

**Key messages**

- The Dutch 'gouden driehoek' success points to the importance of making partnerships work for innovation and development. The African situation puts specific demands on the configuration of partnerships. The differences and implications for policy making need to be further explored.
- 'Noblesse oblige': Dutch ('gouden driehoek') success in securing food & nutrition in the Netherlands presents opportunities and responsibilities for contributing to the improvement of food & nutrition security in other parts of the world.
- Food & nutrition security in Africa involves much more than increased food production. Threats to food & nutrition security are expected to build up over the next years and decades. The related complexity of issues requires working on many interconnected fronts without treating them as isolated islands of success.
- In Africa, food & nutrition insecurity often does not correlate to a lack of available scientific knowledge per se, as much as it relates to the socio-cultural and institutional context for connecting the right knowledge to the right people under the right circumstances. Hence there is a need for strengthening the ability to make knowledge work in context.
- Public-private partnerships are part of a wider 'innovation system' involving many interactive roles to be played by a range of actors. Improving this 'role play' (e.g. through support to capacity development) should distinguish between respective contributions that Dutch and African representatives of each type of actor can make (government, private sector, civil society, knowledge institutes etc.).

This policy paper summarises findings of an exploratory study<sup>1</sup> of the role of knowledge institutes in public-private partnerships for the improvement of food & nutrition security in Africa. The study supports policy-making by defining what is involved in effective roles of knowledge institutes in related (agricultural) innovation processes. It is critical to understand the bigger picture in which such roles need to be defined. This brief presents the key concepts followed by the main topics of concern, namely innovation, partnerships and how knowledge institutes may strengthen the way in which they play a role in working toward food & nutrition security in Africa.

**Food & nutrition security as outcome of food system performance**

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. The domain in which food & nutrition security is shaped is called the food system. It relates to all interrelated actors and factors that shape how food is produced, traded, processed, sold through retail to consumers and consumed. This entails economic, cultural, environmental, social, legal, and political aspects. Supply chains can be seen as subsets of agriculture and food (A&F) systems. Supply chains are usually organised around a

particular commodity, which is then analysed from 'farm to fork'. 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. Complex dynamics involved in achieving food & nutrition security ask for appropriate governance in terms of food system performance as well as governance of related innovation processes. Such governance is charged with reconciling demands of economic viability, environmental integrity and social equity & cultural appropriateness requires working from a highly integrative perspective (people-planet-profit).

**Box 1: Food & nutrition security**

The concept of food & nutrition security contains two central components: food security and nutrition security. **Food security** describes people being secure of enough food in terms of calorie intake. **Nutrition security** highlights the importance of a balanced diet where intake of protein and vitamins/minerals may determine food-related health. Good nutrition is an increasingly recognized issue in health security which not only concerns malnutrition, but also obesity, making it a shared North-South concern. The 'security' part of the food & nutrition security concept requires a certain level of required **stability**, which is directly related to the **resilience** of agriculture and food systems.

This goes against the tendency to look for ‘silver bullets’ in trying to improve food & nutrition security, be it in technology, markets, or something else.

Innovation governance involves connecting innovation across dimensions, levels and sectors. This not only relates to regulation, but very much to the creation of an enabling context for the optimal performance of the food system. This enabling context also concerns the facilitation of collaborative innovation processes in connection with food systems, to which we will return later in this brief.

## Innovation through public-private partnership

This study was partly inspired by the documentation of successful Dutch partnerships between government, private sector and knowledge institutes, called the “gouden driehoek”. This so-called golden triangle has been instrumental in Dutch advances in agriculture, livestock production and horticulture and has brought prosperity and food & nutrition security to the Dutch. Notwithstanding the success of this model, questions can be raised as to whether all that glitters in this triangular partnership is gold. The kind of A&F system that emerged has also brought damage in the form of environmental degradation, and is heavily dependent on foreign natural resources such as imported animal feed. The associated ecological footprint is unlikely to be affordable or desirable to most African countries.

