

THEMATIC NOTE 4

The Role of Innovation Brokers in Agricultural Innovation Systems

Laurens Klerkx, Wageningen University

Peter Gildemacher, Royal Tropical Institute (KIT)

SYNOPSIS

“Innovation brokers” are persons or organizations that, from a relatively impartial third-party position, purposefully catalyze innovation through bringing together actors and facilitating their interaction. Innovation brokering expands the role of agricultural extension from that of a one-to-one intermediary between research and farmers to that of an intermediary that creates and facilitates many-to-many relationships. As an organization and function, innovation brokering differs from traditional extension and R&D because it represents the institutionalization of the facilitation role, with a broad systemic, multiactor, innovation systems perspective. Preliminary lessons from experience are that innovation brokers help build synergy in agricultural innovation systems, but their “behind-the-scenes” mode of operating conceals their impact and may limit financial support for their role. Their contributions to building capacity for collective innovation and preventing innovation-system failures offer a rationale for public investment in their activities, but such investments must be accompanied by improved methods for measuring the impact of innovation brokering. As “honest brokers,” innovation brokers need considerable room to maneuver in building and facilitating networks from a credible position. Given that countries may have different cultures of collaboration and different stages of innovation system development (with corresponding system imperfections), a context-specific design is required for innovation brokers to attain a credible position.

WHAT IS THE RATIONALE FOR INVESTING IN INNOVATION BROKERS?

Over the past decades, the stakeholders in agricultural innovation have become more numerous and their interactions more complex (World Bank 2006). This increased

complexity has made cooperation for innovation less straightforward. To function, an AIS required shared visions, well-established links and information flows among the actors, and incentives that enhance cooperation (World Bank 2006). Interaction between stakeholders that are different enough to have new knowledge but related enough to understand each other seems particularly to lead to innovation—a relationship described aptly by Granovetter (1985) as “the strength of weak ties.”

Creating and fostering effective coalitions among actors is often hindered by incomplete information about what potential partners can offer, by different incentive systems for public and private actors, differences between indigenous and formal knowledge, social differences that cause exclusion of certain actors, or ideological differences (Pant and Hambly-Odame 2006). Innovation scholars (Burt 2004, Obstfeld 2005) emphasize the importance of having people who act as brokers in networks, connecting stakeholders that are not familiar to each other but may provide the “new combinations” essential to innovation. It is also recognized that a dedicated actor can fulfill this role of “innovation broker” (Smits and Kuhlmann 2004; Howells 2006).

Innovation brokers act as “systemic intermediaries” in innovation systems, forging many-to-many relationships. While the term “broker” has the connotation of a strategically acting go-between who benefits from the separation between actors and pursues objectives mainly out of self-interest, the concept of “innovation broker” derives from the notion of an “honest broker,” who brings people together mainly for altruistic purposes (Obstfeld 2005). The role of the honest broker resembles a broadened notion of the role of a process facilitator (Klerkx and Leeuwis 2009). In other words, innovation brokers are facilitators of interaction and cooperation in innovation systems, and their activities extend throughout innovation processes that last several years.

In the agricultural sector, innovation is vital for sustainable economic, social, and ecological development. Efforts to overcome the many barriers to effective communication, cooperation, and ultimately innovation are thus central to the public interest and justify public investments.

WHO CAN BROKER AND HOW?

Any advisory service or related individual or organization can broker, connecting farmers to different service providers and other actors in the agricultural food chain. Examples include research organizations such as those of the CGIAR, national and international NGOs, specialized consultancy firms, temporary projects, government programs, and farmers' organizations (see Klerkx, Hall, and Leeuwis 2009 for examples). Although public organizations such as extension services and research organizations could perform innovation brokering as part of their mandates (see TN 3), many retain a linear, transfer-of-technology

mindset and lack the capacity to fulfill this role (Rivera and Sulaiman V. 2009; Devaux et al. 2009). Innovation brokers can also be independent, specialized organizations with a skill set especially tailored to innovation brokering. A broad range of specialized innovation brokers has emerged, for example, in the Netherlands (Klerkx and Leeuwis 2009). Developing countries such as Kenya (boxes 3.23 and 3.24) and India (box 3.25) have done the same in recent years (Klerkx, Hall, and Leeuwis 2009).

