

Workshop on Rethinking Impact: Understanding the Complexity of Poverty and Change

Abstracts

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Learning alliances: Emerging trends in knowledge-intensive agricultural innovation for poverty alleviation

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While farmers' participation in agricultural innovation has been well recognized, the institutional mechanisms that could strengthen innovations for effective poverty reduction and change have received less attention. These require different system architectures than many of the existing systems of agricultural research and extension that are primarily input intensive. I explore the rapid spread of two agricultural innovations in India in recent times—Non Pesticidal Management (NPM) and the System of Rice Intensification (SRI)—that have addressed the complexity of change in knowledge-intensive systems. The spectacular spread of NPM in the state of Andhra Pradesh—0.5 million acres involving 200,000 farmers in less than 3 years—on the one hand presents interesting insights into the nature of collaboration between civil society organizations and the state. On the other hand, it demonstrates the need for agricultural research agencies to proactively seek sources of knowledge and collaboration outside the formal research systems—from civil society in particular. Engaging in knowledge dialogues with groups that often challenge linear understandings of innovation can lead to new insights, such as the kinds of innovations required in extension and the kinds of promotional policies suited to rain-fed farming. The success of NPM is also based on strategic alliances with organizations of the poor at several levels and shows that, if the system architecture is based on good knowledge flows among diverse actors, the system can respond to and influence public policies even at times of severe farming crises.

I extend some of the insights in NPM with the modest success in a more recent innovation—SRI. Unlike NPM, the system architecture in SRI is still evolving and is perhaps facing the same challenges of legitimacy of alternative knowledge though in a shorter time span. With evidence of yields on farmers' fields often being higher than in laboratories, SRI has been mired in scientific controversies. I explore the challenges of poverty reduction through contrasting experiences in SRI uptake in the various states of India. Open and complex systems of innovation such as SRI are unpredictable, with actors accessing knowledge and rooting the system in diverse ways across India and elsewhere. Field evidence indicates increased technical competence in some states of India though reduced poverty focus *vis-à-vis* a greater poverty focus and larger uptake in other states. This indicates that the relation between agricultural innovation and poverty reduction that has often been assumed actually needs proactive efforts from research, extension agencies and civil society organizations, in collaboration with resource-poor farmers. Learning alliances have emerged as new institutional mechanisms with the promise to further knowledge dialogues and enable greater synergy in functioning among diverse actors that comprise an agricultural innovation. I share some insights on this through some ongoing initiatives and explore some policy insights through the case studies.

Linking evidence and user-voice for pro-poor policy change: Lessons from Uganda and Kenya

Nicolas A. Hooton

Many agricultural research projects seek to achieve pro-poor impact through policy-level changes, but the pathways to achieving such changes are often poorly understood, and lessons not applied in project design. The result is often a disappointing failure to observe policy impact, from what may be highly policy-relevant findings.

A recent collaborative project between the International Livestock Research Institute (ILRI) and the Overseas Development Institute (ODI) sought to understand and draw lessons from examples of evidence-based policy change. A new methodology for understanding policy change processes and the role of the different influences produced a rich understanding of the complex processes and influences leading to the policy changes.

Two particular case studies—on new urban agriculture policy in Kampala and on changes in dairy marketing policy in Kenya—illustrate the important roles played by different partners in achieving policy change, as both are successful collaborations between researchers, civil society organizations (CSOs) and government.

In Kampala, Uganda, new City Ordinances on Urban Agriculture have recently been passed. Previous policies had been largely interpreted as prohibiting the practice of urban agriculture, although it was known to be a highly important livelihood strategy for the poor, with some 30% of all households in Kampala practising agriculture. The new Ordinances acknowledge and support the legal right of residents to grow food and raise livestock within the city limits, while still addressing public health and nuisance issues. Key actors in this policy change included a coalition of CSO, city council, local and international researchers. This coalition developed over a number of years, and each actor played a particular role in the development of the new evidence-based policies.

In Kenya, there has been a significant policy change toward official support for small-scale milk traders. This contrasts with the previous active harassment and attempts to stamp out this traditional market, which links the vast majority of small-scale farmers with poor consumers. This change was largely driven by evidence from a highly collaborative research and development project, implemented by national and international research institutes and government, in close collaboration with service-delivery and advocacy-focused CSOs. All partners played important roles in influencing the policy change.

In both cases, a critical factor was the linking of ‘user-voice’ (poor farmers, traders and consumers) into policy dialogues so that research evidence was linked to the real issues and concerns of those affected. This was achieved through innovative linkages between CSOs, government (local and national) and researchers. While the mechanism for these linkages was different in each case, lessons can be drawn in the form of guiding principles. CSOs played a particular role in supporting (through representation or capacity-building) the voices of poor beneficiaries in policy dialogues. And close linkages between researchers and CSOs brought an ‘advocacy’ element to supplement more ‘formal’ communication routes that researchers were constrained to follow. CSOs were also able to play a key role in piloting new approaches, based on the researchers’ evidence, and in partnership with government. The same evidence therefore ended up working through a number of different channels. Linkages with government throughout the process built understanding and ownership of the process, helping to reduce potential conflict in what were highly controversial policy areas. The coalitions of different actors also meant there

was a sensitive understanding of the overall policy-making context, so that appropriate strategies could be developed and modified throughout the lengthy process of policy change.

While local context and sector issues influenced the particular approaches that proved successful in each of these cases, lessons can still be drawn to produce guiding principles on effective collaboration to achieve pro-poor, evidence-based policy changes.

Maize adoption and poverty in Mexico

Javier Becerril

The approval of the Millennium Declaration by the General Assembly of the United Nations resulted in the formulation of eight Millennium Development Goals (MDGs) to guide international policies. Some of the most important issues covered by the MDGs are poverty, hunger and technology transfer, which are strongly linked to sustainable agricultural development at national, regional and local levels.

Empirical evidence shows that there is a general consensus between economists and social scientists that technology change contributes to poverty alleviation. That is, benefits from new agricultural technology have influenced poverty reduction both directly, by raising incomes of farm households, and indirectly by raising employment, raising wage rates of functionally landless laborers and by lowering the price of food staples.

The Mexican experience is that, after 40 years of initiatives, programs and efforts to transfer improved maize germplasm by public and private institutions, in 1996 only about 25% of the total area (7.9 million ha) was planted with modern varieties—maize hybrid and open pollinated varieties (OPVs)—; most of this area is located in the commercial production zones of central and northwestern Mexico.

Maize production represents the primary source of food and income for millions of rural households; however, the productivity of the small-scale maize-based cropping system in Mexico remains low by global standards. Additionally, in 2000, more than 28% of the rural households were considered extremely poor, living under the poverty line of US\$ 53.13 per capita per month. Furthermore, according to the FAO, about 5.3% of the population of 100 million was undernourished in 2002–2004.

Twelve villages were studied: six in the Coast of Oaxaca and six in Frailesca of Chiapas, both in southern Mexico. A survey was conducted covering 325 households—27 in each village. The small-scale farmers interviewed managed a total of 504 maize plots. The two regions analyzed are quite different in socio-economic terms, but the agro-ecological conditions are similar, i.e. the environment is not a variable in the performance of the improved maize varieties. Poverty is persistent in both regions: the headcount index shows that 67% and 57% of the small-scale farmers in Oaxaca and Chiapas, respectively, live under the food poverty line of about US\$ 36 based on a food basket.

This research analyzes the role of the adoption of improved maize germplasm on per-capita expenditures (as a measure of poverty status) in 12 villages. Since it was not possible to observe a small-scale farmers ‘before’ and ‘after’ maize technology adoption, the research was unable to identify the causal effect on poverty using a standard methodology. Thus, the research followed a propensity score matching approach that allows the comparison of adopting farmers with farmers that have not adopted modern maize varieties. The empirical results show that overall adoption of improved germplasm in Chiapas through the Nearest-Neighbor-Matching

(NNM) and Kernel-Based-Matching (KBM) procedures had a positive and significant impact on per-capita monthly expenditure in the range of US\$ 14.63 (NNM) to US\$ 11.05 (KBM). This corresponds to the average per-capita expenditure difference between pairs of farmers that were similar, but had different technology status. In the same way in Oaxaca, the overall causal effect of improved germplasm adoption on households' per-capita monthly expenditure is also statistically robust and significant differences in the range of US\$ 18.46 (NNM) to US\$ 14.57 (KBM).

The empirical results strongly suggest that adoption of improved germplasm is an important mechanism to help rural households to get out of poverty, through enhancement of small-scale farmers' per-capita expenditure. The study helps shed light on the discussion of whether maize adoption helps the poorest farmers.

Innovation as relational practice

Stephen Biggs and Barun Gurung

Introduction

Drawing from concepts in network analysis and relational practice theory, we argue that innovation derives from institutional and behavioral changes that are generated from the dynamic actions of various actors in a given social network. With its focus on social groups that are linked by work, friendship, influence or communication relations, network analysis enables us to identify leaders in relation to their position, status and influence within the social network. Relational practice theory, with its focus on adult growth, achievement and identity, provides insight into the arena of individual action that is the foundation of behavioral change.

The analysis draws from specific themes from network analysis and relational practice theory to analyze innovations that have been generated from Nepal's Leasehold Forestry and Fodder Development Project.