The Dutch ‘gouden driehoek’ partnership relates to a governance setting that is rather different from what we encounter in Africa. The so-called ‘polder model’ of egalitarian relationships, the particular institutional arrangements (based on democracy, solidarity and integrity), and the well-organised farmer associations are among the conditions that are usually quite different in Africa. Also, the governance perspective of three key partners in the ‘gouden driehoek’ needs to be broadened if we want to understand what and who shape A&F systems in Africa and who needs to be involved in making progress in food & nutrition security issues. Even in the ‘gouden driehoek’ the role of civil society such as producer organisations is taken for granted. Civil society organisations play a key role in agricultural innovation in Africa as well. The ‘innovation system’ perspective provides a basis for a broader understanding of who needs to play what interactive role in enhancing food & nutrition security in Africa.

In looking for ways forward, the innovation system perspective helps identify who needs to be on board in collaborative innovation processes aimed at realising universal food & nutrition security.

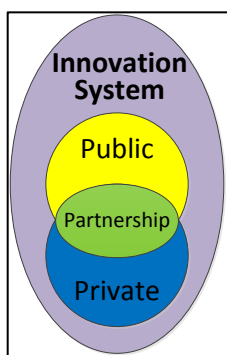


Figure 1: PPPs: part of wider innovation systems

### Box 2: Innovation Systems refer to:

“(Networks of) Organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behaviour and performance. The innovation systems concept embraces not only the science suppliers but the totality and interaction of actors involved in innovation. It extends beyond the creation of knowledge to encompass the factors affecting demand for and use of knowledge in novel and useful ways.” (Rajalahti, Janssen & Pehu, 2008). Innovation systems can be identified at different levels, and in relation to different domains (e.g. environment, agriculture, health). Due to the complexity of issues involved, food & nutrition security requires (actors at) different levels and domains of innovation systems to work in unison. This requires different forms of ‘orchestration’.

As with A&F systems, innovation systems are not actual entities, but socially-constructed perspectives. Such perspectives help to reveal patterns of connectedness, causality, and coherence, leading to new insights into opportunities for improving food & nutrition security. Innovation systems are about innovation processes, and innovation processes are about actors and public-private partnerships. The question of ‘how innovation happens’ is at the heart of innovation systems-thinking. Some identify particular factors such as markets as what makes innovation happen. Others identify particular actors such as companies who allegedly make innovation happen. We would argue that what makes innovation happen is context-specific. Innovation occurs in different dimensions and at different levels and scales. What makes the difference will be different in the context of product innovation and in sector innovation. Furthermore, we think that innovation involves a dynamic of interactive roles very much along the same lines of what makes teams function well. It depends on collaborative effort. Appropriate capacities and conditions for innovating collaboratively should not be assumed, but pro-actively strengthened. This requires matching forms of (innovation) governance in Africa as well as more informal facilitation innovation partnership processes.

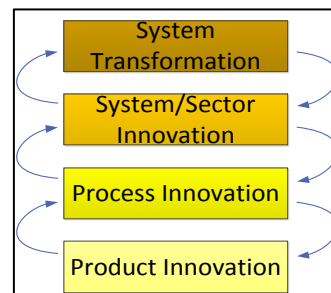


Figure 2: Linking innovation across levels & scales asks for innovation governance and facilitation

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## Partnership for development

Public and private actors are not always an easy combination. The public sector mind-set tends to be perceived as rather different from the private sector mind-set. One apparent reason is that traditionally the first has tended to focus on public goods and the latter on private goods. Conflicts may therefore occur as to what should take pre-eminence: economic viability, social equity or environmental integrity. Studies of public-private partnership show that partners often start off from incorrect assumptions as to what will make the

partnership successful. Box 3 points to a number of associated ‘myths’ and realities. Many public-private partnerships work along the lines of rather technical issues, such as pest-resistant crops.

The challenge is to develop partnerships along the lines of bigger and more strategic challenges, such as addressing the effects of climate change or any of the bigger challenges to agriculture and food systems.

**Box 3: Selected myths and realities in (public-private) partnership (Tennyson et al. 2008)**

<i>Endearing Myths</i>	<i>Enduring Truths</i>
Partnerships are shaped around a common vision.	Partners see the partnership activities as delivering their individual organisational aims.
Partnership organisations are drawn together by a common goal	Partnership organisations are drawn together by the complementarity of what they will bring to the table.
Wider benefits occur when the partnership reaches scale or is replicated	Wider benefits occur when all those involved take the lessons and outputs from the partnership and apply them in their own spheres of operation and influence.

