

## **Strengthening Agricultural Innovation Capacity: Are innovation brokers the answer?**

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### **Summary**

Taking the case of Dutch agriculture as an example, this paper examines the role of innovation brokers in stimulating innovation system interaction and innovation capacity building, and reflects upon their potential role in developing countries' agriculture. It concludes that innovation brokerage is likely to be relevant in emerging economies, that public or donor investment may be needed to overcome inherent tensions regarding the neutrality and funding of such players in the innovation system, and that stimulating the emergence of innovation brokers requires a policy that supports institutional learning and experimentation to ensure that the brokers become contextually embedded.

**Key words:** Agriculture, innovation systems, intermediaries, innovation policy, the Netherlands, developing countries

### **1. Introduction**

In the fast-changing multi-functional agricultural sector of the 21st century, innovation is a central strategy in tackling challenges and grasping opportunities as a means of achieving economic, social and environmental goals. Yet many countries around the world are still struggling with agricultural innovation arrangements and policies informed by the simpler and more stable techno-economic conditions of the mid 20th century. Consequently, they are attempting to reform and evolve their agricultural innovation arrangements to develop flexible and responsive capacities. This is particularly urgent in developing countries as agriculture remains a central element of the economy, and innovation is key to the agricultural growth needed to reduce poverty (Thomas & Slater, 2006; Bezemer & Headey, 2008).

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Central to this reform and evolution process is the shift from public sector agricultural research and extension that delivers new technology in an institutional configuration that resembles a pipe line, to arrangements that resemble a network or system of research, farmers, entrepreneurs, and other organizations involved in the creation, diffusion, adaptation, and use of knowledge, as well as in providing other resources for innovation (Biggs, 1990; Hall, Bockett, Taylor, Sivamohan, & Clark, 2001). Moreover, agricultural innovation requires a balance between new technical practices and alternative ways of organizing, for example, markets, labor, land-tenure, and distribution of benefits (Dormon, Leeuwis, Fiadjoe, Sakyi-Dawson, & Huis, 2007). In this light, innovation scholars have re-conceptualized innovation as a successful combination of “hardware” (i.e., new technical devices and practices), “software” (i.e., new knowledge and modes of thinking) and “orgware” (i.e., new social institutions and forms of organization) (adapted from Smits, 2002). These sorts of insights have been elaborated in the idea of fostering effective agricultural innovation systems (Hall *et al.*, 2001; Spielman, Ekboir, Davis, & Ochieng, 2008; Lenné, 2008). In agricultural innovation systems, networks of different players are transient and emerge around specific challenges and tasks at particular points in time. Public agricultural research is one of these players, but its value is as a responsive element of a network or system, rather than in its own right (Sumberg, 2005; Kristjanson *et al.*, 2009). Other players such as the private sector or civil society organizations have a prominent role, not just as passive knowledge users or transmitters, but as pro-active agents who are interdependent in working towards effective socio-technical innovations in agriculture (Hall *et al.*, 2001; Leeuwis, 2004; Biggs, 2007). Much of the literature on such networks deals with more formalized public-private partnerships (PPPs) (Byerlee & Fischer, 2002; Hartwich & Tola, 2007), but it is not only high profile PPPs that matter for pro-poor agricultural development. As Hall (2006:5) suggests: “rather mundane and less high-profile cases are going to be of the type that planners and policy makers are going to have to deal with on a day-to-day basis”.

A number of questions remain unanswered when it comes to how everyday innovation capacity may be improved. How can a production base made up of many farmers organize its demand for knowledge, technology, and organizational change? What mechanism will facilitate the search for information? Who will coordinate the networks of interaction needed for innovation? A recent World Bank (2006) study found that, even when there were strong market incentives for players to collaborate for innovation, linkage formation was still extremely limited. Although this suggests that

public policy should play an important role in promoting these linkages, how should this be achieved in practice? Is there a need for an organization with a brokerage role to help coordinate multiple players and facilitate partnerships and linkages? Should this be a private organization or a public agency?

As public policy gets to grips with these new ideas, the importance of having intermediary organizations that sit between and connect different agents involved in innovation trajectories in developing countries is becoming increasingly apparent (Fisher & Vogel, 2008; Szogs, 2008), who fulfill boundary work (Kristjanson *et al.*, 2009), and play a role in bridging, bonding, and linking social capital (Heemskerk & Wennink, 2004; Hall, 2006). This type of intermediary would not be the traditional intermediary in a one-to-one relationship, such as conventional agricultural extension, but a systemic intermediary as an in-between in a many-to-many relationship (Van Lente, Hekkert, Smits, & Van Waveren, 2003; Howells, 2006). Hartwich, Gottret, Babu, and Tola (2007:vii) state in this regard that “third-party catalyzing agents are necessary to bring partners together, motivate them, provide information, and organize space for negotiations.” These systemic intermediaries act as *innovation brokers*, whose main purpose is to build appropriate linkages in innovation systems and facilitate multi-stakeholder interaction in innovation. So far, the agricultural sector has relied mainly on public sector intermediaries such as agricultural extension services, often with questionable effectiveness and a limited mandate (Leeuwis, 2004; Sulaiman, Hall, & Suresh, 2005). National governments and development assistance agencies now face the difficult task of identifying appropriate mechanisms that can function as innovation brokers in the context of the dynamic and evolving contemporary agricultural scenario, in which numerous challenges (e.g., sustainability, climate change, poverty alleviation, agri-industrial development) need to be addressed simultaneously (e.g., Hall, 2008).

Some experience of innovation brokers already exists in the agricultural sector, from which lessons can be drawn. From a policy perspective it is important to understand the effectiveness of different innovation brokerage mechanisms (Hall, 2006; German & Stroud, 2007). It is equally important to understand the process that governs the emergence and evolution of these mechanisms in specific contextual settings (Hall, 2005), because we have learned from the past that efforts to transplant organizational blueprints from one context to another are unlikely to be effective. The purpose of this paper is therefore twofold. Using the case of innovation brokers in the Dutch agricultural sector, the paper first explains the circumstances that have led to the emergence of these

arrangements and discusses the role of policy in facilitating this emergence. Secondly, it outlines how these intermediaries look in practice and discusses the factors that determine their effectiveness. The paper concludes with a wider discussion of the implications of this experience and particularly its implication for developing countries. The conclusion stresses the importance of shifting from policy perspectives that focus on introducing generic mechanisms to achieve innovation brokerage functions, to policy perspectives that focus on stimulating and enabling the institutional innovations needed to allow these to emerge and grow organically in context-specific ways. Before embarking on this trajectory, we first present a brief review of the literature on innovation brokers in order to further clarify and demarcate the area of discourse and provide an analytical lens.

