to, new markets, taking producers to Kigali to negotiate with buyers. More than 3 tonnes are currently being sold each week and farmers are paid RWF 210 per kg; washed Irish potatoes are sold at between RWF 300 and 350 per kg in Kigali.

The results

The business has contributed to an increase in the price of Irish potato earned by KOABIKI members, where the farm gate price at has increased by RWF 30 per kg compared to the price paid at local markets. Part of the farm gate price increase is due to increased prices for fertilizer and other agricultural inputs that are being used in production. Farmers are also now able to get credit from the woman trader before harvest.

[4] 1 US$ = 671 RWF (November 2013).

This business has created over 50 jobs in the community, especially for women who wash and pack Irish potatoes, and those making the bags or packs from banana leaves. The packaging of these Irish potatoes is environmentally friendly as materials are degradable and can be composted after using.

Table 11: Overview of selected value chains, identified burning issues, innovations and actors involved in Rwanda

Value chain	Burning issue	Innovation	Stakeholders involved	
Irish potato	Limited access to quality planting material	Enhanced capacity to produce seed material (green houses)	PO*	KOABIKI cooperative
			Operators	Individual seed producers
			FI**	-
			Supporters	Rwanda Agricultural Board, RAB (extension)
			Enablers	District authorities
	Valorize the technology for washing potatoes (market potential)	Install urban sale points for washed potatoes	PO	KOABIKI cooperative
			Operators	Traders from Kigali and Musanze
			FI	-
			Supporters	RAB (extension)
			Enablers	-
Pineapple	Limited production capacity	Use of a new technology to produce more planting material in less time (micro-propagation)	PO	COAFGA cooperative (production)
			Operators	-
			FI	-
			Supporters	RAB (research and extension)
			Enablers	-
	Limited processing capacity	Development of a bankable business plan (attract investment funds for equipment)	PO	COVAF cooperative (processing)
			Operators	-
			FI	Banque Populaire du Rwanda, BPR (loans)
			Supporters	Consultant (business plan)
			Enablers	-
	Comply with quality standards	Use knowledge for quality enhancement and control (protocol)	PO	COVAF cooperative (processing)
			Operators	-
			FI	-
			Supporters	Consultant (training)
			Enablers	-

* PO: Producer Organization
** FI: Financial Institution

Lessons learned and way forward

Lessons learned

The experiences gained and results obtained through the innovation triangle approach generated the following lessons:

Interventions should be guided by a clear priority issue

In all cases, the grassroots and apex farmers' organizations were able to clearly articulate a priority issue that warranted a response using the innovation triangle approach. The approach enabled this issue to be validated by other stakeholders. The identification and articulation of this issue was central to the approach as it provided the platform from which interventions and activities were identified and responsibilities assigned.

Central importance of market opportunities

The approach did not always clearly articulate targeted market opportunities, but these should be as clearly articulated as the priority issues. This is important so as to provide the business context of the innovation triangles. In cases where the question of market access was addressed, the innovation triangle provided a complete picture. For example, in the potato value chain in Rwanda, IMBARAGA facilitated interactions between the KOABIKI cooperative and supermarkets in Kigali. The supermarkets defined the quality of potatoes required, and the cooperative, through one of its members, was able to respond to this specific requirement.

Important role of the facilitators

The facilitator needs to have sufficient and continuous consultations with actors to build their confidence in the innovation triangle. The facilitator must not be biased, should be a good listener and have the ability to tap into the knowledge of experts and practitioners in the value chain, so as to achieve mutually set targets. It is not only about facilitating the meetings;

a facilitator needs to follow up on stakeholders' agreed activities, and to facilitate shared activities of two or more stakeholders who have agreed to work together on a specific issue. More importantly, the facilitator should provide some guidance on market orientation at the grassroots level, by linking them with buyers who know market requirements.

High dependence on donor-funded projects

With the exception of OCFCU in Ethiopia, the apex farmer organizations are significantly dependent on donor-funded projects, which affected the application of the innovation triangle approach, which was business-oriented, and prevented it achieving its full potential. In the potato value chain in Kenya, the facilitators were unable to identify private sector players or enterprising members of the farmer organizations who could invest in demonstration plots. Instead, the innovation triangle was dependent on a donor-funded project to set up the plots. Once this project support was withdrawn, the innovation triangle collapsed. In contrast, in the potato value chain in Rwanda, one of the members of the cooperative was able to use her own resources to access markets and hire transporters to exploit a business opportunity in the value chain.