Background

In 1993, the Government of Nepal and the International Fund for Agricultural Development (IFAD) initiated the Hills Leasehold Forestry and Forage Development Project with the two-fold objectives of: (1) raising incomes of families in the hills who were below the poverty line, while (2) improving ecological conditions. The objectives were to be achieved through leasing areas of degraded forest lands to groups of poor households, who would be assisted to regenerate the lands.

There is general recognition that the Leasehold Forestry and Fodder Development Project has produced several innovations that generated significant impacts on the lives of poor rural women and men. These impacts have contributed to meaningful gains in the quantity and quality of livestock that farmers now own; reduced pressure on national forests for fodder and fuel wood; increased household food security; diversified and increased sources of income; and decreased farmers' indebtedness to the local money-lenders. An additional aspect of the innovation is the successful incorporation of gender issues and targeting of poor women in the Project's strategy and implementation. The significance of successful gender integration is particularly noteworthy in the context of Nepalese society, where gender ideologies that privilege men are dominant, and relationships between community members and government workers are often steeped in hierarchy.

Study outline

This study, based on the relational practices between project members, community women acting as ‘group promoters’ and ‘leasehold’ community groups, assessed the key relationships, and their content, that contributed to the changes and innovations of the Leasehold Forestry and Fodder Development Project. In particular, these key relationships are examined in the context of four themes that are drawn from network analysis and relational practice theory.

Connectors

This theme focuses on the actions of three ‘connectors’ in the social network of the project. Connectors are those actors located centrally in the network and refers to the degree of direct connections that they have to others, their degree of centrality being a key element to changes that led to innovations in the project.

The three ‘connectors’ brought their earlier experiences from having shared an innovative approach that put rural women at the center of forestry activities. This women- and rural community-friendly approach, with adaptations, became the ‘standard’ for the Leasehold Forestry and Fodder Development Project.

Boundary spanners

This theme focuses on the ‘boundary spanning’ actions of group promoters,¹ and the gender unit of the project, whose key roles as brokers between important constituencies resulted in change and innovations: they engendered a ‘bridge’ between the rural–official divide; influenced and managed important external (United Nations and IFAD) attention to sustain funding support for the approach; and generating ‘legitimacy’ for the ‘leasehold’ concept in national forestry discourse.²

Preservers

This theme focuses on the preserving activities of two key members of the social network: the Chief Technical Advisor, and the National Coordinator of the Leasehold Forestry and Fodder Development Project. Relational practice theory characterizes the activities of such leaders as ‘shouldering responsibilities’ that go beyond the technical definition of the job, even if it means putting aside personal agendas or sacrificing some symbols of their status. Their activities are analyzed in the context of their ability to think contextually, to ensure that the project was protected from the challenges of a bureaucratic culture of hierarchy and domination, and from resistance to gender and equity issues. They ‘modeled’ their behavior through actions that created an enabling institutional environment for the gender unit to function effectively, which resulted in the acceptance and recognition of women group promoters as effective mobilizers of community user groups within the bureaucracy.

¹ Group promoters: rural women trained as ‘para-professionals’ to facilitate information exchange between national extension agents and community user groups. They were also trained to provide training in mobilizing community women and men to organize and manage the leasehold lands and livestock.

² This is particularly significant, given the enormous experience and support for Community Forestry, the ‘big brother’ of the Leasehold forestry approach.

Mutual enablers

This final theme analyzes the actions of members of the gender unit in the project. Specifically, it revolves around the concept of ‘mutual empowerment,’ which is drawn from relational theory, and refers to behavior intended to enable others’ achievement and contribution to a given project. Although the focus of activity is on others, there is an implicit belief that empowering another is a mutually beneficial process. In this context, the actions of the gender unit can be perceived as enabling the women group promoters to produce, achieve and accomplish work-related goals and objectives. The actions of the gender unit were characterized by a willingness to put effort into ‘embedded outcomes,’ which are outcomes embedded in other people, such as increased competence, self-confidence, and increased knowledge.

In outlining the impacts achieved as a result of the mutually empowering relationship between the gender unit and women group promoters, the analysis delves first into the personal histories of women group promoters. Their narratives of being excluded as a result of their gender, caste, poverty and illiteracy serve as a poignant background to their achievements in light of the mutually empowering relationship.

Exploring livelihood outcomes of participatory farmer training: The case of sweet potato feed utilization in Vietnam and The Philippines

Dindo Campilan and Lorna Sister

In many parts of the world, sweet potato is popularly—and almost exclusively—known as a food crop. In Asia, it is also widely utilized as animal feed by poor farming households. Sweet potato roots and vines are among the local feed resources that small-holder livestock owners rely on, especially as a low-cost and readily available alternative to commercial feed products.

In the last 10 years, the International Potato Center (CIP) and national partners have developed and introduced technical innovations for optimizing the use of sweet potato as a feed resource. Key outputs include improved animal feed practices adapted to the small-scale and resource-poor systems of pig-raising in Vietnam and cattle-raising in The Philippines.

Within this collaborative effort, CIP’s Users’ Perspectives With Agricultural Research and Development (UPWARD) Program facilitated the development and piloting of two participatory farmer training approaches: (1) farmer-to-farmer training in Vietnam, and (2) farmer field schools in The Philippines. Both approaches employ principles and methods in participatory, group-based and experiential learning. However, the former relies on local farmer-trainers, while the latter works mainly through the formal extension service.

In both countries, project monitoring and evaluation tracked learning processes and outcomes during training implementation. Pre- and post-tests measured changes in knowledge, while feedback exercises assessed training methods and arrangements. In successive animal-rearing seasons, an impact assessment was carried out to determine: (1) how farmers’ improved knowledge became translated into on-farm practices, and (2) the livelihood outcomes resulting from knowledge application.

Experiences in project M&E and impact assessment underscore the need to revisit earlier conceptualization and measurement of post-training livelihood outcomes. In the case of improving sweet potato feed utilization in Vietnam and The Philippines, it has become necessary to recognize:

1. Sweet potato as part of farmers' pool of local feed resources to support animal-raising;
2. Sweet potato feed as an innovation that integrates knowledge from multiple sources and processes;
3. Feeding and nutrition as an aspect of the entire system of animal rearing;
4. Knowledge as among the livelihood capitals to improve outcomes from small-holder animal production;
5. Animal-raising as component of the livelihood portfolio of farming households.

Mapping of processes associated with change: Adoption of hybrid maize in Nalgonda district, Andhra Pradesh, India

Vishnubhotia (V.L.) Prasad, K. Gurava Reddy and P.G. Bezkorowajnyj

The impact of agricultural and poverty interventions cannot be explained by a simplistic establishment of causality between costs and benefits. There is a compelling need to understand the process of change to ensure more quality benefits to more people over a wider geographical area more quickly, more equitably and long-lasting. Farmers in Nalgonda district of Andhra Pradesh in south India keep dairy animals in mixed farming, where crop residues form an important component of livestock feeding. Over time, the crop component, while remaining diversified, has undergone changes in terms of specific crops and varieties grown. For example, farmers have adopted hybrid maize during the past 4–5 years, to some extent at the expense of sorghum, paddy and cotton. The sorghum straw that is still considered by farmers as an ideal staple feed for cattle is now almost non-existent, but dairy production from the area has not declined. In fact, milk production, which is an important source of livelihood of farmers, increased. It was considered important to trace the causes and consequences of increased adoption of hybrid maize by the farmers of Nalgonda district with special reference to their fodder use and livestock production.

Broadly, a case study approach was taken to map the change at farm level with special reference to hybrid maize uptake along with processes associated with the change at higher levels. The study was made in two villages, Kacharam and Kamatamgudem in Nalgonda district. The data were collected using both a formal survey and informal, participatory, semi-structured discussions with different actors during January–June 2005. Secondary data pertaining to milk sale from the two villages were collected from the records of respective milk collection centers for the period ending March 2006. Data on maize marketing arrangements collected from the Joint Director agriculture included the 2006 *Kharif* crop.

Farmers adapted the maize crop to suit their fodder needs by increasing the seed rate without affecting the grain yield. Farmers also responded to the change in cropping by reducing the total number of livestock held and at the same time increasing the number of 'improved' animals. Farmers coped with fodder shortage by buying paddy straw during the summer from other villages and green fodder from neighboring farmers who use irrigation. At the level of service provision, the watershed program under APRLP (Andhra Pradesh Rural Livelihood Program) initially paved the way for increased uptake of hybrid maize by supplying seeds and timely advice. This was followed by promotional activities of the private sector, culminating in the supply of subsidized private-sector seed through government outlets. The Nalgonda dairy union, which became autonomous in 2000, increased its milk procurement network and the producer price offered to farmers. This also prompted farmers to have more improved dairy

animals. The Union also supplied hybrid fodder seeds of Sudan sorghum grass, which became very popular with irrigation farmers from whom rain-fed farmers obtained green fodder through mutually agreed institutional arrangements. A demand-responsive cattle breeding service organized by an NGO in partnership with the dairy union was also responsible for the increase of crossbred cows in the area. We argue that a series of changes at farm and other levels that include actors concerned with the service provision and delivery were required to accommodate the change at farm level. The policy and institutional changes associated with the uptake of hybrid maize germplasm are traced to account for the change.

Key Partners: a consortium of NGOs called DDNN (Deccan Development Network of NGOs).