Innovation brokering typically comprises the following functions, to be applied in a flexible and iterative manner (Klerkx and Leeuwis 2009; Kristjanson et al. 2009):

- **Analyzing the context and articulating demand.** The participatory assessment of problems and opportunities through quick system diagnosis identifies promising entry points (in terms of prospective markets), supportive policy, and constraining factors to be overcome. The analysis provides information to stipulate a shared vision

Box 3.23 The Need for Innovation Brokering: Supplying Potatoes for Processing in Kenya

In Kenya, DEEPA Industries Ltd. expanded its potato crisp production capacity from 2 to 12 tons a day, but its fully automated production line required a steady supply of high-quality potatoes. The International Potato Center (CIP) and the Kenya Agricultural Research Institute (KARI) organized and facilitated a meeting in 2005 to see if an arrangement could be brokered between the processor and potato producer groups in Bomet District. During the meeting, agreements were reached on a fixed price for farmers' produce, transport arrangements, and the regular supply of produce. The parties also agreed that the local public extension office would support the producer organization's efforts to supply the processor. No stable source of funds for continued brokering beyond this one-off meeting could be identified to continue supporting development of this emerging beneficial relationship between actors.

The transporter of the first shipment sold the high-quality potatoes destined for the processor elsewhere for a higher price and replaced them with potatoes of lower quality. The processor declined to accept further deliveries from the producers because they did not meet the quality requirements, with the result that a

constant supply of potatoes did not materialize. The processor had to scale down his ambition of exporting to other East African countries.

A structured and sustained innovation brokering effort could have made a big impact by building a working coalition between the different stakeholders in the innovation process. A more harmonized and effective contribution by research, extension, the private sector, and producers would have been possible through a clearly mandated broker.

Three years later, in the context of a development project funded by the Common Fund for Commodities (CFC), CIP and KARI renewed efforts to broker organizational innovation. Meetings are being organized to build trust and structure communication and economic interactions between the actors. Currently research, agricultural extension, producer groups, and DEEPA are innovating within the production chain by using high-quality, clean seed, contract farming, direct purchasing, local collection of the produce, and testing new genetic material for quality in crisp processing. These initiatives resemble types 1, 2, 3 in the typology of innovation brokering presented in table 3.9.

Sources: D. Borus and P. Gildemacher, CIP, Nairobi.

The Innovation Works Unit of the International Livestock Research Institute (ILRI) sought to facilitate pro-poor innovation related to livestock husbandry through efforts with a local as well as a systemic focus. The unit created several learning platforms for public and private stakeholders in particular projects. The platforms, which were mediated by local facilitators hired by the different projects, can be characterized as hybrids of an innovation consultant and a systemic intermediary (see the typology in table 3.9). The different projects funded innovation brokering through the platforms.

The platforms often took the form of safe havens—environments outside each of the participating organizations that provided a more neutral space conducive to creativity and co-creation, bypassing dominant groups committed to maintaining the status quo. A concrete example involved facilitation of the inclusion

of local pastoral Maasai communities as equal partners in drawing up a land-use master plan, in which local and scientific knowledge were combined. The Maasai gained a voice in the policy debate from which they had been excluded. A major achievement was that the facilitators tackled the huge power imbalances across their multipartner project team, such as the often unrecognized power of scientific experts. To build trust and demonstrate respect for the knowledge of all partners in the project, the facilitators pursued multiple strategies, such as hiring local community members as members of the core project research team and encouraging the joint creation of knowledge by a hybrid team of scientists and community members.

Despite these achievements, this kind of mediation often remains unrecognized and undervalued. It was difficult to make it a central function of an institute such as ILRI and get it funded.

Source: Kristjanson et al. 2009; see also www.ilri.org/innovationworks.

and articulate demands for technology, knowledge, funding, and other resources.

- **Composing networks.** Facilitate linkages among relevant actors—specifically, by scanning, scoping, filtering, and matchmaking possible partners that have complementary resources such as knowledge, technology, and funding. This also includes matching demand and supply in pluralistic advisory and research systems.
- **Facilitating interaction.** Action planning, along with the identification of and support to those taking leadership in multistakeholder activities, has the main objective of building functioning stakeholder coalitions. Considering the different backgrounds of the actors involved, coalition building requires continuous “translation” between actors, the building of trust, establishing working procedures, fostering learning, motivating, managing conflict, and intellectual property management.

