

Research that matters: outcome mapping for linking knowledge to poverty-reduction actions

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An 'Outcome Mapping' approach was applied retrospectively to five diverse, highly collaborative research projects aimed at poverty reduction. Designed to help plan for, clarify, and document intended and actual changes in behaviour, actions, and relationships of groups and organisations that directly influence a project's intended beneficiaries, Outcome Mapping enabled us to identify and describe the strategies and actions that played important roles in the innovations achieved. Successful strategies observed included the use of champions, jointly producing high-profile outputs that enhanced the status of local partners, multiple communication strategies, targeting ongoing policy processes, and strong emphases on and investment in capacity building.

Des recherches qui importent : cartographie des résultats pour relier les connaissances aux actions de réduction de la pauvreté

Une approche fondée sur la « cartographie des résultats » a été appliquée rétrospectivement à cinq projets de recherche très collaboratifs et divers visant à réduire la pauvreté. Conçue pour faciliter la planification, la clarification et la documentation des changements prévus et réels sur les plans du comportement, des actions et des relations des groupes et des organisations qui influent directement sur les bénéficiaires prévus d'un projet, la cartographie des résultats nous a permis d'identifier et de décrire les stratégies et les actions qui ont joué des rôles importants dans les innovations obtenues. Parmi les stratégies efficaces observées on peut citer l'utilisation de champions, la réalisation conjointe de produits très médiatisés qui ont renforcé la position des partenaires locaux, des stratégies de communication multiples, le ciblage des processus d'orientation en cours et l'accent mis sur le renforcement des capacités et l'investissement dans ce dernier.

Pesquisa que interessa: mapeamento de resultado para ligar conhecimento com ações para redução da pobreza

Uma abordagem de 'Mapeamento de Resultado' foi aplicada retrospectivamente em cinco projetos de pesquisa diversificados e altamente colaborativos destinados à redução da pobreza. Destinado a ajudar a planejar, esclarecer e documentar mudanças pretendidas e mudanças reais de comportamento, de ações e de relacionamentos de grupos e organizações que influenciam diretamente os beneficiários pretendidos de um projeto, o Mapeamento de Resultado permitiu-nos identificar e descrever as estratégias e ações que desempenharam papéis importantes nas inovações alcançadas. Entre as estratégias bem-sucedidas que foram observadas estão o uso de defensores

da estratégia, produzindo conjuntamente resultados de alto nível que melhoraram o status dos parceiros locais, múltiplas estratégias de comunicação, tendo como meta os processos de políticas em andamento e forte ênfase em capacitação.

Investigaciones de alcance: el mapeo de resultados que vincula conocimientos y acciones para abatir la pobreza

Se aplicó retroactivamente el método de ‘mapeo por resultados’ a cinco proyectos de investigación que buscaban abatir la pobreza con un alto grado de participación. El Mapeo por Resultados fue diseñado para apoyar la planeación, la depuración y la documentación de cambios intencionados o reales en el comportamiento, las acciones y las relaciones de grupos y organizaciones que afectan a los beneficiarios directos de un proyecto. El Mapeo también permitió la identificación y la descripción de las estrategias y acciones más importantes para lograr innovaciones. Entre las estrategias exitosas que se observaron están la participación de personas célebres, la elaboración conjunta de productos de alto perfil que elevan el prestigio de las contrapartes locales, y distintas estrategias de comunicación, las cuales se centran en lograr cambios en el proceso habitual de toma de decisiones políticas, haciendo énfasis en invertir en el fortalecimiento de capacidades.

KEY WORDS: Environment; Governance and public policy; Methods; Sub-Saharan Africa

Introduction

The key role that scientific research and technology plays in development has been highlighted by many international organisations (IAC 2004; UN Millennium Project Task Force on Science, Technology and Innovation 2005; UNDP 2001; World Bank 1999). Yet, despite this recognition, agricultural and natural-resources research in particular remain underfunded (Pardey *et al.* 2006; Ruttan 2001). One of the possible reasons for this apparent underinvestment is that there appears to be a ‘knowledge–action’ gap that is limiting the impact of agricultural research for development on poverty (Kristjanson *et al.* 2009; McNie 2007). In other words, not enough of this research is generating knowledge that is actually changing behaviour, policies, technologies, and strategies that lead to enhanced welfare of poor households. This is in part because of the complex nature of poverty processes, but it may also be due to limited attention to what can help to bridge gaps between knowledge and action for sustainable development (Clark and Holliday 2006; ICSU 2002).

