



# Going for gold in innovation partnerships responsive to food insecurity in Africa – the role of knowledge institutes

## Volume 2: Five case studies

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## Project Report



Wageningen UR Centre for Development Innovation (CDI) works on processes of innovation and change in the areas of secure and healthy food, adaptive agriculture, sustainable markets and ecosystem governance. It is an interdisciplinary and internationally focused unit of Wageningen University & Research centre within the Social Sciences Group.

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Volume 2: Five case studies

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### **Summary**

The Dutch 'gouden driehoek' refers to successful partnership in agricultural development between government, sector and knowledge institutes. This has been key in securing food & nutrition in the Netherlands. Could this model be applied to African conditions and be the basis for similar success in relation to food & nutrition security? This report is part of the documentation of an exploration in relation to this question. It documents five examples of effective roles of knowledge institutes in the context of agriculture and fisheries innovation in Africa. It shows a variety of roles played that are not necessarily directly related to knowledge (brokering). What made knowledge institutes be instrumental in effective innovation processes, seemed to have a lot to do with an ability to play flexible roles that were informed by strategic thinking: "What is appropriate in this context at this moment for these stakeholders?". Strengthening capacities of African knowledge institutes to more effectively play flexible roles in innovation partnerships will be an important contribution to improving conditions that shape the state of food & nutrition security in Africa.

### **Companion document to**

Wigboldus, Seerp and Jan van der Lee (2011). Going for gold in innovation partnerships responsive to food insecurity – the role of knowledge institutes. *Vol. 1: Context study*. Wageningen UR Centre for Development Innovation. 116 pp.

and

Wigboldus, Seerp, Jan van der Lee, Gareth Borman, Karen Buchanan and Wouter Leen Hijweege (2011). Going for gold in innovation partnerships responsive to food insecurity – the role of knowledge institutes. *Policy paper*. Wageningen UR Centre for Development Innovation. 6 pp.

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# Preface

Food & nutrition security is a subject that has featured high on international agendas over the past few years and will remain doing so for the years to come. This year, there were high-level seminars, conferences and policy meetings almost monthly on this topic, and more has already been scheduled for 2012. The increased attention was partly ignited by the 2007-2008 food crisis, but also relates to a growing awareness that food security for all is going to be increasingly challenging, if only because of the effects of climate change. During an FAO conference in June 2011, Kofi Annan therefore stated that delivering global food and nutrition is the challenge of our time.

Though the increase in food availability has kept pace with soaring population numbers, in absolute numbers of people, food *in*security has increased over the past decades, while at the same time threats to food security are gaining momentum. Climate change is one of the most notable threats. Compounding challenges to food security raise the question whether in the future it will be enough to further '*tweak*' agriculture & food systems as we know them now, or whether more drastic change is needed where we may need to think more along the lines of system *transformation*. Answers to this question have implications for what should be on (agricultural) innovation agendas.

There is a growing international awareness of the need for alignment of roles of government, private sector, civil society, knowledge institutes and other key players in development innovation to be able to respond to food insecurity. In terms of (agricultural) innovation, the Dutch agriculture and food system has greatly benefitted from successful partnerships between private sector, government and knowledge institutes. This is often referred to as the 'golden triangle'. Though not all may be gold that glitters in this triangular partnership it is still an inspiring example while looking for clues regarding improved innovation partnerships and related innovation capacities. Conditions for African agriculture and food systems are rather different from Dutch conditions, but, while taking this into account, there are opportunities for using Dutch experiences and expertise as part of the bases for strengthening effective (public-private) innovation partnerships for food security in Africa. We may need to think more along the lines of a pyramid to include other key players such as civil society in the perspective. Effective *collaborative* innovation among those players requires appropriate innovation governance as well as more informal facilitation of interaction and collaboration. And that challenge is what this report connects to.

This report does not stand alone, but is part of a set of three documents. The companion report documents five cases of agriculture and fisheries innovation in Africa. It points to the need for knowledge institutes to play flexible roles in innovation processes. This includes roles that may not traditionally be seen as their role to play, such as facilitating more effective collaboration between other players in the innovation process. By doing so, they can be instrumental in making innovation happen in situations that would otherwise remain constrained by institutional limitations.

This report does not stand alone, but is part of a set of three documents. The companion report sketches the bigger picture of agriculture and food systems, which is the domain in which change is needed to secure food & nutrition for all. It is meant to connect the on-the-ground realities of (agricultural) innovation as described in the case studies to the bigger picture of global conditions that shape food & nutrition (in)security. The ability to link innovation across dimensions, levels, sectors and countries will make a big difference in making innovation systems be truly responsive to food & nutrition insecurity.

A separate 6-page policy paper summarises key findings from this report and the companion report on cases of agriculture and fisheries innovation in Africa. Copies are available through the Centre for Development Innovation.

Dr. A.J. Woodhill  
Director Wageningen UR Centre for Development Innovation



# Acknowledgements

We would like to thank those who have made it possible to embark on this study, allowing us to further develop our own perspectives along the way. First of all thanks to Patricia Wagenmakers of the Ministry of Economic Affairs, Agriculture and Innovation (EL&I), who provided her critical thoughts and made it possible to check tentative conclusions in a meeting with representatives from the Ministry of EL&I and the Ministry of Foreign Affairs (MinBuza). This helped us a great deal in sharpening our focus and made us decide to summarise the study in a 6-page policy brief in order to make findings more useful for policy support. We would also like to thank Floor Geerling-Eiff who supported the process of doing this study from the beginning and has created opportunities for developing the three resulting products.

Gareth Borman and Marja Thijssen would like to greatly acknowledge the contribution made by Mohammed Hassena, Joep van den Broek and Walter de Boef to the case study document on the Ethiopian seed sector. Gareth Borman and Jan van der Lee would like to do the same for the contribution made by Bram Wouters to the case study on the dairy landscape in Ethiopia.

Wageningen, December 2011



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## Executive summary

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This report is part of the documentation of a limited exploration of effective roles of knowledge institutes in innovation systems responsive to food & nutrition security in Africa. Knowledge institutes play an interactive and interdependent role in relation to a number of other key actors, most notably private sector, government, civil society and farmers & communities. The Dutch experience with the golden triple helix<sup>1</sup> can be inspiring for agriculture & food system development in countries in the South. However, conditions for, drivers of and challenges to food systems in the South are quite different than in the Netherlands. This calls for tailor-made approaches in making innovation system responsive to food & nutrition security for all. To bring in on-the-ground realities in this exploration, five public-private partnership cases of agriculture and fisheries innovation were studied in Ethiopia, Rwanda and South Africa. They related to innovation in the dairy sector, soybean sector and seed sector (Ethiopia), the cassava sector (Rwanda) and small-scale fisheries in South Africa. Lessons learned in the five cases include the following:

- Dairy sector in Ethiopia: The current focus of government in dairy sector development needs to change. Top-down and production driven roll-out of technologies and extension services has not been effective as a solitary solution to all challenges faced within the development of the dairy sector.
- Seed sector in Ethiopia: Universities provide a good institutional arrangement for process facilitation due to their more independent positioning within the seed sector. Furthermore, their intrinsic link to research for providing evidence in support of partnerships' innovation projects is strategic.
- Soybean sector in Ethiopia: Government will remain the key actor for providing an enabling environment for change. However, it cannot take up the role of facilitator in innovation processes for several reasons, which includes: the reduced capacity and inefficiency to do so, role ambiguity, and a conflict of interests with regards to change.
- Cassava sector in Rwanda: Knowledge institutes can play a catalytic role in agricultural development and innovation. Their specific and critical roles are, among others, the pro-active identification of possible innovations, a comprehensive view on value chain and market system development (theory of change), methodological competence and coaching, training and capacity development, facilitation of the capitalization of experiences of development professionals (for instance through write-shops) and the promotion of information sharing mechanisms.
- Small-scale fisheries in South Africa: The most effective role proved to be the role as knowledge broker: the innovation process had to be based and built on the knowledge of the stakeholders on market based management and scope for modification of the (knowledge related) future perspectives.

In the above case studies, the concept for change and more importantly innovation, has not been brought about spontaneously. In these cases facilitation played an important role. This is also the background for two distinct roles for knowledge institutes that were emphasized throughout the above case studies. These roles are the role of being a facilitator in the process involving multiple stakeholders and the role of brokering knowledge. The idea of facilitating and brokering roles for knowledge institutes may seem to imply a cumbersome and time consuming process. However, transparency and clarity about the interests of various stakeholders and protection against political pressures are core features of a successful innovation process. Such an innovation process requires dialogue between domains (science/society/policy) for proactive decision making. It also warrants capacity to advocate for decisions and change in general. Such an approach should be demand driven. It requires a patient and iterative

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<sup>1</sup> The "Gouden Driehoek".

process for facilitating a series of incremental changes to a system/sector. This may require restructuring of institutions.

Key conclusions emerging from the exploration in these case studies include the following:

The public and private sectors are characteristically different. Finding a shared interest requires the willingness of both parties to compromise. Effective facilitation in this process requires not only a good understanding of the system or sector challenges, but also the opportunities for business that arise out of adversity. A business-minded approach is necessary for revealing incentives that are attractive to a critical mass of stakeholders to bring about demand for change.

Traditionally, knowledge institutes are expected to “bring in” knowledge, a view inspired by the prevailing paradigm of knowledge dissemination. As co-innovation is becoming more of an accepted new paradigm for (agricultural) development, knowledge institutes will need to position their roles differently and more flexibly. Knowledge institutes need to be ready to play flexible roles in innovation processes.

There is great potential for African knowledge institutes to play a significant role in food related innovation processes.

As revealed in at least three of the above case studies (on the seed sector, the soy subsector, and the small scale fisheries system), key to the success of formulating partnerships between public and private actors were the individual competencies of specific facilitators in the process.

## List of abbreviations and acronyms

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CDI	Wageningen UR Centre for Development Innovation
Wageningen UR	Wageningen University & Research centre
EL&I	Dutch Ministry of Economic Affairs, Agriculture and Innovation

# 1 Introduction

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The Ministry of EL&I would like to understand the role and use of knowledge institutes in relation to public-private partnerships for sustainable agriculture innovation, particularly in the context of food security. The overall objective of this study is therefore to provide policy advice to EL&I on how to shape its international policy in relation to a more effective role of knowledge institutes in public-private partnerships responsive

## **Knowledge institutes**

When we use the term 'knowledge institute', we refer to formal, not-for-profit groups that provide products and services in the field of knowledge generation, dissemination and exchange. They include universities, research groups and training institutions. We use this term in order not to limit the scope to universities only. Using this broader term connects to the potential of playing varied and flexible roles that we want to highlight in the following.

to food and nutrition security. The starting point of this study was inspired by the document "De gouden driehoek in actie – praktische voorbeelden van verbinding bedrijf, kennis en overheid"<sup>2</sup>. The 'Gouden Driehoek' relates to the successful cooperation of agricultural research/education, private sector and government in the Netherlands. This type of cooperation already started in the nineteenth century and is regarded as the basis for success of Dutch agriculture in the twentieth century. Knowledge institutes played a key role in this. This history is being dusted off and used as an inspiration for new forms of public-private partnerships.

The 'gouden driehoek' refers specifically to the Dutch situation. The term is better known as the 'triple helix' in other circles. The situation in other countries will likely be different. What kind of partnerships like the Dutch 'gouden driehoek' can be considered as "gold" in international development? What makes such partnerships (in agriculture) become golden partnerships (success factors)? And what specifically can and should be the role of knowledge institutes in such partnerships? These are the key questions this study seeks to address.

As the report on the 'gouden driehoek' focused particularly on cases in the Netherlands, it is interesting to explore how public-private partnership leads to success in an international setting of agricultural innovation, with a particular focus on the role of knowledge institutes and on links with food security imperatives. This also introduces critical questions as to how 'golden' this collaboration actually has been. Economically, it has definitely brought a lot of benefits to the Netherlands. But at what cost to the environment (just thinking of e.g. the use of pesticides in the Dutch flower bulb industry), and to resources in faraway places (from where we source much of the feed for animal production)? From a global perspective, questions related to social and environmental sustainability may have to become more prominent, before we export the Dutch model (also see writings on transition management such as Rotmans, 2006).