The importance in innovation partnerships to interlink players and help them interact more effectively has been highlighted in many studies (e.g. Kilelu et al., 2011 and Klerkx and Leeuwis, 2009). This role is referred to as **innovation (inter)mediation or innovation brokering**. In the context of this study it is important to note that these studies argue for a need to go beyond knowledge brokering which relates to the inclusion of more process facilitating kind of roles. Making public-private partnerships work for food & nutrition security will involve a strategic commissioning of services of innovation brokers who can play flexible roles and by so doing can help take public-private partnerships to a next level (box 9). Internally (e.g. within private sector and within knowledge institutes) such roles are required, but we would emphasize the need for facilitating collaborative innovation. This role could be played by individuals from any of the key players the the ‘golden pyramid. However, knowledge institutes are particularly well suited to provide those services.

**The role of 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. The first association that people have regarding the work of knowledge institutes relates to the role of science and technology. Science & technology has won its spurs in many cases of innovation for development, particularly at the level of product and process innovation. Under increasingly adverse conditions – including climate change and economic downturn – the challenges will

**Box 4: Farmer-led research as catalyst in cassava sector innovation in Rwanda<sup>1</sup>**

Cassava is cultivated by 700.000 households in Rwanda. It is of great importance to food security of poor farmer households and urban dwellers. The cassava sub-sector underwent major changes over the last decade. From 2003 the Cassava Mosaic Disease ravaged the sector, reducing production by 25%. After massive replacement of traditional varieties with resistant ones, production increased significantly. Still, many technical, commercial, organisational & institutional challenges persist. Government plays an active role in transformation of the Rwandan agricultural sector, but paid less attention to the cassava sector. This also relates to the sector being weakly organised. In this context, INGABO, a farmer’s union operating in the Southern province where cassava is an important crop, initiated an action research to identify levers for making value chain development more inclusive. ISAE and WUR staff provided support and INGABO staff and young professionals played active roles in the research. It provided key ideas for pro-active innovation and options for value chain and market system development. The research process and outcomes have catalysed further development of the cassava sector, e.g. in the form of promotion of local cassava agribusiness clusters. Key ideas for pro-actively addressing technical, commercial, organisational and institutional challenges were suggested and options for value chain and market system development were shared during a national cassava event. This induces government to give more attention to the cassava sector.

**Box 5: Platforms facilitating innovation partnerships and up-scaling of lessons learnt into institutional and political frameworks for seed sector development in Ethiopia<sup>1</sup>**

The partnerships and innovation component of the ISSD Ethiopia programme aims at solving bottlenecks in the seed sector by collaborating with institutions that are unable to address these challenges unilaterally. In each region, a partnerships’ platform and core group have been established. Platforms involve as many stakeholder institutions as are interested in discussing issues and suggesting innovations for addressing these. A select core group (from the public, private, research and civil society sectors) forms the decision making body responsible for the planning and follow-up on the execution of regional partnerships’ projects. Key to the innovation process is the involvement of a sufficient number of stakeholders who together want to work on demand-driven solutions to the problems. Important up-scaling interfaces occur at two levels: (1) between the local and regional level, to provide an evidence base for problem interventions, and (2) between the regional and federal level, for communicating with decision makers who can exert influence on the enabling environment. Partnerships’ facilitators broker these connections. From experience, the choice of individual facilitator is crucial: a positive attitude motivates others; good interpersonal skills and competencies for communication are important; good diplomacy is necessary for dealing with many actors; and an extensive personal network is a key characteristic in the selection of the individual tasked with facilitating partnership formation.

become ever greater. Nonetheless, hopes are high that knowledge institutes can keep contributing through further innovation for development as we move to a situation in which nine billion people need food on the same planet, but under more adverse conditions. As long as natural resources were plentiful, challenges manageable and both the average and total ecological footprint of populations limited, science and technology could not only keep in step with growing populations, but even improve conditions. Now we have to

prepare for a different future. Innovation needs to be taken to a next level. This involves a two-pronged approach for the role of knowledge institutes: 1) Improving innovation effectiveness through e.g. more interdisciplinary, trans-disciplinary and integrative which (beyond science) research; and, 2) transforming the way in food system operate, involving the innovation of innovation and the quest for food justice.