It is increasingly apparent that if sustainable poverty reduction is the goal, how the research is done matters – a lot (Kristjanson *et al.* 2009). Processes and tools that help to bridge the knowledge–action gap and limit transaction costs faced by research teams are needed (Spielman 2005). One such tool is called Outcome Mapping, developed at the International Development Research Centre (Earl *et al.* 2001). Outcome Mapping was designed to help development project teams to plan for and document desired and actual changes in behaviour, actions, and relationships of groups and organisations that directly influence a project’s intended beneficiaries. Strategies to increase the probability that project outputs lead to desired outcomes are identified, and these strategies can be key to a project’s success.

This article explores the use and usefulness of Outcome Mapping as a methodology to assess a diverse range of agricultural-research-for-development projects retrospectively (*ex post*), and to learn lessons regarding which strategies help to increase the likelihood that research will generate knowledge that contributes to reducing poverty. The International Livestock Research Institute (ILRI) undertook these projects with a wide range of local, national, regional, and international partners. The cases were selected to reflect a range of geographic focus, types of partner, types of research output, and length of time since the start of the project. They cover five broad problem areas, with data gathered from multiple regions across East and Southern

Africa (further described below). Thus, this set of case studies allows us to make comparisons and learn across a wide range of cultural, socio-economic, and agro-ecological systems.

Methodology

Outcome Mapping focuses on the social changes that an initiative intends to bring about (Earl *et al.* 2001). It helps project teams and programmes to identify their most important partners (referred to as ‘boundary partners’), clarify the changes expected, and plan the strategies to be used to achieve desired outcomes. Results are measured in terms of the changes in the behaviour, actions, and relationships that can reinforce or undermine the material changes being sought. Outcome Mapping has been used by organisations in Africa, Latin America, and Asia to help researchers and development practitioners to consider how their outputs will be used, by whom, and for what purposes (Jones 2007; see www.outcomemapping.ca for examples). It has enabled research teams to recognise the approaches and strategies needed if they are to go beyond producing research outputs (such as papers, technologies, workshops, training) and see those outputs used to change the policies, management strategies, rules, behaviour, and other things that enhance the welfare of resource-poor people.

Leksmono *et al.* (2006) adapted Outcome Mapping in combination with other methods to look retrospectively at a dairy research and development project to determine how research evidence was used to influence policy change in the dairy sector in Kenya. They identified boundary partners, described key behavioural changes, events, and activities during the course of the project, and mapped the key influences. This demonstrated the usefulness of Outcome Mapping as a framework for understanding how research outputs (in this case, knowledge about the informal milk-marketing sector) become translated into outcomes (policy and institutional changes leading to more income for more milk traders and sellers).

While research organisations like ILRI typically do not directly implement development activities, some degree of intervention is needed if research outputs are to achieve development outcomes and impacts. Thus, partnerships with NGOs, community-based organisations (CBOs), the private sector, and government agencies are critical. It is also important to recognise that researchers are not the only source of new ideas or new knowledge (Hall *et al.* 2008). Thus in the case studies we explore whether the Outcome Mapping methodology enhances researchers’ understanding of how outputs become translated into outcomes, and how useful this approach might be for tracking the kinds of result being achieved by ILRI initiatives. Although the methodology was originally designed as a planning tool, here we are using it to look retrospectively at the changes achieved and at the strategies that influenced those changes. Given the diversity of projects examined, it is expected that the lessons learnt will be more broadly applicable to agricultural and natural-resource research-for-development initiatives.

Approach

At the start of this initiative, several workshops were held to introduce the concepts of Outcome Mapping to the case-study project teams. We held follow-up meetings with the case-study participants to develop a retrospective exercise using Outcome Mapping’s conceptual framework (see Box 1). The vision and mission of the research intention were described, key boundary partners listed, and outcome challenges for each partner defined. Progress markers were listed for each partner, clearly couched in behavioural terms, and a strategy matrix was developed to identify the diversity of influential actions actually used by the research teams. The authors then worked with each research team, assisting them to collate evidence of progress and to summarise the cases. Evidence of progressive outcomes was diverse and consisted of minutes of meetings, media reports, emails, letters of invitation, proposals, contractual agreements, and advertisements, among others.