Different types of innovation brokers have been observed, working at different levels of the innovation system and varying in their level of ambition and thematic scope. Table 3.9 presents a tentative typology based on the Dutch landscape of specialized innovation brokers (Klerkx and Leeuwis 2009). Although several of the types

described here can be found elsewhere, the typology is subject to further research and amendment (Klerkx, Hall, and Leeuwis 2009).

Innovation brokers have been found at the supranational (across several countries), national (country), regional (province, district), and (sub)sectoral or commodity level (such as dairy or horticulture), but these levels may also mix (for example, when dealing with cross-cutting value chain innovations). With respect to their level of ambition, some innovation brokers focus mostly on incremental innovations at the farm level, in a demand-driven and bottom-up fashion. They may be reactive, responding to clients’ ideas, or they can more pro-actively approach prospective clients and offer a context analysis and demand articulation session (Klerkx and Leeuwis 2008). Other innovation brokers typically focus on radical innovations that comprise complete (sub)sectors or value chains, dealing with complex problems that require a systemwide change process. In this case, innovation brokers are often proactive initiators of processes and act as change agents. With respect to thematic scope, some innovation brokers focus on one sector (dairy alone, for example), whereas others address all kinds of sectors within a region, and still others focus exclusively on a specific activity (rural tourism, for example). The optimal

Several types of innovation brokers have emerged in India. They have taken different organizational forms, they operate at different levels in the innovation system, and their scope of innovation differs.

International Development Enterprises. In India and Bangladesh, an international NGO, International Development Enterprises (IDE), acted as a broker in the process of developing innovations for low-cost irrigation pumps. (In Bangladesh, aside from coordinating interaction among actors in the irrigation pump supply chain, IDE also coordinated interaction with policy makers.) Because of IDE's intervention, the focus broadened from developing a particular technology to realizing the vision of effective irrigation water provision for the poor. Institutional innovations were the key to realizing that vision and included changing the incentives for public and private actors and creating effective demand for the technology so that a self-sustaining market could emerge. IDE acted as a local innovation consultant as well as an instrument for systemic innovation.

Using ICT and social media to build awareness of innovations and other information. To truly benefit from farmers' creativity and experimentation, several

initiatives use ICT and social media to identify and build awareness of little-known innovations. Participants can share experiences and scale up successful efforts. These initiatives are hybrids of an innovation consultant, a peer network broker, and a ICT-based platform that helps to articulate demands and build networks. Examples include the HoneyBee Network and Villagro Network, which scout for innovations for their databases and connect innovators to supporting agencies such as India's National Innovation Foundation. The networks also help participants to patent innovations and find investors to develop products. Sustainable inventions from the Honey Bee database comprise 34 categories, including agricultural tools and techniques, water conservation, health, education innovation, food and nutrition, traditional medicine, and industrial and household goods. (Example of specific innovations include a motorcycle-driven plow for farmers who cannot afford tractors or bullocks and matchsticks made of natural fibers sourced from agricultural waste.) Still other efforts use ICT-based brokering instruments ("infomediaries") to share operational (market and production) information (rather than strategic information) for innovation.

Sources: Authors; Gupta et al. 2003; Hall, Clark, and Naik 2007; Murthy 2010; see also www.ideorg.org, www.honeybee.org, and www.villagro.org.

innovation system level, ambition level, and thematic scope of the work can be determined only in the course of the interaction between innovation brokers and their clients. This uncertainty implies that sometimes clients will need to be referred to another type of innovation broker than the one they originally started to work with. In other instances, several complementary innovation brokers are involved within a single innovation process (Klerkx, Aarts, and Leeuwis 2010, Devaux et al. 2010).

WHAT ARE THE POTENTIAL BENEFITS OF INVOLVING AND INVESTING IN INNOVATION BROKERS?