Bridging the gap between farmers and researchers through collaborative experimentation: Cost and labor reduction in soybean production in South-Nyanza, Kenya

Isabelle Vandeplass, B. Vanlauwe, A.M. Sagwa, J.A. Asimba, R. Merckx and J. Deckers

The Tropical Soil Biology and Fertility laboratory at the International Center for Tropical Agriculture (TSBF-CIAT) introduced dual-purpose soybean varieties in southwest Kenya both to improve soil fertility by nitrogen fixation and to provide a source of better food and income. The project started with soybean demonstration trials in 2005. Since then, the Uriri Farmer Cooperative Society has been successful in spreading the seeds over the district; nevertheless, farmers still had problems with soybean agronomy.

We therefore started a Collaborative Experiment (CE) Approach in March 2006 to make soybean production more accessible to farmers. The approach consisted of four stages: (1) information sessions about the soybean crop; (2) participatory rural appraisal; (3) collaboration in the whole process of experimentation, from problem identification, to the design and analysis; and (4) handing over to allow farmers to experiment by themselves.

Farmers identified two main constraints to the recommended soybean production methods: (1) the high labor requirement, and (2) the lack of income to purchase the recommended inputs. The treatments chosen for the experiment were: (1) Labor options: point-placing with two weedings (recommended), planting in trenches at 'correct distance' with one or two weedings, and broadcasting with one weeding; (2) Inputs: diammonium phosphate (DAP) (recommended), 1/2 DAP and 1/2 manure, manure, 1/2 Tithonia and 1/2 DAP, ash, 1/2 ash and 1/2 manure, and no input.

Statistical analysis of the yields showed a significant increase in yields from 586 kg/ha to 756–1047 kg/ha when applying inputs, but no significant differences between the local or mineral inputs. Tithonia + DAP gave the highest yield of all, but had the highest labor requirement. After seeing the harvest results, most farmers said they were interested in using 1/2 ash and 1/2 manure, full manure, full ash, or 1/2 DAP + 1/2 manure. Economic analysis confirmed that these were the most beneficial among the tested inputs. The farmers' preferences among the labor treatments were planting in trenches with one or two weedings, or broadcasting with one weeding, depending on labor availability in the household. Only 50 kg/ha was gained by planting in trenches rather than broadcasting the seeds, while the time required for planting was four times longer than for broadcasting. Only 75–84 kg/ha was gained by weeding twice rather than once.

The results and discussions with farmers during the field days, and short-term impact analysis demonstrated that the CE approach had been successful in two main aspects. The first was its success in identifying problems and yield-enhancing treatments that are accessible to deprived people. Indeed, during a ranking exercise, farmers gave higher importance to low production cost and low labor requirement than to yields. During field days, all farmers felt there was at least one of the treatments accessible to them. Collaborating in the design of the experiments thus helped target the real constraints faced by the less privileged farmers. The second main success of the process was an increased awareness of and interest in soybean and its benefits. While drawing benefits-trees less than a year into the collaboration, the farmers concluded that soybean could bring a better life, cash for school fees and better health. The number of farmers registered in the soybean cooperative also increased from a few hundred to 4500 that year. Several farmers also started their own experiments to further adapt the recommendations to their own needs. The CE approach was thus successful in bridging the power-relations and knowledge gap between researchers and farmers, and in designing appropriate technologies.

Key Partners: The PhD project is a collaboration between the Land Management and Economics Department of the K.U. Leuven, Belgium, and the Tropical Soil Biology and Fertility Institute of CIAT, Nairobi. The research is supervised by Dr J. Deckers and Dr R. Merckx from the K.U. Leuven and by Dr B. Vanlauwe, from TSBF-CIAT in Nairobi. L. Driessens is an MSc student who participated in the research in 2006. The research is implemented in partnership with the Uriri Farmer Cooperative Society in Migori and Rongo District of Nyanza province, Kenya. A.M. Sagwa is the chairman of this cooperative, J.A. Asimba the field assistant to Isabelle Vandeplass.

Comparison of three modes of improving benefits to farmers within agroforestry product market chains

Charly Facheux, Diane Russell, Divine Foundjem-Tita, Charlie Mbosso and Zac Tchoundjeu

Many organizations have tried to assist farmers to improve returns to forest and tree products, but few have systematically tested interventions. This paper describes the results of three types of interventions in market chains for tree products, ricinodendron and kola, which represent important alternative commodities for Cameroonian farmers: (1) bringing farmers directly in contact with buyers at the farm gate; (2) facilitating a village-level stabilization fund to allow for off-season sales; and (3) research on storage methods allow for more cost-effective off-season sales. The dimensions of the comparison are as follows: (1) financial costs and benefits—this calculation is adjusted to show the per-person benefits so the number of individuals benefiting is a key variable; (2) social costs and benefits—a matrix of social factors is provided that shows which methods affect which aspects of household and village life; and (3) sustainability of each option in terms of potential for farmer organizations and community-based organizations, or traders (or both) to take up the method without external assistance.

Research to development process: PETRRA experience

Ahmad Salahuddin and Noel P. Magor

PETRRA is a project of the International Rice Research Institute (IRRI). It had a big challenge to ensure that the research-to-development pathway receives top priority in its implementation. It developed some practical examples of how transitions from research to development can be done in a meaningful way. IRRI in its salinity tolerant rice variety development program, together with NARS and NGO partners, established one good example. Two NGO partners of PETRRA—RDRS and Shushilan—also established examples of such successful research-to-development transition in extension-method research through their organizational response and commitment to a pro-poor agricultural program. The IRRI example has been transferred to many other programs in the area of varietal development for unfavorable ecosystems and attracting resources from multiple donors. The two NGO partners are also attracting resources from donors and moving toward sustainable agricultural program development. These two had no strong agriculture program before they became involved with PETRRA. Long-term organizational commitment towards pro-poor agricultural development, working with the right kinds of partners and having the ability to locate the project component in the wider context of the organizational program appeared to be the key to such successes.

Addressing the research–development disconnect: Lessons from integrated natural-resource management in highlands of East and Central Africa

Jeremias Mowo, Chris Opondo, Adolf Nyaki and Zenebe Admasu

The African Highlands Initiative (AHI) has been operating in Eastern and Central Africa (ECA) since 1995 and was established out of stakeholders' concern that many years of investments in research had not led to significant impact on livelihoods and natural-resource management (NRM). This was attributed to lack of innovative strategies for enhancing uptake of developed technologies and the inappropriateness of most of the technologies. Research and development stakeholders in the region therefore gave AHI the task of developing methodologies for integrated NRM and institutionalizing them in partner research and development organizations in the region. Working with partners and farmers in five ECA countries, AHI has developed several methods, tools and approaches for improving the impact of agricultural research on development, particularly in reversing natural-resource degradation and increasing the returns to land and labor. Emerging lessons show that a combination therapy of innovative approaches to integrated NRM greatly contributes to minimizing the gap between research and development. These include adopting appropriate entry points and linked technologies, interaction between farmers and R&D actors based on trust and respect, and the use of multi-disciplinary teams to tackle complex NRM issues. The term 'entry points' as used here refers to interventions that address priority issues as ranked by farmers, bring quick benefits and are accessible to most households, while 'linked-technologies' are integrated technologies that are complementary and address multiple constraints holistically, leading to multiple benefits.

Innovative ways of assessing outcomes and impacts of participatory research on rice in Nepal and Bangladesh

K.D. Joshi³

The outcomes of highly client-oriented breeding (COB) and participatory varietal selection (PVS) on rice in Bangladesh and Nepal were assessed using a range of techniques, all of which included some level of farmer participation. These were: household-level questionnaires (HLQs) using structured interviews; focus-group discussions (FGDs); in-depth, semi-structured interviews; and the use of the global positioning system (GPS) to do transects that can be repeated over time. The less-structured approaches such as FGDs were very simple, and hence cost-effective, and were used to triangulate the results from the more systematic surveys. The in-depth interviews provided new information on varietal traits that were not found with more formal methods, and also allowed detailed information to be collected on impacts on livelihoods.

Measures of adoption varied with the various sampling methods used. The GPS method was the most unbiased, but we had to substantially revise the initial sampling strategy to reduce the demand on resources. The FGDs were a vital complement to this method, both for triangulation and for revealing the presence of varieties that the predetermined GPS sampling points missed.

The adoption of the varieties, identified by PVS or bred by COB, was rapid in marginal and in more favorable agricultural environments. In Bangladesh, over 90% of the households in some villages adopted the new varieties within 3 years of their first introduction. However, at early stages in the adoption process, lack of seed and information meant that measurable adoption with the assessment techniques used was detected only in villages where there had been at least some, albeit often very limited, project activities. We identified farmer-to-farmer seed transactions that spread seed beyond the original villages where we had worked and found evidence of the spread of information to new villages.

The amount of seed distributed in farmer-to-farmer seed transactions relative to the area it occupied was a strong predictor of the increasing popularity of a variety. In Nepal, new varieties accounted for nearly half of the farmer-to-farmer seed transactions in the study villages. In Bangladesh, about half of adopters subsequently distributed seed, and over 80% of farmers did so when more seed was available because they could grow rice in two seasons of the year.

There was substantial impact in several dimensions of peoples' livelihoods. Food sufficiency levels improved considerably. Additional cash from the sale of surplus grain, or because grain no longer had to be purchased for household needs, was used by the farmers for various purposes. There were beneficial changes in cropping patterns in both Bangladesh and Nepal due to the introduction of shorter-duration rice varieties.

³ The author was unfortunately unable to attend the workshop and present this paper.