## **2. The role of innovation brokers as innovation system catalysts**

The roles, performance, and effects of innovation brokers in the industrial sector in Western countries are quite well documented (e.g. Van Lente *et al.*, 2003; Howells, 2006; Winch & Courtney, 2007; Sapsed, Grantham, & DeFillippi, 2007; Johnson, 2008). Although mentioned as a solution to innovation system fragmentation and underperformance, and researched in preliminary studies (Clark, 2002; Spielman & Von Grebmer, 2006; Hartwich, Gottret *et al.*, 2007; Van Mele, 2008; World Bank, 2008; Kristjanson *et al.*, 2009), the topic has been less systematically investigated in the agricultural sector. This reflects the fact that, in the agricultural sector, innovation brokers have only recently emerged as distinct from the traditional agricultural intermediary organization, namely, the public extension services.

### *2.1 What is an innovation broker?*

Howells coined the term “innovation intermediary”, defined as: “an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties. Such intermediary activities include: helping to provide information about potential collaborators; brokering a transaction between two or more parties; acting as a mediator, or go-between, [for] bodies or organizations that are already collaborating; and helping find advice, funding and support for the innovation outcomes of such collaborations” (2006:720). However, the provision of brokerage or innovation intermediation functions may often not be the primary role of an organization as Howells

argues: “organizations providing intermediation functions do not solely or even wholly restrict themselves to intermediary functions, but also cover more traditional contract research and technical services which involve no third-party type collaboration” (2006:726). To distinguish such specialized brokers from other individuals or organizations that provide some innovation brokerage functions, but not as a core function, Winch and Courtney (2007:751) define an innovation broker as “an organization acting as a member of a network of actors [...] that is focused neither on the organization nor the implementation of innovations, but on enabling other organizations to innovate”.

## 2.2 What are the main functions of innovation brokers?

Innovation brokerage comprises several detailed functions (Howells, 2006; Johnson, 2008) which can be reduced to three generic functions (Van Lente *et al.*, 2003; Klerkx & Leeuwis, 2009a):

- Demand articulation: articulating innovation needs and visions and corresponding demands in terms of technology, knowledge, funding, and policy, achieved through problem diagnosis and foresight exercises.
- Network composition: facilitation of linkages between relevant actors, i.e., scanning, scoping, filtering, and matchmaking of possible cooperation partners (Howells, 2006).
- Innovation process management: enhancing alignment in the often heterogeneous networks constituted by actors from different institutional backgrounds and reference frames related to norms, values, incentive and reward systems. This requires continuous “interface management” (Smits & Kuhlmann, 2004) in which there is a “translation” between the different actor domains, described as “boundary work” (Kristjanson *et al.*, 2009), or “knowledge brokerage” (Hargadon, 2002). Furthermore, it includes a host of facilitation tasks that ensure that networks are sustained and become productive, e.g., through the building of trust, establishing working procedures, fostering learning, managing conflict, and intellectual property management (Leeuwis, 2004).

## 2.3 Reported risks and drawbacks

Despite the potentially important role that innovation brokers can play, a number of risks and possible drawbacks have been identified with regard to their functioning.

- *Neutrality tensions*

A key factor for the credibility and legitimacy of innovation brokers is an impartial or neutral and independent position (Spielman & Von Grebmer, 2006). On the one hand, this is complicated because stakeholders (e.g., financiers or participants) may exercise pressure to compose and manage networks in a way that fits their objectives (Isaksen & Remøe, 2001); this may result in the innovation broker being seen as a representative of a single organization. On the other hand, maintaining a neutral position is inherently difficult because brokers always exercise a certain degree of steering (Laschewski, Phillipson, & Gorton, 2002). However, as innovation is about breaking out of current practices, sometimes innovation brokers actively need to help “destroy” existing systems to be able to bring about new networks and new ways of thinking (Smits & Kuhlmann, 2004).

- *Function ambiguity*

Innovation brokerage can be both a side activity of traditional knowledge intensive service providers, such as research institutes or extension service providers, and the core business of a dedicated organization. This may imply that brokers’ functions overlap with those of parties for which they intend to broker, and hence they may be seen as a competitor rather than a facilitator. Also, there may be a lack of clarity about the actual benefit of having a mediating agent (Candemir & Van Lente, 2007). As a result of competing functions and perceptions about benefits, innovation brokers may alienate themselves from players in the existing knowledge infrastructure who nevertheless can be important for network composition (as possible partners in the network to be formed).

- *Invisible effects/ willingness to pay*

Assessing the impact of innovation brokers is considered difficult, given their indirect impact on profit and incomes (Howells, 2006). Despite their contribution being quite invisible, they may have had a determining role in achieving success instead of failure (Johnson, 2008). Main tensions include:

- Difficulties in ex-ante evaluation of service value and low ex-ante identifiability of benefits that affect willingness-to-pay amongst private parties for, especially, functions that relate to demand articulation and network composition.
- Funding impatience: funding is provided for too short a period and this impedes the innovation broker from becoming well-established, and the networks it supports becoming sustainable (Rosenfeld, 1996). This is enhanced by the fact that the impact of innovation brokers on innovation

is hard to make visible with current evaluation methods aimed at “hard” indicators (Rasmussen, 2008).

The following section explores whether the Dutch experience with agricultural innovation brokers can throw more light on the policy challenges faced by those seeking to reform national agricultural research systems and strengthen agricultural innovation capacity in developing and emerging countries.