The current imperfect interaction between the actors essential for agricultural innovation—farmers and their organizations, researchers, extension, agricultural service providers, local government, agribusiness—is often not a

result of unwillingness to interact but of a lack of capacities, structures, and incentives to interact effectively. Through investments in innovation brokering, communication between the multiple actors can improve greatly. By providing fresh insights and a mirror for self-reflection, innovation brokers stimulate clients to look beyond their current situation and constraints. For example, farmers and other agrifood stakeholders can think about new possibilities to improve their businesses, or producer organizations, researchers, and extension service providers can think about innovative manners of communicating. Impartial, honest brokers, because of their less-biased position and the overview of the system that they can provide, can forge contacts between parties that would normally not cooperate. They can also mediate more easily in the case of conflict (see the first point in the section, "What Key Issues Should Be Considered?," later in this TN). Hence they can assist in promoting more perfect information.

Table 3.9 Typology of Innovation Brokers

Type of broker*	Focus
1. Innovation consultants, aimed at individual farmers and small and medium enterprises (SMEs) in the agrifood sector	Connect farmers/agrifood SMEs with relevant collaborators and service providers and also with sources of funding and policy information. Generally incremental innovation; short time horizons.
2. Innovation consultants aimed at collectives of farmers and agrifood SMEs	Similar to type 1. The main difference is that they work with collectives, first connecting farmers or agrifood SMEs with similar interests and then connecting these actors with relevant collaborators, service providers, and sources of funding and policy information. Generally incremental innovation; short time horizons.
3. Peer network brokers	Aim to bring farmers together to exchange knowledge and experience at the interpersonal and group level—in other words, to facilitate enterprise development through peer-to-peer learning resembling concepts such as Farmer Field Schools. An explicit objective is to involve actors from weak networks (surpassing regional and sectoral networks) by inviting entrepreneurs from other regions or sectors and subject matter specialists.
4. Systemic intermediaries for the support of innovation at higher system level	Catalyze radical systemwide innovation (such as an entire production chain, societal systems, or policy systems) by: (1) managing interfaces between (sub)systems in the innovation system; (2) building and organizing (innovation) systems; (3) stimulating strategy and vision development; (4) providing an infrastructure for strategic intelligence; and (5) providing a platform for learning and experimenting. Involve several societal actors, including farmers, supply and processing industry, civic advocacy organization, and policy makers, for example. Generally radical/system innovation and transition trajectories; medium to long time horizons.
5. Internet-based portals, platforms, and databases that disclose relevant knowledge and information	Portals and platforms differ with regard to their prospective audiences, which may be selective (such as farmers), all agrichain actors, or project-related audiences. Portals and platforms may have a rather passive matchmaking role. Some portals create order in a wealth of information sources and give an overview but do not serve as a selection aid. Interactive tools exist, however, to allow the provision of services adapted to users' needs. Addressing both operational or tactical problems and strategic innovation issues; short time horizons.
6. Research councils with innovation agency	Management of multiactor R&D planning networks (involving farmers, supply and processing industry, civic advocacy organization, policy makers)—e.g., facilitating a demand-driven research agenda and priority setting. Facilitation of participatory/collaborative R&D (involving end-user participation), also addressing the creation of an enabling environment for enhancing research result uptake. Incremental and radical innovations; short to medium time horizons.
7. Education brokers	Aimed at curricular innovation. Provide educational establishments with the latest insights from practice and research to enhance the fit of their education programs with business and societal needs.

Source: Adapted from Klerkx and Leeuwis 2009.

* Hybrids of different types of innovation brokers are possible within a single organization, as well as involvement of different types of innovation brokers within a project.

Broadly, innovation brokering can be expected to have immediate and long-term results. Direct results are expected through market innovations that arise when producers respond better to the needs of agribusiness and agribusiness operators develop a better understanding of production systems, as in the case of potatoes for the snack food industries in Kenya and Peru (box 3.23 and the description of Papa Andina in module 1, TN2). Brokering can facilitate technical innovation by improving how agricultural research service providers target serious bottlenecks in production or processing or by inducing required institutional change on the part of policy makers and legislators. Over the longer term, and beyond the immediate results of a single innovation brokering effort, brokering should improve how the overall innovation system functions. Once contacts have been made and working coalitions have

formed between stakeholders, the result should be more market-oriented research and advisory services, more effective agricultural value chains, and a more conducive policy environment—in other words, a better-functioning innovation system (Klerkx and Leeuwis 2008; Klerkx, Aarts, and Leeuwis 2010; see also box 3.24).

WHAT ARE THE MAIN INVESTMENTS NEEDED FOR INNOVATION BROKERING?