We have orientated this exploratory study in relation to the following considerations:

1. We found that many documents on the triple helix do describe success in terms of *outcomes* of the partnership, but they are usually much less clear on what were success factors in terms of the partnership *process*. What made this partnership successful as it unfolded? And, more particularly, what makes for an effective role of knowledge (institutes) in such partnerships? In this paper we chose to zoom in on what makes for a successful role of knowledge institutes.

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<sup>2</sup> Document in Dutch only. Roughly translated: The triple helix in action – practical examples of connecting business, knowledge and government. Ministry of Economic Affairs Agriculture and Innovation, 2011.

2. It soon became clear that as we move into the international arena, we also need to consider different ways of conceptualising public-private partnerships and the triple helix approach. There appears to be a whole field of overlapping concepts and approaches. Different schools of thought will phrase the same factors and processes differently and on top of that, different organisations have connected to different stages of the development of conceptual thinking. For some, thinking in terms of public-private partnerships and triple helix is the great move forward, while others consider those to be just part of a wider *innovation system*. In this paper, we chose to work with the concept of innovation systems and related approaches as they are rather prominent in the field of agricultural development these days.
3. Though taking the innovation system perspective as leading in our analysis, we not so much seek to broaden the concept of *public-private* partnership to that of innovation systems, but rather see public-private partnerships as part of an innovation system. Of particular interest in this study is to see the role of knowledge institutes in connection with the role of the private sector. Though informed by other perspectives, the case studies presented in this document are necessarily limited in that they provide insights regarding the role of knowledge institutes mainly from knowledge institute perspective. Further study will be needed to get a clearer picture on the role of knowledge institutes in food-related innovations from the perspective of the private sector.
4. A lot is written in terms of 'the role of knowledge' in (agricultural) innovation, where knowledge is easily equated with science, knowledge institutes, and/or research. This sometimes seems to obscure the real issues regarding innovation partnerships, where knowledge is often first of all a tool and means in the hands of innovation agents. The innovation agents, their interaction and the choices they make in putting knowledge into action, appear to be more rewarding entry points for studying the role of knowledge institutes. In this paper, we will zoom in on knowledge institutes and those who represent these institutes, in terms of how they played their role in a wider innovation process<sup>3</sup>. We may call this an actor-oriented approach to the role of knowledge in food-related innovation systems.
5. We wanted to connect food security and the role of knowledge institutes in (agricultural) innovation systems. Though food security is a much respected field of study and practice and much has been studied in the field of (agricultural) innovation systems, the two dynamics are rarely (conceptually) connected. The object (goal) of innovation systems often remains vague and unarticulated, which creates an analysis context where the (agricultural) innovation system appears to be a purpose in and of itself. Not all agriculture is for food, but much is. In this paper we chose to connect food security and innovation systems to the conceptual framework of food systems.
6. Food security is not just about today's food security and agricultural innovation is not just about today's innovation. In order to be ready for the increased need for (safe and nutritious) food on a planet that will be facing a number of crises over the next decades, we also need to consider how food-related innovation systems will need to be functioning in order to be ready for the challenge. Zooming in on knowledge, we also want to know what role knowledge institutes will need to play to be ready for the challenge. Not just in terms of providing new technologies and other tangible innovation products, ut also in terms of other services. This paper therefore attempts to include a future-oriented perspective on the role that knowledge institutes will need to be playing in the future, given the challenge in food security. We will illustrate the types of roles that knowledge institutes can play in (agricultural) innovation processes in the five cases discussed elsewhere in this paper.

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<sup>3</sup> This appears to be in line with the conclusion "from knowledge for action to knowledge in action" of the book by Paassen, A. et al. (2011) on *Knowledge in action – the search for collaborative research for sustainable landscape development*. Mansholt publication series – volume 11, Wageningen Academic Publishers.

7. Not all is about food security and it is not just agriculture and fisheries that determine the future of food security. Food, economic, and environmental security are very much interconnected. It is hard to put boundaries on an innovation system. Strictly focusing on just food security and directly food-related innovation systems will not provide a clear backdrop against which to sketch the role of knowledge institutes. Though not an emphasis, we will therefore make some brief explorations beyond the borders of food-related innovation systems.

This report is part of a series of three reports that document the exploration of the above considerations. It zooms in on five cases of agricultural and fisheries innovation in Ethiopia, Rwanda and South Africa. It is meant to present some on-the-ground realities of knowledge institutes involved in innovation processes in Africa.

A separate report looks at the bigger picture of food-related innovation systems as part of (global) food systems<sup>4</sup>. It discusses options for knowledge institute engagement in public-private partnership.

A 6-page policy paper<sup>5</sup> summarises findings from this case study report and the bigger-picture context study.

## Methodology

The selection of case studies has not been based on a broad exploration of opportunities. Given the limited time available for selecting suitable cases, we focused on a number of selection criteria:

- It should relate to a clear public-private partnership.
- It should relate to an effective role of knowledge institutes in an innovation process.
- It should be in Africa.
- It should be of recent date (or on-going), having sufficient information to report on.
- It should have a clear case owner who is very well acquainted with the ins and the outs of the case.

We used a common framework for documenting the cases in order to be able to compare and synthesize findings and make it easier to find patterns for learning.

The framework covered the following elements:

1. Introduction to the innovation process, providing a brief background and context description
2. Analysis of roles and interfaces in the innovation process, looking at interfaces between key actors, and the specific role of knowledge institutes in these interfaces
3. How exactly knowledge institutes made a difference in this innovation process.

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<sup>4</sup> Wigboldus, Seerp and Jan van der Lee (2011). Going for gold in innovation partnerships responsive to food insecurity – the role of knowledge institutes. *Vol.1: Context study*. Wageningen UR Centre for Development Innovation. 116 pp

<sup>5</sup> Wigboldus, Seerp, Jan van der Lee, Gareth Borman, Karen Buchanan and Wouter Leen Hijweege (2011). Going for gold in innovation partnerships responsive to food insecurity – the role of knowledge institutes. *Policy paper*. Wageningen UR Centre for Development Innovation. 6 pp.



## 2 The cases

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In the sections below, five case studies on different innovation systems for different food or food-related sectors from different contexts have been summarized. Where possible, the key role of knowledge institutes was highlighted. Innovation systems generally bring together a wide range of stakeholders from public, private and civil society sectors. Partnerships involving public and private actors are a common focus of innovation systems.

### 2.1 Case 1: The dairy sector landscape of Ethiopia

*Gareth Borman and Jan van der Lee*

Ethiopia has good potential for the contribution that dairy production can make to agricultural development in the country, as there is a relatively high number of cattle per rural household and a favourable climate for improved livestock breeds. Currently, the dairy sector is shifting towards greater market orientation through the liberalization of markets, private sector investment, and promotion of small scale producers. A number of development interventions have targeted the dairy sector; however, with limited success, poor rates of adoption. Despite these interventions, productivity has remained low and subsistence oriented with poor access for surpluses into the market.

There are considerable challenges that dairy sector development faces in Ethiopia. Among others, these include a significant problem in the institutional linkage between key actors in the value chain and weak capacities among service agents for facilitating market oriented innovation. Awareness raising, knowledge dissemination, experience sharing, evidence-based action learning and adaptive management are key to the innovation process. Agricultural development is driven increasingly by markets and less by production. Information and communications technologies are playing an increasing role in that development (World Bank 2008) <sup>6</sup>.

A key insight of Woodhill *et al.* (2011)<sup>7</sup> into the Ethiopian context and prevailing perspectives on innovation systems is the importance of knowledge brokering and the role that knowledge can play in fostering innovations through institutional arrangements. Woodhill *et al.* (2011) recognize that these knowledge brokers need to be seen as neutral independent agents for bringing about change, for the benefit of a particular sector or value chain. Furthermore, in most examples of successful innovations in the Ethiopian case-studies, the predominant driving forces were market incentives and the coordination by individuals or organizations acting in the 'brokering' role.

#### **Existing capacities for development in the dairy sector**

##### The public sector

Government plays the predominant role in providing capacity development services such as training; production support; input supply; and extension, artificial insemination, and regulatory services. The apex of agricultural development agenda setting and planning is housed in the Federal Ministry of Agriculture (MoA). At regional, zonal and district level there are offices of the Bureau of Agriculture (BoA), providing

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<sup>6</sup> World Bank. 2008 World Development Report 2008: Agriculture for Development. The World Bank, Washington D.C.

<sup>7</sup> Woodhill, J. et al. 2011. Market linked innovation systems: opportunities for strengthening agricultural development in Ethiopia, Report for the Embassy of the Kingdom of the Netherlands, Addis Ababa, Ethiopia. Wageningen UR and Royal Tropical Institute. 66pp

grassroots services. The Ethiopian Institute for Agricultural Research (EIAR) and regional subsidiaries (RARIs) provide valuable support to BoA-led agricultural development initiatives.

Technology dissemination has been the predominant focus of the Ethiopian government, with several supporting activities in capacity development provided at various levels. Examples are the National Artificial Insemination (AI) Centre, Faculties of Veterinary Medicines and National Veterinary Laboratory, the Ethiopian Institute for Agricultural Research (EIAR) livestock breeding centre in Holetta, and the Ethiopian Meat and Dairy Technology Institute (EMDTI) in Debre Zeyet. Public service delivered capacity development focusses mainly on general knowledge building and is not targeted towards specific skills development (van der Lee *et al.* 2010)<sup>8</sup>.

Agricultural extension services are provided almost exclusively by the government through district offices of Agriculture (DoA). The extension service was originally set-up for achieving food security objectives, but is not yet tailored for providing market oriented advices for transforming traditional subsistence livelihoods into local economies. Facilitators of innovation processes are widely inexistent in current extension service capacities (Woodhill *et al.* 2011).

### Knowledge institutes

Ethiopia qualifies a large number of graduates in agricultural studies with a principle focus on technical expertise. Agricultural Technical and Vocational Education Training centres (ATVETs) train Development Agents (DAs) who are assigned at kebele (community) level, often to a Farmer Training Centre (FTC), with the envisaged plan of supporting farmers through knowledge transfer, products' support and services, particularly with regard to modern technological practices. Formal training institutions, such as universities, focus on general animal production whereas ATVETS focus on a wide range of vocational skills such as animal husbandry. Expertise in value chain development, market promotion and analysis, and supporting innovation systems is sparse. The link between demand and consumer behaviour has never received quite the right attention, neither has the educational focus on the dairy value chain been taken adequately into account. Existing curricula do not sufficiently incorporate agri-business perspectives.

#### **Box 1: FTCs – hubs for agricultural innovation?**

Ethiopia is making significant investment in agricultural extension, research and education, with a major focus on 'scaling-up best practices' for agricultural driven economic development. Over 69,000 development agents have been graduated, most of them working in the public extension programme. However, capacities for more market oriented advisory services are poor as the training provided to DAs is technical and for vocational purposes. Despite the substantial investments made so far, institutions like the Farmer Training Centres still require more adequate facilities, operational budget and a novel set of skills and methodological guidance for delivering the intended services (Woodhill *et al.* 2011)

The recently launched, Dutch-funded, NICHE/ETH-019 programme on agribusiness development aims to review and evaluate existing Ethiopian higher education agriculture curricula and research agendas, adjusting these to the needs of the labour market and the private sector. One of the major intended curriculum inclusions is that of interdisciplinary value chain approaches.

