



Linking Knowledge with Action Using Community Facilitators to Span Boundaries: Lessons from East Africa

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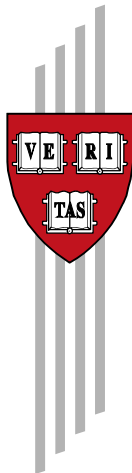
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Fellows of Harvard College



Working Papers

Center for International Development
at Harvard University

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Abstract

Advances of science may take much longer to translate into helpful societal actions without deliberate linkages among policy makers, practitioners, and scientists and an integration of their knowledge systems. Successful projects in sustainable knowledge-based action are not only multi-disciplinary and holistic in their approach, they also engage consistently with the consumers of the knowledge being generated. We present a model for integrating scientific and indigenous knowledge and strongly linking that knowledge with community and policy action to balance poverty alleviation and wildlife conservation in Maasai pastoral systems of East Africa. This model uses 'community facilitators' who act as 'boundary-spanning' individuals, linking pastoralist communities, scientists, and policy makers. Our experience indicates that there can be accelerated progress if the project deliberately creates and places a boundary-spanning person or organization at the community-science-policy interfaces to facilitate and promote linking knowledge with action. We found it was critical that the facilitation process ensures that scientists focus on answering important questions from community and policy viewpoints. Key lessons include the need for frequent and strategic community engagement, careful choice of appropriate local boundary spanning persons, the central role of co-production of boundary objects, and the inclusion of incentives for the key stakeholders.

Keywords: community facilitators, boundary spanning, Maasai Pastoralists, policy makers, land use, sustainable poverty alleviation.

JEL subject codes: 013, 016, 017, 031

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1. Introduction

The world is faced with a huge challenge of helping its present and future inhabitants to utilize available resources in a sustainable way (Reynolds et al. 2007, Millenium Ecosystem Assessment 2005). Central to this challenge is the problem of how to alleviate poverty and sustain natural resources at the same time, particularly in developing countries where the need is urgent and daunting (Young 2005, Crewe and Young 2002). Fighting poverty and sustaining natural resources demands a concerted effort among communities, policy makers and scientists so as to better understand the nature and extent of the gaps that have existed in institutions, how to formulate better procedures and program designs to support innovation, and to motivate the actors to continuously work together for better and more acceptable answers to present and future problems (Van Kerkhoff and Lebel 2006, Court and Maxwell 2005, Sumner and Tiwari 2005).

The question of sustainability is complex. It requires not only that multiple actors work together but that they also utilize investigative lenses from multiple disciplines to ensure that the problems are well understood from the viewpoint of a range of diverse disciplines (Van Kerkhoff and Lebel 2006, Agrawala et al. 2001). Further, the solutions arrived at should not only answer today's questions but also do so in a way that does not jeopardize the ability of other actors and stakeholders to achieve their aspirations while maintaining the critical ecological and biophysical conditions that are essential to our collective survival (Van Kerkhoff and Lebel 2006).

Organizations and policy makers need more of certain kinds of information to help them inform the policy process (McNie 2007), support action and create products. Often, scientists generate knowledge that is not actively linked to community or policymaker needs. Successful projects are not only multi-disciplinary and holistic in their approach, they are also those that engage consistently with the consumers of the knowledge being generated (Keough and Blahna 2006, Cash et al. 2003, Agrawala et al. 2001). Knowledge is more likely to lead to action if the processes of information generation and use are iterative, so that science supports policies that address societal goals (Hezri and Dovers 2006).

It is rare to find researchers, policy makers and communities fully engaged with each other, driven by the desire to support community needs with good and useful science and policies. Although many organizations are engaged in research that is geared towards finding solutions to prevailing problems, the majority of them find themselves pursuing the tasks either alone or with one of the other key stakeholders, but not both. When some engagement takes place, it is often either short-lived or cosmetic in nature (Crewe and Young 2002). Evidence shows that there may be substantial gains in constant community engagement and collaborative priority setting in knowledge-action projects (Keough and Blahna 2006, Agrawala et al. 2001, Guston 1999, Mbithi 1974).

In East Africa, like in many other pastoral systems in the developing world, pastoralists face a tremendous rate and extent of change in their lives (Coast 2002, Fratkin 2001,

Fratkin 1997), principally because of the loss of pastures for grazing livestock, huge population growth, underdeveloped markets, livestock diseases and unsupportive policy environments (Hesse and MacGregor 2006, Homewood and Rodgers 1991). There has been a lack of timely and appropriate information (Herrero et al. 2003) and a focus on the actual consumers of the information is rare (Van Kerkhoff and Lebel 2006).

Our overall project objective was to better link policy makers, communities and researchers; integrate their knowledge systems; and use that integration to support action on critical community and policy issues related to alleviating poverty and sustaining natural resources. In this paper, we will: (i) describe a novel model of using boundary-spanning individuals to link scientific and indigenous knowledge with community and policy action; (ii) provide lessons (based on the experiences of our work in Kenya and Tanzania) that will help others to better link knowledge with action; (iii) explore possibilities for broader application of this approach in other cases; (iv) discuss the circumstances where this approach would be most appropriate.

2. Study sites

The study sites were in pastoral systems where livestock are the main source of livelihoods; areas also rich in biodiversity, particularly large mammals. Site selection was purposeful in order to focus the work on pastoral welfare and wildlife conservation at the same time. We chose four sites (Kitengela, Mara, Amboseli-Longido and Simanjiro) that were culturally and socially similar within Maasailand, and could be compared across the national boundary of Kenya and Tanzania. They varied in agricultural productivity from dry to wet, representing areas close to and far from markets, and exposed to two different national policy environments.

Within these sites, the rainy seasons are bimodal, mostly unevenly spread and with frequent (five to ten year interval) drought occurrences (Sindiga 1984). The long rains fall around April to May while the short ones arrive between October and December. The Maasai Mara area is the wettest (a range of between 500–1000mm of rainfall), while the Amboseli-Longido is the driest (with a range of between 300–500mm). Kitengela and Simanjiro have a similar average annual rainfall range (500–700mm). Except in parts of the Mara where soils and rainfall can support rain-fed agriculture, the rest of the areas are mainly suitable for livestock production coupled with some limited rain-fed crop cultivation for subsistence purposes. Besides cultivation, increasing numbers of pastoralists have pursued a wide range of activities aimed at increasing and diversifying their sources of income and reducing their vulnerability to weather-induced income collapses (Coast 2002, Mwangi and Warinda 1999, Campbell 1999, Homewood 1995, Rutten 1992, Galaty and Johnson 1990). Such diversification strategies are most visible in the Kitengela area where options are greater due to its proximity to Nairobi (Kristjanson et al. 2002). In Simanjiro (the study site in Tanzania), large-scale cultivation continues to compete for space with livestock and wildlife (Sachedina 2006, Lama 1998, Mwaikusa 1993, Mwalyosi 1992).