Box 1: Outcome Mapping parameters

Vision: A description of the large-scale ultimate development changes (economic, political, social, or environmental) to which the programme hopes to contribute, including the ideal behaviour of the key boundary partners.

Mission: Describes how the programme intends to support achievement of the vision. It states with whom the programme will work and the areas in which it will work, but does not list all the activities in which the programme will engage.

Boundary partners: Those individuals, groups, and organisations with whom the programme interacts directly and with whom the programme can anticipate opportunities for influence.

Outcome challenge: Captures how the actor would be behaving and relating to others if the programme achieved its full potential as a facilitator of change.

Progress markers: Information that the programme can gather in order to monitor achievements towards the desired outcome. A set of graduated ‘change’ indicators that advance in degree from the minimum one would *expect to see* as an early response to the programme’s basic activities, to what it would *like to see* them doing, to what it would *love to see* them doing if the programme were having a profound influence.

Strategies: Strategies (Causal, Persuasive, and Supportive) used by the programme to contribute to the achievement of an outcome, aimed either at the boundary partners directly or at the environment in which the boundary partners operate.

Case studies

The five cases-study projects examined were as follows:

1. *Vaccination strategy* against a serious cattle disease found across East and Southern Africa (East Coast Fever, or ECF).
2. *Livestock-farmer field school (LFFS)* approach for developing and disseminating improved livestock-management techniques and strategies in Gambia, Kenya, Pakistan, Swaziland, and Uganda.
3. *Poverty mapping* in Kenya, Tanzania, and Uganda, for targeting poverty-alleviation efforts to ‘poverty hotspots’.
4. *Dairy-policy processes research* aimed at influencing pro-poor dairy policy in India, Kenya, Tanzania, and Uganda.
5. *Pastoral systems community-led research* towards better understanding of the impacts of livestock–wildlife systems on biodiversity, and the implications of changing land-use practices on pastoralist livelihoods and the environment in Kenya and Tanzania.

The cases can be described and categorised in terms of the research outputs produced, the desired outcomes, and the strategies pursued to help to increase the likelihood that research outputs were useful, used, and accessible to users, and thus turned into outcomes (Table 1).

Research outputs

In three of the cases, the research outputs are relatively simple to define. In the first case (vaccination strategy), the output was a technology; in the LFFS and poverty-mapping cases, it was a method or approach. For the dairy-policy processes and pastoral community-led research projects, research outputs focused on increased understanding about key issues that

affect the lives of particular groups of rural poor: small-scale dairy producers and market traders, and pastoralists. For both, the new knowledge generated had policy implications.

Desired outcomes

In all cases, the desired outcome was poverty alleviation, but mediated in different ways. In the first case, the outcome sought was that a new technology would be used to prevent economic losses caused by livestock deaths from East Coast Fever. In the LFFS and poverty-mapping cases, the outcome sought was increased capacity of individuals to respond or contribute to change. The former was intended to improve farmers' ability to solve problems and to network in order to access other sources of knowledge. In the latter, use of the poverty-mapping technique was expected to result in more effective allocation of resources to those in greatest need. The final two cases focused on the use of evidence to influence policies expected to improve the income-generating abilities of small-scale milk vendors and pastoralists. A further outcome sought in the pastoral-systems case was wildlife conservation.

Strategies pursued to translate outputs into outcomes

The strategies and approaches that contributed to outcomes for the different project teams (as opposed to the research activities producing outputs) varied across these diverse projects (Table 1). The vaccination-strategy project needed to find a way to facilitate production and distribution of a vaccine technology so that it became widely, and affordably, available to potential pastoral users. In the LFFS and poverty-mapping cases, the key strategy for linking outputs to outcomes involved building users' (farmers and policy analysts) capacity on the method or approach. In the poverty-mapping research, a policymaker advisory team was established at the outset of the project. These policymakers acted as champions for the research outputs and remained involved and informed throughout the research and beyond to the dissemination and use stage.