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<sup>8</sup> Van der Lee, J., *et al.* 2010. Skills & gaps – a capacity needs assessment of dairy chains in the Addis Abeba milk-shed, project report to LNV, the Netherlands. Wageningen UR in collaboration with SNV-Ethiopia. 35pp

## The private sector

The public and civil society sectors have played an important role in facilitating the formation of legally recognized farmer organizations. Primary farmer cooperatives have been a common institution in agriculture in Ethiopia for quite some time and are the basis for modern associations of farmer-based production and marketing. Primary and secondary cooperatives (cooperative unions) are critical for institutional linkage to input supply, technical skills training, financial services, goods processing and marketing. Cooperatives collect and bulk products from their members and non-members at fair prices for external marketing, returning dividends to their members.

Whilst cooperatives and unions are focussed mainly on the production link in the dairy value chain, there are also many private actors involved in the supply of inputs and services for dairy production. Feed marketers, land leasing agents, feed-meal sellers and equipment merchants and hirers are dispersed across the landscape but also, in selected areas, there are private veterinarians, AI service providers and farmers who hire out their bulls for breeding services. Private actors are also involved in milk collection, processing and retail. These include some well-organized dairy cooperatives and unions that have the capacity to process and sell dairy products, but also independent processors, traders, retailers and hawkers who provide the link to consumers.

## International and non-governmental organizations

Significant investments in the dairy private sector have been funded by international and non-governmental organizations. The Netherlands Development Cooperation (SNV), the USAID supported Land O'Lakes and the CGIAR institute ILRI provide support to the development of the dairy chain through different but complementary programmes aimed at increasing access to produce and commercializing the market for quality milk.

SNV's approach warrants specific elaboration because it is unique among its peers. SNV is strengthening capacity predominantly through the creation and strengthening of branch and business associations in the dairy value chain. This includes improving the advisory services provided by local organizations, albeit government, the private sector or civil society, for reducing poverty and promoting good governance. The core of SNV's approach is bringing all the value chain actors and stakeholder groups together in the so called Coordination Group (CG). CG meetings are quarterly and involve stakeholder members from the value chain, different institutions and other invited clients with experiences to share. The CG meetings are based upon: specific capacity needs assessment; networking; building upon existing relationships and forming new ones; sharing lessons learnt; and creating awareness on innovations in the value chain.

### **Box 2: Multi-stakeholder platforms for innovation, learning and business.**

SNV was instrumental in the establishment of the Ethiopian Milk Producers and Processors Associations (EMPPA). As a direct result of this, SNV has facilitated the establishment of processing businesses, linking these to rural producers for supply to domestic markets. Together with Wageningen UR, SNV initiated the National Dairy Forum in November 2010. Alongside an opportunity to exchange and learn from experiences, this forum provided the opportunity to propose the Ethiopian Dairy Board. The Ethiopian Dairy Board is led by a steering committee comprised of key stakeholders who were linked during the National Dairy Forum. SNV has also been successful in generating an innovation fund, which subsidizes up to 80% of a logically sound but new initiative for dairy sector development.

## **Characterizing the innovation process: sector involvement in the dairy value chain**

The Ethiopian public sector has a very linear approach to delivering technologies, providing technical education and training, disseminating knowledge, and supplying inputs and services at local levels. In

practice, the success of these interventions is more complex. One factor that challenges the efficacy of public sector support to the dairy industry, and the rates of adoption among stakeholders, is an uncoordinated approach to discretely addressing several bottlenecks in the dairy value chain.

Private actor participation in the dairy sector is constrained by a lack of knowledge and resources to invest, with insufficient support from the public sector. Furthermore, the contemporary business environment for dairying is unfavourable as risks are significant. These include low supply security of both inputs for farmers and raw product for processors, low income for producers, around 200 days of decreased demand due to fasting by Ethiopian Orthodox Christians who constitute nearly half of the population, an unclear health and quality regulatory environment, physical constraints in the built environment and low availability of spare parts for processing equipment. Whilst a great number of stakeholders in the dairy value chain are stagnant in the innovation system, others are vastly more entrepreneurial, such as some of those service agents mentioned in the section above on *existing capacities for development in the dairy sector*. Many of the innovations supported by the SNV facilitated CG were, in actual fact, spearheaded by individual companies.

Dairy value chain actors widely perceive the government as having little interest in the sector (van der Lee et al. 2010). Such sentiment corroborates an observed weakness in the public sector's capacity to facilitate development processes (Woodhill et al. 2010) and broker knowledge sharing, partnerships and business linkages in the dairy value-chain. By default, non-governmental and international organizations are important facilitators of innovation in the dairy sector. These organizations have the capacities to play the brokering and facilitating roles. Some NGOs in Ethiopia have been experimenting with agribusiness clusters, innovation platforms, networks and learning alliances, which are usually focused on a specific value chain or commodity. Learning alliances are clusters of farmer organizations, NGOs and other actors, which aim at improving their business and market position through a facilitated learning process, which integrates training and work activities in a cycle of workshops, field assignments, and coaching visits.

### **In conclusion – building upon existing capacities for knowledge brokering and process facilitation**

The current focus of government in dairy sector development needs to be addressed. Top-down and production driven roll-out of technologies and extension services has not been effective as a solitary solution to all challenges faced within the development of the dairy sector. The national AI, breeding and veterinary facilities have fallen short of meeting the demand for these services. The problem with the efficiency and effectiveness of the AI service (and others) may be that it is monopolized by the public sector. The fact that the performance of the public AI service is poor despite significant demand from private dairy producers justifies a private stake in the service delivery. Workineh and Ababu (2006)<sup>9</sup> recommended that the public sector continue to import and test improved genotypes, but move into a support role for private AI services, providing quality assurance and regulatory services for improved service delivery. This would require significant knowledge input to the capacities of technicians and service providers.

Knowledge has a crucial role to play in challenging persistent institutional, cultural and technical bottlenecks in the dairy value chain. Currently, knowledge is predominantly generated and housed in non-governmental and international organizations, but little is transferred to the public sector beyond grassroots level personnel. The relevance of such organizations' practical experience, action research, and learning evidence for innovation systems is significant, and could provide important input for policy-

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<sup>9</sup> Workineh Ayalew and Ababu Dekeba (2006). Organization and performance of government-owned cattle breeding ranches in the supply of genetic improved breeding stock in Ethiopia. pp 20-31. Proceeding of the 14th annual conference of the Ethiopian Society for Annual Production (ESAP) held in Addis Ababa Ethiopia, September 5-7, 2006. Part I: Plenary Session.

makers. Building upon the existing capacities of non-governmental and international organizations in process facilitation and knowledge brokering, whilst cooperatively strengthening the public sector and local knowledge institutes to sustainably assume this role in the future, could have significant ramifications for the dairy sector

## 2.2 Case 2: Partnerships for developing a vibrant and pluralistic seed sector in Ethiopia

*Marja Helen Thijssen, Mohammed Hassena, Gareth Borman, Joep van den Broek, and Walter Simon de Boef*

Seed is an essential input for crop production. Key to the contribution that seed makes are its availability, quantity, quality and affordability. Farmers have to have physical access to quality seed of sufficient quantity at the right time, and this has to be affordable for them. In addition, seed needs to be of a variety well-suited to the local production environment and farmer/market demands.

The greatest source for seed in most developing nations is that which farmers save during production. In addition they may exchange seed with neighbours or relatives, or purchase from local markets. The formal system in Ethiopia consists of a public and emerging private subsector. At present, the federal government of Ethiopia plans and details formal seed distribution to its regions.

Integrated Seed Sector Development (ISSD) is a concept that acknowledges and appreciates the unique challenges faced by a sector characterized by diversity and complexity that should not be addressed by linear and independent pathways, but rather by a pluralistic approach that promotes complementary seed systems' development (Louwaars & de Boef, in press).

The principle aim of ISSD is to mainstream a process that can cultivate an environment that enables farmers to experiment with and innovate production systems, having the necessary access to inputs and services to develop their capacities to do so, and become more autonomous in their decision making and business. Such a process embraces a vibrant seed sector and supports an indefinite number of different value chains to have access to seeds of the crops and varieties they desire and to market their products based on the demands of their clients (Louwaars & de Boef, in press).

### **Partnerships and innovation in seed sector development**

The partnerships and innovation component of the ISSD Ethiopia programme aims at solving jointly defined development challenges in the seed sector by collaborating to solve those problems that institutions are unable to address by themselves. The programme operates in a decentralized way in four regions in Ethiopia (Amhara, Oromia, SNNPR and Tigray region) through regional innovation and facilitation teams (henceforth ISSD coordination units), hosted at four universities (Bahir Dar University, Haramaya University, Hawassa University and Mekelle University) and one regional seed enterprise (Oromia Seed Enterprise).

As a working modality of the partnerships and innovation approach, four regional partnership core groups and four partnership platforms have been established in each of the four regions. Regional platforms involve as many stakeholder institutions as are willing to participate in discussions on issues experienced at a local as well as a regional scale, suggesting innovations for improving upon these issues. A select core group, with 8 up to 10 members, representing the key stakeholder institutions from public, private, research and civil society sectors, form the decision making body of the regional partnership platforms and are responsible for the identification, planning and follow-up on the execution of regional partnerships' innovation projects. Partnerships' innovation projects are targeted interventions into a prioritized set of regional seed sector problems.

The partnerships' projects aim to initiate change in what is an already dynamic sector. This requires continuous and iterative adjustments in the seed sector that generate knowledge, facilitate learning and feed into the policy dialogue at a broader scale. Through the partnerships and innovation approach, the ISSD programme aims to institutionalize and up-scale<sup>10</sup> processes for sharing knowledge, communicating experiences to higher levels of policy discussion, and connecting stakeholders through demand driven partnership projects.

### **Addressing seed quality in Ethiopia through partnerships' projects**

Tigray does not yet have its own regional seed enterprise, thus a major share of formal seed is imported from other regions. It was suspected that much of the seed imported does not comply with national quality standards. The regional core group for Tigray decided through a partnerships' innovation project to test the quality of seed before it is distributed to farmers. The Bureau of Agriculture, responsible for seed distribution, took the lead in this project. The project placed seed quality high up on the government agenda, because it assumes responsibility for the entire formal system. In the future, the Tigray regional core group will continue to advise government on the quality situation of imported seed, and will make timely specific orders for seed that should lead to an improved quality control process.

Key seed sector stakeholders in Amhara region, including state government, have been quite reluctant to recognize the potential contribution that seed producer cooperatives can make to quality seed production. At the same time the government is confronted with farmers complaining about the quality of seed produced and distributed through the formal system. This issue has triggered the Amhara core group to conduct a comparative study on the quality of local informally marketed seed and the formally distributed seed from the public as well as private sector. The announcement of the study already motivated some private and public seed companies to re-clean their seed before selling it to the government. The results of the study were not favourable for the public sector, with a major player declining to participate. This was a significant achievement for creating awareness among key stakeholders and policy makers on the issue of seed quality in Ethiopia. Consequently, further discussions on enhancing the accountability of seed quality control have been initiated.

The regional core group in Oromia concluded that the regulatory wing of the government Bureau of Agriculture is weak and only able to provide limited enforcement for seed quality control. The regional core group is currently facilitating discussions regarding the establishment of an independent regulatory authority for seed quality assurance in Oromia, for which stakeholder interest is very positive. Recognising that such a regulatory authority be independent of the public institutions that are mandated to produce, source and distribute quality seed to the region is an important innovation in Ethiopia. Other regions are currently initiating similar processes that have gained the support of federal government and the Agricultural Transformation Agency, which is a leading policy advisory body to the Ministry of Agriculture.

The SNNP region's Bureau of Agriculture, together with the Southern Seed Enterprise, took the lead in a seed quality partnerships' innovation project. In anticipation of the new Seed Proclamation, they trained public and private seed producers, regional, zonal and district level agricultural input experts, seed quality laboratory technicians, concerned university instructors, and researchers on seed multiplication and quality control. Breeders and researchers were also trained in the production of early generation seed, in which very high quality standards apply. In addition, the project assessed internal seed quality assurance systems of different types of seed producers. The project will conclude this year with policy advice on sound quality procedures for seed production by different types of producers, and from different seed classes, to decision makers in the region.