The main investments to mainstream the use of innovation brokers to support agricultural development are:

- **Improving the recognition and evidence that innovation brokering is useful.** Funding the innovation broker role is problematic. Even when organizations involved

in agricultural development see this role as central to their core missions, they lack the opportunity and freedom to execute the innovation broker role within their mandate (Kristjanson et al. 2009). To widen awareness of brokers' potential role in innovation and show that an investment in their role is justified, more structured documentation of successes and failures (specifically in developing countries) is required, followed by the publication and promotion of the outcomes.

- **Improving the understanding of how to implement innovation brokering effectively as a tool for development.** Implementers should take care to not simply copy innovation brokering models from one context to the other, as best-fit solutions should be sought (Berdegué and Escobar 2002). Different approaches are needed depending on asset positions, favorable or unfavorable production environments, gender issues, and power distribution (Kristjanson et al. 2009). To increase the understanding of effective approaches of innovation brokering, action-learning cases need to be initiated and documented in different countries and agricultural systems.
- **Improving human capacity to play the role of innovation broker.** First and foremost, innovation brokering requires skills related to process facilitation: leadership, multistakeholder facilitation, trust building, and communication; it also requires tools for managing group processes (Anandajayasekeram, Puskur, and Zerfu 2010). A system overview is required to permit stakeholders to understand and “translate” between each other. This skill set cannot be obtained through formal education alone but must be developed through a combination of formal education and practical experience. Investments are required to develop capable facilitators of innovation within organizations motivated to support agricultural innovation through brokering. A critical mass of experts and organizations in this field is still lacking, as reflected by the experience with NAADS in Uganda (Kibwika, Wals, and Nassuna-Musoke 2009) and the reorganization of agricultural service provision in Mozambique (Gêmo 2006). Traditional research and extension organizations must “retool” if they are to develop their innovation brokering capacity and abandon a mere transfer-of-technology paradigm (Devaux et al. 2009). The implication is that they must develop a service delivery philosophy and a mindset that recognizes multidisciplinary (including topics such as agricultural economics, sociology, and gender issues), as well as facilitation skills. Capacity-building

interventions should be local and context-specific and aim to build durable and, ideally, self-sustaining systems of continuous capacity improvement.

WHAT KEY ISSUES SHOULD BE CONSIDERED IN POLICIES TO ESTABLISH INNOVATION BROKERS?

A number of criteria determine whether an organization can play a role in brokering between actors in an AIS (Klerkx, Hall, and Leeuwis 2009). The most important are:

- **A legitimate mandate and credibility in the eyes of system stakeholders.** A key factor for the legitimacy of innovation brokers is that they must have a trusted position as a relatively neutral “honest broker.” They should have a reputation that instills a degree of independence from the major stakeholders in the process and the overall innovation system. This stance is not easy to maintain, because stakeholders may exert pressure to compose and facilitate networks in a way that fits their particular objectives. An apparent connection to an organization may negatively influence credibility as a neutral, honest broker, which seems to indicate that innovation brokers might work best as independent, specialized organizations. Innovation often challenges prevailing role divisions, power relations, and profit distribution. To build productive innovation networks, sometimes parties with vested interests need to be bypassed.
- **Both technical and methodological know-how and a clear role division.** Innovation brokers should have sufficient technical knowledge but should not become so involved with projects that they take over detailed management and take away ownership from the innovation network partners. They should also give equal attention to the goals and interests of each of the partners.
- **Funding sustainability.** A durable source of funding is an important requirement for effective innovation brokering. Often funding is on an ad hoc, project basis, and especially in times of fiscal austerity innovation brokering services are often discontinued, despite high client satisfaction (Klerkx and Leeuwis 2008). Because the impact of innovation brokers is difficult to make visible, durable public, donor, or private stakeholder funding is hard to obtain (box 3.24). Ways need to be found to assess the impact of innovation brokers and better justify public or donor spending, starting with detailed documentation of specific cases.

LESSONS LEARNED

Well-documented experiences with innovation brokering are limited, but there appears to be a growing recognition of professionals in research, extension, and advocacy who may have the skill set and honest broker status that we are looking for in innovation brokers. The development of innovation brokering services requires continued local experimentation, adaptation, and learning (Klerkx, Hall, and Leeuwis 2009). So far several general lessons have been learned, discussed below.