Impact of market and value-adding initiatives of an *in-situ* agro-biodiversity conservation project on crop diversity and livelihood improvement in Western Mid-Hills, Nepal

Devendra Gauchan,⁴ Anu Adhikari, Pratap Shrestha, Bhuwon Sthapit and Madhusudan Upadhyay

Market provides both opportunities and challenges for the conservation of agricultural biodiversity. In general, market development promotes intensification, specialization and commercialization of production, resulting in loss of diverse local genetic resources. However, if market development is well targeted, it can promote conservation and sustainable use of local biodiversity. This study is the outcome of an impact study conducted on market and value-adding initiatives of an *in-situ* agrobiodiversity conservation project on crop diversity and livelihood improvement in Nepal. (The project *In-situ* conservation of agrobiodiversity on-farm project, Nepal was launched in 1997 by the Nepal Agricultural Research Council [NARC, a national research organization], Local Initiative for Biodiversity Research and Development [LIBIRD, a local NGO], and the then International Plant Genetic Research Institute [IPGRI, now Bioversity International]. The main goal of the project was to strengthen the scientific basis, institutional linkages and policies that support the roles of farmers in conservation and use of crop genetic diversity.) The study combines and consolidates information from various case studies, including insights, experiences and observations of the authors. The study assesses mainly the contribution of process involving complex partnerships among national research (NARC), local NGOs (LIBIRD), international research center (Bioversity International), local farming communities (*Pratigya* cooperative and various men and women farmers' groups) and local agro-entrepreneurs (*Shital* Agroproduct, etc.), and including other stakeholders (local extension agencies and local environmental club), for *in-situ* conservation of agrobiodiversity through market promotion and value-adding initiatives. It also aimed to assess the outcome of changes in some of the measurable indicators of impact in terms of volume and value of produce, crop genetic diversity, poverty, social equity, gender relation, and empowerment, including institutional culture and learning.

The study was undertaken in Kaski ecosite, Pokhara valley, mid-hills, Nepal, where many of the value-addition and marketing initiatives has been focused on local crop diversity. Both qualitative and quantitative research methods were used for the study. Participatory and qualitative study covered desk study, focus-group discussion, key-informant interviews, case studies, village workshops, direct field visits and project field monitoring. A quantitative household survey comprised a specifically designed questionnaire for crop-growing households. In addition, value-chain research and analysis was used through market and product survey of various market actors (e.g. traders, local entrepreneurs, tourist hotels, supermarkets and consumers in Pokhara valley), producers and middlemen in the local community, as well as actors in scientific fields (food technologists, nutritionists, plant breeders) in the overall innovation system. A multidisciplinary team of social and biological scientists was involved in participatory project implementation, including developing indicators for measuring impact—developed and field tested with local communities and used in impact assessment of market and value-addition initiatives.

The field study showed that the project involved participatory implementation, involving different disciplines, sectors and actors, and setting up the institutional structure (farmers groups, cooperatives, market networks) including policy linkage, in the delivery of positive outcomes

⁴ The author was unfortunately unable to attend the workshop and present this paper.

and impact. The farmers received and perceived increased benefits from the project in terms of enhanced local crop diversity, increased cash income, and access to information and knowledge of marketing and value addition. Farmers' linkage with markets was strengthened and sustained through training on quality production, organized production and local-level processing, value addition and marketing. Participation, position, voice and influence of resource-poor farmers and women have increased in community biodiversity management, resulting in positive social inclusion, gender relation and farmer empowerment. However, the benefit of project intervention has been greater in market-accessible areas with increased area allocation and maintenance of more diversity of some market-preferred crop varieties at the expense of other traditional ones. As compared to resource-endowed farmers, poor farmers have less access to market information, market-linkage support and value-addition technologies. Key constraints and challenges of marketing and value-addition initiatives are lack of appropriate food standards and certification schemes, as well as absence of national policies and legislation for granting geographical indication for local products. Diversification of markets is also needed to sustain the gains and enhance profitability.

The paper concludes that on-farm conservation of agrobiodiversity through marketing and value-addition initiatives in a market economy is sustainable only when market development is well targeted for resource-poor farmers and different actors in innovation systems and in value chains. Group mobilization and capacity-building of local communities, stakeholders' strategic alliances for market promotion, and facilitation for local innovations are important for enhancing livelihoods of resource-poor farmers and sustaining conservation initiatives through market intervention. However, from the study we found that the impact of specific marketing and value-addition initiatives are difficult to measure and attribute owing to the complexity of project activities and intervention options which are going on simultaneously that range from participatory plant breeding (PPB) and crop management to post-harvest, value addition and marketing. In addition, identification of specific contributions and attributions of each actor, discipline and activity has been problematic as the project involves interdisciplinary, complex multistakeholder public-private-civil society partnership approach to implement conservation and development activities. The paper highlights some of these difficulties and lessons learned in linking agrobiodiversity conservation with poverty alleviation in addition to its 'spills over' effect on institutional change and learning in overall national natural-resources innovation systems in Nepal.

Key partners: NARC, LI-BIRD and Bioversity International.

**Gender concerns in research and household poverty reduction: The case of Kenya
Agricultural Research Institute (KARI) project on indigenous poultry in western Kenya**

Jane Njeri Ngugi⁵

This case study presents evidence on how the use of gender-sensitive participatory approaches (PAs) in agricultural research for development enhances research outcomes and impacts among the national agricultural research systems. PAs ensure that the relevant stakeholders, both men and women, are involved in development initiatives. In KARI, PAs were introduced in 1991, when the Institute adopted farming systems approach to research, extension and training (FSA-

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RET). This was during its implementation of an adaptive research program. However, FSA-RET alone did not achieve high levels of technology adoption among the targeted groups. The missing link was failure to consider gender differences in its research processes. In Kenya, though female farmers contribute 80% of the total labor in food production and 50% in cash-crop production, they were ignored in KARI's research activities. To redress the situation, KARI embarked on a gender-mainstreaming process in 1995. Various efforts were initiated to enable research management and scientists to embrace gender concerns in the Institute's research agenda. The expected output was that projects undertaken would incorporate gender concerns, resulting in high technology adoption levels, increased yields and improved livelihoods among the farming communities. To ascertain whether incorporation of gender concerns had in fact made a difference, we used funds from an ASARECA-PRGA Program project to conduct case studies on selected KARI completed projects. The indigenous poultry project was selected as one of the most gender-sensitive projects implemented in KARI. It confirms that incorporation of gender concerns in research does improve livelihoods (outcomes and impacts).

The indigenous poultry project was implemented by scientists in KARI-Kakamega in western Kenya using technologies developed at KARI-Naivasha. Gender concerns were identified and incorporated into the project right from problem diagnosis through implementation. Participatory rural appraisals were conducted to identify major constraints to this enterprise. These constraints include: disease outbreaks, death of young chicks, predators, lack of veterinary assistance, inputs, and capital for purchasing supplementary feeds and constructing housing for birds. KARI and its key partners intervened by training farmers on the protection of young birds, brood management, housing, supplementary feeding technologies, development of affordable technologies and an elaborate, sustainable disease-control program. Gender analysis showed that women played the major roles in the indigenous poultry enterprise and as such there was a need to target all household members in the project activities. In assessing impact, personal and focus-group interviews were conducted on 68 farmers from four farmer groups. The groups were new Bulindo PLAR [participatory learning and action research] group (5 men, 15 women), Bulemia farmers' group (6 men, 6 women), Siloam farmers' group (13 men, 7 women) and Vitinyaliza farmers' group (15 men, 1 woman).

Study findings showed that incorporating gender concerns—timing of meetings, convenient venues, encouragement of vulnerable groups (women and youths), strategies planned to overcome cultural barriers and use of the local language—in project activities leads to active participation of women and youths in indigenous poultry enterprise. As a result of the empowerment of farmers, there were high adoption levels of all these technologies: brood management (99%), disease control (95%) and supplementary feeding (92%). The overall result was improved indigenous poultry performance (mean number of birds per household increased from 15.0 to 42.0), and increased household incomes (mean sales per household per season [about 3 months] were KES 5000.00). Empowerment of vulnerable groups led to changes in household gender relationships, decision-making, and increased access to and control over household incomes, particularly from the sale of eggs and live birds. A few women reported that they had been able to open and operate bank accounts because of the indigenous poultry enterprises. There were reduced household conflicts, because men had been relieved of the burden of meeting the daily household purchases of basic needs. Besides, there was improved livelihood at household level.

However, in spite of the gains made, there were still some persistent cultural practices that need to be changed to enable the indigenous poultry enterprise to achieve its full potential. A

notable case is the prohibition against vulnerable groups slaughtering chicken and eating certain parts of the chicken. Culture, too, dictates that a household cannot have two cocks, and a cock has to be slaughtered during the initiation rite of male children in those households.

Assessing the impact of CIFOR's influence on policy and practice in the pulp and paper sector

David Raitzer

Despite rapidly rising investment in international policy-oriented research, there remains considerable uncertainty about its effectiveness as a contributor to development goals. The present study attempts to help resolve this uncertainty by applying a combination of qualitative and quantitative methods to assess the impact associated with influence stemming from CIFOR's inter-disciplinary research on the political economy of the Indonesian pulp and paper sector.

Key informant interviews revealed that CIFOR's research made important contributions to the development of an international coalition of civil society advocates regarding natural forest clearing for Indonesian pulp production. This advocacy coalition convinced foreign pulp buyers and investors to place pressure for more sustainable practices by the major pulp producers, which in turn not only directly affected the companies, but also contributed to reforms in Indonesian regulations for pulp concessions. As a result, the companies have increased areas set aside for conservation, have accelerated shifts towards plantation-based fiber supplies, and pulp processing overcapacity has grown at a reduced rate.