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<sup>10</sup> A note on terminology: up-scaling is a vertical mechanism for strengthening a promising practice or process through policy and institutional frameworks; out-scaling is a horizontal mechanism for implementing a promising practice or process on a wider scale.

## **Linking the partnerships approach with seed related policies**

The difficulty in translating planning into practice is not always an issue of insufficient capacity to do so, but often related to the levels of commitment of the implementers. Some are hesitant because implementation is not perceived to be in the same direction as government has planned. However, once projects (first implemented as action and learning research) are proven successful, policy makers become interested in adopting the approach, even if it was rejected at an earlier stage. For example, successful experimentation with free marketing in Amhara region has triggered policy-makers in Oromia and SNNP regions to develop similar approaches which were rejected at an earlier stage.

Experiences from the partnerships and innovation component of ISSD should feed into the federal policy dialogue. However, not all policy needs readdressing. Many solutions can be delivered without changes in policy. A number of important seed related policies, like the Seed Proclamation and the upcoming amendments to the Plant Breeders' Rights Proclamation, will need to be translated into specific guidelines for implementation. We foresee the ISSD programme playing an important supportive, and if required, facilitating role in translating policy into fully-functional guidelines for implementation. The positioning of the partnerships' activities at the different scales of influence, and a reciprocal flow of interaction between federal, regional and local levels, facilitates a robust process for sharing experiences and providing government with the knowledge to address sector-wide problems.

## **Characterizing the innovation process**

The many variables and parallel processes in a systems-based approach do not make it easy attribute the response initiated by different interventions. One of the key principles of the ISSD project is to link and align interventions as much as possible with existing governmental programmes and stakeholder activities in the seed sector. This increases the chance of success. Nevertheless, problems are complex, systemic and cannot be solved by independent linear approaches, hence the innovation process is complex. It is out of necessity that such an innovation process be designed to promote a vibrant and pluralistic seed sector in Ethiopia.

A tentative outcome to this approach is generalizing the following system when addressing regional seed issues:

1. Study – generating a sufficient evidence basis to warrant change;
2. Create awareness of the problem – evidence stands to reason, supplies the rationalization, and breaks the taboo of the problem;
3. Form partnerships for identifying solutions – jointly identifying, planning and implementing a solution to the problem that could previously not be solved independently;
4. Institutionalize the solution – Scaling up the solution and making it part of the region's common policy in seed sector development.

Key to the innovation process is the inclusion of sufficient stakeholders in the seed sector, who together want to work on a clear and demand-driven solution to the problem. Stakeholders involved need to feel ownership for the new solutions found.

## **Key stakeholders in the regional partnerships' core groups**

The table below briefly summarises the key partners in the regional partnerships' core groups. Stakeholders can be grouped according to the classification below. One stakeholder, that has not been

included, is the Wageningen UR Centre for Development Innovation (CDI), which has a coordinating and facilitating role in the ISSD programme, including the partnerships' component. The national partnerships' facilitator is based in Ethiopia and works in very close alignment to CDI. The role of the national partnerships' facilitator was instrumental in fast-tracking the process for partnerships' formation in Ethiopia, and also for providing coaching to the regional partnerships' facilitators who are employed by the respective regional ISSD coordination units. Involvement of CDI has been important in exposing the regional partnerships' facilitators to innovative approaches that have been successful in other countries and programmes, who in turn stimulate such *out-of-the box* thinking in the regional platforms. The regional partnerships' facilitators are staff members of the regional partner organizations and the ISSD programme. They are supported directly by the regional ISSD coordinators, who are well connected, knowledgeable and respected seed sector experts.

Key regional partners	Current role in the Ethiopian seed sector
Bureau of Agriculture	Responsible for overall regulation and coordination of the agricultural sector, including seed production and equitable distribution, and seed quality regulation
Research institutes	Mainly responsible for variety development, and the production of breeders' and pre-basic seed
Universities	Develop varieties and occasionally produce breeders' seed; develop improved technologies; conduct wider seed systems' research; out-reach programmes; and house the regional partnerships' facilitation team
Public seed enterprises and private seed companies	Major producers of basic and certified seed
Farmers and farmers cooperatives	Engage in seed production and to some extent informal marketing
Non-governmental organizations	Support farmers and SPCs and may also be involved in seed aid

Partnerships' innovation projects are designed to bring together the operators in the value chain (seed producers and marketers), the supporters (NGOs and universities) and the enablers (government agencies). Bringing all important operators, supporters and enablers together at a regional level to jointly define problems and plan solutions is key not only to the learning process but also to identifying common goals, potential linkages and mutual benefits. These horizontal interactions between different stakeholders are key for initiating innovation. Important vertical interactions also occur, at two levels: (1) between the local and regional level, to provide an evidence base for problems and innovations, and (2) between the regional and national level, for communicating broader issues with decision makers at a national level, who can exert considerable influence on policy guidelines and the enabling environment.

Interactions are facilitated by the regional ISSD coordination units. In addition, the Embassy of the Kingdom of the Netherlands (EKN) in Addis Ababa plays an important role in communicating with policy makers at the federal level and with members of the development community, including other donor organizations.

## **Success factors for partnership brokering and innovation facilitation**

Establishing partnerships is a complex task which requires sharp focus on the desired objectives and results. Finding mutual benefit among multiple stakeholders and encouraging shared responsibility and accountability is paramount. From experience, it has been shown that the choice of individual facilitators or brokers is crucial. Individual's qualities and attitude are important for motivating others. Good interpersonal skills and competencies for communication are paramount. Personal networks are key characteristics in the selection of the individual tasked with facilitating partnership formation. Also, good diplomacy is necessary for dealing with many actors from different cultures, who individually have incongruent stakes and power in the seed sector of Ethiopia.

It is necessary that partners feel that the output is shared, that ownership is collective, and that trust is established to experience the full potential commitment to benefit and risk sharing. From a more external perspective on the partnerships' facilitator, it is important that this individual is seen as an independent broker and interested foremost in the successful development of the sector, not in personal or institutional gain. This instils trust in working relationships.

## **Conclusions**

Woodhill et al. (2011) observe a loose linkage among key actors in value chains and a fragmentation in the knowledge system in Ethiopia in general. Communication, experience sharing, awareness raising and capacity development could be improved by more coordinated efforts. Often activities are less efficient due to duplication of efforts, resulting in poorer continuity and diminished longevity for achievements. Partnerships are a logical progression for accommodating multiple stakeholders who can individually bring many important resources to the seed sector. Partnerships, however, do not happen spontaneously. They require clever brokering by a neutral facilitator.

A pluralistic innovation network is important for pulling innovation in the direction of market opportunity and stakeholder interests. Rigid mandates, role ambiguity and ineffective incentives make it difficult for the public sector to coordinate, follow up on, and efficiently manage intervention efforts. Often an external perspective is necessary.

Universities provide a good institutional arrangement for process facilitation due to their more independent positioning within the seed sector. Furthermore, their intrinsic link to research for providing evidence in support of partnerships' innovation projects is strategic. Government remains the enabler, however, it is not logical for government to be involved in every step in the seed-chain, as both a producer and an assurer of quality product and service deliver. There is a conflict of interest arising there. Decentralizing management and responsibility of the seed sector allows the public sector, the private sector, knowledge institutes and the civil society to assume their independent roles and efficiently carry out their mandate.

Diversity in practice and experimentation is key for innovation in the seed sector of Ethiopia. Out-scaling is challenging as the agro-ecological and socio-economic context of Ethiopia is so diverse. A technology applied successfully in one location may not be suitable for another, and the same applies for innovations, even those institutional in nature. Regardless of the differences in the set of practices which led to successful innovations in various regions of Ethiopia, it can be said that the facilitated change process itself has broad scale similarities that need to be institutionalized and captured in the policy framework. The partnerships' process described above addresses seed quality, but this is just one example. In different contexts, among different stakeholders, different problems are prioritized. In this regard, the programme and facilitators strive to bring about change that is demand driven.

## 2.3 Case 3: Developing soybean value chains in Ethiopia and reducing the necessity for importing edible oils

Monika Sopov

### The current state of soy production in Ethiopia

Ethiopia is an exporter of oil seeds and at the same time an importer of edible oil for human consumption. The value of imported oil is 40 to 60% of the export earnings of oilseeds. Of all edible oil, 80% is imported, mainly palm, soy bean and sunflower oil (Wijnands et al., 2009)<sup>11</sup>. Even though soy bean was introduced to Ethiopia in the 1950s for the purpose of import substitution (Shurtleff & Aoyagi, 2009)<sup>12</sup>, production is still insufficient to substitute imports.

The last few years, soy production does not show consistent volumes in Ethiopia, which is mainly due to the fragmented markets. Producers have not been able to find outlets to sell their products; at the same time, processors of animal feed and edible oil are operating at 60-70% capacity due to insufficient amounts of available soy. As small scale producers were not successful in securing markets for their products, they stopped growing soy for commercial purposes, especially in the Jimma area. They still produce it for household consumption and as feed for their own animals. At the same time, processors had to look for other options, and some of them started importing soy. This past year (2011), the price of soy shot up from 400 Ethiopian Birr (ETB) per 100 kilograms in March, to as high as 1800 ETB/100 kg in September before harvest (1 Euro ≈ 23 ETB). During 2010 the average price of soy was less than 500 ETB/100 kg. The current high market price of soy makes it very attractive for smallholders as well as for large scale commercial farms to engage in production once again. However, the problem of the fragmented market remains.

### The opportunity for innovation

It was assessed that the edible oil sector in Ethiopia has a lot of potential for development, which is additionally stimulated by the more than 23% devaluation of the ETB in 2010. Furthermore, implementation of the Growth and Transformation Plan of the Ethiopian government supports development by '*the intensification of marketable farm products for domestic and export markets, and by small and large farmers.*' The commercialization of smallholder farming will continue to be the major source of agricultural growth. The agriculture sector will be transformed to a high growth path to ensure food security, to broaden export and to keep inflation low (MoFED, 2010)<sup>13</sup>.

The domestic market offers opportunities by producing larger quantities of oilseeds and by using idle oil milling capacity. Considering the fragmented market, the focal question for innovation is: What is the best strategy for linking producers to processors to ensure efficiently operating markets, and to decrease the need for import?

### History and evolution of the innovation process

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<sup>11</sup> Wijnands, J.H.M., J. Biersteker and E.N. van Loo (2009). Oilseeds business opportunities in Ethiopia. LEI, Wageningen UR, The Hague.

<sup>12</sup> Shurtleff, William and Akiko Aoyagi (2009) History of soybeans and soyfoods in Africa (1857 - 2009): Extensively annotated bibliography and sourcebook. Soyinfo Center, USA.

<sup>13</sup> Ministry of Finance and Economic Development. 2010. Growth and Transformation Plan 2010/11-2014/15, Federal Democratic Republic of Ethiopia. 85pp

The Wageningen UR Agricultural Economic Research Institute (LEI) and Plant Research International (PRI), focussed on assessing the opportunities of the soy and sunflower subsectors in Ethiopia. In the second year, the objective of developing three value chains for soy and sunflower was initiated under the coordinating lead of the international development cooperation and the Wageningen UR Centre for Development Innovation (CDI). In the third year of the project, CDI will continue to establish a trading platform and subsector organization especially for soy, due to the increased interest from producers to engage in soy production as result of increasingly attractive prices.

In the second phase, CDI contacted Professor Ken Giller (Wageningen University), who has been involved in up-scaling soy production in various African countries with the help of Bill and Melinda Gates Foundation (BMGF), but at that point in time, not yet in Ethiopia. Prof Ken Giller had been asked by the BMGF to enter into other countries and due to the on-going Dutch support, existing network and potential for soy production, Ethiopia was a seemingly obvious choice.

In the first year of the project, various stakeholders were interviewed, desk studies were conducted and a financial model was developed to evaluate the opportunities in the soy and sunflower subsectors taking various macro and micro economic factors into account. This phase was relatively straightforward with clear path and end result.