Key strategies used to link outputs to outcomes in the dairy-policy processes work included closely engaging with major stakeholders in developing and evaluating evidence; demonstrating new approaches through pilot projects; channelling advocacy messages through local civil-society organisations (CSOs) with a mandate for advocacy; and creating an environment for debate. This included the use of video to bring the experiences of those in the field to the attention of policymakers. Evidence of the positive experiences in one country gave ILRI credibility to replicate the model in other countries. The pastoral project developed a new 'continual engagement' model to better integrate knowledge from policy makers, communities, and researchers, with the goal of promoting more effective action to balance poverty alleviation and wildlife conservation in four pastoral ecosystems of East Africa (Reid *et al.* in press). The model involved creating a core boundary-spanning team – including community facilitators, a policy facilitator, and trans-disciplinary researchers – responsible for linking with a wide range of actors from local to global scales. Collaborative researcher-facilitator-community teams integrated local and scientific knowledge to help communities and policy makers to improve herd quality and health, expand biodiversity-payment schemes, develop land-use plans, and engage fully together in pastoral and wildlife policy development. An important focus of the strategy centred upon creating hybrid scientific–local knowledge highly relevant to the needs of communities and policy makers (Reid *et al.* in press).

The Outcome Mapping methodology was used as a planning tool at an early stage in only one of these projects. The pastoral systems community-led research used it at the project-inception meeting to define boundary partners and develop some initial community engagement

Table 1: Research outputs, outcomes, and strategies for each case study

Research output	Desired outcome(s)	Strategies pursued to translate outputs into outcomes
1. <i>Vaccination strategy</i> (technology output): Infection and treatment method against East Coast Fever livestock disease (ITM)	ITM is widely used in Kenya and across East and Southern Africa to reduce the risk of, and deaths associated with, ECF for poor smallholder farmers	Carrying out joint trial activities and presenting credible evidence that demonstrated the advantages of the single broad regional vaccine strain of ECF
		Organising discussions and developing consensus on contentious issues, patiently addressing all the concerns, and constantly updating all actors on developments
		For the private sector, the research team invited them to see the pilot trials and involved them in developing terms of reference for their contribution to the project objective
2. <i>Livestock-farmer field Schools</i> (LFFS) (methodology output): An adapted extension approach focusing on incorporating livestock and aimed at building farmers' capacity so that they are able to access information in new ways and to evaluate for themselves what new technologies and techniques they can use and how best to use them	LFFS is being used in development initiatives by NGOs, public and private sector to improve livelihoods, by making farmers more responsive to opportunities and able to overcome constraints	Involving implementing partners who provided starter funds in planning activities for the creation of pilot LFFS
		Made oral presentations to an international conference and was a constant reference point for questions raised, creating learning alliances
		Helped various stakeholders observe the methodology in practice
		Wrote and distributed LFFS development and policy briefs
		Promoted adoption of the approach into national extension strategies, involved extension agents in developing a training-of-trainers manual, plus specific tools for poultry production
		Developed more area-specific and relevant approaches (Turkana pastoralists and gender considerations in Pakistan)
3. <i>Poverty maps</i> (methodology output): Building national capacity to produce maps showing location and numbers of poor and poverty 'hotspots' for Kenya, Tanzania, and Uganda, and integrating them with other information for targeting pro-poor interventions	Policy makers are using the maps to allocate resources and plan poverty-alleviation interventions, resulting in more effective use of resources. Processes and institutions are being put in place that allow countries to develop or update their own maps to be used for the same purpose	Choosing local statistical researchers directly involved in census, welfare-monitoring survey, and GIS, and enhancing their capacity through hands-on training
		Facilitating presentations by experienced researchers who shared know-how and how the maps have been used
		Developing and involving policy-support teams throughout the process, so they understood the process and outputs, and linked them to poverty policies
		Making presentations to donors and development agencies throughout the process, informing them of the poverty information and ways in which it can be used
		Jointly producing high-quality reports with ownership and credit going to local partners
		Holding high-profile book launches and strategically and widely distributing the books

(Table continued)