The overall result of these changes has been averted loss of between 76,000 and 212,000 hectares of natural forest, depending on assumptions applied, with 135,000 hectares of natural tropical rainforest saved under the main set of assumptions used. Much of these savings are in areas of deep moist peat, with more than 1000 tonnes of carbon stored per hectare, and in areas of high biodiversity.

Qualitative interviews with representatives of agencies at each major step of each of the principal impact pathways were used to develop plausible counterfactual scenarios. These interviews suggest counterfactual scenarios of slower adoption of improvements in the absence of CIFOR's research.

An economic surplus framework was developed to value averted deforestation based on the external environmental benefits of forest conservation and the avoided consumption of implicit subsidies from depressed stumpage fees. This framework is used in conjunction with these counterfactuals to identify economic benefits attributable to CIFOR. These benefits, which principally result from reduced carbon emissions, are determined to range from US\$19 to \$587 million, depending on assumptions used, with a main estimate of \$134 million (discounted 1998 US dollars). In the context of less than half a million dollars of direct research costs, such benefits represent an exceptional return on investment, and illustrate the potential effectiveness of targeting advocacy bodies as an intermediary audience for policy-oriented research findings.

The statistical challenges of attributing impacts of demand-driven advisory service programs and farmer field schools in Africa

Ephraim Nkonya⁶ and Kristin Davis

Program placement and self-selection biases are the major challenges to attribution of impacts to projects and programs (hereafter referred to as programs). Randomly assigning participation in the program and the control (non-participation in the program) is the most generally accepted method to address these biases. Random assignment assures that both groups are statistically similar (i.e. drawn from the same distribution) in both observable and unobservable characteristics. However, random assignment of participation and non-participation is not feasible in farmer field schools (FFS) and demand-driven advisory services, since communities and households make their own decisions about whether or not to participate.

This study used quasi-experiments⁷ to assess the impact of demand-driven advisory services in Nigeria and we propose the same approach to assess the impacts of FFS in East Africa. The quasi-experiment involved selection of households who willingly participated in the demand-driven advisory service project (the Nigeria Fadama II project) as the treated group and compared them with non-participants who had similar observable biophysical and socio-economic characteristics. Selection of the comparable project participants and non-participants was done using the most commonly used quasi-experimental method, namely propensity score matching (PSM). The difference in outcomes between the two matched groups can be interpreted as the impact of the project on the program participants. However, PSM only matches the program participants and non-participants based on observable characteristics. If unobservable characteristics also affect the outcomes, the PSM approach is unable to address this bias.

To address the bias due to unobservable characteristics, we used the double difference (DD) estimator to compare the changes in outcomes of the matched samples of participants and non-participants before and after the program started. For example, if the outcome being measured is the number of extension visits demanded by farmers, then

$$DD = (Y_{pt1} - Y_{pt0}) - (Y_{nt1} - Y_{nt0}),$$

where Y_{pt1} = number of extension visits demanded by program participants after the program started, Y_{pt0} = number of extension visits demanded by program participants before the program started, Y_{nt1} = number of extension visits demanded by non-participants after the program started, Y_{nt0} = number of extension visits demanded by non-participants before the program started. If DD is significantly greater than zero, then the program had a significant impact on the demand for advisory services. The DD estimator nets out the effects of any additive factors (whether observable or unobservable) that have fixed (time-invariant) impacts on the outcome or that reflect common trends affecting program participants and non-participants equally. Thus, by combining PSM with the DD estimator, differences in pre-program observable characteristics can be controlled for. There could still be a bias due to heterogeneous or time-varying impacts of the unobservable differences between participants and non-participants. Such shortcomings are unfortunately inherent in all non-experimental methods of impact assessment. There is no perfect solution to these potential problems. One of the important strengths of this simple approach is

⁶ The author was unfortunately unable to attend the workshop and present this paper.

⁷ This method is referred to as a 'quasi-experimental' method because it seeks to mimic the approach of experiments in identifying similar 'treatment' and 'control' groups. However, since the comparison groups identified in quasi-experimental methods are not selected by random assignment, they may differ in unobserved characteristics, even though they are matched in terms of observable characteristics.

that it yields results that are easy to calculate and interpret. The PSM and DD combination approach also has advantages over econometric regression methods since it compares only comparable observations and does not rely on parametric assumptions to identify the impacts of programs.

Using the PSM and DD methods for our study in Nigeria showed that Fadama II project participants were more likely to demand post-harvest technologies than non-participants were. However, non-participants were more likely to demand soil and water conservation practices than participants. These results reflected the focus of Fadama II project on post-production technologies. We compared the results of using matched samples with those obtained by using unmatched samples and observed significant differences. This suggests likely wrong conclusions that may be drawn from impact studies that do not compare comparable program participants and non-participants.

We plan to use this method to study the impact of FFS in East Africa. The approach will help better understand the impacts and effectiveness of FFS as compared to the traditional extension services in Africa. The study will also serve as a good case study of impact assessment of community-driven development programs and projects that are becoming increasingly popular approaches to empowering the poor to participate in the decision-making process of poverty-reduction programs.

How can Formal Comparative Qualitative Analysis assist in understanding and explaining differential impacts of pro-poor innovation in the renewable natural resources sector?

Sheelagh O'Reilly

The Research Into Use (RIU) Programme is predicated upon a hypothesis that “an innovations systems approach will prove more effective than linear approaches at getting research outputs into use for the benefit of the poor.” The program accepts that innovation systems (i.e. the current social, policy and regulatory contexts that enable innovation to take place) exist in various forms at the national, sub-national and increasingly at the regional level. The analysis of innovation systems has mainly taken place in Western industrialized countries, although this analytical tools is increasingly being applied to non-Western countries. The potential for using the innovations systems analytical tools has yet to be widely applied to the agriculture sector and even less thinking/application in the broader natural-resources sector (forestry, fisheries and environment/biodiversity management), as well as within an explicit ‘pro-poor’ policy context. However, there is a growing interest in this area.

The challenge to the impact evaluation component of the RIU Programme is how to produce robust evidence of impact relating to the uptake of technologies and processes and the subsequent impact on poverty. It must do this using appropriate analytical tools, e.g. an innovation systems assessment linked to a clear social exclusion analysis to enable the following questions to be answered during the lifetime of the program.

For an intervention (technology, process, communication instrument, etc.), the key question is what worked, where, for whom and why (or how)?

If we can begin to understand this through the use of a robust comparative analysis, can we then answer the question ‘Will it work here?’—i.e. what pre-conditions are necessary, and can they be put in place to enable other locations (countries, villages, communities, individuals)

to assess whether an innovation that is successful elsewhere can be adopted/adapted to suit local conditions.

Evidence for ‘critical success factors’ for pro-poor innovation will be generated on two linked areas of work. The first will be through developing a theoretical ‘knowledge baseline’ relating to pro-poor innovation in the renewable natural resources sector. The second, and innovative area, relates to understanding and explaining the critical success factors for innovation in a variety of contexts and for a number of different ‘poverty types’ through the use of a Formal Comparative Analysis Protocol (FCAP). The use of this approach is to facilitate comparative analysis across many (12–20) cases, so that an assessment of the relationship between an ‘intervention’ (process and/or technology) and its pro-poor impact can be made.

Key Partners: This work is being undertaken as part of the impact evaluation component of the DFID-funded Research Into Use Programme. The RIU Programme was commissioned in 2006 to capitalize upon the achievements of DFID’s past and current research in renewable natural resources. While there have been some high-profile success stories under the RNRRS, the full impact potential of many more research outputs has yet to be realized.

The RIU purpose is two-fold, “to maximize the poverty-reducing impact of the RNRRS and other research, and by so doing, to increase understanding of how the promotion and widespread use of research can contribute to poverty reduction and economic growth.” The core hypothesis of the RIU is that “an innovations systems approach will prove more effective than linear approaches at getting research outputs into use for the benefit of the poor.”

The objective of the impact evaluation work within the RIU Programme is to “produce high-quality evaluation evidence that significantly increases understanding of how ‘research into use’ can best contribute to poverty reduction and economic growth.” It will address specific evaluation questions linked to pro-poor innovation in the renewable natural resources sector. Assessing the different impacts of research outputs on different groups will be a key objective of part of the work.

Further details: www.researchintouse.com.

Participatory Impact Pathways Analysis: A practical method for project planning and evaluation

Boru Douthwaite, Sophie Alvarez, Graham Thiele, Ronald Mackay, Diana Cordoba and Katherine Tehelen

Participatory Impact Pathways Analysis (PIPA) is a practical planning, and monitoring and evaluation (M&E) approach developed for use with complex projects in the water and food sectors. PIPA begins with a participatory workshop, where stakeholders make explicit their assumptions about how their project will achieve an impact. Participants construct problem trees, carry out a visioning exercise and draw network maps to help them clarify their ‘impact pathways.’ These are then articulated in two logic models. The *outcomes logic model* describes the project’s medium-term objectives in the form of hypotheses: which actors need to change, what are those changes, and which strategies are needed to realize these changes. The *impact logic model* describes how, by helping to achieve the expected outcomes, the project will impact on people’s livelihoods. Participants derive outcome targets and milestones which are regularly revisited and revised as part of project M&E. PIPA goes beyond the traditional use of logic

models and logframes by engaging stakeholders in a structured participatory process, promoting learning and providing a framework for ‘action research’ on processes of change. The two logic models provide predictions of future impact that can be used in priority-setting. They also provide impact hypotheses required for *ex-post* impact assessment.