The land tenure systems in the two countries are significantly different and these systems have evolved rapidly in Kenya over the last 25 years. In Kenya, Kitengela and most of Maasai Mara are under private/individual land ownership, while Amboseli is principally community-owned (i.e. group ranches). In Tanzania, the land is mostly owned by the government. All these areas have experienced accelerated socio-economic and cultural changes in recent years (Reid et al. 2008, Homewood 1995), and to a lesser extent, share some biophysical variations that include a cyclic occurrence of droughts (Campbell 1999, Sindiga 1984, Mworira and Kinyamario 2008, Hastenrath et al. 2007, UNEP and GoK 2006).

These four areas also fall within wildlife dispersal areas, as they are located next to protected areas. Many of the populations of wildlife are in decline, and thus the conservation of wildlife is a major concern (Prins 1992, Said 2003, Reid et al. 2007, Stoner et al. 2007). Most of the costs associated with living alongside wildlife populations are borne by pastoral families living near protected areas, which include loss of human life to wildlife, livestock loss to predators, and transfer of diseases from wildlife to livestock. However, the economic benefits from wildlife (revenues) flow principally to central governments and tourist firms (Emerton 2001) and the elite (Thompson & Homewood 2002), or are just beginning to trickle down to local communities (Nkedianye 2004, Kristjanson et al. 2002). Thus, these study sites have significant livelihood issues that are strongly linked to wildlife conservation in positive and negatives ways, and they are changing rapidly over time with changes in human populations, land tenure, land use and climate change. Figure 1 below shows the project sites in East Africa.

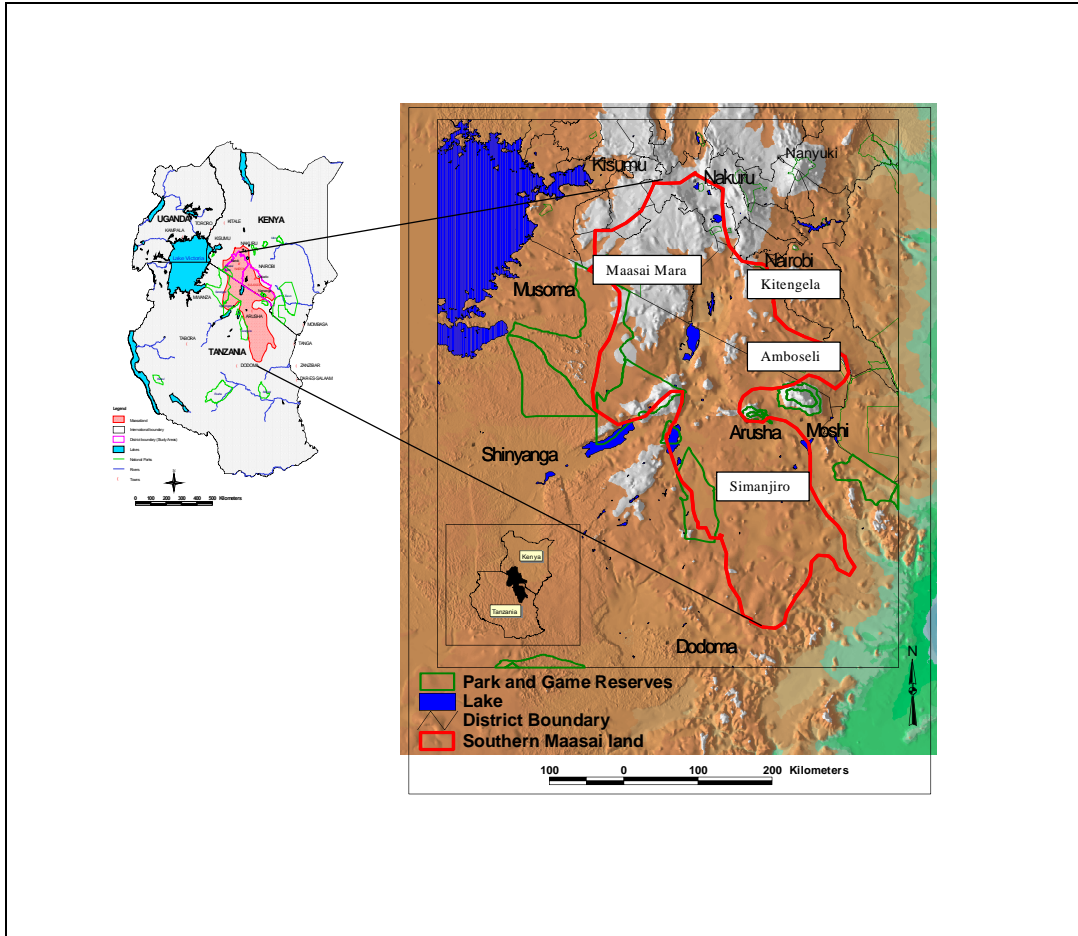


Figure 1. The four research sites in East Africa

3. *The ‘Community Researcher-Facilitator’ approach*

In typical research projects, researchers aim at transferring ‘their knowledge’ to organizations, policy makers or extension officers, who are then expected to make use of it and pass it on to local users (see Box 1). Instead, this project took an approach that explicitly created an ‘arena for boundary work’ that put individuals in the center of the research team who focused on activities aimed at spanning the boundaries between scientists, policymakers and communities (Figure 1). Community researcher-facilitators (hereafter referred to as facilitators) were hired and made the focal point of a fledgling information network. Together with other researchers, they sought answers to pastoral problems. Unlike the other researchers, though, they lived in the study communities, so they understood the problems being studied as well as their context. They teamed up with researchers and/or community members (depending on need and appropriateness) to approach policy makers so as to clarify priority policy issues being expressed by community members. For example, in some sites the facilitators engaged researchers in land use and land tenure issues to inform the local communities and then engage policy makers to discuss appropriate changes such as, in the case of Kitengela, the development

of a land use Master Plan. Box 1 highlights the main differences between an extension officer and a community researcher-facilitator.