### **3. The emergence and role of innovation brokers in the Dutch agricultural innovation system**

#### *3.1 The rise and fall of the OVO-triptych*

Historically, the Dutch public agricultural research and extension system was characterized by a high degree of interconnections between its main actors. This so-called OVO-triptych (meaning Research-Extension-Education triptych) has been credited as a key factor in the development of innovative capacity within Dutch agriculture and making it an important player in the global agricultural scene (Roseboom & Rutten, 1998; Smits, 2002). The OVO-triptych embodied the corporatist Dutch agri-business culture in which there were well-developed institutionalized linkages and feedback mechanisms, and continuous alignment between farmers, agri-industry, research and extension establishments, and government (Wielinga, 2001). Having its origin in post-World War II policy on food security, OVO's main objective was the modernization of Dutch agriculture, with a focus on homogenous development paths emphasizing productivity increase and efficiency gains (Nieuwenhuis, 2002). The OVO approach was seen to work well until the mid 1970s (Wielinga, 2001). However, starting from the 1980s the OVO-triptych became less successful, and changes were triggered by a set of political, cultural, institutional, and economic forces. Growing public concern about health issues, production surpluses, increasing environmental awareness in European society, combined with serious food production scandals (BSE, swine fever, and foot-and-mouth disease), led to reduced support for the “industrial” productivity increase paradigm that was dominant in the OVO-triptych (Nieuwenhuis, 2002). In general, the need was seen for a major re-think of how agricultural production in the Netherlands should be given shape to deal with new societal, economic, and ecological demands, and how the knowledge infrastructure should support that. As policy shifted towards reducing the environmental constraints, the interests of policy makers and farmers, that had

once been aligned, started to become increasingly divergent. Publicly funded research and extension became increasingly oriented to issues such as reducing the environmental impact of farming, and hence did not align well with farmers' economic motives. This caused a loyalty conflict among agricultural extensionists, who wanted to be loyal to both their paymaster (government) and their clients (entrepreneurial farmers).

Against this background, the dominant policy view became that the OVO-triptych could not remain a purely agricultural affair, and that it needed to open up to new societal players (e.g., consumers, nature conservationists, the environmental movement) in order to be able to deal with the new societal concerns, options, and priorities. The agricultural sector (including the OVO-triptych) was seen to respond rather slowly to the redefined public interest, and it became increasingly viewed as an obstacle (i.e., as part of a defensive agricultural lobby) rather than as a stimulant to desirable change (Verkaik & Dijkveld-Stol, 1989). As part of a wider wave of reform and privatization of public services, the government responded to these problems in the OVO-triptych by embarking in 1990 on a trajectory of privatization of research and extension establishments, accompanied by the introduction of radically new financing mechanisms and procedures (Roseboom & Rutten, 1998). This was not only meant to make room for new providers of research and extension services, but also seen as a way to change the service delivery culture (of providers) and the expectations (of clients), shifting the balance from supply-driven to demand-driven approaches. The privatization of public Dutch agricultural research and extension establishments induced a repositioning of the different players in the agricultural knowledge architecture, according to the new rules of the game imposed by the new knowledge market setting in which they had to operate. These policy and institutional changes led to increased competition and the shielding-off of information among research and extension organizations, and weakened the once strong linkages between agricultural research, extension, farmers, agri-industry, and government (Leeuwis, 2000), which were seen as a key factor in the success of the OVO-triptych.

### *3.2. Different types of innovation brokers emerge*

In response to what many saw as the collapse of the OVO-triptych, a number of proposals for new organizational arrangements for agricultural research and innovation support were formulated (Enzing, Holland, & Schaffers, 1998), emphasizing the need for a renewed OVO-triptych and the

strengthening of some of the linkages in the triptych that had weakened over time. It was out of this context that intermediary organizations with the function of agricultural innovation brokers came to prominence, both as a policy intervention and as a pragmatic response of civil society, farmers' organizations, and the private sector to social and economic challenges and opportunities.

An initial attempt by the government to establish a central innovation broker to channel the knowledge flows in the privatized knowledge architecture proved non-viable. Due to its close connections to government, it was viewed as having a biased agenda that did not match with the interests of clients. Moreover, the organization could not cope well with the increasingly fragmented, local, and autonomous set of networks that emerged after the reform (Wielinga, 2001). At the same time, various types of innovation brokers emerged in a more self-organized manner at regional and sub-sectoral levels, with the goal to restore and optimize the linkages in the agricultural innovation system. Such innovation brokers were generally established in a concerted effort of private (research and extension providers, farmers' organizations) and public parties (municipalities, provinces, ministries). These parties either subsidized these organizations or participated as shareholders. However, the motivations of individual founders were not always altruistic, as goals such as profit seeking and policy realization were reasons to invest.

Following the function-based typology of Klerkx and Leeuwis (2009a), seven distinct types of agricultural innovation brokers can now be seen in the Netherlands, as follows.

#### *Types 1 and 2: Innovation consultants*

These organizations focus either on the individual farmer (Type 1), or on a collective of farmers with a common interest, who wish to jointly develop or implement an innovation (Type 2). They have emerged out of a concern that there is a gap between farmers' innovation needs and existing service provision of technology and information. They focus mostly on incremental innovations. They make an innovation SWOT analysis of a farm, define an innovation strategy with the farmer, and help to find and guide interaction among cooperation partners. Most often, the SWOT-type analysis (demand articulation) and the identification of cooperation partners and information sources (network composition) are initially provided free of charge. Innovation consultants can be found with different organizational formats: for-profit private firms, government agencies, and non-profit foundations. These organizations often have a regional coverage, attending different types of agricultural

enterprises. An example is the Agricultural Knowledge Centre North Holland (AKC-NH), which emerged out of concern about the closure of a regional experimental station after privatization of the research and extension system. AKC-NH was jointly funded by provincial and local government, privatized research and extension providers, regional agricultural colleges, and the regional farmers' organization. An example of its services is the guidance it provided in the search for a flower-bulb disease detector to automate disease detection and reduce labor costs. Instead of ending up at the "default", formerly public agricultural research institutes, in its role of a neutral broker the AKC-NH searched for available knowledge in public and private, agricultural and non-agricultural, research institutes and R&D departments of large companies. Having found a candidate technology, AKC-NH then searched for subsidies to conduct feasibility studies as the investment risk for farmers was too high. Furthermore, it helped maintain energy and stamina in the process, mediated between the different cultural worlds of the actors involved, and guided the process of intellectual property protection.