Investing for development returns: A review, a theoretical discussion and some cases of milk-men, milk-trees and millions

Henrik Egelyng and Annita Tipilda

To truly reflect development values, evaluation of agricultural research for development (ARD) may need to go beyond evaluation of research performance in terms of the products and services delivered, toward assessing the development outcomes in terms of social and environmental sustainability. This may be done at various levels, including public goods such as biosphere functions and outcomes for poor people in terms of poverty alleviation, food security, and natural-resources use and conservation. Successful agricultural innovation and sustainable rural development depend on social, political, economic and institutional processes as much as technological ones. Technology is therefore just one aspect among many factors influencing to what extent to which the course of development follows sustainable pathways. Preferably, therefore, evaluation of ARD can be designed and carried out within a holistic development studies framework. Analyzing dissemination of research products and calculating rates of monetary returns may remain important; but, ultimately, impact assessments and evaluations may wish to examine how research products and services are used and how their use affects people’s lives, their societies and environments. This therefore entails a shift away from directly measurable (often market-based) impacts, toward capturing the complexity and non-linear nature of agricultural innovation and sustainable development. While ARD has been documented as being largely beneficial (even in narrow monetary terms), we argue that impact assessments have been carried out largely within economic paradigms that are limited in capturing elements such as natural capital and environmental services. Along with a handful of case studies, a development returns framework to ARD is presented in which development values are evaluated and development returns are presented.

Linking the learning process in Farmer Field Schools to impact of transformative change and poverty reduction

Esbern Friis-Hansen and Deborah Duveskog

Existing approaches and methods, generally focused on a transfer of technology, do not fit the resource-poor farming context of the ‘South.’ Human capital, innovative mindsets and the production of knowledge for a framework of action are crucial for agricultural development. This situation calls for a new paradigm in extension with a stronger focus on education that is liberating in nature rather than domesticating, and where the focus is on dialogue, knowledge and rural innovation in extension activities rather than dissemination of blueprint solutions, in order to allow farmers to become experts in their own field and actors of their own development.

The Farmer Field School (FFS) approach involves farmer groups in season-long practical learning, where farmers engage in action-oriented experiential learning through practical

agricultural experiments. There are also externally facilitated learning sessions aimed at gaining knowledge about agricultural, human and cross-cutting issues related to their broader livelihoods. Songs and dance are often used to internalize learning messages. Some key learning tools and exercises are carried out in the FFS as a means of enhancing learning, and as an aid for the facilitators to ensure participation, dialogue and critical reflection among group members. The International Fund for Agricultural Development (IFAD)–FAO East African Sub-regional Pilot Project for FFS started in 2000. It has operated more than 1300 FFS groups in Kenya, Uganda and Tanzania.

This study aimed to analyze links between the learning process in FFS and outcomes and impact of change among the rural poor in East Africa. The study focused particularly on analysis of how the learning process in FFS enhances empowerment and leads to transformative change in terms of individual and collective agency, and how this may contribute to poverty reduction. We further examine the broader role of transformative learning in the agricultural and rural development sector context.

The study draws upon information from several interrelated research investigations carried out in the East African context over the last couple of years, merged with direct insider and practitioner experience. The study applied a contextual impact-assessment methodology that combines qualitative social science research-based studies with stratified random household surveys. The study emphasizes analysis of the socio-economic context and views intervention as one among several factors resulting in development impact. The contextual impact assessment aims to uncover relationships among context, intervention, development process and impact. FFS graduate farmers are compared with control groups consisting of non-FFS farmers, which are as similar as possible to the FFS graduates. The qualitative and quantitative methods are combined and interweaved in several ways. Through participatory focus group discussions, statements of farmers' own perceptions of well-being and world views were recorded. These statements were subsequently translated into indicators for well-being and poverty in terms of individual and collective agency. Through focus group discussions among farmers and rural extension staff, further indicators were defined relating to empowerment, rural change and transformation of livelihoods.

Informed by these indicators, questions were developed and compiled into a household questionnaire. The survey was then administered among 1200 FFS members and non-members in Tanzania, Kenya and Uganda through stratified random sampling. The questionnaire was pre-tested, revised and administered using trained field assistants. Data were entered into the SPSS software package and analyzed using quantitative statistics, including cross-tabulations and chi-square tests.

To gain a deeper understanding of values and perceptions among farmers, qualitative in-depth interviews were then carried out with FFS graduates reflecting on their individual experiences and life history. This qualitative data was analyzed using the NVIVO software package. Joint analysis was then carried out in a manner that allowed for informed decisions on the statistical data analysis based on qualitative and quantitative data. The qualitative analysis also helped explain the quantitative results.

Preliminary findings of the study show that the learning process in FFS has triggered transformation and change among farmers in a range of individual and collective aspects and has contributed to poverty reduction.

Assessing women's empowerment through participatory agricultural technology in Syria

Alessandra Galie'

Gender-sensitive measurement of change is a basic element for the evaluation of the efficacy of pro-poor development interventions that are meant to empower women toward social justice and gender equity. However, despite a proliferation of gender-sensitive indicators, measurement methods are still ineffective and do not capture the multi-dimensional nature of poverty, empowerment and gender.

My PhD research aims to assess the empowering potential of a women proactive approach adopted by the participatory plant breeding (PPB) program at the International Center for Agricultural Research in the Dry Areas (ICARDA). Based on a diagnostic study conducted in November and December 2006, I developed a conceptual framework for my action-research. This analytical framework is based on a system concept Social Impact Assessment (SIA) that allows looking at the social dimensions of impact with a holistic approach to dynamic processes of change as perceived by those involved. I integrate these qualitative methods with quantitative ones to monitor the actual changes in governance structures.

Strategies to address social justice have often overlooked gender injustice and consequently reproduced, if not aggravated existing inequalities. On the other hand, in cases where gender mainstreaming has been adopted, it has rarely been implemented in programming practices, resulting in little advancement toward gender equity. Gender-sensitive impact evaluations of development interventions can monitor the inclusion of gender concerns, increase the accountability of gender-mainstreaming mechanisms, and also highlight their shortcomings for future improvement.

Empowerment is often considered key to self-determination and gender justice. Empowerment is a process of inner and outer change in power relations that affect the individual as agent and subject of governance systems at different societal levels. The difficulty of assessing change toward gender justice rests in the technical aspect of measuring transformations in dynamic power relations, and in the elusive and political nature of the issues of gender and justice. Are there universally acceptable development paths? Are desires adequate parameters of self-determination? How can change as a process be captured? And whose point of view counts? How can the complexity of the system where change takes place be taken into account? Finally, how does change in practical circumstances relate to more strategic transformations of gender relations?

The aim of my action-research is to assess the empowerment potential of the proactive approach adopted by the PPB program at ICARDA in the context of the Syrian countryside. Here, a complex overlapping of governance structures from the global to the local level, formal institutions, and socio-cultural norms hinder women farmers' achievement of their right to self-determination. Women are not recognized as independent citizens, farmers and biodiversity managers; distribution of access to and control of natural resources is gender-biased in favor of men; and women farmers are excluded from equal participation and decision-making related to new opportunities.

The overarching methodology I adopted at the analytical stage of my research is the system concept SIA. This will support my qualitative analysis of change (empowerment) at individual level, and show how such empowerment is supported or undermined by the dynamics at wider national, regional and global levels (that affect the local situation). My selection of

methods used context-relevant gender-sensitive indicators developed in collaboration with the women farmers during my previous diagnostic study.

Rich pictures paralleled by Q-Methodology will help explore women farmers' worldviews in relation to their environment, desires, perceived impediments and solutions with a minimum involvement from externally imposed criteria. An adapted multi-criteria mapping can support an understanding of individual views on policy options. I will use a Sustainable Livelihoods (SL) framework to learn about intra-household gender-differentiated needs and perceptions of access to basic assets. However, I will integrate the capital stocks usually included in the SL with an analysis of belief systems and perceptions of identity and status.

These methods will be repeated cyclically in *ex-ante*, *in-itinere* and *ex-post* SIAs, to highlight inner and outer changes in worldviews and asset distribution affecting women farmers after their involvement in the PPB. Quantitative methods will be used to monitor changes in formal and informal governance frameworks and appreciate the potential of women proactive programs aimed at social and gender justice.

The paper presents the conceptual framework of the research, the methodology formulated and the methods selected. So far, only the first stage (*ex-ante* SIA) of the three stages of the research has been conducted. Therefore, I discuss the challenges faced when applying the methods selected. These relate to 'participation' and the difficulty of including the most marginalized women farmers in both the conceptualization and implementation of the research. A second challenge is working with the temporal division of the SIA in three stages that are in reality blurred and hard to distinguish. I also analyze the impossibility of attributing empowerment effects to the PPB activities and argue for the need to focus on PPB as one element contributing to empowerment in combination with complex processes of social change. Finally, I discuss the difficult moral implications of excluding the 'control village'—that is non-PPB participant—from a number of opportunities offered by the PPB program. The paper concludes with an open question on how to conciliate the respect for self-chosen development paths with desirable transformation in gender relations.