Extension officers:

- *Have expertise that is typically related to one discipline (e.g. crop science)*
- *Can be ‘outsiders’ or ‘insiders’ in the communities where they work, but they come prepared with a “how to do it” list from their extension training*
- *Train and show farmers/livestock keepers what to do and how; their information is typically ‘pre-packaged’*
- *Usually do not venture into other disciplines e.g. From crop husbandry to wildlife conservation, and may avoid making linkages with policy makers and other outsiders*
- *Are given limited time horizons to achieve certain levels of production or targets as set by their central government superiors*

Community Researcher-Facilitators:

- *Have expertise that is discipline-related, but the work challenge and approach taken starts with the problem*
- *Are insiders who have knowledge regarding some of the discipline areas, but also have a good understanding of other broad issues in the area*
- *Listen to farmers and/or livestock keepers to understand their priorities and find new information sources and partners appropriate to help solve their problems*
- *Ideally handle multi-disciplinary issues and multi-task with the help of the local people, leaders, other researchers and policy makers*
- *Have broad, deep and long time horizons since the communities in question are theirs*

Box 1: Differences between a traditional extension officer and a community researcher-facilitator

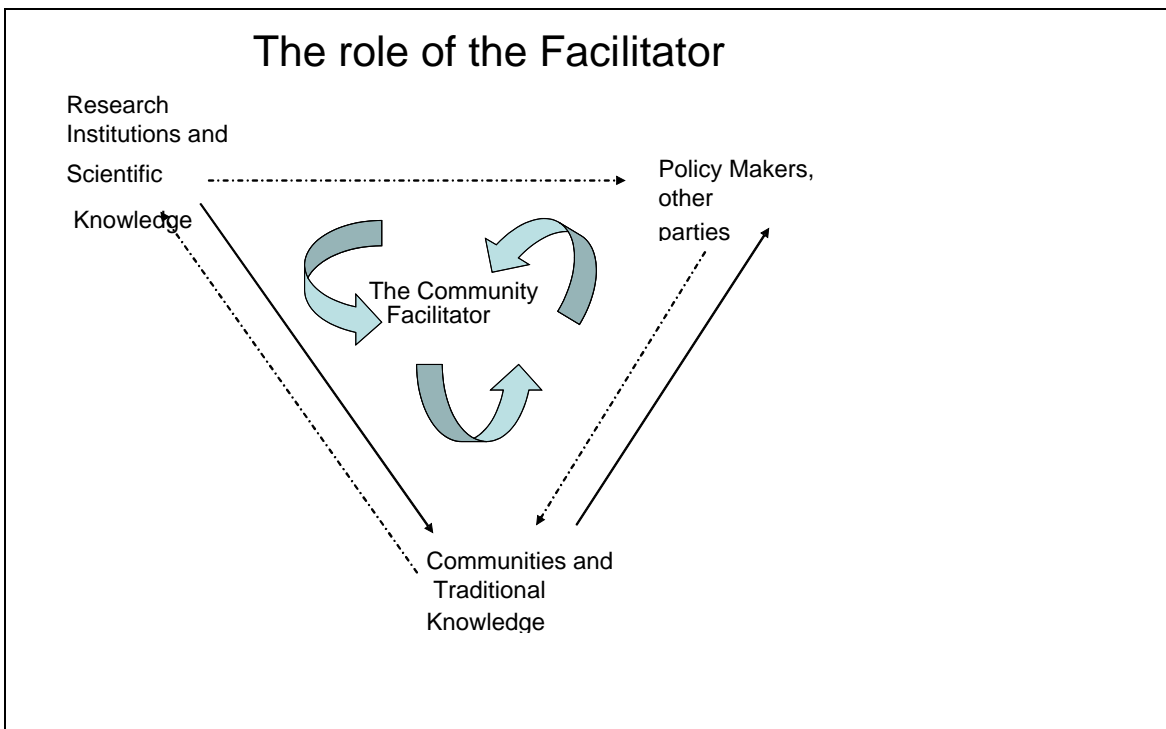


Figure 2. The role of the community researcher-facilitator

The team used an approach called ‘outcome mapping’ to jointly plan their work. This planning tool starts with defining ‘successful project outcomes’ from the communities’ point of view. Working backwards, team members then explore what activities and strategies are needed in order to achieve the desired outcomes. This approach focuses on desired behavioral and institutional changes by the various partners (identified and ideally engaged in the outcome mapping exercise), including policy makers. For example, for the *Kitengela Iparakuo Landowners Association (KILA)*, a high priority desired outcome was to have a harmonized land use plan to help minimize conflicts and to improve local pastoral livelihoods through better livestock husbandry and marketing while tapping into wildlife-related revenues in the Kitengela area south of Nairobi National Park. The team worked closely with the Facilitator and engaged researchers to generate relevant information (such as available open land, distribution of resources, livestock and wildlife numbers, fences hindering movements and discussion on human-wildlife conflict issues). Armed with the information, they then engaged policy makers with a view to influencing informed and community-friendly decisions.

In each of the project sites, outcome mapping led to the identification of priority issues that served as entry points for the facilitators; these are summarized in Table 1.

Table 1. Priority issues for each site identified using outcome mapping approach

Sites	Priority # 1	Priority # 2	Priority # 3
Maasai Mara	Land sub-division	Wildlife revenue generation & sharing	Livestock breeds and diseases
Kitengela	Land use conflicts	Livestock breeds, diseases & markets	Human-wildlife conflicts
Amboseli	Livestock breeds, diseases, markets	Group Ranch sub-division issues	Livelihoods diversification
Simanjiro	Livestock breeds, diseases, markets, livestock policy review	Land alienation, cultivation	Park-people relations

3.1 Attitudes and values of the research – facilitation team

From the outset, the researcher – facilitation team adopted some explicit and implicit rules of engagement that created norms for interaction among team members and how the core team would behave with a wide range of collaborative partners. While some of these are simply rules of effective leadership and management, they were so important that we elaborate upon them here. Perhaps the most important implicit rules were respect for (and curiosity of) difference, humility in word and action, listening and learning first, and ‘looking for the third place’. Important explicit rules included the need to take risks and adapt initial plans as needs changed, creation of fuzzy boundaries between team roles to encourage individuals to ‘boundary-span’ (Cash et al. 2002), open-mindedness or lack of prescriptive approaches, and the need to all help each other, or ‘reto-o-reto’ in the Maasai language (‘you help us, we help you’). Respect, humility and listening first was particularly important in mixed scientific – community settings to empower the community voices to symmetry with that of the experts. The point was made, in word and

action, that all members of this team were experts and students, both at the same time. Team members spent a great deal of time listening to each other, trying to understand different concepts and languages, different knowledge systems. The learning orientation put emphasis on thinking of new and unexpected ways to approach old and new problems with rapid adaptation of approaches as the team discovered more effective ways to work. The team initially implicitly and then explicitly looked for a third place of interaction that was neither in the scientific world nor the world of community knowledge and action, but was a hybrid space between these worlds.