In relation to the integrative efforts, there are as yet less explored roles that knowledge institutes can play. The highlights from cases that illustrate such roles can be found in boxes 6-10. Knowledge institutes are uniquely positioned to play a role in both product and process innovation and in helping to facilitate collaborative innovation, as their vested interests in innovation processes are comparatively small and because of their broad access to sources of knowledge, expertise and experience. African universities and associated institutes hold a great potential for helping to take collaborative innovation for food & nutrition security in Africa to a next level (Africa Commission, 2009). The successful Dutch experience with innovation partnerships puts the Dutch in a key position to contribute to the enhancement of public-private partnership for food & nutrition security in Africa. Working with African universities and associated institutes is a good way of strengthening capacity to work with a more long-term and comprehensive perspective on food security. Such perspective is needed to support the often more short-term oriented perspectives of business development.

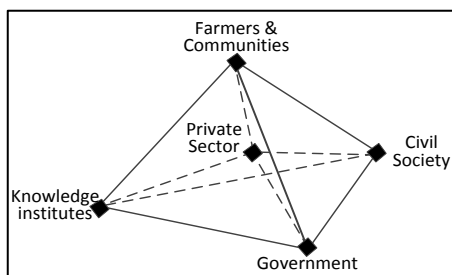


Figure 3: 'Dream team' or 'golden pyramid' of innovation partnership for food & nutrition in Africa

The five cases highlighted in box 4-8 can be seen as indicators of what is possible when knowledge institutes tune their innovation support to the characteristics of local settings. Countries are different, sectors are different, (potential) innovation actors (incl. individuals) are different, and so does innovation support need to vary according to context specifics. The cases show how different approaches, methods and styles were adopted. They are examples of making knowledge work in context, a practice that we would like to see adopted more widely in Africa. The resulting opportunities for contributing (indirectly) to food & nutrition security proved to be also dependent on the active support by government actors (including Dutch ministries and embassies) for playing such flexible roles. At the same time, though local settings vary, the bigger picture of (global) A&F systems and challenges to food & nutrition security in Africa is shared in common. Helping connect local realities of (agricultural) innovation to the bigger picture of (global) A&F systems, and the other way around, is an important service to integrate efforts toward enhanced (global) food & nutrition security.

**Box 6: Knowledge brokering building upon existing capacities in dairy sector innovation in Ethiopia<sup>1</sup>**

Ethiopia has good potential for dairy production. Currently, the sector is shifting towards greater market-orientation. A number of development interventions have targeted the dairy sector, however, with limited success and poor rates of adoption. Despite these interventions, productivity has remained low and subsistence oriented with poor access for surpluses into the market. A significant challenge for the dairy sector is the absence of institutional linkages among key actors in the value chain and the weak capacities among service agents for implementing market-oriented innovations. In the most successful examples of innovation in the Ethiopian dairy sector, the predominant driving forces were market incentives and the coordination by individuals or organizations acting in the 'brokering' role. The Netherlands Development Agency (SNV) has been one key actor in this process, strengthening capacities 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. The core of SNV's approach is bringing all the value chain actors and stakeholder groups together in so called Coordination Groups (CGs). CG meetings involve stakeholder members from the value chain, different relevant institutions and other invited clients with experiences to share 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 7: Helping create shared perspectives for innovation in the small scale fisheries sector in South Africa<sup>1</sup>**

In 1994 the apartheid regime of South Africa was transformed into a regime in which access rights to marine resources became possible for all inhabitants. This transformation had a serious impact on the fisheries sector and a new policy was needed to set fish quotas to maintain a sustainable production level while at the same time keeping the fishing industry alive. The need for improved marine ecological-economic management systems for the small-scale fisheries sector became apparent, but due to the complex nature of the small scale fisheries sector such policy is as yet not in place. A study was initiated to explore options and trade-offs between fisheries economics, market demand and marine environment. By doing so, the knowledge institutes involved helped create transparent decision-making options and trade-offs for key stakeholders by establishing a shared knowledge base for understanding the dynamics of the marine ecosystem, the economics of fishing and concerning the management of the resources. The resulting shared perspectives help stakeholders in taking steps towards a better managed small-scale fishing sector that takes into account environmental as well as economic factors.