Importance of a business orientation

With the exception of OCFCU in Ethiopia, the apex farmer organizations do not have a business orientation at the institutional level. This affected the entire orientation of the approach in terms of objectives and targets. OCFCU is one of the leading coffee exporting cooperatives in the country, with established linkages with coffee buyers around the world. The project interventions responded to OCFCU's objective of improving its export performance by addressing challenges experienced by its membership. For example, OCFCU trained over 100 coffee farmers on seed preparation and nursery management, distributed over 100 kg of seed, and trained cooperative leaders on coffee quality requirements, among many other activities. These interventions all contributed to a 23% increase in output and an eight-fold increase in dividend paid to coffee farmers over the project period.

Key role for enterprising individuals

Entrepreneurs within the apex and grassroots farmer organizations need to be identified and encouraged to respond to business opportunities in the value chain so they are able to exploit opportunities with support from facilitators. In Rwanda, the woman entrepreneur was a member of the KOABIKI cooperative. After receiving training as a facilitator – and on her own initiative – she exploited the business opportunities for washed potatoes, with facilitation from IMBARAGA. She effectively exploited the opportunity to sell washed potatoes to three supermarkets and three hotels in Kigali. By the end of the project, she was employing 50 people to wash and pack the potatoes, and she was paying potato farmers between RWF 20 and 30 higher than the price paid by traders.

Low scale of volumes but growing market opportunities

In most cases, the scale of production by the grassroots farmer organizations was too low to attract a significant private sector actor. Instead, the farmers' organizations engaged with small traders and other buyers, and this increased their business risk. It is more interesting to have several grassroots cooperatives involved in one innovation triangle, since this creates the opportunity to offer larger volumes and enhanced economies of scale. This is particularly the case when there is a sustained and growing demand for products and farmers are able to organize the supply of large volumes of high quality products.

Predominance of production-oriented priorities

Out of the 14 burning issues that were identified by the four apex farmer organizations, ten were related to crop production. The farmers' organizations' priorities were to access quality and clean planting material, and to improve their capacity to apply improved planting technologies. This shows that the farmer organizations clearly identify a supply side constraint in their respective value chains, which reveals the importance of well-functioning input markets. Only by improving their supply side capacity can farmers' organizations gain better access to markets.

Demands by grassroots farmer organizations

The platform – and the grassroots farmer organizations in particular – could ably describe their priorities in the context of engaging in value chains and business. Through the design of the approach, the apex farmer organizations are expected to facilitate a process that enables the grassroots organizations to address these priorities. Putting the grassroots organizations and other business actors in the value chain at the centre of the approach, within the innovation triangle, facilitated the voicing of their needs. This was rather new for both the apex and grassroots organizations. It raised expectations of the grassroots organizations, which started putting pressure on the apex organization.

No one-size-fits-all approach

The successful application of the innovation triangle approach depends on various factors, including the context of the value chain, the entrepreneurship capacity and mindset of the apex and grassroots farmer organizations, and the performance of other players in the value chain. In that sense, it is important that the approach is used as a tool which the facilitator and other actors can adapt in the context of their respective situations. For example, the KOABIKI cooperative registered significant success in the potato value chain in Rwanda because of a combination of factors, including enterprising members and business opportunities in the value chain. In the coffee value chain in Ethiopia, significant achievements were realized due to a strong, business-oriented apex farmer organization, a well-defined value chain, and support from other value chain actors, especially government extension service providers.

Multi-stakeholder processes trigger innovation

The involvement of different stakeholders in the value chain was very innovative. The approach enabled the farmers' organizations to have structured discussions with research organizations, agricultural input service providers and traders, among others. These discussions are the beginning of a relevant evolution for the grassroots and apex farmer organizations from having a project and donor orientation to a business orientation. There is evidence that this evolution is being realized at the grassroots. For example, the cooperative members of IMBARAGA registered a company called F3U to sustain momentum from the project. The company has accessed premises where Irish potatoes will be washed and sold.