Practically speaking, how did this work? On the scientific side, the leaders specifically invited core collaborators who had a track record of working across disciplines successfully and had at least the desire, if not the experience, of interacting strongly with community members or policy makers. The resulting team was about 80% female, which we interpreted as more than happenstance: in our experience, a focus on cooperation and teamwork, rather than competition and 'alone' work, generally plays to female strengths. On humility and listening, actions were exceptionally important: it mattered what type of vehicle the scientific team members arrived in (small), how long they stayed (full meetings), what they wore on their feet (shoes ready to walk) and if they walked with community members. Strong boundary spanning by scientists meant that each scientist had a set of collaborative partners they interacted and sought opportunities with, and actively helped with community action when asked. As for scientific focus, when the scientific team truly oriented their work toward the expressed needs of community members, they often found their expertise either irrelevant or the needed information and products entirely different than they supposed. In this instance, the issues of animal health and breeding were of prime importance to community members, so the team recruited a veterinarian and an animal production specialist, but also actively connected communities to outside experts to address particular needs. On products, the team originally proposed to create some computer-based models to look at the trade-offs between cultivation, livestock keeping and wildlife conservation at the household and ecosystem levels, but these tools were not nearly as useful as accurate maps of fence lines, elephant conflicts or the debates surrounding the spread of cultivation on grazing and wildlife dispersal lands.

These rules of engagement were largely created by leadership from the Maasai community facilitators, to match some of the cultural norms in their communities. Respect, humility and listening were major required characters when the core team recruited facilitators, based on the team's previous experience of effective characters of community leaders. This made the difficult work of knitting together the knowledge and value systems of scientists, community members and policy makers possible, from a facilitator's perspective. Despite this approach, it took significant time to develop sufficient trust among team members for scientists to let go of their products (like maps) and actively allow them to be used as part of political processes and significant time for community members to view the information as credible and legitimate. Community members, at each of our sites, were surprised at this attempt to integrate indigenous and scientific knowledge and often described their previous experience with researchers. Previous researchers did not ask locals what kind of research they wanted to see, they

instead brought solutions; they did not train locals in research methods; they did not return research information to communities and discuss it with them, and did not treat indigenous knowledge as equally valuable as scientific knowledge.

One of the most important aspects of this communication process was the selection of the facilitators themselves to ensure they would be as effective as possible when working with local communities and policy makers. A joint pastoral and researcher team carefully defined the criteria for the facilitators that would make them most effective from a Maasai cultural and researcher perspective. These characteristics included: 1) good listening skills, 2) respectful of elders, 3) rising leaders in good standing with the community, 4) eloquent speakers, 5) advanced education (at least a BSc.), 6) ability to work independently, and 7) a member of the communities they served.

At first the flow of information between researchers, community and policy makers was not strong. As information started flowing between researchers and communities, communities and policy makers, and then researchers and policy makers, different specific information channels started to evolve. In a number of instances, the community started to work directly with policy makers to discuss policy issues; researchers also worked directly with the communities and policy makers. Policy makers started calling scientists to contribute to some policy review work. Over time, trust and open dialogue developed among the researchers, communities and policy makers at local and national levels. This happened more strongly for the Kitengela and Mara sites, and not as strongly for the Amboseli and Simanjiro / Longido sites in Tanzania.

3.2 The role of trust and support for quick action

We found that key to success was the facilitators gaining the trust of community members and others. Groups that trust each other can move faster, in planning and implementing actions as work is easily delegated without the fear that some parties will let down the rest by not diligently pursuing the set objectives. Also, the fear of divergent interests or sabotage are minimized and synergies created. Past interactions with some conservation-related organizations had bred some mistrust, resulting in an atmosphere where joint and unilateral actions were viewed with suspicion especially regarding land ownership matters. The suspicions made it difficult to work together and achieve desired objectives. Moreover, previous lessons had shown that without trust, it was almost impossible to achieve any helpful results with communities. To help avoid that problem in the Reto-o-Reto project, trust was leveraged partly by riding on previous or ongoing successes of the Facilitators in community-based projects and on the impartial and international name of ILRI as a livestock-oriented research organization. On the other hand, the ILRI team behind the facilitators needed to trust that problems would get identified and prioritized accordingly. The focus and trust were kept on target by frequent meetings between the facilitators and the ILRI co-coordinating researchers to ensure that progress was not only made, but that each site got a fair amount of support from the research team and local partners.

There was need for faster and sharper identification of issues by leveraging both local and non-local knowledge. In some cases, that led to an opportunistic approach to producing some outputs quickly by taking advantage of the windows availed by pressing problems and a favorable policy as well as political wind. These quick actions called for preparation, to be able to take advantage of the opening windows. What came in very handy was the experience of the facilitators in matters on the ground (to be able to quickly discern an opening window), and the fact that they were riding on the shoulders of giants (ILRI researchers and other partners) who could quickly harness support for the decisions arrived at, at the local level, give credibility to the information and avail resources to pursue the cause. In these situations, the facilitator acted as what has been referred to elsewhere as the “entrepreneur” who worked hard to ensure the connection of the various strings to ensure success (Kingdon 1995).

3.3 Different levels of facilitation

Over time, the facilitation team evolved a set of facilitation rules that determined the depth of their facilitative action, in relation to science, on a case by case basis. This approach had five levels (see Table 2, showing the 5 levels and examples of what types of requests for help fell into each). The lowest levels of engagement were those requests that clearly were outside the responsibility of the facilitator and were not acted upon. The next level involved passive facilitation, simply pointing community members in the right direction with respect to the information they were seeking. The third level involved actively connecting community members with expertise and information outside the project team, while the fourth was the same action within the project team. The latter engagements tended to be more in-depth and longer term because of the dedication of the team members to team goals. The highest level of facilitation, used sparingly but purposely, was joint production of hybrid traditional – scientific knowledge with joint community-scientist teams (further discussed below).