Table 1: Continued

Research output	Desired outcome(s)	Strategies pursued to translate outputs into outcomes
<p>4. <i>Dairy policy processes</i> (policy-relevant new knowledge): Research for improved understanding and evidence of the role and importance of the informal milk market for small-scale dairy farmers, traders, and poor consumers, and the need to mainstream this knowledge in the regulatory and institutional environment, and improved understanding of how research evidence can be used to influence pro-poor policy change</p>	<p>National policy makers recognise the important role of the informal dairy sector, seek to increase understanding of the sector in their own countries, and plan policies that acknowledge and support the role of informal markets in serving poor producers and consumers</p>	<p>Mainly through a collaborative consulting and working arrangement with national government</p>
		<p>Carrying out dairy-industry appraisals and in-depth surveys, where results were used as credible research work through networking and communication</p>
		<p>Contributing resources, especially staff time to attend influential forums where the process and findings were shared, and questions and concerns addressed</p>
		<p>Identifying policy ‘champions’ who also worked closely with the researchers in Kenya</p>
		<p>Applying a diverse range of communication strategies: technical papers, mass-media reports, video clips (which used voices of benefiting communities)</p>
<p>5. <i>Pastoral systems community-led research</i> (Policy-relevant new knowledge): Understanding the impact of livestock–wildlife systems on biodiversity, the implications of changing land-use practices on pastoralist livelihoods and the environment, and improved understanding of processes to empower local communities to contribute to pro-poor policy land-use changes</p>	<p>Policy makers engaging with and incorporating research evidence as to the needs of both pastoralists and wildlife in land-use planning and formulating pro-poor policies, and local communities are proactively managing their land resources more sustainably</p>	<p>Continual engagement strategy pursued through the community facilitator-researchers by the original key research-team members</p>
		<p>Multiple communication strategies pursued</p>
		<p>Co-production of hybrid local–scientific knowledge developed with users</p>
		<p>Training and working with local community members in GPS and GIS analysis, so they could self-monitor programmes, wildlife numbers and movements, fencing, and land use</p>
		<p>Organising meetings with policymakers for dialogue among different groups about cross-cutting issues</p>
		<p>Presenting information to key decision and policy makers at both local and national levels</p>
		<p>Assisting in developing proposals for continued funding</p>
		<p>Obtaining support for unconventional research approaches</p>

strategies. Although full monitoring of behavioural change was not continued throughout the project life, there was strong awareness of the importance of pursuing multiple strategies to ensure that knowledge was broadly shared, and of the importance of joint learning and co-production of knowledge as key factors in leading to developmental change.

Results: outcomes and lessons

First, we highlight some of the outcomes achieved in the case-study projects, and then draw out some key lessons from these experiences.

Scaling out the technology

Vaccination strategy: The intention was to work towards region-wide availability of this technology (ITM) to end users for control of East Coast Fever. Kenyan veterinary authorities have now agreed to allow the use of a regional strain of this vaccine in the country (removing a previous policy roadblock to its use), formed a steering committee to oversee its delivery and application, and authorised the introduction of the technology. Tanzania is now ahead of Kenya in terms of dissemination and widespread use of this technology, with lessons for Kenya and other eastern and southern African countries dealing with this serious livestock-disease threat (ILRI 2009). Public–private partnerships, with researchers playing an active role in the collaboration, have been critical factors in this case study, where we are beginning to see a regional scaling out of an ‘on the shelf’ technology.

Involving the users in the development and implementation of the approach

Livestock-farmer field schools: This project developed and tested an approach to farmer field schools oriented to the needs of smallholder livestock keepers. Training guidelines were developed together with farmers, aimed at building local capacity to support innovations and new approaches to livestock production, processing, and marketing. Five years after the start of this project, the original farmer methodology had been adapted to address numerous livestock issues, with operating guidelines published and distributed in 35 countries. A total of 208 individuals from government extension and NGOs had graduated from capacity-building courses to facilitate LFFS in Kenya. Ten trainers of trainers had been coached to extend the capacity-building activities in other countries, including Afghanistan, Pakistan, Swaziland, Tanzania, and Uganda. Several implementing organisations (including NGOs and donors) now support the establishment of LFFS in a wide range of countries. As a result, approximately 2300 farmers in Kenya and 1000 farmers from other countries have graduated from these schools. Two new projects, supported by the International Fund for Agricultural Development (IFAD) and the Food and Agriculture Organization of the United Nations (FAO), plan to implement LFFS, involving at least 25,000 African households.