Sustainability and scaling out of the initiated activities

To sustain the activities that were initiated and supported by the FEISA project and to scale out to other apex and grassroots farmer organizations, the following needs to be done:

Continuous application by apex farmer organizations

The apex farmer organizations should continue to apply this approach to respond to the priorities of their members. The more the approach is applied, the more the apex farmer organizations will evolve into effective providers of business-oriented services to their members. Continuous application would strengthen the capacity of the facilitators to apply the same tools with other grassroots farmer organizations, and contribute to the evolution of the mindset of the apex farmer organizations from a project to a business orientation.

Actors should set business targets linked to markets

The stakeholders in the innovation triangle should clearly define targets for business performance. These may include increases in productivity, yield, sales, revenues and profits. Setting such targets would enable the different players, especially the farmers' organizations to have a clear focus as they engage in different innovation triangle interventions. It is important that these targets are set during the initial stages of the approach, such as joint action planning meetings. In the pineapple value chain in Rwanda, the COAVGA cooperative registered yield increases of up to 50%. This increase was noticed by the Gakenke district authorities, who are now keen to work with COAVGA to apply this technology in other areas in the district.

Conduct market assessments

The apex farmer organizations should conduct assessments of target markets to inform their decision making, so that market opportunities are as clearly articulated as priority issues. This goes hand-in-hand with setting business performance targets. The market assessments should answer the following questions: (a) Who are the specific current and potential buyers of our products? (b) What are their quantity requirements, including the timing of these requirements? (c) What are the quality requirements for each target market? (d) What is the reserve price

below which it is not profitable to target these markets? Market assessments are particularly needed for the rice and potato value chains in Burundi, and the banana and potato value chains in Kenya.

Coaching of facilitators of innovation triangles

The facilitators need to receive further coaching on their roles and expectations. This is particularly important since the current facilitators are all from the apex and grassroots farmer organizations, and are biased in their application of the innovation triangle approach. Coaching should address and deepen the following issues: clarity on the goals and objectives of the actors in the innovation triangle; qualities of a good facilitator and how to apply those qualities; defining the agenda of innovation meetings; sustaining the commitment of different actors in the innovation triangles; understanding of markets; and setting of business targets.

Coaching farmer organizations in business planning

The managers, coordinators and leaders of the apex and grassroots farmer organizations need to be trained and coached in business planning. This is critical for several reasons. Firstly, some of the grassroots farmer organizations needed to access credit from financial institutions and were required to develop a business plan. These included the Girumwete Dukore cooperative in the rice value chain in Burundi, the Turahiriwe cooperative in the potato value chain in Burundi, and COVAFGA in the potato value chain in Rwanda. Secondly, effective business planning combines market analysis, profitability analysis and an analysis of the technical and operational aspects of the business. These are important exercises that would contribute to the development of a business orientation within the farmer organizations.

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ASARECA
Transforming Agriculture for Improved Livelihoods

Properly functioning farmer organizations are essential to enable smallholder agriculture in Sub-Saharan Africa to become more productive and profitable. Farmer organizations allow for collective action by smallholders, creating economies of scale, reducing transaction costs and thereby improving access to markets. In order to sustain income generation through marketing of agricultural products, farmers and their organizations need to maintain their competitiveness and hence reinforce their capacity to innovate.

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), through its Knowledge Management and Up-Scaling (KMUS) programme, initiated the 'farmer empowerment for innovation in smallholder agriculture' (FEISA) project (2010-2013). The project aimed to empower smallholder farmers in Burundi, Ethiopia, Kenya and Rwanda to improve their productivity in selected value chains. The project put farmers in the driver's seat by providing farmer organizations with tools and skills to enhance collaboration with private enterprises, as well as service providers, in multi-stakeholder 'innovation triangles' within value chains for the benefit of smallholder farmers.

Built around case studies from the four countries, this book presents the innovation triangle approach, as well as a self-assessment tool for service provision by apex farmer organizations to their members. Both the innovation processes followed, and the results obtained, provide valuable insights on the facilitation of multi-stakeholder platforms for farmer-led innovation in value chains. These insights particularly focus on the role of, and services provided by, apex and grassroots farmer organizations for enhanced market access. The book therefore contributes to developing and implementing strategies and approaches to strengthen the role of farmer organizations in promoting farmer entrepreneurship.

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