Table 2. Types of requests for information by level of facilitation

Level of facilitation	Type of action	Example
1. No facilitation	None	Status quo
2. Connecting facilitation	Cross-site learning visit	Linking with KWS for support to visit model conservation projects
3. Will get evidence from an outside expert	Cattle disease control demonstrations	East Coast Fever (ECF) vaccine trials for new bulls
4. Have project expert with existing evidence	Farm visits to see breeds and learn on sheep diseases	ILRI sheep breeds and helminthiasis project
5. Joint production of new knowledge	Doing GIS and GPS training, then mapping	Generation of the fence maps, Mara animal count

3.4 Facilitator character and incentives

Right from the beginning, the facilitators were each excited to be in a big team, and also in their home areas. The early weeks of the project for the facilitators were spent

teambuilding and familiarizing themselves with each of the sites to explore and see for themselves the main issues on the ground. They discussed these issues among themselves, first with a few local leaders, and then with ILRI researchers in the initial project meetings. The importance of these visits cannot be overemphasized: the ‘outsider eye’ comments and discussions provided by the other facilitators were crucial in deepening the local facilitator’s insights into local issues. That helped to unearth some issues that might, under normal circumstances, be taken for granted. Seeing what was going on in the other sites and discussing the processes and possible implications with local people helped to galvanize the facilitators’ views and insights, and to broaden their depth and breadth of salient issues in Maasailand. Some of those issues would later need, as they realized, similar solutions (for example the problem of diseases such as East Coast Fever (ECF) which was among the leading causes of mortality in cattle in all the sites.

The facilitators depended on both innate as well as learned skills to handle the day-to-day issues in their respective sites (Box 2). Each of them was best suited for the local situation. They had to balance between listening and leading, show willingness to admit that they did not know something, and to always try and rise above their ‘personal baggage’. The preparedness to work hard to make a difference was a key mindset, as it allowed them to sift through large amounts of information in search of what was appropriate and on demand by the local communities. The ideal candidate for the job would have been an all-knowing individual, but since that was not achievable, they had to strive to be “the next best thing”. They made friends and allies to help in rallying support for the prioritized agendas (both at community and policy-makers levels), but also ensured they were as neutral as possible in their deliberations. To help the facilitators with their work was the level of networking that they had earlier on built that supplied the much-needed goodwill to keep people listening and hopeful that a good outcome was possible. The leadership abilities helped to keep people together and focused.

The prioritization of agendas helped to keep the facilitators focused, while the fact that what was being done was related to what they had done before (with the local communities) enhanced their levels of motivation and incentives for the work. Unlike a politician, a facilitator did not have to please people for re-election; but they had to keep performing to keep their following and credibility. As long as the issues being pursued were salient and of priority within the community, the facilitator could move on and link the community with policy makers or just with other sources of assistance and information. This method of facilitation had not been seen in the community, and the follow up of prioritized issues soon made many to believe that the targets were achievable.

Not being a politician helped in keeping the focus, and ensuring neutrality without fear of being “thrown out” like happens to politicians often. The overall caution for facilitators across all the sites was to ensure that they watched their paths so as to avoid being embroiled in politics against the incumbent leaders. However, as the facilitators gathered some influence towards the end of the project, some sites begun to feel that influence more, coupled with the fact that those working around the facilitators also happened to

have their own strengths, shortcomings, as well as ambitions. That is where the leadership skills came in handy, and the negotiation and diplomacy skills coupled with some humility helped to allow the politicians to take the credit and not to feel threatened. These skills helped to grease the wheels of community interactions.

The most important thing for the facilitator was to keep a sharp focus, many times requiring mediation between several antagonistic sides that sometimes threatened to derail the broader community good for personal short term gain. The facilitator needed to rise above the wrangles by reminding people of the earlier stated objectives, and suggesting a clear way forward towards the desired vision. That was crucial in answering the recurrent question from the community: “where do we go from here?” A deep understanding of the community power structures was critical at such times, while a clear sense of direction and a commitment to keep to the target were also indispensable qualities. Box 2 summarizes the unique situation for each of the Facilitators.

Box 2. Credibility issues and leveraging from past experience by facilitators across sites

- *In the Maasai Mara site the facilitator had worked for local wildlife associations and people respected him. He was known for having managed a wildlife association without being drawn into sectarian political controversies and for improving the management and profitability of the association. He was also known for being straightforward and not corrupt, unlike many of his predecessors.*
- *In the Simanjiro site in Tanzania, the facilitator was known as “Daktari” i.e. Doctor. He was a veterinary doctor who had worked closely with the local people before, especially in the control and treatment of livestock diseases. He was already a man in demand at the community level.*
- *In the Kitengela site, the facilitator had been a teacher for more than six years and was later closely associated with the innovative and unique wildlife conservation Lease Program that initiated the successful implementation and transparent running of conservation benefit-sharing with local landowners. The fact that the new ILRI project would be looking at ways to sustain a win-win situation between livestock keeping and wildlife conservation was well received by the community.*
- *In the Amboseli area, the facilitator was known for his exemplary hard work in searching for affordable ways of improving access to water, education, and conservation benefits in the dry and remote area. His achievements were admired by many and taken as a good example of what path the local elite should follow.*
- *All the facilitators had leadership qualities of some sort, and a good track record.*

3.5 Characteristics of the information / knowledge developed

The information and knowledge created and exchanged in the scientific – facilitator – community team was often from one knowledge system (i.e., traditional), sometimes a union of knowledge systems (i.e., scientific and traditional), and only occasionally an integrated hybrid among knowledge systems. The principal team’s goal was to focus on the problem (not a disciplinary approach or political needs or scientific interests) and find information, wherever it might be, that would help address the issue at hand, even if it was well outside science or traditional knowledge (see levels of facilitation above). As

community members and scientists requested information from each other, often the information was found within one scientific discipline (like veterinary science) or community local knowledge, but often spilled over into others such as the economics of the existing ECF vaccine. And, the scientific team often responded to a request by suggesting other useful information for community members to consider, in inter-linked problems (such as learning the merits and demerits of existing ECF treatment packages before incurring costs). Sometimes, if the problem was large and new information was needed, the team created new ways to collect more information that were a hybrid of traditional and scientific methods. For example, most major joint production started with development of hypotheses (in scientific language) based on both local and scientific knowledge, proceeded to adaptation and integration of local methods of information collection (long-term experience and observations) and scientific methods (like wildlife, land use surveys), and then to joint collection of information. Always, the methods used to collect the information were a hybrid between traditional and scientific methods. For example, when initial attempts to map fences from the satellite imagery failed, the team decided that community members should walk and GPS all 6471 fence lines on the landscape, a task the scientific team would not have contemplated doing alone. The community-scientist team then analyzed the information together, picked out what information to emphasize on and with what media, and interpreted the resulting information together.