### *Type 3: Peer network brokers*

These organizations usually have a sub-sectoral focus (such as horticulture, pig farming). They concentrate on the formation of so-called soft networks, which are concerned with knowledge exchange and often have an informal character. In the Dutch agricultural sector, informal network structures (so-called study clubs, which resemble farmer learning networks such as Farmer Field Schools<sup>1</sup>) traditionally existed, often guided by an external facilitator (generally an extensionist). Because of changes such as the diversification of farmer interests, a decreasing number of farmers, and the fact that facilitation by a consultant from a public agricultural extension service is no longer available free of charge, the original study club concept has been considerably weakened. The peer network brokers are an attempt to revitalize the study club concept, and besides a small participation fee paid by farmers they are generally supported with public funding. An example is the Dairy Farming Academy (DFA), whose goal is to set up new farmer networks on the basis of shared interests (see Klerkx & Leeuwis, 2009b). Networking activities include information exchange through an online databank, network members' farms being used as demonstration farms, experienced farmers acting as coaches for less experienced farmers, best practice meetings in which farmers discuss a theme of common interest, and master classes by non-agricultural entrepreneurs. DFA aims to be demand

driven, programming working themes based on aggregated demand obtained by analysis of the online databank, questionnaires, and on impressions obtained by facilitators. To be able to closely identify with farmers' lifeworlds, facilitators themselves are dairy farmers. DFA's role as an innovation broker thus focuses on demand articulation and strengthening links between peers and with the wider set of agricultural innovation actors (network composition).

#### *Type 4: Systemic instruments*

The main difference in the systemic broker compared to the previous three is that it goes beyond individual firms, or clusters or networks of firms, and targets higher level innovation architectures that involve complex constellations of business, government, and societal actors, dealing with complex problems. This type of innovation broker is often a civil society organization (but with public funding), reflecting its interests in innovation and policy issues that go beyond the conventional domain of government or the private sector. A Dutch example is the Innovation Network Rural Areas and Agricultural Systems (INRAAS), described by Smits and Kuhlmann (2004). It was established in mid 2000 to address challenges such as reducing the detrimental effects of agriculture on the environment and the need to shift from bulk production to multi-functional agriculture. The realization of this complex agricultural agenda required intermediation between a diverse set of agricultural and non-agricultural stakeholders. The main activities of INRAAS are thus geared towards managing and strengthening a collective systemic vision and approach to agricultural innovation. This includes foresight exercises, network building, and initiating experiments to jointly identify, develop, and implement innovative opportunities. Through their efforts, these organizations also aim to bring about change in "hard" and "soft" institutions, and go beyond participating actors and organizations to also include policies, rules, habits, standards, procedures, and laws. Following INRAAS, a number of sub-sectoral instruments have been set up: SIGN (Dutch Greenhouse Horticulture Innovation Foundation), Courage (its name phonetically reflecting the Dutch word for cow and the courage needed to innovate) for the dairy sector, Kiemkracht (Germination power) for arable farming, and Eggnovation for the poultry sector. An example of such change is SIGN's facilitation of a project on the greenhouse as an energy source instead of a major energy user, which at the conception of the idea eight years ago was seen as a ridiculous idea, but now there is a working prototype based on a very efficient heat exchanger.

#### *Type 5: Internet portals*

A large variation of internet portals have developed in the Dutch agricultural sector which display relevant information, such as agricultural news, market information, and “yellow pages” of service providers, the function of which is to connect farmers with these information sources. These portals may be stand-alone efforts or part of a research project. They are sometimes operated commercially, or are paid for by subsidies from government or commodity boards. Examples include the Agri-logistics Knowledge Portal for linking actors and knowledge developed in several projects related to agri-logistics (Van Baalen, Bloemhof-Ruwaard, & van Heck, 2005), and the web-based question-answer databank integrated in the previously described Dairy Farming Academy.

#### *Type 6: Research councils with innovation agency*

Although in the Netherlands farmer-driven research planning mechanisms have traditionally existed, these do not always forge broader linkages in the innovation system (see Klerkx & Leeuwis, 2008a). A new sort of research council (Bioconnect) has recently emerged, in which all relevant actors in the organic agriculture value chain (organized in sectoral product workgroups – PWG) have been granted decision-making authority in research funding, utilizing public funds of the Ministry of Agriculture (see Klerkx & Leeuwis, 2008b). Farmer and industry representatives are expected to propose topics based on a broadly shared demand from their constituencies, which they discuss and prioritize with so-called research theme coordinators. These feed the researchers within their institutes with information from the PWG to guide proposal development in order to make these fit with sector needs. Within the PWG, a so-called knowledge manager fulfills the role of facilitator, streamlining the flows of information coming from the different system components and mediating between the different actor groups involved. Bioconnect also facilitates the participatory research that results from the process, as well as the set-up of broader innovation networks tackling the issues facing the organic sector, making a link with legislation and market developments.

#### *Type 7: Education brokers*

Because the Dutch Ministry of Agriculture continues to fund agricultural education, basic research and research that supports policy making, it has responded to a perceived lack of interaction between

agricultural (vocational) education establishments, research institutes, and practice by supporting the set-up of the so-called Green Knowledge Cooperation (Kupper, Lans, Wals, & Geerling-Eiff, 2006). This Green Knowledge Cooperation, besides linking the several education establishments, aims to position the agricultural schools as regional knowledge centers that respond to innovation queries from the agricultural sector, involving both teachers and students. Another example of a brokerage arrangement for supporting agricultural education is the so-called Content Broker, which helps to find material for teachers to use in their classes, such as journal articles, educative computer models, and manuals. It does this by making explicit the demand and supply of the participating organizations.

### *3.3 The observed contribution of innovation brokers*

Several studies have looked at the contribution of the Dutch innovation brokers (Klerkx & Leeuwis, 2008a, 2008b, 2008c, 2008d, 2009b; Batterink, Wubben, Klerkx, & Omta, 2009) in terms of their influence on the way innovation arrangements are organized (roles, responsibilities, and patterns of interaction) and how routine working practices and policies (institutional setting) have changed<sup>2</sup>. Below we discuss the main findings in terms of whether innovation broking mechanism have, or have not, fulfilled the functions, outlined in section 2, that are needed to establish dynamic responsive innovation systems.

In the sphere of demand articulation, they have helped farmers and other agri-food stakeholders to think about new possibilities to sustain their businesses. Because of their unbiased position, innovation brokers appear to provide a fresh look at diagnosing the constraints and opportunities of farmers or, at a higher level, production chains, regions, or sub-sectors. Because innovation brokers are critical and provide a mirror for self-reflection, they tend to force their clients to look towards the possibilities beyond their current situation and constraints.

In the sphere of network building, there are numerous examples where innovation brokers have helped farmers, and others that want to initiate innovation projects (innovation champions), to get in touch and negotiate with project partners and other relevant stakeholders from the policy, market, and civil society domain, as well as with suitable knowledge providers who could assist them in orienting towards new activities, including more than just the traditional research and extension providers. They hence make a variety of sources available; this is essential for developing the new combinations that are central to innovation. At the system level, they have contributed to the development of innovation

agendas, and radical and/or system innovations to meet future challenges, by performing foresight exercises and initiating innovation projects that bear a high risk of failure. This has resulted in several new concepts, some of which were initially regarded with suspicion and disbelief, but now have become viable new development strategies.