Poverty mapping: The goal here was to develop mapping and statistical modelling tools and national capacities to generate geographically referenced information on poverty that government and development agencies could use to guide their allocation of development resources. Five years after the start of this initiative, a refined methodology for generating high-resolution poverty/welfare indicators had been developed and disseminated, together with high-resolution poverty maps for Kenya, Tanzania, and Uganda. Poverty analysts in the three countries were trained, and new poverty-analysis units were established. These are influencing the allocation of national development resources, based in part on these poverty analyses and maps (for

example, the constituency development funds in Kenya). In the Uganda Bureau of Statistics, trained spatial-poverty analysts are organising surveys to update and integrate their maps with sectoral information from other ministries (for example, a poverty and wetlands book: Ministry of Water and Environment Wetlands Management Department *et al.* 2009); and in Tanzania similar reports are being developed and used in the Government's Poverty Monitoring System. The regional animal-agriculture research network (AARNET) is using poverty maps in identifying intervention sites for a livestock early-warning system aimed at assisting vulnerable nomadic pastoralists.

Influencing policy change

Dairy-policy processes: The objective of this project was to create, disseminate, and foster the application of knowledge about informal milk markets, enabling small-scale rural dairy producers and marketers across East Africa to improve their livelihoods by participating effectively in, and contributing to, policy changes supporting pro-poor dairy development. By the end of the fourth year of this initiative, the research team had accumulated knowledge concerning the significant contribution of informal milk markets to dairy development in Kenya, Tanzania, and Uganda. There is evidence that these research outputs have influenced dairy-policy changes in Kenya and Tanzania, as well as informing several large regional development projects. The research outputs have also been used in the formulation of regionally harmonised dairy policies influencing cross-border trade. Drawing on methodologies used and lessons learned in East Africa, development agents and the Government of India have provided funds to ILRI to lead similar research initiatives with partners in India, along with studies in Assam aimed at guiding a World Bank-funded dairy-development project.

Pastoral systems community-led research: The intention of this four-year project was to increase our understanding of the impact of livestock-wildlife systems on biodiversity, improve effective participation of rural communities in decisions affecting their livelihoods, and influence policies affecting wildlife and land use. By the end of four years, information on how different land-use strategies affected livelihoods and biodiversity was widely available and is being used by communities in Kenya and Tanzania to increase recognition of their needs, promote wildlife conservation activities, and influence policy change. The community facilitator-researchers and other community members who received training and experience in matters such as mapping, land-use analysis, and household surveys have become powerful and eloquent community and environmental advocates. In one area, information about the financial benefits of conservation at the household level catalysed a discussion among community members and encouraged communities to form community wildlife conservancies within the land that they owned. This joint community action created an interest among local and international NGOs, who joined them to persuade national policy makers to develop a policy framework for conservation outside protected areas, called the Community Conservation Planning Framework. In another pastoral area, community members and researchers jointly created a detailed land-use plan which was presented to the local District Commissioner, who worked with the Ministry of Lands to conduct a land-use planning exercise with community groups and county councillors. This co-created plan was subsequently sent to various ministries at the national level, and the map created with community members forms the basis for Kenya's first land-use plan for privatised rangeland (Nkedianye *et al.* 2008). It is the first major policy/plan that has involved Maasai in its development (Reid *et al.* in press).

Conclusions: transforming research outputs to outcomes – what kinds of strategy are needed?

Partnership and team-building strategies

Since outcomes are realised with and through partners and seldom by researchers on their own, strategies for identifying and productively engaging with partners are critical. In particular, keeping transaction costs to a minimum was a concern of researchers in all the case studies (as partnering with multiple organisations can be very time-consuming). The experience of all the case-study teams, however, was that the investment of time in team-building up-front in the project invariably paid off later, particularly in terms of influencing desired institutional and policy changes. The dairy-project team in particular built broad partnerships, including government research and extension, regulatory bodies, NGOs, and the private sector. They sought to understand and address different vested interests and to capitalise on complementary mandates and skills. For example, they found that NGOs are particularly credible in pro-poor advocacy; that the participation of ministry partners in key policy-advisory committees helped to lead to sought-after policy changes; and that private-sector partners can significantly and quickly influence policy.

The LFFS team involved donors, implementing agencies, and extension agents in establishing pilot projects in respective countries, developing training manuals, and promoting this form of action–learning approach in various forums. The vaccine-project team played a brokering role, facilitating meetings where different actors (other researchers, country veterinary authorities and regulatory agencies, private companies) shared concerns and information, and agreed on acceptable working structures. By linking livestock producers with researchers, and communities with one another, the project team was able to communicate with and reach a relatively large rural population.