**Box 8: Linking producers to processors in soybean sector innovation in Ethiopia<sup>1</sup>**

The soy bean was introduced to Ethiopia in the 1950s for the purpose of import substitution, but to this moment, production is still insufficient for this. While producers seem unable to find markets for their products, processors of animal feed and edible oil are operating at 60-70% capacity due to insufficient amount of available soy. Fragmented markets appeared to be a major cause for this situation. A project was initiated to investigate opportunities for soy bean value chain innovation. Both local and international (WUR) knowledge institutes were involved. The roles they played reduced transaction costs for producers and processors by networking, identifying potential partnerships and linking key players to each other, providing a platform for all actors in the soy chain to discuss burning issues,

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**Box 8 (continued)**

such as pricing and thereby contributing to trust building among producers and processors. This put further development of the soy sector on the agenda at national level, linking research institutes to private sector for knowledge brokering, e.g. in relation to available soy varieties and characteristics. The resulting collaboration helped create new perspective on roles and linkages in the soy bean value chain, leading to enhanced efficiency of markets and indirectly to improved food security.

**Conclusion**

Knowledge institutes usually focus on their role of providing education and research services. However, in complex innovation processes, such as related to global food & nutrition security, they need to be more flexible. Due to their comparative objectivity, these institutes are often in a unique position to play other roles as well, such as facilitating public-private partnership platforms, connecting essential players to innovation processes, and linking actors across policy levels. The nature of their work provides them with a view on the ‘bigger picture’ of A&F system dynamics. Where knowledge institutes are able to play these flexible roles in innovation processes, this can help in catalysing, facilitating and supporting collaborative innovation. The ‘flexible’ in this context means appropriate in context and also adaptive in response to change throughout the process and alternating options as fits the particular situation. Such

practice has been illustrated through five cases from which we have shared some highlights only (Boxes 6-10). As short as the examples are, they are pointers to a practice of the flexible roles of knowledge institutes in support of public-private partnership for food security & nutrition, which we would like to see grow to fruition in Africa.

Knowledge institutes have an important role to play in public-private partnership for food security in Africa but as yet, their potential has not been fully realised. They need to look beyond traditional roles and explore alternative roles more seriously. However, this is not an issue of just starting to play such roles. It will require strategic efforts to strengthen organisational capacities and individual competences for engaging effectively in innovation processes. Where there is a need for fundamental research they should be ready to identify this and deliver the required research in an accessible form to the other partners. However they also need to be able to quickly shift gears and to be able to facilitate public-private partnership platforms or link knowledge and information across decision-making and policy levels. Such ambitions

need to inform curriculum development and competency-based training as well, thereby broadening the range of opportunities for knowledge institutes to play effective roles vis-à-vis societal concerns. As roles are interconnected, they will be partly dependent on other actors (e.g. government and private sector) to support them in playing such roles.

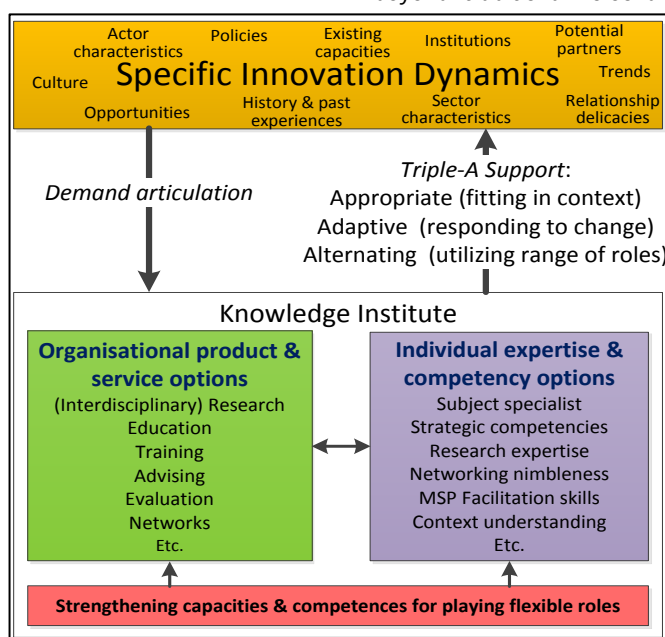


Figure 4: Strategic and flexible positioning of knowledge institutes to play effective roles in public-private partnership processes.