In the second phase, during the development of the expected three value chains, it turned out that many different actors with different interests had to be taken into account. A demand for the following value chains was evident: animal feed, nutritious food, edible oil, and soy milk chain. There did not seem to be much interest in developing sunflower value chains. Trying to cater to the needs of the different value chains, identifying and getting the key stakeholders together proved to be challenging. In fact, no value chains were really formed, primarily due to the following:

- contracts between producers and processors didn't give the required level of flexibility;
- processors were looking for farmers and cooperatives with several hundreds if not thousands of hectares of soy, which were not easy to find.

Moving into the third and final year of the project, challenges emerge on a different scale. If considerable support backed by the BMGF arrives in Ethiopia, soy supply could rise significantly. Whilst prices at the moment are very attractive for smallholders who are eager to engage in soy production, the future challenge will be in securing a relatively stable price that is attractive for both producers and processors . Balancing the process of rapid development whilst avoiding price volatility and the potentially crashing of the market will be of paramount importance.

### **Stakeholder involvement and roles in the innovation process**

For the soy subsector, there have been three different settings of stakeholder involvement and roles through the three phases of the process, as outlined in the tables below:

	<b>Role</b>	<b>Interest</b>
<b>Phase 1:</b>		
Farmers	Provide information; Interviewees; workshop participants	Increasing income
Processors	Provide information; Interviewees; workshop participants	Securing soy for processing
Exporter	Provide information; Interviewee; workshop participant	Securing soy for export

	<b>Role</b>	<b>Interest</b>
Knowledge Institute (LEI)	<p>Process expertise:</p> <ul style="list-style-type: none"> <li>Identify and implement process for project; implement interviews and workshops; liaise with stakeholders</li> </ul> <p>Content leader:</p> <ul style="list-style-type: none"> <li>collect and analyse data and information; develop financial model; make recommendations; write report based on findings</li> </ul>	Exploring the business opportunities of soybeans in Ethiopia
Ethiopian Research Institute	Provide information, Interviewee, workshop participant	Gaining support with soy production (technological as well as financial)
Local Consultancy	Support project by collecting data; providing logistics; liaising with local stakeholders	Identifying appropriate data, information and stakeholders
Embassy of the Kingdom of the Netherlands (EKN)	<p>Supply image of prestige and quality to the project</p> <p>Define the mandate to project</p> <p>Provide funds for project</p> <p>Provide links to Ethiopian government</p>	Supporting Ethiopia in decreasing the need for importing edible oil, and for supporting domestic production and development
Ethiopian Government	Provide information; Interviewee; workshop participant	Decreasing the import of edible oil; supporting the increase of domestic production; establishing an environment in which business can operate
<b>Phase 2:</b>		
Farmers	Produce and/or collect soy	Increasing income
Processors	Purchase soy	Securing soy for processing
Exporter	Provide information; Interviewee; workshop participant	Securing soy for export
Knowledge Institute (CDI)	<p>Develop process methodology</p> <p>Develop strategy for the 3 value chains</p> <p>Guide local consultants in:</p> <ul style="list-style-type: none"> <li>implementing process strategy</li> <li>setting up workshop (who to invite, how to facilitate, setting objectives, evaluation, etc.)</li> <li>formatting collected information</li> <li>thinking strategically for the soy subsector</li> </ul> <p>Capacity building:</p> <ul style="list-style-type: none"> <li>for Ethiopian soybean experts to understand the</li> </ul>	<p>Linking the project to the overarching policy framework of the embassy and other Ethiopian programmes</p> <p>Linking the project to other Wageningen UR departments and setting up new projects</p> <p>Linking the project to other Dutch organizations and setting up new</p>

	<b>Role</b>	<b>Interest</b>
	<p>demands of the private sector for developing competitive edible oil prices and for value chain thinking and research</p> <ul style="list-style-type: none"> <li>• for government staff on value chain development for the edible oil sector</li> </ul> <p>Draw lesson learnt; develop recommendations to the EIAR and government trade and extension departments on how to assist practically the private sector in developing commercial value chains; develop proposal for follow up phase</p>	projects
Ethiopian Research Institute	Provide information; seed improvement and multiplication	Gaining support with soy production (technological as well as financial)
Local Consultancy	Support project by collecting data; providing logistics; liaising with local stakeholders	Identifying appropriate data, information and stakeholders
EKN	<p>Supply image of prestige and quality to the project</p> <p>Define the mandate to project</p> <p>Profile the importance of project by opening and participating in key events</p> <p>Provide funds</p> <p>Support project with strategic guidance</p> <p>Provide links to Ethiopian government</p> <p>Link project to others running in Ethiopia</p>	Supporting Ethiopia in decreasing the need for importing edible oil, and for supporting domestic production and development
Ethiopian Government	Provide information; Interviewee; workshop participant	Decreasing the import of edible oil; supporting the increase of domestic production; establish an environment in which business can operate
<b>Phase 3:</b>		
Farmers	<p>Produce and/or collect soy</p> <p>Provide data for marketing information system (MIS)</p> <p>Participate in standard setting</p> <p>Contribute to trade activities of the trading platform</p>	Increasing income
Processors	<p>Purchase soy</p> <p>Provide data for MIS</p> <p>Participate in standard setting</p> <p>Contribute to trade activities of the trading platform</p>	Securing soy for processing

	<b>Role</b>	<b>Interest</b>
Exporter	Provide information; Interviewee; workshop participant	Securing soy for export
Knowledge Institute (CDI)	Facilitate collaboration in the subsector (standards, MIS, trade platform)  Facilitate the creation of an enabling environment for spot market trade  Set basis for future markets  Liaise with different stakeholders in the wider value chain  Link project to the BMG Foundation	Contributing to a conducive trade environment for soy
Knowledge Institute (LEI)	Identify business opportunities	Developing new projects
Ethiopian Research Institute (EIAR)	Provide information; seed improvement and multiplication	Gaining support with soy production (technological as well as financial)
Local Consultancy	Support project by collecting data; providing logistics and content to process and workshops; extending existing stakeholder networks	Identifying appropriate data, information and stakeholders
EKN	Supply image of prestige and quality to the project  Profile the importance of project by opening and participating in key events  Provide funds  Support project with strategic guidance  Provide links to Ethiopian government  Lobby for policy change  Link project to others running in Ethiopia	Supporting Ethiopia in decreasing the need for importing edible oil, and for supporting domestic production and development
Ethiopian Government	Provide information; Interviewee; workshop participant	Decreasing the import of edible oil; supporting the increase of domestic production; establish an environment in which business can operate

Some tentative outcomes of the project include:

<b>For whom</b>	<b>Key (tentative) outcomes</b>
Farmers	Increased production and sale of soy
Processors	Increased capacity utilization of mills
Exporter	Increased export
Knowledge Institute (CDI)	Soy subsector is better organized; production and sales of soy are growing
Knowledge Institute (LEI)	Financial model developed
Ethiopian Research Institute (EIAR)	New seed varieties with more favourable characteristics are available for farmers; production technologies are improved
Local Consultancy	Increased its knowledge about the subsector Increased capacity of its staff Increased its network Access to new projects
EKN	Contributed to soy subsector development and to Dutch–Ethiopian technology and knowledge transfer; Contributed to the realization of the Ethiopian government’s Multi Annual Strategic Plan (MASP)
Ethiopian Government	Contribution to MASP realized. Soy subsector is developed In addition to large scale farmers, small farmers are contributing to development Intensification of marketable farm produce

### **The most critical roles of knowledge institutes in the innovation process**

The key role of knowledge institutes was to bring actors to the table who otherwise would not have met, or would have met only after a long and costly process of searching for each other. As a result of the efforts of knowledge institutes, actors got confirmation that there are incentives to produce and process soybean. By facilitating the development of efficient markets, the project supports the development of the soy subsector, and contributes to food security.

Some knowledge institutes can play the role of ‘impartial’ facilitator. Especially in the case of Wageningen UR, the name conveys the image of Dutch expertise and effective projects, hence it evokes the trust of stakeholders involved in the process that they facilitate in Ethiopia. The added value of these knowledge institutes is their expertise in multi-stakeholder process facilitation. Understanding how trust can be developed, how agendas can be set and shared, mediating between parties who do not necessarily agree on the best course of action, and guiding participating parties through a reflective learning process are all key to that process. Thus it very much depends on the individual skills and competencies of the facilitator in interpersonal communication and process methodology.

It is vital that individual facilitators are selected with great care as convincing parties to collaborate and to engage in partnership requires great skill and a good understanding of the key issues in the value chain or wider sector. In this case of the soy project in Ethiopia, there was an excellent balance among similarities and complementarities regarding the individual actors from CDI and the local consultancy. Both individuals have commercial backgrounds. Whilst the Ethiopian consultant has an excellent local network with government, private and NGO sectors, and the required diplomatic skills to get people to agree on objectives for the future, CDI is strong in process facilitation, strategic thinking, and in linking the project

to Dutch private sector, policy makers, and to other knowledgeable partners in the Netherlands, thereby commanding significant resources.

The Ethiopian individual left the local consulting company in August 2011. Because of contractual arrangements, CDI continued to work with the replacement person, but decided it was best to arrange a separate working contract with the predecessor. The replacement person comes from an NGO background and unfortunately does not possess an equivalent business drive and capacity to the predecessor. Interestingly, the stakeholders in the project also greatly valued the services of the predecessor over those of the replacement person and could not, at any stage, recall what the name of the local consultant was. Personal relationships are extremely important in Ethiopia.

Another important role was that of being a knowledge broker among the different actors, including: producers; processors; ministries; and research institutes. This concerned a wide variety of topics, such as: contract farming; production technology; characteristics of different soy varieties; and others based on the demand emerging from the different actors. The project provides the opportunity for discussions and capacity building around these topics. Wageningen UR LEI had the role of providing fundamental research products and services, which included identifying key stakeholders in the edible oil seed sector and evaluating business opportunities for soy and sunflower. Wageningen UR CDI has a key role in designing the innovation process for promoting learning.

## **Conclusion**

Government will remain the key actor for providing an enabling environment for change. However, it cannot take up the role of facilitator in innovation processes for several reasons, which includes: the reduced capacity and inefficiency to do so, role ambiguity, and a conflict of interests with regards to change. Local NGOs could take up the facilitator role, and many successfully do. However, NGOs often focus either on specific value chains or specific actors within a value chain. International organizations have a much bigger terrain to operate in but often they have very specific agendas set by international and not local demands. Such agendas may not fit in the local context and may conflict with the interests of local private sector. Their impartiality in the facilitation of innovation processes is suspect. Because of their impartiality, knowledge institutes can provide a good institutional arrangement for process facilitation and to develop partnership arrangements. Furthermore, through their linkages they can contribute to the coordination of a variety of projects that can be supported by objective research and evidence based learning, thereby increasing the efficiency and impact of such projects.

## **2.4 Case 4: ManiOK-CaÇAVA: action research for innovating cassava value chains and stakeholder collaboration in Rwanda**

*Ted Schrader*

### **Importance of the Rwandan cassava sector**

The current population of land-locked Rwanda is estimated at 11 million people and expected to double by 2050. During the same period, the number of people living in urban areas will increase from 20% to more than 50% of the total population. The relative importance of the agricultural population and of farming as an economic activity will thus decrease over time. The actual agricultural population will remain the same as it is today or grow slightly, meaning that the average size of holding will remain around 0.7 ha per household or decline further. Producing 2-3 times more on the same land area is therefore a key

challenge for the coming decades, as is the creation of agribusiness related and other off-farm employment.