Champions

In the dairy-policy processes, poverty mapping, and pastoral systems community-led research cases, champions played an important role in supporting the research and communicating research findings to potential users. In the dairy-policy case, the project leader was a prominent government staff member who was part of the national policy process – sitting on committees responsible for drafting dairy-related policy reforms. Capacity building of community members in the pastoral project gave them confidence to act as champions in various forums, and a well-connected individual was recruited to lead the policy team. A permanent secretary led the Kenya poverty mapping policy-advisory group, and his involvement enhanced the status, visibility, and reach of the poverty analysts involved.

Credit and recognition for partners' roles in high-quality outputs

Individual incentives are important drivers of behavioural change. In the pastoral systems community-led research project, communities used research findings based on their needs to support interactions with local policy makers and raise the visibility of key issues affecting their welfare. In the dairy-policy case study, an important strategy involved demonstrating to policy actors how research evidence could be used in their own interest. The poverty-mapping research team trained individuals within the national statistical units of Kenya, Tanzania, and Uganda, and the joint research outputs (new national poverty maps) were produced

in high-quality government reports which raised the visibility of the poverty analysts and demand for their research evidence by policy makers.

Strategic communication

All the case studies produced different kinds of communication output, disseminated through multiple channels and aimed at different audiences. Often researchers focus on journal articles and conference presentations that are rarely seen or used by organisations and individuals outside the scientific community. Essential to these case studies was strategic thinking by project-team members about the audience, communication channel, and approach right from the outset of the project (and not waiting until the end, as is often the case). In the dairy-policy case, for example, video was used to bring the views of traders to a gathering of policymakers, and policy briefs that presented the research evidence in a simple manner were made available. In this case, holding face-to-face meetings with major stakeholders and providing advocacy agents such as NGOs and journalists with solid evidence were also critical. The LFFS group developed practical training manuals that could be used to train LFFS facilitators. Throughout the pilot periods, the project team facilitated visits to sites and held 'on-site' sessions with high-profile policy and national planning officials and donor agents. Both the dairy-policy and LFFS research teams became accessible reference points for queries (for example, by email and telephone). The pastoral community facilitator-researchers participated in several local radio shows to discuss issues of concern and to share sources of information and latest knowledge with their constituents.

Targeting on-going policy processes

Using a diverse range of communication products, the dairy-policy team was able to provide valuable inputs into an ongoing review of the country's dairy-sector policy (Leksmono *et al.* 2006), which provided a policy-reform 'window of opportunity'. In the pastoral-systems and dairy-policy cases, the project teams also identified current policy processes where communication strategies could be targeted. Both project teams proactively engaged in related policy debates, either directly or through partners, alongside other actors involved in associated change processes. For example, a media campaign led by private-sector interests seeking to outlaw raw milk supplied by informal milk vendors gave the research team a platform to present research evidence to the contrary to a grassroots audience that was able to mobilise public opinion in support of pro-poor policy change.

Capacity building

All the research teams used capacity building as a strategy for increasing the likelihood that some activities and impacts would continue after the life of their project funding. In the LFFS case, researchers recruited and trained 'trainers of trainers' from various countries who then returned home to train others in the approach. In the poverty-mapping case, new poverty-analysis units were formed with the individuals who had received training through the project, and new policies were implemented which ensured regular updates of the poverty maps and hence a continued demand for, and use of, those skills.

Research-for-development initiatives vary considerably in their scope and aims, but they all desire to generate knowledge that will lead to actions that contribute to sustainable poverty reduction. While we cannot ensure that this will happen, this review of lessons learnt across a range of projects indicates that there are strategies that can and should be pursued to increase

the likelihood that it will. We have grouped them into the following categories: team building, champion-related, strategic communication, targeting on-going policy processes, and capacity building – but there are undoubtedly others.