Context analysis is needed prior to or as part of the innovation broker establishment

It is essential to adequately map and diagnose the strengths and weaknesses of the relevant innovation system (see Gildemacher et al. 2009) to get a clear view on missing linkages and/or deficient interaction. In doing so, it should also become clear whether some parties already fulfill an innovation brokering role and the extent to which they may complement or overlap with the envisioned task of the proposed innovation broker. Such a preparatory phase of context mapping and consultative talks with stakeholders prior to innovation broker establishment may take between one and two years.

Some innovation brokering functions are generic

To bring structure into the process of innovation brokering, several generic steps in the process can be distinguished: (1) context analysis; (2) initial network composition; (3) participatory needs and opportunity assessment, including network recomposition when necessary; (4) action planning; (5) network facilitation/coordination, problem solving, and conflict resolution; and (6) exit strategy. As progress in innovation processes is rather unpredictable, no fixed time allocations can be given for these phases.

Innovation brokers can use existing tools, methods, and approaches, but innovation brokering is learning while trying

Attention for integrated innovation brokering in agricultural development is new. The capacity to play the role of innovation broker cannot be fully obtained through formal training. However, many practitioners will recognize the role of innovation broker as a role they have played or seen being played. Although innovation brokering is thus not yet a very well-articulated and recognized role, tools from other

approaches are available, such as the facilitation of multi-stakeholder interaction and value chain development. Innovation brokers can benefit from using such methods, to avoid “reinventing the wheel.”

The role of AIS theory should be appropriately modest

The real proof of concept is in practice. It is important for practitioners to keep in mind that it is the experience in practice that steers the development of theory. Considering that innovation brokering has been recognized only recently as an important and deliberate function in AIS, practitioners are often pioneers. This situation implies that they should make decisions based on their own understanding, experience, and judgment rather than search for answers from AIS theory. While trial-and-error learning may incur some inefficiencies in regard to effective spending of funds (Klerkx and Leeuwis 2008), experimentation appears to be needed to create locally adapted innovation brokers, as there is no one-size-fits-all model (Klerkx, Hall, and Leeuwis 2009).

Perfect innovation brokers do not exist

When listing the skills and attitudes required in a good innovation broker, an apparently endless list of required qualities will emerge. These qualities are impossible to find combined in a single person. Still, the role of innovation broker will depend on these imperfect individuals. Each individual will have to develop a personal style as a broker that fits his or her strengths and weaknesses.

A structured exchange of experiences supports capacity building

As this field is new and capacity building is needed, peers involved in innovation brokering need to invest time and effort in exchanging experiences. As a reference point, the Netherlands took about fifteen years to develop a diverse field of innovation brokers and recognize their role (Klerkx and Leeuwis 2009). A structure of peer-to-peer exchange and support will directly improve performance as well as help to build capacity.

Innovation brokers should negotiate and defend the freedom to explore options

Once established, an innovation broker should be given considerable freedom to explore new options and establish

new linkages. Brokers should not be tied to prescribed input-output schemes by either their employers or funders.

Monitoring and evaluation are needed for learning

Innovation is by definition an unsure process. It involves invention, adaptation, and changing directions as a response to the insights that are gained. It is difficult, even detrimental, to monitor progress through rigid and SMART milestones (Klerkx and Leeuwis 2008). Methods of M&E that focus on learning lessons are more suitable. Alternative M&E indicators should be identified by the stakeholders involved as relevant proof of progress, but (more important) these indicators should also serve as points of reference for learning to improve the process of innovation.

Recognize the difficulty of distinguishing and attributing outcomes

The primary work of innovation brokers is to improve the quality of interactions, which is a process that includes many intangible contributions. Innovation brokers will have to deal with the dilemma that they should sufficiently emphasize the impact of their role but not take all the credit (which may annoy stakeholders and diminish their ownership). While attribution is already a perennial challenge for extension programs, it is possibly even more problematic for innovation brokers, given their “behind-the-scenes” mode of operating. Because it is hard to distinguish and attribute the impacts of innovation brokering, it is also difficult to make the innovation broker role self-sufficient; willingness-to-pay is typically low among private actors. Long-term public investments appear to be needed in view of persistent innovation system failures such as fragmentation and lack of coordination. A focus on short-term funding may engender a vicious circle of short-term funding, leading to the disappearance of the innovation broker and renewed funding of a similar innovation broker.