In Rwanda, the most important food crops are beans, bananas, maize, cassava, Irish potatoes, sweet potatoes, soya, wheat, sorghum and rice. Cassava fields account for 10% of the total cultivated area. At any point in time, more than 700,000 agricultural households, with on average 5 family members, cultivate cassava. Cassava – known as a ‘poor man’s crop’ – requires less external inputs than other food crops and is relatively easy to cultivate. It is a crop of great importance for food security, in particular for the relatively dry and less fertile parts of the country. Cassava is also an important food staple for poor urban dwellers. The Rwandan capital of Kigali, which population doubled over the past decade, is a growing market for cassava flour (processed bitter varieties) and for fresh sweet cassava tubers. Provincial town markets, secondary schools, prisons, Eastern Congo and the Rwandese diaspora also offer increasingly important market opportunities.

Over the past two decades the cassava subsector underwent major changes. After a dramatic decline in 1994-95, production again reached the pre-genocide levels in 1999. It then further increased, reaching one million tonnes in 2002. As from 2003, the Cassava Mosaic Disease (CMD) ravaged the subsector, with a production decline of 25%. From 2006-08, farmers have massively replaced traditional cassava varieties with resistant ones. The yields of new resistant varieties prove to be much higher, with average production rising from 5-6 tonnes to 10-12 tonnes per hectare. This productivity improvement, coupled with an extension of the area cultivated with cassava, boosted production to 2 million tonnes in 2009-10. For a large number of farmers and many other economic actors (such as traders, processors, wholesalers, retailers, transporters, and exporting companies), cassava is increasingly important as a source of income. An estimated 20% of sweet cassava and 15% of bitter cassava is currently marketed. The monetary value of the Rwandan cassava sector, including home consumed sweet and bitter cassava, is estimated at 70 billion Rwandan Francs (87 million Euro) per year.

Although cassava production has significantly increased and value addition through processing and trade activities has become more important, there are many technical, commercial, organizational and institutional challenges. The government plays an active role in the transformation of the Rwandan agricultural sector. Specialisation, market-orientation, productivity improvement, promotion of cooperatives, rural roads and electrification, and development of post-harvest activities are some of the key words used when describing government roles. Although government programmes have played a decisive role in availing CMD resistant varieties, cassava receives less attention than other food crops like maize, wheat, potatoes and rice. The government-led construction of two large cassava processing factories is, however, a new development, which is likely to significantly affect the subsector.

The Rwandan government strongly promotes the formation and development of agricultural producer cooperatives. Dozens of cassava producer cooperatives have been created since the adoption of the national cooperative law and policy in 2006. Despite this, cassava farmers are still weakly organized, both in comparison to other agricultural subsectors and in relation to the total number of cassava farmers. With 15,000 members, INGABO is a relatively large farmers’ union. It operates in the Southern province, where cassava is an important crop. Although INGABO does not specifically concentrate on cassava, it has developed a relatively strong profile on the crop, mainly because of the massive production of cassava cuttings for the introduction of new resistant varieties. In fact, INGABO played a major role in addressing the CMD pandemic, serving farmers in the Mayaga region and beyond. The fight against the CMD pandemic and the profitable production of cassava cuttings was not only a turning point for the Rwandan cassava subsector, but also for INGABO. As a relatively young farmers’ organization, INGABO went through important formative years. Its operational performance enhanced the credibility of the organization and helped INGABO to position itself as an important player in the local agricultural development arena, both as an economic actor and as a partner in policy development and

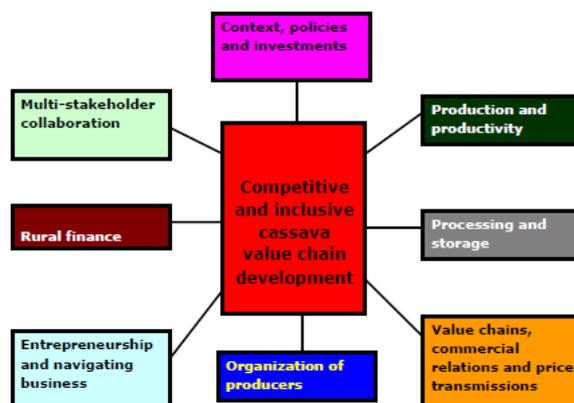
implementation. Outgrowing contracts significantly improved INGABO's financial position, strengthening organizational autonomy and self-determination.

### Origin, evolution and outlook of the action research programme

It is in this context that INGABO, informed about the possibility to partner in a Dutch-funded and CDI-managed action research programme, submitted a proposal through its development partner Agriterra. INGABO proposed action research activities that would help the organization to better position itself in the cassava sector. With increased surplus production and market opportunities, INGABO is most interested in opportunities for organized farmers to take up processing and marketing functions. First experiences with farmer-managed semi-industrial processing units triggered this interest. The WUR-DGIS 'Value chains for pro-poor development' action research programme, which is foremost interested in the identification of levers for making value chain development more inclusive, positively received the INGABO proposal.

In 2009, the INGABO farmers' union and the CDI started action research activities, mainly to reflect upon cassava processing and marketing challenges in the Mayaga production zone. At first, research focused on approaches and options for promoting farmer-inclusive cassava processing and marketing. The leading idea was that local processing units would not only offer value adding opportunities, but could also stimulate the professionalization of cassava production and enhance farmers' business relations with other operators in cassava value chains. The number of research subjects progressively diversified over time. The different components of the action research programme contribute to the following central question, *'What are the opportunities to improve the performance of the cassava sub-sector and make it more profitable for producers and their agribusiness partners?'* This question indicates a market systemic perspective and an entrepreneurial outlook, which characterize the action research activities.

During the action research process, the areas outlined in the figure on the right have been addressed. The diversity of subjects covered allows for a comprehensive view on levers that can make cassava value chains more competitive, sustainable and inclusive. Such a view appears to be necessary for proposing actions in different areas, which together contribute to a more resilient and innovative cassava sector. The action research on levers for making cassava value chains more competitive, sustainable and inclusive seeks to contribute to a cassava sector which observers qualify as 'OK' or for which they say: *'Vraiment ÇA VA'*. Hence the overall title of the action-research programme: *ManiOK-CaÇAVALA*.



### The action research process

Three features characterize the action research process : (i) Progressive contextualization, (ii) Networking and seizing of opportunities and (iii) Communication of action research results.

#### Progressive contextualization

Starting off with action research activities in the Mayaga region and concentrating on emerging farmer-managed cassava processing units, the number of research subjects progressively expanded over time. This process towards an increasingly comprehensive action-research programme was both purposive and circumstantial. Primary research results generated answers, but also many questions. With more insights

and challenges, the action research team progressively developed their theory of change with multiple issues that need to be addressed to develop competitive, sustainable and inclusive cassava value chains. This approach may be called 'progressive contextualization' (Vayda 1983) <sup>14</sup>.

#### Networking and seizing opportunities

The evolution of the research process was also the result of grasping opportunities for collaboration that arose. Networking in the context of Rwandan agricultural development dynamics and working with young professionals created opportunities to cover more subjects than initially foreseen, in a cost-effective manner. The expansion of the action research programme allowed for a better articulation of micro and macro level data and of both quantitative and qualitative data.

#### Communication of action research results: - a national multi-stakeholder workshop

Over time, the combination of all research subjects led to an important set of empirical (quantitative and qualitative) data, databases, research reports and articles. Reports and articles are all presented in a ManiOK-CaÇAVA format and structured according to the eight action research domains (outlined in the figure above). As from early 2011, the research group, essentially composed of CDI, INGABO and the Higher Institute of Agriculture and Livestock (ISAE), approached the Rwandan Agricultural Board (RAB) to present research results and discuss the organization of a strategic workshop. RAB is a key actor in the implementation of national agricultural policies and programmes. Integrates, among others, the former ISAR agricultural research institute, the Rwandan Agricultural Development Agency (RADA) and the national seed service.

The objectives of the workshop are to formulate strategic resolutions for the Rwandan cassava sector, to define priority actions for the coming years (2012-2015) and to innovate and improve stakeholder collaboration for cassava value chain development. The workshop organizers will invite all actors, who, in one way or another, play a role in the development of the Rwandan cassava sector.

Under the coordination of RAB, organization is in the hands of the national cassava steering committee. As a result, relations between organizations intervening in the cassava sector (GLCI, CRS, FAO, Caritas, ISAR, Imbaraga, National CC Federation, RCA, and others) have been improved. One of the outcomes of the workshop organization may be an improved functioning of the national cassava steering committee.

#### **Important roles for organizations in the action research process**

CDI, as an international knowledge institute, explicitly seeks to collaborate with national research centres, government institutions and farmers' organizations, for three reasons:; transferring action research competencies; making action research results as relevant as possible; and ensuring the sharing and uptake of action research findings.

As a farmers' union providing services to members and representing farmers interests in the policy arena, INGABO is convinced that action research competencies are necessary for systematic member consultation, evidence-based policy development, increased credibility, and well-founded proposals for change (lobby and advocacy).

As a national higher institute for Agriculture and Livestock training and research, ISAE is interested in international links for education and research collaboration, both for the innovation of curricula and

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<sup>14</sup> Vayda, 1983. Progressive contextualization: methods for research in human ecology. In: Human Ecology 11 (3): 265-281

research methodology and for opportunities for student field assignments. The work with and for cassava cooperatives enhances the public service and development profile of the Institute.

The Rwanda Agricultural Board (RAB) is responsible for the practical implementation of national agricultural policies, in collaboration with local authorities at district and sector level. It has the capacity to mobilize all cassava sector stakeholders and to establish links to the Ministry of Agriculture and Animal Resources (MINAGRI). To improve operational performance, RAB is interested in innovation-related questions.

In addition to the institutional collaboration that was established, the collaboration with young professionals was very important and allowed realization of more studies and data collection than originally foreseen. Although attribution is a problem, several young professionals got jobs and other assignments after their involvement in the action research programme.

An interesting feature of the action research programme was also the attention of network organizations. In collaboration with Agri-Profocus (APF), IFDC, BAIR and INGABO, a lot of work has been done at the level of (informal) local agribusiness clusters. In collaboration with EKN, SNV, BAIR and INGABO, a study was done on the functioning and perspectives of Joint Action Development Forums. The Agri-Profocus initiated 'Agri-hub' also falls under the category of network organizations. It is at this level that issues like 'unleashing farmer entrepreneurship', 'navigating business' and the role of facilitators as agribusiness coaches were discussed. The agri-hub could scale the action-research experiences and results to other sub sectors. The national cassava steering committee is also a network organization. It could become the national innovation platform for the subsector.

### **The roles played by knowledge institutes**

CDI was the overall coordinator of the action research process and was involved in most research subjects. ISAE was responsible for a large survey among cassava producers and their organizations, whilst ISAR reflected on its role in the fight against CMD and upcoming challenges regarding cassava variety research and seed multiplication. Young professionals played a remarkably important research implementation role. The table below provides more detailed information on the roles and services of knowledge institutes:

<b>Services</b>	<b>Observations</b>
Interdisciplinary research perspective	The interdisciplinary nature of the action research programme resides in the combination of technical, organisational, commercial and institutional subjects. Bringing this together has been an important service (theory of change with different areas of action and levers for making value chains more competitive and inclusive).
Action research services	In actual practice, this was by far the most important service: defining and focussing research questions, preparation of methodologies and tools, review of drafts (questionnaires, databases, articles), write-shop facilitation, supervision and coaching of students and young professionals.
Knowledge brokering	Knowledge institutes can proactively bring in new information about new approaches, business models, research methodologies and tools. In the ManiOK-CaÇAVA action research programme, the following new elements were brought in: the RISE framework (rural innovation systems and entrepreneurship); the agribusiness cluster development approach; navigating business and competitive intelligence as important capacities for local entrepreneurs (including farmer cooperatives); and warehouse receipt system as an option for value chain financing. In regard to research methods, the following can be mentioned: a self-assessment tool for farmers' organizations; farmer life histories; value chain analysis; with emphasis on commercial relations and price transmissions along value chains.