Finally, it has been confirmed that innovation process management is an important function that can be performed by innovation brokers. Innovation processes tend to involve different groups of actors, with different expectations and interests determined by their institutional background. For example, farmers often want instant access to applicable knowledge and quick results, research providers have an interest in undertaking (publishable) research, policy makers want to realize their policy goals and see the results of public investments. The interested parties thus differ with regard to the time horizons of projects, and the desired output. Innovation brokers have clearly facilitated cooperation and managed to synchronize expectations of different actor groups during a number of innovation processes. They have reportedly made the different project partners aware of their institutional backgrounds and expectations, and of the role they can fruitfully play in the innovation process. Moreover, they have been successful in making transparent the risks and benefits that are attached to engagement in the innovation process. This is especially useful, because by doing so they contribute to reducing uncertainty in the early stages of innovation processes when there is a high risk of failure – a risk that would preclude private parties from innovating (see also Sapsed *et al.*, 2007; Johnson, 2008). In addition, they act as a “translator” between the different cultural worlds and perform mediating roles in the event of conflict about, for example, the attribution of intellectual property rights, strongly diverging goals and visions, or the division of funds. The involvement of innovation brokers in innovation processes hence avoids inertia and accelerates the process by helping project members maintain their focus and energy during the process. Beyond the level of the single project, innovation brokers fulfill a catalyst role (to bring about change and stimulate cooperation), a liaison role (e.g., to inform policy) within the agricultural innovation system, and also an innovation capacity building role.

### *3.4 Observations regarding the inherent vulnerabilities of innovation brokers*

Not surprisingly, the vulnerabilities that are reported in the general literature on innovation brokers also seem to play a role in the Dutch agricultural innovation system. Below we indicate how these have expressed themselves, and what lessons can be learned.

#### *Neutrality tensions*

As regards neutrality, besides the recognition that total neutrality is hard to achieve<sup>3</sup>, there are several pressures on innovation brokers that may impair their neutrality. As stated earlier, in an effort to restore knowledge infrastructure linkages and optimize innovation system interaction, several parties in the Dutch agricultural sector supported the set-up of innovation brokers through concerted action. However, a social dilemma situation manifested itself in that the benefits for the collective were recognized (enhancing innovation systems performance by facilitating the formation of linkages between system components), but parties also wanted to realize conflicting individual goals through an innovation broker as a condition for (financial) support.

For example, the providers of research and extension that contributed financially as shareholders or financiers of several Type 1 and Type 2 innovation brokers (e.g., the previously mentioned AKC-NH), explicitly or implicitly expected some form of return on investment. They wanted to be seen as “preferred supplier” and showed unwillingness to cooperate with other (competing) knowledge providing parties, hence forcing innovation brokers into the role of procurement instruments. Although most innovation brokers did not adhere to such preferred suppliership, it had negative effects on their perceived impartiality (especially amongst other research and extension providers) and thus had the potential to hamper collaboration.

Innovation brokers also risk becoming, or being seen as, vehicles to realize policy objectives of financiers. Externally imposed goals may inhibit, or destroy, (informal) interactional patterns conducive to innovation. For example, a government-funded innovation broker that aimed to stimulate multi-stakeholder interaction and learning on nutrient management (called Nutrient Management Support Service), was perceived by farmers as having a direct link with the realization of undesired government policy, and hence never gained credibility and quickly disappeared (Klerkx, De Grip, & Leeuwis, 2006). Contrasting objectives may also cause loyalty conflicts with financiers and clients. In the case of DFA, the Ministry wanted DFA to focus on certain activities that emphasized advanced in-

depth learning on certain topics, whereas farmers preferred to have more casual knowledge exchange on day-to-day experiences in dairy farming with other farmers. So DFA was driven by both farmer demand and financier demand, with a resultant dilemma for the innovation broker as to whose demands to favor (Klerkx & Leeuwis, 2009b). These tensions indicate that, as a basic condition for effectiveness, innovation brokers should be given the freedom to operate independently.

#### *Function ambiguity tensions*

As regards function ambiguity, independent innovation brokerage is not always fully understood and accepted in the Dutch agricultural innovation system. This is partly due to the response from established players (i.e., the established research institutes and extension providers) to the revitalization and innovation catalyst mission of innovation brokers – which is about breaking with old structures and establishing new networks and partnerships - and partly due to the overlap with existing or new functions from traditional research and extension providers.

For example, in the case of KnowHouse, a Type 1 innovation broker (see Klerkx & Leeuwis, 2008d<sup>4</sup>), research and extension organizations welcomed it as a demand articulator and network composer, but saw it as a competitor in the provision of certain services during the innovation process (innovation process management). This caused annoyance among research and extension organizations, because they felt that KnowHouse forced itself in between them without adding value, but taking up some of the project money which otherwise could be used for the research itself. Furthermore, although farmers' representatives positively evaluated KnowHouse's contribution to innovation, at the same time they saw it as a threat in terms of KnowHouse's role as an opinion leader. There was vagueness about the different roles that KnowHouse was desired to play, i.e., whether it was a sounding board for the development of ideas on innovation, a broker that matched demand and supply in the knowledge infrastructure, or a delegated taskmaster for agricultural entrepreneurs and hence a client of research and extension providers. The result of this is that, despite the innovation broker having a positive influence on network formation and on the effectiveness of cooperation in the innovation process, parties may lose confidence in the innovation broker as they are not sure what it actually does and represents. This indicates that the role of innovation brokers should be made clear to the parties with whom they work, and that parties should

be made aware of what they can expect from the innovation broker, and what activities are undertaken by the innovation broker and by the network participants themselves.