Short-term results and long-term outcomes

It is important to keep in mind the two levels of results, direct and indirect, of innovation brokering. Direct and concrete activities and results are needed to keep the innovation coalition together long enough to build trust and build relationships. Without direct and concrete results and activities, it is impossible to keep actors motivated to invest in interaction and collaboration. Direct innovation results are also needed to justify investments in coalition building

and brokering. The biggest potential for impact is, however, through the long-term outcome of improved collaboration between actors, transforming the innovation system in such a way that it becomes responsive and contributes to a durably competitive agriculture sector.

RECOMMENDATIONS FOR PRACTITIONERS, POLICY MAKERS, AND PROJECT LEADERS

From the lessons learned so far, several recommendations can be distilled for brokers themselves, policy makers, project leaders, and those who champion innovation brokering.

Recommendations for prospective innovation brokers

- ***The problems and challenges that need to be tackled by innovation brokers may be different.*** Although not exclusive to developing and emerging countries, but maybe even more severe and pressing in light of rural poverty and natural resource scarcity and degradation, problems that need to be addressed include: dealing with competing claims on natural resources, inclusion of the poor and giving them a voice in the development process, and equitably integrating smallholder farmers in global value chains. For this reason, different approaches are needed in designing the brokering role. Prior to setting up an innovation broker (which may be an individual, a unit in an existing organization, or a new organization) in a region or sector, start with an analysis of innovation system imperfections, and assess the need for an innovation broker and willingness of stakeholders to support and/or work with a broker. Gain the confidence of stakeholders, and work to gain credibility as an honest broker in the innovation system.
- ***Plan for the nature of the different innovation broker functions*** (particularly context analysis, demand articulation, and initial composing of networks as first steps) in the different steps of the innovation process. Do not apply them as a blueprint, however. Be flexible at the same time. Assist in reassessing the context, needs, and opportunities when needed, and help networks to adjust accordingly. The facilitation of interaction is a dynamic activity, given that changing visions and networks require constant attention to mutual understanding and trust.
- ***The nature and intensity of the innovation broker’s role will most likely change over time.*** It should shift gradually from actively taking the initiative to handing over the

initiative and daily project management to project participants and acting in the more distant role of project monitor.

- ***A broker will have to deal with multiple accountabilities and conflicts of interest in the innovation process.*** Conflict management and intermediation skills are important. Brokers must prepare to deal with contrasting demands and the opposition of incumbent actors in the innovation systems who do not favor change. As an innovation broker, try to be as transparent as possible about the “what” and “why” of certain actions or interventions, to avoid giving false impressions. Perception management is essential. In some countries with weak governance, additional challenges need to be dealt with, such as corruption and favoritism. Due to resource dependencies an innovation broker may nevertheless become a more or less “hidden messenger” for government or another party—a perception that may be detrimental to the broker’s impartiality, credibility, and hence longevity.
- ***Take care in assigning credit for results.*** As the innovation process evolves and results materialize, the innovation project partners, other actors in the innovation system, and funding agencies should be made aware of the broker’s contribution in achieving these results. Brokers themselves should avoid taking credit from project participants.
- ***Expect the greatest reward and sign of accomplishment to be that an innovation broker may no longer be required when local innovation capacity has been built.*** The broker should withdraw rather than force his or her presence between actors. Brokers should think about an exit strategy from the beginning.

Recommendations for policy makers in government, research organizations, and other organizations

- ***Before establishing an innovation broker, assess innovation system failures and current innovation broker capacity to avoid duplication of effort.*** Remember that in some cases the need for context specificity may justify the coexistence of several innovation brokers. It is essential to stimulate interaction between different innovation brokers to demarcate mandates and complementarities. In the absence of coordination, overlap and even competition between innovation brokers can arise, engendering confusion among clients about who is facilitating what and reducing the synergies that innovation brokers should induce in innovation systems.