Multi-stakeholder process facilitation	The organisation and facilitation of the debriefing workshop for all cooperatives involved in the ISAE survey and the upcoming national cassava workshop can be specifically mentioned. An indirect effect of the action research programme was bringing together a large number of actors under the banner of the ManiOK-CaÇAVA action research programme and the role of RAB and the national cassava steering committee in the organization of the upcoming national multi-stakeholder workshop.
Capacity development services	At individual level, capacity development was done through coaching of specific trajectories: collaboration with and coaching of all researchers involved, of whom quite a number were not yet very experienced (young professionals). This was done through many bilateral meetings, review of draft articles and also through write-shops during which articles were drafted. ISAE lecturers and local supervisors played an important role in the coaching of ISAE students. At organisational level, capacity development services were provided to INGABO (action research and lobby capacity) and ISAE (research protocol development for student research and facilitation of debriefing workshop for cooperatives). In the context of the APF initiated agri-hubs, training of agribusiness coaches and coaching of agribusiness clusters were among the services provided by CDI.
Networking and information sharing	The action research team (CDI, INGABO and ISAE) pro-actively approached RAB to inform this key institution on the action research results and for organizing the national multi-stakeholder workshop. Participants of the workshop will receive all studies and databases in electronic format (USBs). For facilitating this workshop, briefs on the major findings, levers, options and questions will be written for each of the eight action research areas. This will be further summarized in an overview of the key issues, levers and options for the Rwandan cassava sector. All information will also be made available on the Agri-hub NING and on the RAB or MINAGRI websites. Packaging the action research programme as 'ManiOK-CaÇAVA' proved to be important for communication purposes.
Strategic policy guidance	The key objectives of the national 'ManiOK-CaÇAVA' workshop are to formulate strategic resolutions for the Rwandan cassava subsector, to define priority actions for the coming years (2012-2015) and to innovate and improve stakeholder collaboration for cassava value chain development.

## Major lessons learned

The 'ManiOK-CaÇAVA' action research process has induced many important lessons, which may be summarized as follows:

- The action research programme had its origin within research questions of the INGABO farmers' union. Throughout the process, INGABO has been involved and informed and INGABO staff have participated in research activities. A lot of attention was paid to farmers' views, ambitions, experiences and outlook for cassava cooperatives. This model shows that knowledge institutes can partner with farmers' organizations, especially those organizations that have the mission and mandate to represent farmers' interests and participate in policy development.
- The key players in the action research programme explicitly recognized their complementary roles. They indicated that they can better perform their specific roles and functions in collaboration with others.
- Faced with more challenges but greater insights, the action research team progressively developed their theory of change, incorporating different yet complementary fields of action for developing competitive, sustainable and inclusive cassava value chains. This approach is potentially interesting for other innovation-oriented subsector and value chain development programmes. Knowledge

institutes can play an important role in keeping the focus and overview, through the formulation of practical frameworks and operational theories of change.

- Young professionals played a remarkably important research implementation role. Being very eager to learn and work, they learned and contributed a lot. This new generation may be at the forefront of a transition towards more entrepreneurial approaches to agricultural development. This innovation, which departs from the typical habits created by donor-funded development projects, seems to be crucial for the future of African farmers and food security on the continent.
- In addition, staff members of different organizations proved eager to capitalize on their experiences and knowledge by writing research articles. This potential could have been harnessed earlier and better if the action research programme had been communicated earlier and better, to a broader group of stakeholders. Strategic networking for communication and uptake of action research results is therefore of great importance. When action research is explicitly conceived for suggesting development interventions or even for formulating a development programme, the perspectives for uptake of action research results are likely to be more easily defined.
- Knowledge institutes can play a catalytic role in agricultural development and innovation. Their specific and critical roles are, among others, the pro-active identification of possible innovations, a comprehensive view on value chain and market system development (theory of change), methodological competence and coaching, training and capacity development, facilitation of the capitalization of experiences of development professionals (for instance through write-shops) and the promotion of information sharing mechanisms. Structural involvement of knowledge institutes in development programs may lead to more knowledge intensive accompaniment of development efforts. It may contribute to the reduction of dependency on fund transfers and support the transition from traditional development projects to agricultural entrepreneurship promotion.

## **2.5 Case 5: The ecosystem approach for sustainable small scale fisheries management on the west coast of South Africa**

*Petra Spliethoff*

A pilot project along the West coast of South Africa (SA) studied options for an innovative and participatory approach for the management of the small scale fisheries system. Fishers' understanding of the marine ecosystem and analysis of the economic viability of their fishing activities were taken as an entry point for the development of an ecosystem-based fisheries production chain.

For a long time, fisheries in South African waters were considered to be an 'open access' natural resource without ownership or property rights. With the expansion of fisheries activities, the introduction of new fishing technologies and increased engine capacity, overfishing has become an issue of concern. In the latter decade of the last century, the SA government decided that in order to keep the fish stocks at a sustainable production level (and the fishing industry alive), access to fishing had to be restricted by means of quota, permits, fishing licenses, and marine protected areas.

Current SA fisheries policy is based on the monitoring of high value stocks and concomitant restricted access to marine resources. Long term quota have largely been allocated to the industrial fleet and its processing and distribution plants, at the costs of fishing rights and market access by the traditional fishers. A policy for the small scale fishing system is still lacking. As a consequence, the living conditions

of traditional fishers are breaking down. For the time being, an ‘interim relief’ policy is in force, which gives the small scale fishers the right to catch a limited amount of various species.

So far the ecological impact of the restricted access and adoption of quota for the small scale fisheries system has remained rather theoretical. Moreover, decision support tools used by fisheries managers usually ignore the social and economic dimensions of fishing activities and do not allow the testing of assumptions about key behavioural responses of the fishers and how these translate into modified patterns of fishing effort. Improved understanding of the fishers’ responses will strengthen the assessment of alternative management strategies in terms of their capacity to achieve both sustainable economic wealth from fisheries and conservation of marine biodiversity.

In agri-food chains, supply and demand of foods and goods is mostly governed by open market processes. Fisheries however are a form of speculative ‘hunting’, in which production levels cannot easily be adjusted to the changing market demand. In fisheries, adherence to principles of ecological sustainable fishing is imperative for the survival of the sector, while its economic performance largely depends on adjustable agreements and distinct communication lines to buffer negative effects of fluctuations in supply and price. In other words: ‘fishing for the market’ warrants a more ‘all-inclusive’ approach.

Hence a key scientific challenge is to develop marine ecological-economic management systems, that explicitly pay attention to the impact of access regulation regimes on market development, their influence on harvesting decisions taken by the fishers, and the ensuing impact on marine biodiversity. This project was meant to study the scope for ecosystem based fisheries management approaches for the small scale fisheries system and within this context, explore options and trade-offs between fisheries economics, market demand and the marine environment. This is to achieve a better managed small scale fishing system that takes into account environmental as well as economic factors that impact them.

### **Introducing an ecosystem approach to fisheries management**

The basic question for the project was: *‘How can the living conditions of traditional fishers and all involved in local fish trade be improved in such a way that the livelihood of the fishing communities and the production from the marine environment in their fishing area are secured?’*

The introduction of an ecosystem approach in fisheries management, in combination with the development of a viable fish marketing chain, has proven to offer opportunities to initiate improvements in the product mix and marketing practices. It can lead to substantial increases in revenue for fishing communities. Key features of the ecosystem approach to fisheries is that fisheries management necessarily relies heavily on:

- a) Market based management mechanisms (the economic aspects of fishing);
- b) Monitoring of the conditions of stocks to enable the fishing sector to adjust to the fluctuations in the ‘resource rent’ (the ecological aspects);
- c) Instruments to enable the fishing industry to anticipate and respond to price fluctuations in the market (the institutional aspects).

Traditionally there has been an emphasis or even a bias towards managing fisheries with technical instruments (gear controls, licensing quota systems, marine protected areas, closed seasons, etc.). To be effective, the ecosystem approach to fisheries requires that the knowledge and experience of stakeholders are taken into account and that stakeholders are informed about facts and values of management measures and their expected impacts. In addition, sharing of information is considered

essential to develop and implement appropriate management approaches and to build up the institutional memory to fall back upon.

### **The economics of fishing**

Most artisanal fishers do not have a clear idea about the costs and profits of their fishing activities. They just consider the fishing at sea as their core activity and tend not to take part in the marketing of their catch. They normally sell fish at the landing site to middlemen or to a processing factory.

The actual income from the fish catch of the day depends on many factors. First, the fishers have to cover a number of costs for each fishing trip, for bait, fuel, and food etc. The income of the day largely depends on the presence of middle(wo)men who purchase fish for a price based on the quantity and composition of the catch and the price that hawkers insist upon. The balance (costs/benefits for the fishers) has to be accepted by the fisher and will not influence fishing activities for the next day. In this context it is important to note that fishers often have few alternative sources of employment and little to no bargaining power. Their usual response when prices fall or resources become depleted is to increase effort. It is true that overfishing, which destroys the marine resource base, is a source of poverty, but it is also true that poverty induces people to overfish. Thus one of the strategies to achieve a reduction of poverty is to help fishers to organize and empower themselves.

Through the collection, analysis and discussions about the costs involved in fishing and the effectiveness of these costs (inputs and outputs), the project aimed to increase the understanding of the fishers about the economic viability of their fishing enterprises. Fishers also had to become aware of the complexity of production-supply processes, understand how to recognize and anticipate uncertainties arising in the supply chain, and be made conscious when to apply precautionary approaches, the very basis of co-management of fisheries.

### **The ecological aspects**

For generations, people living along the west coast of SA have made their living from the sea. Fishers know the resources best, as they spend most of their lives at sea. They can become outstanding counterparts in fisheries research and governance of the marine resources. On the other hand, social, economic and political realities of the use of marine resources clearly demonstrate that fishing is no longer the fishermen's business alone, but is part of the general preoccupation of the society.

Awareness is growing that the health of marine ecosystems and the Total Allowable Catch (TAC) cannot be valued by assessing target stocks only, as is currently the case in SA. Every species and every stock of fish impacts on others and is impacted upon by others. This reality calls for new management approaches that take the ecological assets into consideration along with the social and economic consequences. It requires an ability of government and society to regulate market demand, not only the use of the resources.

The ecosystem approach involves all stakeholders in the fisheries sector and values all forms of information, opinions, scientific studies, indigenous and local knowledge, culture and traditions, innovations and practices. By creating awareness of the relative value, the biotic and abiotic factors, the functioning and the vulnerability of the ecosystem, and by acknowledging the wisdom and expertise of local fishers, it was assumed that the following issues could be addressed:

- capacity needs for assessing and monitoring coastal fish stocks
- willingness of fishers to comply with proposed management measures
- communication and cooperation between fishers, scientists and policy makers.

## Institutional aspects

As a consequence of liberalisation of the fish trade, the influence of public actors is decreasing, while the role of the market and the civil society is growing. Institutional structures are needed to provide the means for guiding and directing the process of fisheries management, problem solving, and opportunity creation.

Many problems and opportunities in the supply chain require commitments of a broad set of actors and approaches. The idea of the project was that if the interests and capacities of the various stakeholders in the chain could be harnessed and guided, actors would be inclined and willing to remove obstacles and create opportunities for the development of a sustainable value chain.

In small scale fisheries systems there often is a lack of information and knowledge on the functioning of the fish supply chains. This seriously impedes good governance and management. Information for actors and decision makers is limited and often biased. This makes it difficult for them to deal with the complexity of the system and to come up with solid plans and schemes. Especially among the bigger fish industries, there is a tendency to address complicated matters with simplifications. Problem definitions are too simple, policies and institutions too static and consumers too widespread to design and enforce an effective and fair trade governing system.

The project had a strong focus on the development of a participatory knowledge base and emphasised the need for the collection and codification of knowledge, data bases, access and distribution systems. The main aim was to increase the cognizance of participating actors and to empower them to participate in the development of a sustainable value chain. It is expected that the knowledge base will continue to play an important role in increased availability of information to those who previously had little access.

## Characterizing stakeholder involvement in the small scale fisheries industry

The table below describes some of the values, viewpoints and roles of the different stakeholders in the small scale fisheries industry of the west coast SA.