Assessing social innovations in agricultural research and development partnerships

Laxmi Prasad Pant and Helen Hambly Odame

There has been a move from output assessment of international research and development interventions (input → activities → outputs) to include outcome assessment (outputs → outcomes → impacts). Outcome assessment emphasizes the impacts of interventions on social goals, such as poverty reduction, social inclusion and environmental protection. While this shift has broadened the scope of monitoring and evaluation literature to address social change, systems of innovation thinking—particularly in rural development and agriculture—informs us that the dominant paradigm of impact assessment should be complemented by social innovation assessment (SIA), providing research and development actors with critical learning lessons. Although the system of innovation framework has appeared as a relatively more holistic learning framework, analytical and methodological techniques to assess innovation performance—specifically social innovation performance—are still emerging. To this end, this paper integrates two distant bodies of literature: the literature on impact assessment of research and development interventions, and the literature on social psychology of assessing learning and innovations. Based on case studies of stakeholder collaboration for innovations in rice in Nepal and mango in

India, this research identified critical incidents that helped or hindered learning and innovations during the decade-long interventions under the DFID's Renewable Natural Resources Research Strategy (RNRRS) program (1995–2006). Using this qualitative study, an innovation assessment tool was developed in the form of a structured questionnaire. The questionnaire includes statements about the critical incidents and mode of stakeholder interactions to be ranked on a four-point scale depending on how often the statements apply to the respondents' current organizational environments. The SIA provides critical learning lessons for social innovation generation and overall performance improvement in collaborative agricultural research and development interventions at the organizational, network and system levels.

Evaluation of outcomes and impacts of participatory methodologies on the quality of life of Andean households in Bolivia, Colombia and Peru

Rodrigo Paz, Emma Rotondo and Graham Thiele

This presentation addressed the approach, methods and lessons learned from the experience of the Andean Change Programme,⁸ based on the results of four *ex-post* impact evaluations of project interventions that used different participatory methods. The contribution of the use of these methods to the agricultural innovation process and quality of life of poor farmers in Bolivia, Colombia and Peru was analyzed.

The purpose of these four evaluations is to show the added value of applying participatory methods in agricultural innovation processes, and building evidence-based arguments for advocacy relevant to the institutional innovation systems in Andean Region.

The cases and methods under study are:

- *APROTAC (Candelaria Andean Tubers Producers Association, Asociación de Productores de Tubérculos Andinos Candelaria), Bolivia: Productive Chain Participatory Approach (EPCP)*
- *APAJIMPA (Padilla Chili and Peanut Producers Association. Asociación de Productores de Aji y Mani del Municipio de Padilla), Bolivia: Participatory Monitoring and Evaluation (PM&E)*
- *Improvement and participatory innovation of the manioc (yuca) productive chain in the Cordoba and Sucre savannas. PBA Corporation, Colombia: Empowerment Strategy for Small Rural Producers (EPPR), Organizational Development Strategy for Innovation (DOI), Participatory Research (IP)*
- *Natural Resources Management Project in the Southern Mountain Range (Apurimac, Ayacucho and Cuzco). MARENASS Ministry of Agriculture, Peru: Concursos campesinos and farmer-to-farmer methodology*

Each evaluation study had similar objectives:

⁸ Andean Change is an alliance that promotes South–South learning on the use of participatory approaches, their impacts and the policies required to gear innovation toward benefiting the poor. It is managed by CIP (International Potato Center) and CIAT (International Center for Tropical Agriculture). Work in the impact area is based on a multidisciplinary team coordinated by PREVAL (regional) and Universidad de San Simón (Bolivia).

- (a) Determining main results (in terms of products and outcomes) that arose within the technological innovations adoption framework and their orientation toward impact, explaining the role played by the application of participatory methodologies in these results;
- (b) Defining and proving the main innovations (hypotheses) carried out as a result of technology adoption (expected and unexpected), and explaining how they improved the target population's means and quality of life;
- (c) Specifying the most effective participatory approaches and methodologies, and explaining why they are the most effective;
- (d) Detailing how the experience has contributed to improving the inclusion of poor producers in the preparation of demands for research and agriculture extension services.

A *Guide for ex-post impact studies on participatory methodologies* was prepared for the development of evaluations within the framework of a multidisciplinary work team established by the Andean Change Programme and led by CIP. Common questions were asked, and methodologies such as Participatory Impact Pathways Analysis, Outcome Mapping and Network Mapping were selected and adapted for each case. In all cases, surveys were carried out among the target population, complemented by individual and group interviews. Each case had specific questions, and was guided by an Evaluation Matrix including indicators, variables and information sources required for measurement and verification.

The paper will analyze the main findings and conclusions from each case, looking at common issues and important differences. The appropriateness of the evaluation framework and tools for measuring the outcomes and impacts of the use of participatory methodologies will also be discussed. Finally, the constitution of a multidisciplinary team, led by CIP, for the Andean Change Programme's Impact Evaluation component, will be presented as an additional result, which implied mobilizing and training professionals from national and regional institutions, and building common approaches for impact evaluation.

Rights and responsible well-being dimensions of development: Capturing change and impact

Kurian Thomas

“Not everything that counts can be counted and not everything that can be counted, counts.”

(Albert Einstein)

The diversity of development and humanitarian work in terms of areas, approaches and partnership portfolio provide a complex challenge for program management, learning, accountability and ascertaining the quality and impact of development work. Also, it is important for organizations to ensure that the work is going in the right direction and is becoming more accountable, and at the same time keeping it simple to enable various stakeholders to participate meaningfully in the process. Organizations have made various attempts to identify the common dimensions of change as ends across the diverse program areas and endeavored to establish these common dimensions as a coherent and effective system for monitoring, and capturing impact. This also provides an effective source for organizations to communicate the work (impacts) with people outside the organization.

In parallel, there is general consensus on the need to substantially improve peoples' well-being through the services provided to the public, particularly the poor. The ability to understand the factors that make well-being work is crucial for analyzing the impact from the projects/programs and also in future programming.

I discuss the strategies that can be adopted for capturing the impact from the services to people through better understanding of 'wellbeing.' At Oxfam Hong Kong, we made an attempt toward this through developing the new Planning, Learning and Accountability (PLA) framework. A central feature of the PLA framework is that it examines the changes in well-being. The common well-being dimensions are not additional objectives or activities, but should help to analyze whether activities result in positive (or negative) impact for the people/communities we work with or for.

The well-being dimensions are:

- Self-sustenance: This means the enjoyment of a relatively comfortable life and leisure, enjoyment of the fruits of their labor and gaining dignity and integration therein (rather than alienation), the ability to exploit opportunities and to manage various forms of shock;
- Self-esteem: A sense of worth, personal dignity, personal values, and respect from others, and the ability to appreciate and live out positive values;
- Self-determination: Ability to make individual and collective choices, enjoyment of individual and collective freedoms, freedom from constraints to development, as well as freedom to create and contribute positively to development;
- Responsibility: Social and personal solidarity and responsibility, a life of peace and security, and a capacity for empathy and caring.

The dimensions of change should be used to summarize and analyze how work has contributed to a particular change dimension (or not) in the country, region or program. Using the dimensions of change allows us to concentrate on their outcomes and implications and underline the key learning's from the program/project under the dimensions. Not all dimensions of change are necessarily relevant to all programs at all times. Consequently, it may not be possible to report against each of the dimensions all the time. However, a rationale must be given for why certain dimensions of change are not reported on at a given moment in the program. This should also help us think about whether this is an area the program could aim to tackle in the future.

Various services aimed at increasing public provisions, delivery of the resources/services through defined, transparent and decentralized procedures, benchmarking of the quality of services, and involvement of the community in determining the quality and timeliness of service delivery can be tracked through this system.

Livelihood metrics and knowledge bases for *ex-ante* impact assessment in the rice–wheat farming system of South Asia

Jonathan Hellin

While there is agreement on poverty reduction as an overriding policy goal, there is little agreement on the definition of poverty. Most widely used are absolute poverty lines, particularly

the international poverty line of ‘a dollar a day’ for absolute poverty. The absolute poverty line approach to defining poverty is, however, too narrow and overlooks other aspects of human deprivation. Hence, while internal rates of return and cost–benefit analyses may have been sufficient for the accountability functions of impact assessment, they do not satisfy those interested in knowing how and why a project affects farmers’ lives. Impact assessment practitioners must now document a much broader range of project impacts, especially in the area of poverty alleviation. Alternative definitions of poverty include the capability approach that we adopted in this study. This recognizes poverty as a multidimensional phenomenon rather than just a lack of income or food, and complements the sustainable livelihoods framework. This framework provides an analytical framework to understand the factors that influence the ability of people to achieve sustainable livelihoods. Central to the approach are people’s five classes of assets: natural, physical, human, financial and social capital. Sustainable livelihood development and poverty reduction do not depend on advances in access to just one of the classes of assets, but rather on systematic approaches to achieve an appropriate balance between all five. The capabilities approach represents a major contribution to poverty analysis because it provides a coherent framework for defining poverty in the context of people’s lives. The challenge is that different types of livelihood data are often unavailable on a regular basis and may rely on one-off surveys (e.g. required data on income or consumption typically are available only from relatively small surveys). Furthermore, some assets are not measured at all, and for others the indicators are deficient. I report on the methods and metrics used in an *ex-ante* impact study to guide priority-setting and targeting of poverty-alleviation activities in the Indo-Gangetic Plains of South Asia, home to millions of rural households. The study developed a spatial mapping methodology that draws on secondary data for 18 quantitative, spatially-explicit variables at the district level. These serve as indicators of the five livelihood classes of assets and included soil capability (natural capital indicators), degree of farm mechanization (physical capital indicators), female literacy (human capital indicators), access to credit society facilities (financial capital indicators), and membership of self-help groups (social capital indicators). The overall livelihood asset index showed a significant and strong negative correlation with the national poverty line ($R = -0.65$, $P = 0.00$), with poverty peaking in districts where the assets base is lowest and vice versa. Our results show that a livelihoods asset approach provides a good proxy for monetary poverty measures in the case of the Indo-Gangetic Plains in India. It also has a number of methodological advantages. It circumvents some of the measurement issues inherent to absolute poverty indicators, including which poverty line to use, the choice of consumption over income, and the inherent data requirements. Instead, our measure relies on relative asset poverty and on secondary data. Furthermore, by using livelihood assets it is possible to disentangle the underlying causes of poverty. It thereby provides more immediate pointers to the policy implications than an absolute poverty approach. We argue that the methods and metrics used in the Indo-Gangetic Plains have broader application, i.e. for *ex-post* impact assessment. The approach could benefit from a refinement of the indicators used—other indicators might prove more appropriate in capturing qualitative and quantitative dimensions of the classes of livelihood assets. While the link between livelihood assets and livelihood outcomes (poverty reduction) is not straightforward, and a sole focus on assets ignores the drivers and modifiers that are addressed in the livelihood framework, the livelihood assets approach provides a foundation for future research and development work. It also has the potential to bring about synergies between agriculture-focused work and other disciplines such as health and education.