### *Tensions regarding funding and willingness to pay*

As regards funding, tensions such as low private willingness to pay and public funding impatience have also manifested themselves in the Dutch context and appear to be felt particularly by innovation consultants and peer network brokers (Types 1, 2, and 3) who offer services to optimize innovation at the level of the individual farmer, such as AKC-NH, KnowHouse, and DFA. These tensions seem to be an inherent characteristic of these types of mechanism. They have also to be understood against the historical backdrop of innovation support services in the Netherlands and the fact that these were mainly provided free of charge in the past. Types 4, 6, and 7 appear to receive more continuous funding as the radicality of the innovations they wish to support is of such a nature that it is commonly accepted that private investment will be initially low, or they align with public concerns of government. However, these organizations also have to continuously struggle to prove their usefulness because the process-oriented services of innovation brokers, such as demand articulation and network composition, take place in the early phases of the innovation process and are highly intangible and invisible, i.e., non-compatible with SMART (Specific, Measurable, Agreed, Realistic, Time-bound) criteria. Also, in their role as innovation process managers, innovation brokers sometimes choose to operate in the background, or their contribution cannot be easily distilled as they operate in multi-actor networks. The contribution of innovation brokers to a successful innovation is thus in hindsight often taken for granted by clients, or their specific contribution is hard to define. If this work is done on a fee-for-service basis, there is often little initial incentive to pay for such a service, and organizations experience difficulties charging for it. Despite being for-profit organizations, their income is often largely derived from public funds through the innovation subsidies that they channel. Publicly financed organizations do not have this complication as the cost of their activities is covered, but the difficulty of showing the effect of activities on the end result may undeservedly negatively influence impact evaluations.

As a response to these funding tensions and changes in funding schemes (i.e., the gradual withdrawal of public funding to make innovation brokers self-financing), innovation broker organizations may also simply cease to exist because they cannot make innovation brokerage

activities profitable. Another possibility is that they become a content-providing consultant rather than a facilitator; this may hamper the demand articulation and network composition function, as brokers are no longer seen as neutral and credible in their function of referral service and matchmakers. The problem of showing the impact in evaluations and unstable public policy on innovation brokers is illustrated in the case of ISW (Innovation Supportpoint Wageningen). Government-funded ISW had high client satisfaction but was nevertheless discontinued. However, one year after dissolving ISW, the Ministry of Agriculture decided to co-invest in a pilot project aimed at including the agricultural sector within the service provision of Syntens (a non-agricultural innovation broker financed by the Ministry of Economic Affairs), and funded the Syntens Agro pilot which essentially provided the same services as ISW.

Despite this vicious circle of short-term funding - disappearance of the innovation broker - and renewed funding of a similar innovation broker, it is specific policy to publicly support innovation brokers only temporarily (exceptions include the systemic instruments of which there is more acceptance that facilitating innovation costs time, and that failure is inherent in radical innovation) and that they should become self-sufficient. Here again the social dilemma comes into play in the sense that the systemic contribution of innovation brokers is recognized, but individual actors who benefit from the contribution made by innovation brokers to the system's innovation capacity are hesitant to contribute long term to the intermediaries' funding without having a short-term return-on-investment. Such a short-term vision is symptomatic of the current post-privatization market-based knowledge infrastructure, in which there is an emphasis on short projects that have to compete each time in competitive grant schemes to secure continued funding and have to serve specific policy objectives that may radically change. From the Dutch cases it is clear that the demand articulation and network composition activities need continued public funding, but the innovation process management function, if added value is recognized, could be funded by means of private payments from network participants. This function could then also be fulfilled by research and extension service parties who have facilitation as a new activity, and thus the perceived function ambiguity could be resolved.

### *3.5 Overall lessons from the Netherlands experience*

After 15 years of experimenting, there appears to be a growing recognition of the value of innovation brokers in the new agricultural innovation system of the Netherlands. The fact that they

have become more accepted is shown by the increase in the number of innovation brokers of all types, with the result that there is now a complete palette of innovation brokers for different sub-sectors (see Klerkx and Leeuwis, 2009a). This is not the result of coordinated policy however, but generally of regional or sub-sectoral initiatives, as most innovation brokers emerged and continue to emerge in a bottom-up fashion as a result of concerted action by both public and private parties. It remains a fundamental challenge to sustainably embed the innovation broker function in the agricultural innovation system. One policy implication is hence that a considerable incubation period is required to change attitudes towards supporting the intangible and invisible services provided by innovation brokers. Without this period of incubation, neither policy nor private support will emerge to sustain them.

An overriding observation about the effectiveness of innovation brokers in the Netherlands is that both their strengths and weaknesses (tensions) arise partially because of inherent characteristics of the different innovation brokerage mechanisms and functions. However, it is also clear that the effectiveness of these mechanisms can only be properly understood in the context of the institutional and political circumstances that gave rise to them. A related point is that the effectiveness of these mechanisms also rests on a much wider set of institutional settings than might be imagined, for example, the perceptions of the role and, most importantly, the value of brokers in society. These perceptions and accepted ways of working are themselves changing over time as a result of experimentation with brokerage. In other words, the incorporation of innovation brokers into the overall agricultural innovation capacity of a country is truly dependant on a process of institutional and policy learning, and this is likely to be a long-term process. The effectiveness, and for that matter composition, of innovation brokers in the Netherlands was different 10 years ago and, because of the effects of this policy and the institutional learning process, is likely to be different again in 10 years time. This of course raises a larger question. If the effectiveness of broking mechanisms is determined by institutional and policy learning at a macro level, how can this be accelerated? This question in turn points to the fact that public policy may have to assume a new role and approach in its efforts to promote innovation because of the systemic and evolutionary nature of the capacities involved, as the Netherlands case has shown.

The following sections chalk out some of the practical implications of the Netherlands case for developing countries looking to strengthen their innovation capacity.

#### 4. Innovation brokers in emerging economies – observations and options

We have seen that innovation brokers have proven to play useful roles in the Dutch agricultural innovation system. A relevant question is of course whether these experiences bear relevance to innovation systems in emerging economies, or whether the conditions in which these brokers emerged, and their contributions, are uniquely determined by the Dutch institutional setting. Whereas the Dutch agricultural innovation system used to be characterized by great cohesion and has been affected by full privatization of the supporting knowledge infrastructure, this may be different elsewhere. Moreover, it should be kept in mind that there are different cultures of collaboration that affect the potential for innovation brokers to be effective (Siemsen, 2005; Lenné, 2008). Also, especially in the context of rural poverty, differentiated approaches are needed in the design of such systemic intermediaries depending on a combination of asset position, favorable or unfavorable production environments (Berdegue & Escobar, 2002; Van Mele, 2008), and gender issues (Caniels, Romijn, & Wildt, 2006). However, in many countries, conditions and challenges are broadly similar to those in the Netherlands: the need to enhance networking in the innovation system, the need for a guiding agent in a fragmented innovation system, and the need to deal with the challenges of multi-functional agriculture (Clark, 2002; Sulaiman *et al.*, 2005; Hall, 2006; Spielman *et al.*, 2008). Hence, a relevant question here is: who are innovation brokers in the context of developing country agriculture? A review of the literature shows that in the context of agricultural innovation in developing countries there are already many parties fulfilling innovation brokerage roles. Examples include:

- *National NGOs.* Goldberger (2008) describes the way NGOs have brought together several actors in Kenyan agriculture to facilitate the transition to organic agriculture in export horticulture production. Cabero and van Immerzeel (2007) report on Pachamama Raymi as a farmer network broker for sharing indigenous knowledge in Bolivia.
- *International NGOs.* Clark, Hall, Sulaiman, & Naik (2003) and Hall, Clark, & Naik (2007) document the activities of an international NGO, International Development Enterprises, in managing, respectively, packing technology and low cost irrigation pump innovations in India and Bangladesh. Other examples of international NGOs are, for example, the PROLINNOVA initiative

(Waters-Bayer, Van Veldhuizen, Wongtschowski, & Wettasinha, 2008), or the Latin-American Grupo Chorlaví (Ramirez & Pino, 2008).

- *(Descendants of) special projects.* Bentley *et al.* (2007) describe the Bolivian Innova project that acted as a demand articulator for farm technology, with subsequent network formation. Adeoti and Olubamiwa (2009) report on the cocoa rebirth initiative to forge linkages in the Nigerian cocoa innovation system. Clark, Yoganand, and Hall (2002) document the evolution of the Andhra Pradesh-Netherlands Biotechnology Program to a self-financed broker of research and development projects using biotechnology to address smallholder agriculture.
- *International donor agencies.* Kuada and Sørensen (2005) describe the role of the Danish development agency, Danida, in fulfilling the role of broker in inter-firm collaboration in Ghana, and Van Leeuwen, Beekmans, and van Haeringen (2007) describe a similar role for the Dutch development organization, SNV, in several Latin-American countries.
- *Experiments in national research and extension programs.* Hall and Yoganand (2004) document experimentation in the Ugandan agricultural extensions systems and the creation of the National Agricultural Advisory Services (NAADS) that provided funds to farmers to hire and train private services providers to act as innovation brokers and assist with technology and marketing support. The National Agricultural Innovation Program of the Indian Council of Agricultural Research with its focus on the establishment of consortia around agricultural development themes is another example of such experimentation ([www.naip.icar.org.in](http://www.naip.icar.org.in)).
- *Farmer and industry organizations.* Heemskerk and Wennink (2004) describe the role of farmers' organizations in bonding African farmers into farmer groups, connecting these with other organizations, and linking them to formalized agricultural research and extension to influence research and extension agenda setting and execution. In the Colombian cut flower industry, the Ceniflores innovation center was set up by producers' associations to act as an independent "virtual" broker between the industry and research institutes, supporting demand articulation and platform formation (Lee & González, 2006). Other descriptions of such roles in, e.g., linking farmers to markets, building innovation systems, or supporting territorial development are provided by Wennink and Schrader (2007) and Abramovay, Magalhães, & Schröder (2008).
- *Research organizations or affiliates.* Hocdé, Triomphe, Faure, and Dulcire (2008) deliberate upon the role of researchers as innovation brokers, and Van Mele (2008) suggests that the innovation

broker role would be a new role for the CGIAR institutes. Spielman *et al.* (2007) describe the case of the AGRONATURA Science Park at the International Center for Tropical Agriculture. It hosts private companies and other research, technology, and development organizations and aims at building relationships, financing new research projects, and promoting private-sector research. Devaux *et al.* (2009) describe this role of the International Potato Center in the context of value chain innovations (i.e., linking farmers to markets) through the Papa Andina project, and Kristjanson *et al.* (2009) describe several efforts of the International Livestock Research Institute in facilitating livestock husbandry-related innovations.

- *Specialist third party organizations.* Hall (2005) describes the International Organization for the Acquisition of Agri-Biotechnology Applications (ISAAA), a non-profit organization established to broker access to technologies, genes, and protocols owned by the private sector or held in public laboratories in developed countries.
- *Government organizations.* Hartwich, Monge Pérez, Ampuero Ramos, and Soto (2007) describe the Bolivian SIBTA (Sistema Boliviano de Tecnología Agropecuaria), a joint government-NGO supported initiative that combined a fund for applied technical innovation projects and a knowledge management scheme based on the idea of markets for local knowledge. Implicitly, this scheme permitted networking among a range of agents. Vera-Cruz, Dutrénit, Ekboir, Martínez, and Torres-Vargas (2008) describe a similar development of the Mexican Produce Foundations. Bell and Juma (2007) and Nelson (2007) describe the respective role of the Fundación Chile and CORFO (Corporación de Fomento de la Producción) as boosters of the networking with foreign technology sources that co-enabled Chile's agricultural development.
- *ICT-based brokers.* Although often on a more operational level (market/production information) than for strategic (innovation) purposes, a range of ICT-based brokerage instruments have been applied to act as "infomediaries" (Rao, 2007), such as information kiosks in India through which farmers may access cattle health information (Ramkumar, Garforth, Rao, & Heffernan, 2007).

The main difference of the already existing innovation brokerage interventions in the developing country context from those in the Dutch context appears to lie in the fact that the interventions in the Dutch case concern mainly new and specialized organizations, whereas in the context of developing countries many parties fulfilling innovation brokerage roles can be considered traditional intermediaries that take up such innovation brokerage functions in addition to their traditional roles as

representatives, funding agencies, and research organizations. Such new roles have either purposefully or serendipitously emerged and have been found to have similar beneficial effects on innovation as those reported for the Dutch innovation brokers (see, e.g., Bentley *et al.*, 2007; Kristjanson *et al.*, 2009; Devaux *et al.*, 2009). However, it would be interesting to assess the effect of this organizational connection with traditional roles (such as research and extension, advocacy and representation, and funding) on the core values of neutrality and credibility. Having mixed identities may have negative effects on the organizational and institutional maneuvering space that is given to execute the innovation brokerage role, and on the sustainability of this role, as has been noted by several authors (Hulsebosch, Marcilly, & Schaeffers, 2006; Kristjanson *et al.*, 2009; Devaux *et al.*, 2009). Positioning innovation brokers as organizationally detached from existing organizations may be an option to prevent neutrality tensions and to provide more freedom to act as an innovation catalyst and bring about institutional change, but it also bears its own tensions with regard to neutrality, function overlap, and funding, as the analysis above has shown.