- ***When establishing innovation brokers, avoid maintaining an overly close organizational and ideological connection with the respective policy domain.*** Distance will enable the innovation broker to develop a clean, “honest broker” image and sufficient operational maneuvering space. Do not try to use innovation brokers as messengers to bring about government interventions. Sometimes radical innovation goes against current government policy.
- ***Accept that innovation brokers, by counteracting imperfections in the innovation system, also change the innovation system’s configurations and interaction patterns.*** Although such actions may challenge certain policy lines, policy makers who champion the role of honest brokers should accept this situation and defend it with their constituencies and peers in the policy domain.
- ***Allow sufficient freedom*** to forge unexpected linkages (for example, to connect agriculture with the gaming industry) and experiment (touching themes that at first sight do not have anything to do with current ways of agricultural production), but agree upon certain deliverables. Such deliverables could include the number of new concepts developed or the number of productive innovation networks forged, supported by narrative case reports of innovation dynamics. A supervisory board drawn from the different domains with which the innovation broker works should be installed to monitor the extent to which these deliverables have been realized. The board members are ideally well and widely respected but at the same time visionary and open to change.
- ***As in the case of market failure, innovation system failure justifies public investment,*** even though innovation is unpredictable and difficult to plan. Investment in innovation typically is of a “best bet” nature, and stimulating innovation means that investments are made in projects with an unknown and sometimes unviable outcome. Despite innovation brokering, failure may occur, but this does not mean that innovation brokering does not merit investment.
- ***Stimulate the development of M&E indicators that capture the rather intangible activities of innovation brokers,*** particularly indicators that move beyond case documentation and satisfy the need for quantitative justification of investment. Methods and indicators are especially needed to capture causal relationships between innovation network performance and the activities of innovation broker activities as well as the spillover effects of innovation brokers in innovation systems. Methodologies such as social network analysis may be promising

in this regard (see Spielman, Ekboir, and Davis 2009). Stimulate policy learning and institutional memory in relation to the roles and effects of innovation brokers to avoid a vicious circle in which innovation brokers appear, only to disappear and reappear.

- ***Creating innovation brokering capacity within an existing organization, such as an extension or research organization, requires the proper institutional conditions to be shaped.*** Innovation brokering cannot be judged on the basis of traditional performance criteria for research and extension, such as publications or numbers of field visits. Furthermore, management and staff need to gain an understanding of the role of innovation brokering so that it is not seen as extrinsic to the organization's core mission.
- ***Brokering is influenced by the nature of the AIS and institutional frameworks as well as cultures of collaboration.*** Many countries are characterized by "immature" innovation systems that lack a functioning knowledge infrastructure (research, education, advisory services) and by inadequate institutional frameworks (in terms of well-functioning legislation, markets, and interaction patterns). Policy makers should keep in mind that different cultures of collaboration may affect the potential effectiveness of innovation brokers (for example, in building trust, achieving a collective goal) because of the cultural organization of interaction among actors at different social and economic positions and issues like clientelism, social exclusion, nepotism, and corruption.

Recommendations for project leaders, project implementers, and/or innovation champions

- ***Prepare to give up preconceived ideas.*** Stimulating critical and creative "out-of-the box" thinking is a key role of innovation brokers.

- ***Establish a clear division of tasks*** in innovation process management, to avoid overlap and a lack of project ownership. Depending on the innovation network's internal capacity to manage innovation processes, the intensity of the broker's involvement may vary. Generally, daily project management is a principal task of project leaders/ implementers and/or innovation champions, while issues like process monitoring and conflict mitigation are a principal task of innovation brokers. The involvement of innovation brokers implies that reflection on project progress, the role of different partners, the viability of the vision, and objectives becomes an integral part of the project.
- ***Coordinate actions of the innovation network partners and the innovation broker when forming the network,*** to avoid confusion among the parties approached as to whom they should regard as their main contact person.
- ***Recognize that the innovation broker cannot always take a clear stand in advocating the interests of the innovation project versus external parties,*** although the broker is regarded as part of the innovation network. Advocacy is needed to some extent, but within certain limits. Innovation brokers that become too institutionalized in the project may benefit from having another innovation broker give a "second opinion."
- ***Although innovation brokers are often subsidized, if a private contribution is requested, realize that this investment is generally compensated by a lower failure rate and better access to external resources.*** In general, integrate the cost of innovation brokering in the overall project sum, and do not see it as an unnecessary investment lowering the research budget.
- ***Accept that innovation brokers cannot perform miracles.*** Some obstacles may be of such magnitude that they require prolonged action by innovation brokers (for example, through mediation) but nonetheless cannot be overcome.