Key Stakeholders	Description
Fishers	'The fish producers', who think they have a historical right to utilise marine resources and feel victims of the current politics, fisheries biologists and the industrial fishing sector
Conservationists	Who believe that the coastal marine resources are vulnerable ecosystems, which need to be protected from fishing
Small private sector	Fish mongers, processors, traders, retailers and ancillary service suppliers, whose livelihood depends on the small scale fisheries sector
Policymakers	Who have to address the concerns and interests of the society as well as the different groups of fishers, competing for the same fish stocks; They have to navigate between various public authorities and private companies trying to meet multiple policy objectives
Industrial fishing sector	Which has made large investments and want to make profits; They feel overregulated by the government and even have recruited biologists to prove the eco-friendliness of their fishing activities
Scientists	Who are asked to provide advice on options for TAC and Individual Transferable Quotas (ITQ's) based on the best available assessments and scientific evidence.

## **The role of knowledge institutes in the ecosystem approach to innovating the sector**

Implementation of an ecosystem based approach that recognizes the indigenous knowledge and expertise of small scale fishers , restores their historical fishing rights to near shore resources, and secures their access to the fish supply chain, is a long process. Moreover, this process needs a conducive political framework for joint management, with state fisheries managers and scientists to accommodate the small scale fisheries in relation to other systems in the broader fisheries sector. Moreover, enabling policies must be explicit with respect to the underlying principles of market based management and should provide a platform from which the stakeholders can discuss and decide on these principles with the assurance that they are supported at higher levels. It goes without saying that in view of the context pictured above, the facilitator of such a process should be an impartial guide with the knowledge and skills to select and apply methodology that will be most appropriate for the situation.

CDI as coordinating knowledge institute carried out desktop studies, discussions with a range of scientists and students working in and with the fishing communities, and organized informative meetings with policy makers and entrepreneurs to communicate and discuss concepts, ideas and options for innovation. Two project counterparts were invited to visit the Netherlands to become acquainted with the functioning and organisation of the Dutch fisheries sector and to explore possibilities for partnership, investment and cooperation. Workshops were held, meetings and field visits were organised in SA to discuss problems and issues. Plenary gatherings were organised to explain the ecosystem approach and the need for improved landing, processing and marketing, as well as options to improve the viability of the fishing activities. Based on the outcome of these exercises a start has been made with the development of a pilot value chain for one of the coastal species that are not under the quota regime.

Stakeholders, even if they are not formally involved in fisheries management, influence and impact on processes and the functioning of the supply chain, They often are considered a nuisance. On the other hand, the interactive perspective of corporate interests throughout the chain urges fishers, hawkers, retailers and traders to collaborate in order to benefit from the overall functioning and viability of the sector. During interviews and meetings, attention was paid to use a language and an approach acceptable for the fisher folk as terms like holistic approaches, realization of livelihood rights, or the integrity of ecosystems are not easily understood without sufficient explanation.

## **Conclusions**

The complexity of the ecosystem approach in fisheries management not only relates to technical, social , economic and cultural aspects of fishing but has to be seen in relation to the multiple linkages that occur within the chain and between fishery and non-fishery activities. Long term maintenance of ecosystem health may be in conflict with short term interests of a number of stakeholders, as people are more concerned about jobs and income to feed their families and are unwilling to defer their present needs for the future.

Development towards improved fisheries governance will have to include institutional and organisational changes that are guided by iterative and adaptive processes and market driven incentives. It was realised that a learning approach was needed. To this end the following guiding principles were adopted to promote effectiveness, legitimacy and moral responsibility and accountability of the stakeholders:

- The diversity and multiplicity of stakeholders offer the opportunity to increase knowledge and experience with respect to sustainable production of the ecosystem and the socio-economics of the supply chain.
- Stakeholder analysis will reveal where the current system is deficient, leading to a plan for addressing these deficiencies, e.g. through capacity enhancement.

- The diversity and multiplicity of stakeholders working together will bring about ideas and solutions with a higher probability of generating innovations, and will provide a better way to deal with the diverse, complex and dynamic nature of fish value chains.
- Involving stakeholders in governance of the ecosystem and supply risk management ensures better problem analysis and intervention definition and hence a better understanding on the functioning and future of the chain.
- Legitimacy of decisions is enhanced and may mean reduction of costs of enforcement and compliance, which are usually the most expensive cost aspects of fisheries management.
- Recognizing and exercising the right of stakeholders to be heard and have their say, and to influence processes that address problems and opportunities, creates ownership for and a greater acceptance of solutions.

The main role of the knowledge institute was to provide the theoretical framework and to clarify the principles, processes and perspectives of a market based management approach. The most effective role proved to be the role as knowledge broker: the innovation process had to be based and built on the knowledge of the stakeholders on market based management and scope for modification of the (knowledge related) future perspectives. In this context the role of the knowledge institute is rather the mobilisation of knowledge and then to use that knowledge effectively for the development of a framework for market based management.



### 3 Discussion and conclusions

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Despite different contexts, development challenges, objectives and innovation processes, two distinct roles for knowledge institutes were emphasized throughout the above case studies. These roles are the role of being a facilitator in the process involving multiple stakeholders and the role of brokering knowledge. The selection of case studies included those in which Wageningen UR coordinates or participates, with the exception of the dairy sector in Ethiopia case. Wageningen UR intuitively emphasizes the roles of process facilitation and knowledge brokering. Despite this bias, it is emergent from the contexts described above, that weak coordination, collaboration and communication among stakeholders has led to bottlenecks in the various systems or an ineffective multiplication of efforts and inefficient use of resources. Despite prior development efforts in some cases, certain problems persist, which are correspondingly complex. Often such complexity can only be addressed by systemic approaches. It is also revealed in the case studies that a market oriented approach to innovation is common. To adequately engage in such an approach requires a systemic way of thinking

In the above case studies, the concept for change and more importantly innovation, has not been brought about spontaneously. In these cases facilitation played an important role. Bringing together the operators in the value chain/system/subsector (such as the producers, processors and marketers of agricultural and fisheries products), the supporters (such as NGOs and knowledge institutes) and the enablers (government agencies) to jointly discuss, define, and provide solutions to the problems was critical for two reasons. The first being that it greatly increases the validity of the value chain/system/subsector assessment. Secondly, it contributes to a powerful sense of ownership of the innovation process among key role players. This significantly improves the chance that these stakeholders will commit to change.

The concepts of facilitating and brokering roles for knowledge institutes may seem to imply a cumbersome and time consuming process. However, transparency and clarity about the interests of various stakeholders and protection against political pressures are core features of a successful innovation process. Such an innovation process requires dialogue between domains (science/society/policy) for proactive decision making. It also warrants capacity to advocate for decisions and change in general. Such an approach should be demand driven. It requires a patient and iterative process for facilitating a series of incremental changes to a system/sector. This may require restructuring of institutions.

Changes in the way that things are done will require new competencies and capacities of actors. Knowledge institutes will continue to play a fundamental role in capacity development through education, research, and the development of knowledge and technologies. However, knowledge and technologies have to be delivered in a way that is conducive to the social, economic, political and natural environment, which are the domains for key factors in successful uptake of such knowledge and technologies. Training and coaching are important capacity development tasks for knowledge institutes as well, and this should remain a significant focus of the services they offer. Furthermore, being able to objectively assess the capacity needs of a system/sector, likewise to objectively assessing the key challenges and focal points for development in that system/sector, is a role that knowledge institutes are well suited for.

This study of five cases has been a limited exploration. Perspectives will need to be broadened by looking at different innovation settings, different players, different sectors, and different countries. It will need to focus on bringing in private sector perspectives on (potentially) effective roles of knowledge institutes. Still, within the capacity of this study, already a number of recommendations for enhancing the effectiveness of the role of knowledge institutes in the context of food related innovation systems can be made:

1. Knowledge institutes need to be ready to play flexible roles in innovation processes. Depending on the specifics of an innovation process, they may need to supply new knowledge, link potential partners in a value chain, system or subsector, to each other and to policy makers, illuminating local farmer realities for observers at higher levels. Connecting to existing knowledge and ensuring local ownership of the innovation process may sometimes be more important than bringing in new knowledge. To strengthen such readiness, knowledge institutes have to invest in internal capacity development for delivering these services, both at the organisational level and at the level of individual competencies.
2. There is great potential for African knowledge institutes to play a significant role in food related innovation processes. The reality in Africa is that value chain (system/sector) operators, such as producers, processors and marketers, are often far less organized than their Northern counterparts. This reduces their capacity to lobby for change, mobilize resources, or improve their competitive positioning in the market. The capacity for facilitating the organization, market orientation, autonomy, and advocacy of these operators usually resides in non-governmental and international organizations. This has obvious implications for the sustainability of innovation systems in countries that cannot satisfy the demand for such professionals locally. This potential should be harnessed through appropriate support to capacity development. Dutch knowledge institutes, with their experience in playing flexible roles in innovation processes, can support such local capacity development. The presence of facilitation and knowledge brokering capacity outside the public system also implies that the prevailing innovation system needs to be flexible enough to utilize these capacities from the private and civil sectors.
3. The public and private sectors are characteristically different. Communication between the two is often met with scepticism, due to preconceived ideas of the norms and values of the respective parties. Often it may be difficult to see complementarities in each other's vision and approaches without a broker to facilitate the required dialogue. Many times it is challenging to match the socially focused development agenda of the public sector with the business objectives of the private sector. Finding a shared interest requires the willingness of both parties to compromise. But ultimately, change has to be demand driven. Effective facilitation in this process requires not only a good understanding of the system or sector challenges, but also the opportunities for business that arise out of adversity. Knowledge institutes have to challenge themselves to think creatively and out-of-the-box when engaging the private sector. A business-minded approach is necessary for revealing incentives that are attractive to a critical mass of stakeholders to bring about demand for change.
4. As revealed in at least three of the above case studies (on the seed sector, the soy subsector, and the small scale fisheries system), key to the success of formulating partnerships between public and private actors were the individual competencies of specific facilitators in the process. Such individuals were emphasized in all three case studies for having unique skills for brokering partnerships among characteristically different stakeholders. Such competencies include: good communication, mediation and contextualization skills; a good understanding of the key issues in that context; a positive and energetic attitude for motivating others; the ability to think strategically; in some cases, maybe a commercial or business related background is beneficial; and of course extensive and strategic personal and interpersonal networks that are valuable for making linkages to resourceful parties. Such skills are difficult to reproduce but form potentially key criteria when assessing the capacity needs of organizations that can play the facilitation role. Often the strength of an institution is based on the skills of its individuals.
5. Traditionally, knowledge institutes are expected to "bring in" knowledge, a view inspired by the prevailing paradigm of knowledge dissemination. As co-innovation is becoming more of an

accepted new paradigm for (agricultural) development, knowledge institutes will need to position their roles differently and more flexibly. Donors could more effectively support innovation processes for bringing about meaningful and sustainable change in developing countries if they are willing to acknowledge this new paradigm and the diversified roles of the representatives of knowledge institutes. This does, however, present the challenge of balancing donor driven results-based programming with more flexible modes of support to innovation, to allow for greater process orientation.

The Dutch 'gouden driehoek' refers to successful partnership in agricultural development between government, sector and knowledge institutes. This has been key in securing food & nutrition in the Netherlands. Could this model be applied to African conditions and be the basis for similar success in relation to food & nutrition security? This report is part of the documentation of an exploration in relation to this question. It documents five examples of effective roles of knowledge institutes in the context of agriculture and fisheries innovation in Africa. It shows a variety of roles played that are not necessarily directly related to knowledge (brokering). What made knowledge institutes be instrumental in effective innovation processes, seemed to have a lot to do with an ability to play flexible roles that were informed by strategic thinking: what is appropriate in this context at this moment for these stakeholders. Strengthening capacities of African knowledge institutes for playing flexible roles more effectively in innovation partnerships, will be an important contribution to improving conditions that shape the state of food & nutrition security in Africa.

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