In doing this, it became clear that there was a temporal mismatch between the ability of scientists to process information in traditional scientific ways (usually slow) and the need for answers to community problems (often urgent). This led to two adaptations to speed up scientific processes and slow down community expectations. Speeding up science meant giving out incomplete information before it was rigorously peer-reviewed; producing first simpler and faster products (like maps instead of models) or presenting existing information as a first step. On the community side, strong involvement and training of community members (who comprised 75% of field teams or more) created hands-on experience in the collection of information on households or along many transects, to make sure the resulting information was reasonably reliable and locally owned. But it also created experts who pretty much knew what the results would likely show, long before it was entirely ready for concrete discussion. This meant the final results were preceded by numerous discussions among community members and scientists about the progress, what the information likely meant and the additional information needed.

3.5.1 Information for power

Joint production of outputs helped to remove asymmetries of power, adding confidence for community members to act more often and more strenuously in their self-interest, often using the information products as part of that action. For example, in Kitengela, the land use problems had increased in the last decade, leading to increased conflicts between humans and wildlife. The Conservation Lease Program was already a huge success for the families in it, yet not much information was available about the spatial distribution of the lands under lease and those on the waiting list for prioritization. In various meetings with donors and government officers questions had been asked about the extent and

location of the program. The NGO running the Lease program did not have the capacity to develop accurate maps showing the extent of the program, the priority areas and of increasing importance, the fences that were hindering movement of both livestock and wildlife in the area. The ILRI team, under the guidance of the facilitator and as requested by the local community and the NGO running the program, took up the challenge to provide guidance in the provision of a clear analysis of the problem. The community identified their own people to be trained in basic GPS and GIS so that they could do the mapping of the area as requested. Ten young people went through two weeks of training at ILRI. Then they went out, with the support of an ILRI GIS expert and the community facilitator, to map out the more than 6000 fence units and also the lands under lease, and other resources. The map then quickly became a major illustration of the extent of the problem in the area. It was widely shared with the District leaders (most notably the District Commissioner, Kajiado District), the chairman of the local county council, the Director of the Kenya Wildlife Service, a parliamentary select committee on environmental issues, the Director of physical planning and the District Physical Planner, just to mention a few. Further, it was handy in fundraising meetings mainly spearheaded by the 'Friends of Nairobi National Park' (FoNNaP) and 'The Wildlife Foundation' (TWF) that could now show potential donors what the situation looked like on the ground and how better targeting could be done.

3.5.2 The challenge of creating an information-demanding culture

One of the most important impacts of the facilitation work was to create a knowledge-demanding culture among the pastoralists, and to increase the realization that teaming up with other like-minded players was crucial in influencing change. Further, the appreciation of the various knowledge systems was an important step forward and an eye-opener for many researchers, local people as well as policy makers.

It was a challenge for the scientists and especially the facilitators to help blur the edges of information channeled to communities. Scientific information had to be simplified, translated into the local language and with the help of the community, interpreted to address the local situation. The need for a seamless transition was there all the time, although sometimes blurring the seams was the best that could be done. Coupled with this task was that of synthesizing the multi-disciplinary information (from science to traditional) knowledge and employment of skills such as advocacy and negotiation skills. That departed significantly from what has over the years been practiced by many agricultural extension people (Keough and Blahna 2006, Agrawala et al. 2001, Mbithi 1974). The information generated had to be appealing to the consumers otherwise they would feel disengaged in the process, so the urgency of the matter and the prevailing political will were leveraged. Many years of research (such as that done at ILRI), long term players in the field (such as the Kenya Wildlife Service and the conservation organizations) helped to put together a credible argument when, for example, the Minister in-charge of tourism accepted to visit the Kitengela site at the height of human-wildlife conflict. The local leaders trusted the figures provided by the conservation and landowners' organizations and so pushed for a nod from the Minister to allow for private fundraising while awaiting the wildlife policy review that was underway. Later, the department of physical planning relied heavily on the generated information on the fences

map. It was used as a base planning tool by the planning team that worked to develop the local Master Land Use Plan. That was a remarkable step in moving towards evidence-based decision making. The GIS data generated for the fence map was important mostly to the scientists, but even more important to the communities and policy makers when it was turned into a credible fences map that all could see and discuss.

3.5.3 Communication approaches

The project was based on sharing and exchange of knowledge between local communities and the researchers and the co-creation of knowledge that was viewed as credible and useful for decision-making by local government and other organizations. Over four years, at least 200 community-level meetings were held across the sites. The issues regarded as being salient by community members (e.g. land use issues, livestock health and human-wildlife conflicts) informed debates at the *enkiguena*—the meetings where local people met to discuss issues of community importance. The facilitators utilized this important forum to relay information about progress made since the previous meeting, and to listen to the unfolding ideas about certain issues from various viewpoints held within the community. The meetings were almost always held under a tree within the local community, while women often held separate meetings to allow for a free discussion of issues without being overshadowed by men especially due to prevalent cultural etiquette.

Radio shows were developed. They addressed issues such as the need to protect communal lands, improve on livestock husbandry and explore ways of increasing wildlife-related revenues discussed in the local vernacular language. That allowed for a much wider sharing of lessons from the project. They opened up a new arena for questions and comments from across Maasailand especially related to the period 2003-2007. These shows expanded the reach of some of the knowledge generated and compiled by the project team to a very wide area, encompassing thousands of Maasai community members. Given most older Maasai have no formal education, radio proved to be effective in reaching and informing them on issues of interest to them.

Project outputs included policy briefs, maps and reports. These were presented at workshops where high ranking local leaders and government officials were invited to participate and share their thoughts. Strategies to ensure their participation included (e.g. efficient, well facilitated meetings, use of mobile phones to send reminders, personal visits, and spelling out of clear objectives linked with the communities' aspirations). The leaders were happy to be among those 'on the driving seat'.

Cross-site visits were another strategy aimed at spreading knowledge and ideas regarding successful strategies and approaches being pursued by some communities, and the lessons learnt in these visits triggered questions and debates that sustained discussions and were used to lobby politicians to take action. For example, the visits to Kitengela by groups from the Mara and Amboseli and the subsequent visit of Kitengela people to the Mara and Amboseli stimulated a more informed dialogue on ways in which to increase conservation benefits to communities, while ensuring that wildlife numbers remained viable. Issues about land use conflicts in Kitengela were a big lesson to folks from the

Maasai Mara and Amboseli on the consequences of privatization and individuation of land.