References

- Clark, William and Laura Holliday (eds.)** (2006) *Linking Knowledge with Action for Sustainable Development: The Role of Program Management – Summary of a Workshop*, Washington, DC: Roundtable on Science and Technology for Sustainability, National Research Council of the National Academies.
- Earl, S., F. Carden, and T. Smutylo** (2001) *Outcome Mapping: Building Learning and Reflection into Development Programs*, Ottawa: International Development Research Centre.
- Hall, A., R. Sulaiman, and P. Bezkorowajnyj** (2008) *Reframing Technical Change: Livestock Fodder Scarcity Revisited as Innovation Capacity Scarcity*, Nairobi: International Livestock Research Institute.
- IAC** (2004) *Inventing a Better Future: A Strategy for Building Worldwide Capacities in Science and Technology*, Amsterdam: InterAcademy Council.
- ICSU** (2002) 'Science and Technology for Sustainable Development', *ICSU Series on Science for Sustainable Development* No. 9, Paris: International Council for Science.
- ILRI** (2009) 'Protecting pastoral cattle against lethal disease', Nairobi: International Livestock Research Institute, available at www.ilri.org/ilripublication/Uploaded%20Files/20041029114520.04BR_IMP_ProtectingPastoralCattleAgainstLethalDisease.pdf (retrieved June 2009).
- Jones, Harry (ed.)** (2007) *Making Outcome Mapping Work: Evolving Experiences from Around the World*, London and Ottawa: Outcome Mapping Learning Community, available at www.outcomemapping.ca/resource/resource.php?id=139 (retrieved 1 July 2009).
- Kristjanson, P., R. S. Reid, N. Dickson, W. C. Clark, D. Romney, R. Puskur, S. MacMillan, and D. Grace** (2009) 'Linking international agricultural research knowledge with action for sustainable development', *Proceedings of the National Academy of Sciences of the US (PNAS)* 9 (13): 5047–52.
- Leksmono, C., J. Young, N. Hooton, H. Muriuki, and D. Romney** (2006) *Informal Traders Lock Horns with the Formal Milk Industry: The Role of Research in Pro-poor Dairy Policy Shift in Kenya*, London: Overseas Development Institute, and Nairobi: International Livestock Research Institute.
- McNie, Elizabeth C.** (2007) 'Reconciling the supply of scientific information with user demands: an analysis of the problem and review of the literature', *Environmental Science and Policy* 10 (1): 17–38.
- Ministry of Water and Environment Wetlands Management Department, Uganda Bureau of Statistics, ILRI, and WRI** (2009) *Mapping a Better Future: How Spatial Analysis Can Benefit Wetlands and Reduce Poverty in Uganda*, Washington, DC and Kampala: World Resources Institute.
- Nkedianye, David, Dickson Kaelo, Robin Reid, Moses Neselle, Leonard Onetu, Ogeli Makui, Mohammed Said, Steven Kiruswa, Patti Kristjanson, Ololtisatti Kamuaro, Shem Kifugo Kifugo, Nancy Dickson, and William Clark** (2008) 'Linking Knowledge with Action Using Community Facilitators to Span Boundaries: Lessons from East Africa', *Center for International Development Graduate Student and Research Fellow Working Paper* No. 25 and *ILRI Working Paper*, Cambridge, MA: Harvard University, and Nairobi: International Livestock Research Institute, available at: www.cid.harvard.edu/cidwp/pdf/grad_student/025.pdf (retrieved 1 July 2009).
- Pardey, P., N. Beintema, S. Dehmer, and S. Wood** (2006) *Agricultural Research: A Growing Global Divide?* Washington, DC: International Food Policy Institute.
- Reid, R. S., D. Nkedianye, M. Y. Said, D. Kaelo, M. Neselle, O. Makui, L. Onetu, S. Kiruswa, N. Ole Kamuaro, P. Kristjanson, S. B. Burnsilver, M. Goldman, R. B. Boone B., N. M. Dickson, and W. C. Clark** (in press) 'Evolution of models to support community and policy action with science: balancing pastoral livelihoods and wildlife conservation in savannas of East Africa', *Proceedings of the National Academy of Sciences USA*.
- Ruttan, V.** (2001) *Technology, Growth and Development: An Induced Innovation Perspective*, Oxford: Oxford University Press.
- Spielman, D. J.** (2005) 'Innovation Systems Perspectives on Developing-country Agriculture: A Critical Review', *ISNAR Discussion Paper 2*, Washington, DC: International Food Policy Research Institute.

UNDP (United Nations Development Programme) (2001) *Making New Technologies Work for Human Development: The Human Development Report*, Oxford: Oxford University Press.

UN Millennium Project Task Force on Science, Technology and Innovation (2005) 'Forging Ahead: Technological Innovation and the Millennium Development Goals', New York, NY: United Nations.

World Bank (1999) *World Development Report 1999/2000: Entering the 21st Century*, Oxford: Oxford University Press.

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