There are several indications from the Dutch case that these independent brokerage agents need some form of continued support from a public funding agency, or through collective funds such as farmer levies. In the case of developing countries also it has been noted that there is a need for such public sector promoting agents or system coordinators (Hartwich, Monge Pérez *et al.*, 2007). Public or donor funding may be justified since: (1) it appears inherently difficult to make the demand articulation and network composition functions self-sufficient; (2) innovation brokers contribute to systemic interaction, hence mitigate innovation system failure (which would provide a rationale for public intervention – see, e.g., Smith, 2000), and have a role as catalysts of innovation; and (3) innovation brokers can more neutrally fulfill the role of facilitator than parties that have a substantive stake in the subsequent research or innovation process. Nevertheless, some challenges also emerge in this regard, including (1) the difficulty of assessing the contribution of innovation brokers through conventional forms of impact evaluation; (2) the proper demarcation of the mandate of publicly financed innovation brokers, as activities that go beyond demand articulation and network composition are sometimes perceived as competition; and (3) the risk that due to resource dependencies the innovation broker may nevertheless become a more or less “hidden messenger” for government or another party – a perception that may be detrimental to its impartiality, credibility, and hence longevity.

These findings have important implications for governments in developing countries and for donors, as countries may have fewer resources, and development assistance with its focus on projects is inherently susceptible to “funding impatience”. This may mean that innovation brokerage roles cease to exist when a project has ended (see Clark *et al.*, 2003; Siemsen, 2005; Caniels *et al.*, 2006; Kristjanson *et al.*, 2009), whereas the acquired innovation brokerage skills and social capital that have been built up could be used to set up other projects. It is thus important to see how in this context innovation brokerage organizations can become durably embedded. Possibly, the role of independent innovation broker can be played by what is left of public agricultural extension services, as has been suggested by several authors (Alex, Zijp, & Byerlee, 2002; Leeuwis, 2004; Sulaiman *et al.*, 2005; World Bank, 2008). However, what is then required is a shift from technology transfer agents to facilitators, and this has major implications in terms of organization structures, cultures, and incentive mechanisms, as well as for the knowledge and competences that present and future extensionists need to possess (see Leeuwis, 2004; Davis, Ekboir, & Spielman, 2008).

## **5. Conclusions and implications for policy**

We have argued that it is plausible that investment in innovation brokers may be sensible not only in the Dutch context, but also in emerging economies. In fact, we have seen that existing organizations have expanded their mandate and are already taking up innovation brokerage roles. Whether such organizations are ideally placed to play these roles is a subject for further study; the Dutch case suggests that specialized innovation brokers can be more neutral and credible in fulfilling important roles such as demand articulation, network building, and innovation process management. In any case, there remains significant scope for existing research and extension organizations to retool themselves in order to play new roles (World Bank, 2008; Hocdé *et al.*, 2008; Devaux *et al.*, 2009). As Kristjanson *et al.* (2009:6) make us realize, this may not be an easy process: “boundary spanning may be institutionalized by creating a new organization or by making it a function of part of an existing organization. Existing institutions, however, are often disinclined to invest in boundary-spanning activities that appear extrinsic rather than central to their core mission, whereas government and private funding agencies have proved reluctant to invest in the creation of new organizations

aiming to serve as 'go-betweens'. Largely for this reason, there exists little incentive for individuals to build their careers in the 'boundary space'."

Besides the question of *who* should perform innovation brokerage roles, an important question is *how* to foster their emergence. A striking feature of the Dutch case is that centrally designed blueprints failed, and that successful innovation brokers (even if eventually subsidized) emerged in a self-organized manner, building on local, regional, or sectoral initiatives, and resulting in a very diverse landscape of contextually embedded innovation brokers. Moreover, we have seen that the current configuration has evolved over time, required considerable experimentation and institutional adaptation, and continues to be dynamic. Combined with the generally bad experiences with the wholesale transfer of institutional innovations from one country to another, such as the fallacy of universal agricultural extension models (Sulaiman & Hall, 2008), this leads to the conclusion that we need a policy approach that encourages institutional learning and experimentation. As a one-size-fits-all approach to innovation system interventions is inappropriate (Hartwich, Gottret *et al.*, 2007), the Dutch innovation brokers should be seen as an inspiration rather than a blueprint. In order to allow innovation brokers to emerge and become embedded contextually, we think it important to raise several points that require attention during such a process. First, we feel that it is essential to adequately map and diagnose the strengths and weaknesses of the relevant innovation system in order to develop a clear vision about which weaknesses to tackle, at which system aggregation level, and with what kind of innovation ambition (radical or incremental innovation). In doing so, it should also become clear whether some parties already fulfill an innovation brokerage role and to what extent these may complement or overlap with the envisioned task of the proposed innovation broker. Once established, an innovation broker organization should be given considerable freedom to explore new options and establish new linkages, and not be tied to prescribed input-output schemes and log-frame-determined performance indicators. It should be recognized that the primary work of innovation brokers is to improve the quality of interactions and processes during innovation trajectories, and that this includes many intangible contributions to making interdependent actors and networks collaborate effectively. In performing such roles, they have accountabilities to several parties and thus they will always have to perform a balancing act.

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<sup>1</sup> The basis of the Farmer Field School (FFS) is the belief that, if farmers are to gain the confidence to lower dependence on insecticides, they need to become acquainted with certain agro-ecological principles which are best acquired through discovery learning. An FFS is a group of farmers (roughly 20–25) who meet periodically (usually once a week) in a designated field throughout the major part of the crop cycle (Tripp, Wijeratne, & Piyadasa, 2005). FFSs are increasingly seen more broadly as a way of farmer-to-farmer extension (Anandajayasekeram, Davis, & Workneh, 2007).

<sup>2</sup> No studies have been carried out so far on the economic efficiency of innovation brokers. Such a study is not easy to carry out given their rather intangible and behind the scenes mode of operating. This is further illustrated in section 3.4.

<sup>3</sup> As Groot (2002) argues, facilitators can never act totally neutrally because the norms and values of facilitators always (subconsciously) influence the way they perceive the issue at stake, the choice of their theories and methodologies, and their actions. They should hence strive for “acceptable” neutrality.

<sup>4</sup> In the 2008 publication, KnowHouse is referred to by the pseudonym InnoFac, because of confidentiality concerns at the time of the research.