3.5.4 Local institutions

The local institutions we worked with included the local authorities (County Councils) and government ministries, together with community-based organizations. That was crucial as the work of a facilitator depends to a greater extent on how well members of the community are brought ‘on board’. However, the smaller, numerous and community-based groups were more difficult to work with when a policy issue was the main focus (mainly because their problems were more local than general enough to attract policy makers’ attention), yet the balance between locally grounded, and nationally-relevant issues was important. All the organizations had their unique problems that made the rules of engagement to vary from one to the other. For example, those composed of politicians (such as the County Council) were prone to sudden change of interest, while it mattered to NGOs whether their donor and project interests were being met. In all the engagements, the facilitators faced a constant risk of carrying out the ‘action’ component themselves (e.g. engaging planners on behalf of the community as opposed to involving community members or other partner (s) in the engagement), resulting in some kind of exclusion that could in turn lead to the loss of legitimacy and credibility for the resultant achievements if they were seen to be elitist.

The role of research was important in adding weight to the community voice in the policymakers’ eyes, especially where research findings provided a base for community action and/or requests. Research backing from an international organization gave a lot of credence to the results and propelled community issues in question to prominence within a time period that would otherwise have been much longer. The need, on the researchers’ side for a hands-on experience encouraged them to listen more, to go out and work in the field with local people, and to be flexible in their work so as to meet the combined demands of the community members and the policy makers. This flexibility allowed for rapid response when windows of opportunity presented themselves. The facilitators provided the required leadership that helped to link solutions to the problems, the politicians, and to target particular policy ‘windows’ (i.e. an opportunity or need in the policy debate or formulation process that allowed for quick linkage of a research finding or community issue to an expressed or potential demand at policy level). For example, in the case of the Kitengela Master Land Use Plan development, several processes were in motion in a latent manner by the time the community raised their voice and joined in the policy debate. At national level, there was debate about a land use policy and so the Kitengela issue became pertinent and could easily resonate with actors at local and national levels (Table 3).

Table 3. Responding to problems, needs and policy windows

Problem	Possible solution	Politicians	Status quo	Policy window
Growing human-wildlife conflict in Kenya. Typical example in all the study sites	<ul style="list-style-type: none"> • A Land use policy (long-term and slow) • Local authority-driven Master Plan (do-able within a shorter time) and would link up to the national expectations 	The local councilors, District leaders, national leaders, Planners	No plan, losses in livestock, wildlife, unsustainable trends, conflicting land uses	New government (Kenya) pledge to have a land use policy in place within a 5 year term to solve long-standing problem

4. Conclusions

Our experience generated numerous lessons that may be useful and broadly applicable in other parts of the world where similar work exists, especially among people and groups interested in linking knowledge with action. The facilitation process had some successes and was able to set in motion a series of processes that has led to increased knowledge and information at the community level and local influence on policies affecting the welfare of community members, in some cases for the first time. However, there were also significant obstacles encountered along the way. The key challenges we encountered included the following:

Dealing with change: Power, politicians and trust. We found that when the facilitators, rather than local politicians, were getting too much of the credit, these policy makers could feel threatened and put up roadblocks to desired actions. Community members also needed to gain trust in the facilitators and believe that their actions were not driven by self interest, but were in the interest of the broader community. Responsiveness and accountability to policy makers, politicians as well as the scientific community helped to improve the standing and effectiveness of the facilitators. The responses to emerging challenges and the experiences generated by the combined team of facilitator, researchers, community and policy makers sought to go beyond the ‘principal-agent’ framework (Guston 2001), by ensuring that instead of mere delegation, there is a concerted follow-up toward the desired objectives, and attributing the outcomes to each of the parties.

Meeting expectations and reconciling diverse interests. Because of large differences between groups, individuals and families within any community, facilitators faced a risk that if a solution to a problem was perceived to be potentially beneficial to a particular segment of society and not another, support for it tended to be sectarian and parochial. When that happened, politicians were less likely to support policy changes. One approach that helped to keep all parties interested was the creation of boundary objects (Star and Griesemer 1989), or standardized packages (Guston 2001) such as the fences map that appealed and aided the policy makers, local community members as well as the multidisciplinary scientific team (GIS experts, ecologists, social scientists, among others) that helped create them. These objects also helped to divert attention from individual people.

Project lifespan versus slow pace of progress. The typical time-span for most donor-funded projects ranges from three to five years. In some of our sites the project ended after three and a half years. We learned that it takes several years to make meaningful inroads within these communities, and longer to make real progress towards desired solutions (*e.g. stop-gap measures such as a moratorium on land sub-divisions awaiting debate and adoption of a land use Master plan were achieved, but the development of an actual master plan took longer*). A 3 year timeframe to achieve desired outcomes is definitely too short when local institutions are not already well established. It is extremely difficult to start new local institutions and support them sufficiently such that they are sustainable on their own after just three years. Ideally, we learned that longer periods of 5–10 years would be more appropriate for engagement with local communities for improved impacts.

Gender aspects. The Maasai community has a structure that brings out strongly both aspects of age and gender (Hodgson 1999a, Hodgson 1999b, Spencer 1998, Galaty and Johnson 1990, Bennett 1988). Although women attended all the open community meetings, few actively participated in the discussions. The vast majority of them sat and listened quietly. Those who participated in the discussions never engaged in direct confrontation with the men. That was not always a sign of agreement, but mainly a sign that cultural norms maintained an asymmetrical power relation in favor of the men.

Among the men there was also a bias in favor of the older generations. Younger men could easily have their views suppressed by the older ones, especially if the issues under discussion were sensitive and likely to tilt the power balance away from the elders. Having said this, younger men are increasingly gaining ground in terms of decision-making power, mostly due to the fact that their superior (formal) educational achievements and numerical superiority are earning them a voice in the community. This is not yet the case for Maasai women, who continue to have very low levels of education. In realization of this fact, the facilitators organized meetings only for women, to discuss issues of interest and concern to them. These issues included discussion on the future of the Maasai family and community, marketing of hand-made beadwork and milk, fuel-saving stoves, participation in elections for local institutions and information on how best to take part in the land-use planning processes. The facilitators also ensured that some

women were involved in the fences mapping exercise, in meetings with district and other leaders, participated in visits to other communities, and were included in local committees. Still, the lesson here is that of all segments of the community, women were the most disadvantaged by the short project life, as building their capacity faced more hurdles given their lower educational attainment, lesser access to income and capital (although recently more and more women are accessing for example, some income from milk sales during favorable rainy seasons). In general, women, especially those from pastoralist communities face a real challenge in trying to bring about change within a male-dominated culture.