**Box 9: Initial ideas for a typology to identify appropriate roles in collaborative innovation for food & nutrition security in Africa**

	Formal governance	Informal governance	Agenda setting	On-the-ground experience	Knowledge brokering	Business models	Connecting partners	Cross-level linking	New ideas	Experimenting	Funding
Government, country	++		++	+			+/-				+
Government, intl			+		+		+/-	+		+	++
Intl multilateral organisations			+	+	+		+	+	+	+	++
Intl Private Sector		+	++	+	+	++		+	+		+
Country private sector		++		++	+	++		+	+	++	+
Intl knowledge institutes			+		++		+	+	+	+	
Country Knowledge institutes		+	+	+	++		++		+	+	
Intl Civil society			+		+/-		+	++	+	+	+
Country Civil Society		++		+	+		+			+	
Farmers & Communities		+		++		+			+	++	

## Recommendations

Based on the findings of this study we offer six recommendations regarding how The Netherlands could effectively support public-private (innovation) partnerships in Africa, thereby contributing to food & nutrition security for all. We pay specific attention to the role of knowledge institutes in this context.

**Recommendation 1:** Government (and its partners) has an important innovation governance role to play in relation to food & nutrition security. Perspectives on what is needed in terms of linking innovation across dimensions, levels and sectors need to be kept alive. Regular bigger-picture checks on global agriculture & food system performance are important.

**Recommendation 2:** The complex dynamics involved in achieving food & nutrition security require that knowledge institutes are effective in interdisciplinary and integrative efforts, working collaboratively with other actors. Strengthening capacities of African knowledge institutes in this respect is strategic.

**Recommendation 3:** Public-private partnerships in Africa need to become more effective in view of food & nutrition security demands. Partnership facilitation is a crucial service in support of this purpose. Strengthening a broad-based capacity (not just of knowledge institutes) in Africa for facilitating such cross-sector public-private partnership processes requires more focus and investment.

**Recommendation 4:** Key actors in Africa (notably knowledge institutes) need to be more capable of playing flexible roles in public-private partnerships for food & nutrition security. Dutch knowledge institutes can support such capacity development. However, they also need to work on their own capacity to perform services along these lines. Curriculum development and other competency-based training need to match such ambitions.

**Recommendation 5:** Public-private partnerships do not flourish automatically. They involve the Dutch private sector's ability and interest to engage with Dutch and African knowledge institutes. Government and good governance has a role to play in ensuring an appropriate balance in working towards public goods and private goods is agreed.

**Recommendation 6:** Understanding how public-private partnerships perform in relation to achieving food & nutrition security, requires working with three complementary perspectives:

- 1) Technical performance: This relates to the internal integrity of individual innovation products and services;
- 2) Partnership performance: This relates to the connectedness and alignment of roles of key actors in innovation for food & nutrition security. It also involves the effectiveness of partnership facilitation processes;
- 3) Sustainability performance: This relates to an integrated sustainability check on effects in terms of economic viability, environmental and ecological integrity, social equity and cultural appropriateness.

### End notes:

<sup>1</sup> This policy paper is based on two reports from a project commissioned by the Dutch Ministry of Economic Affairs, Agriculture and Innovation. The full versions of the case studies shared in this paper can also be found there:

Borman, G., J. van der Lee, T. Schrader, M. Sopov, P. Spliethoff, M. Thijssen and S. Wigboldus (2011). Going for gold in innovation partnerships responsive to food insecurity in Africa – the role of knowledge institutes. *Vol. 2: Five case studies.*

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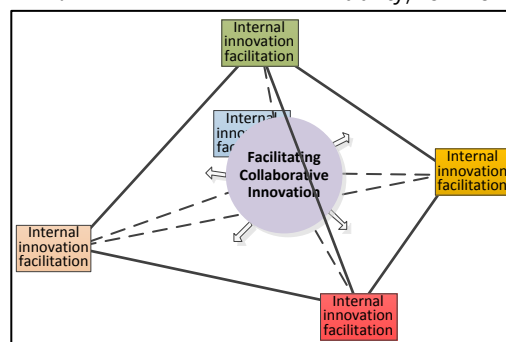


Figure 5 Facilitating innovation processes at actor level and as collaborative process

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Views expressed in this paper cannot be assumed to represent the views of the Ministry of Economic Affairs, Agriculture and Innovation.



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