Mass illiteracy levels, intra-cultural differences and size of the target area. Maasai communities within the project area (and elsewhere) are characterized by low literacy levels (Radeny et al. 2007, Nkedianye 2004, Thomson et al. 2000, Talle 1988). Illiteracy can hinder the level of uptake of new ideas, especially if the issues are locally sensitive (such as land matters or demand for inclusion into male-dominated decision making organs) and more so if the proponents of such ideas are the younger people. For example, in Kitengela, the proposal to have a Master Land Use Plan elicited some excitement as well as fear among community members. Although the facilitator held several meetings (joint men and women and also separately for women), some people with hidden interests were still relatively successful in spreading fear among the older, more influential, but illiterate members of the community. Newspaper articles were read in several meetings and translated and interpreted so as to scare people. The fear that ensued ended up dragging the process for a long time before the way forward could be agreed upon. When the mistrust coincided with an election year, the two major clans wanted to have an upper hand in politics and accused the other of dishonesty in the land-use planning process. The problem then affected and influenced the election outcome of the local landowners' association, seriously denting its credibility.

The sustainability challenge in facilitation work. Sustainability may demand that different key institutions agree to pool resources to offer support for facilitation for a longer period, instead of having only one organization taking the lead and providing most of the funds. Even more important is having stable local organizations that are already representative of the majority's vision up and running by the time facilitation begins. In our experience, these key local organizations included KILA and the wildlife Associations in Kitengela and Mara sites, respectively, whereas there were no similar established organizations in the Simanjiro and Amboseli areas. In Simanjiro, the facilitator had to initially work with the village polytechnic/extension center, where popular extension courses were taught for the local youth. Later, he linked up with other groups in policy review, disease control campaigns, and land use issues. Towards the end of the project, the facilitator used partly its achievements to prepare the ground for a community Trust where land use, conservation and livelihoods issues were the key focus. In Amboseli, the facilitator worked with the group ranch committee but due to the vastness and remoteness of the area, it was necessary to find additional new groups to partner with. However, since they were located far apart it took longer to link up due to poor road and communication infrastructure.

Selection of the facilitator. The process of recruiting the facilitators that were respected, knowledgeable and trusted individuals within their own communities was a difficult one. CVs were insufficient on their own, thus the recruitment team held discussions with local people who knew the candidates well, including scientists who had worked in the area and worked with the candidates. This was in addition to a rigorous interview process that tested the candidates' depth and breadth of knowledge of socio-economic, scientific, cultural, political and environmental issues for their area. Our experience shows that key attributes needed to fulfill the challenging role of facilitator may include: the ability to transcend sensational local issues (including politics) by insisting on science based solutions while seeking answers to locally prioritized problems. However, there was the problem of over relying on the facilitator as an individual as many things could go wrong in their absence, seriously jeopardizing the overall success of the project.

What is the interest of the paymaster? A widely perceived objectivity and lack of bias on the part of the facilitators and especially the institution they were employed by helped immensely throughout this project. Because wildlife and conservation issues were so sensitive in the sites and many wildlife organizations were not trusted by pastoral community members to share their primary concerns (e.g. food and income security), the facilitators stressed the interests of ILRI in research aimed at sustainably improving livelihoods through improved livestock-related strategies. Similar issues have been raised in examinations of the role and effectiveness of boundary organizations elsewhere—for example, with much of the funding for the climate forecast work coming from the U.S. government, doubts arose as to the “internationality” of the effort and hence the credibility of the results (Agrawala et al. 2001). It therefore helps when the interest of the paymaster is at least generally known to be in support of the target community's aspirations.

Ratio of facilitation time to research time. Since much of the needed research information cannot be generated quickly, the project researcher teams rarely kept the facilitators busy communicating new research results. However, this allowed the facilitators to work with other ILRI researchers as and when demanded by the communities and to seek relevant information outside of ILRI in order to meet the information needs of their communities in a timely manner. As a result, the facilitators ended up communicating a much broader and more useful set of information than just that generated by the core research team.

Some of the strategies employed to overcome the challenges of the facilitator approach included:

- Jointly working with many partners (policy makers, scientists and communities) and involving them in an ongoing dialogue, rather than working alone. Such teamwork helps to harness resources from various quarters and encourage participation and sustainability beyond the end of the project.
- Recruiting and ‘on-the-job’ training by the facilitators of community members so that the work can gain momentum and shift focus from the individual facilitator to a critical mass of people spearheading for desired change within the community.

Without such a critical mass, it becomes difficult to keep the fire burning after it is started, and especially after the project intervention ceases.

- The facilitators each in effect acted as a miniature ‘boundary organization’. They engaged their local communities in seeking answers to critical questions, sought answers to key questions and passed them on to communities, acted as bridges between communities, policy makers and scientists and kept the debate going. Essentially they were a multi-directional bridge spanning several boundaries. The impact was more work and more meaningful engagement as the ‘traffic’ of questions and answers increased in different directions.
- Taking a learning approach and keeping an open-mind about which issues were critical. We did not go with prescriptions, we listened to what the people wanted and tried hard to understand the background of the problems. Then as we learned, we gained confidence and built on the successes. We were not afraid of experimenting with new ideas, such as radio programs and policy briefs. Although the latter’s impact is yet to be fully realized, the former proved a big success as many listeners got interested, asked questions and followed through other related programs. Holding discussions in the vernacular language kindled a region-wide interest in issues that turned out to be common to different areas and were thus seen to be ‘salient’.
- One issue raised by the ‘facilitator model’ described in this paper is how widely applicable is it? While many of the particular issues faced in this project were case-specific, our experience suggests that it is quite a robust model for project teams with sustainable poverty reduction goals, and that many of the lessons we learned are widely applicable. It also raises the issue of what the inherent traits of a good facilitator would be, versus what can be taught, and what insights our lessons contribute regarding what could be taught in a course aimed at future ‘facilitator-researchers’?
- There is a great deal more to be learnt from the field. What this project did was to show that it is possible to make a difference by creating boundary individuals who help blur the science-community-policy edges and support sustainable poverty reduction action at a community level.

This work links up well (although on a different scale and emphasis) with experiences from elsewhere across the globe. Some examples include the setting up of teams to generate and disseminate climate forecast data in the U.S. (Agrawala et al. 2001), the lessons from integrative natural resource management within the CGIAR system (Tomich et al. 2007), broad principles of integrated natural resource management (Keough and Blahna 2006) and the lessons from boundary organizations mainly in the U.S.A. (McNie 2007, Van Kerkhoff and Lebel 2006, Cash et al. 2002, Guston 1999), among other studies. It is evident that some of the observations in this paper have been found to be helpful in many other projects, regardless of their geographical location.

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