Through the livelihoods lens: Lessons from Mexico and Nepal on integrating livelihood approaches and metrics for impact assessment

Roberto La Rovere

The impact of technologies or projects on farmers' livelihoods must be considered within the contexts in which people live and operate. This implies a shift in thinking from commodities or crops, e.g. 'maize,' as central object of research, to approaches that more comprehensively link crops to the stocks and flows of household assets and activities. A livelihoods approach tackles the main factors that affect livelihoods, providing a way of thinking through diverse influences, ensuring that the key driving factors are captured.

CIMMYT recently conducted two innovative impact assessments—one at the sub-national level in Mexico and one in Nepal—that operationalize the use of livelihood approaches to comprehensively capture impacts.

The first case assesses a past project conducted during 1996–2001 in the Central Valleys of Oaxaca, Mexico; the aim of the project was to increase productivity and preserve diversity of traditional *criollo* maize landraces, offer training and demonstrations, and promote post-harvest technologies. In 2006, a study was launched that focused on changes in farmers' livelihoods since the project, and on learning how such projects can increase their impact. A livelihood approach was applied in conjunction with econometrics and gross-margin analysis. Participatory focal group and key informant discussions were used to capture qualitative information and triangulate the quantitative findings. A clustering technique was used to group households into homogeneous types, based on 13 critical livelihood assets (11 of a quantitative type and 2 of a qualitative (binomial) type) belonging to all five livelihood capitals. The results capture the effects of the project on farmers' livelihoods in terms of use of *criollo* maize, training and use of post-harvest technology, and relate them to household characteristics of participants and non-participants, to the processes by which past intervention could succeed and be used in 2006, to the main facts behind their success or failure, and to the spillovers originating from their farmer-to-farmer diffusion. Achieving poverty reduction by developing and selecting local and improved maize germplasm was, however, just one of the goals of the past projects; other objectives were maize diversity knowledge, and generating participatory research methods for working with farmers. The benefits of the latter are difficult to quantify as they take the form of a contribution to the stock of scientific knowledge. The assessment indicated that the impacts were in some respects positive (e.g. post-harvest technology), or significant (e.g. adoption of maize varieties), and in other cases of variable entity (e.g. of capacity-building). To these, the spillovers determined by generating knowledge on maize diversity, and developing participatory methods, should also be added.

The same set of approaches used in the Oaxaca case (blending qualitative and quantitative tools, participatory tools, economics, and the rigorous application of before / after and with / without counterfactuals) was also used in the assessment of the impacts of the hill maize research projects in Nepal. The two areas show several commonalities, as they are mountainous and (in most cases) host relatively marginalized communities. As in Mexico, one of the aims in Nepal was developing and testing improved maize varieties through on-farm participatory research. The past approaches were aimed at ensuring the participation of poor and excluded groups of women, and reaching out to marginalized and excluded groups. The recent

impact study captures impact in terms of food security, maize productivity, empowerment and social inclusion, and institutionalization of participatory approaches.

The results of the Oaxaca study, located in the area of origin of maize, indicate a moderate use of improved maize, a parallel 'ageing' trend in farming (also due to strong migration), declines in the areas planted with maize, and a generalized loss of the role of maize as a commercial crop (kept instead for its consumption and cultural roles). These contrast with the case of Nepal, where improved maize varieties are used much more and play important roles for livelihoods. The two cases provide lessons on operationalizing livelihood approaches and on how impact assessment, through a livelihoods lens, can help in capturing the broader impact of international public goods: in this case, maize as a way to reach marginalized farmers and getting crops (maize) to farmers through participatory research.

Partners: In this work partners have mainly been a number of Mexican consultants native to the Oaxaca region. The assessment refers to past research conducted by CIMMYT and national institutions such as INIFAP. In the case of Nepal, various NGOs and public sector research were among the partners.

Recognizing complex social dynamics in natural-resource management in Colombia

Hannah Beardon, Kate Studd and Mike Morris

Colombia is a country rich in natural resources, including agricultural land, and water for irrigation, but poor in terms of socio-economic pressures on communities, political marginalization, effects of conflict in destabilizing livelihoods, and access to land.

Due to high levels of poverty, and therefore a lack of capital, communities living in the Department of Nariño are critically dependent on the ecosystem services provided by natural resources and their own labor to support their livelihood needs. Communities in Nariño Department living in mangrove areas are reliant on stocks of clams and fish, and small-scale farming activities. Current levels of extraction of natural resources by communities living in these areas is unsustainable, and communities do not have the knowledge or capacity to apply better harvesting techniques that would mitigate against the inevitable decline in natural reserves.

The conversatorio process, designed by WWF Colombia and partners, which began in 2003, aims to address different levels of engagement in sustainable management, with a particular focus on community capacity and public accountability. WWF Colombia developed a partnership with local organizations of clam collectors, including ASCONAR and ANCOPF, local NGO, Chonapi, and national training and research organizations including ASDES, in order to facilitate the conversatorio process.

The conversatorio is both a space for negotiation and dialogue between different stakeholders in the mangroves, and a process of preparation, capacity-building and empowerment. The conversatorio in Nariño was a chance for a methodology to be developed and to evolve, bringing in new elements and actors as the need or idea arose. There was a process of preparation, and then a main conversatorio event gave meaning and focus to the whole process of capacity-building and investigation. Outside of that linear understanding, however, the process is more amorphous with a large range of actors and participants, from different areas and organizations, involved in different events and elements of the process.

WWF has provided direct training and support, but has also acted as a facilitator of the process, creating and strengthening relationships in order to build a strong and sustainable process of change. The conversatorio also drew on technical support from a variety of organizations and individuals working on conservation, rights and social development issues in the locality and nationally. A core team of WWF staff and consultants led on different elements of the training and planning, sharing ideas and contributing specialist expertise to the entire process.

The process has since been extended by WWF to three more areas of Colombia, dealing with the management of distinct ecosystems through strong community capacity for participation and negotiation.

The conversatorio agreements included:

- The regional environment agency Corponariño, the national park Sanquianga and the local councils to undertake their distinct activities relating to *classification and management planning* for the mangroves, with participation of local communities.
- The local councils, health service and Corponariño to undertake planning for both hospital and municipal *solid waste management*.
- Research institutes such as INVEMAR and Pacific Agenda 21 to undertake *relevant research* for the management of the *piangua* and the mangrove, with emphasis on the value of traditional and local knowledge.
- The rural development agency, INCODER, to support the *control of the minimum size of capture of the piangua* through communication, education and regulation.
- Local health authorities and councils to ensure *basic health insurance and services*, and develop relevant community health interventions, for the *pianguero* sector.
- Local education authorities and councils to develop proposals for ethnically appropriate *education* and development of Afro-Colombian teaching capacity and inclusion of *piangueros* in regional literacy programs.
- Local councils, rural development and agriculture agencies to provide technical and financial support to *alternative livelihood and production* projects that pressure on the ecosystem and resource, including a commitment of 150 million pesos from the environment ministry.
- DIAN, the national tax and customs agency, to collect data on the *commercialisation* of the *piangua*.

The conversatorios have shown positive effects on the ground, in terms of improving the quality of life and livelihoods of communities, increasing capacity of local institutions to fulfill their roles and of governmental organizations and civil society to create a space for dialogue. However, the challenge has been to show the real effects of the entire process in a fuller way that captures the wider experience of the complexity of the conversatorios, and some of the effects (intended and non-intended) of the process.

Beginning in 2007, WWF decided to use the conversatorios as a case study in a pilot initiative entitled ‘Reflections on Change,’ to look critically and holistically at change processes that WWF programs have stimulated and been affected by. This initiative is done through a facilitated reflection and learning process at the program level, involving a consultant working very closely with in-country program staff and local stakeholders, to critically examine and unpack the complexity of change processes and capture issues such as who gains, who loses, and the role of WWF. This process of reflection aims to enhance programs’ understanding of the

complexity of the linkages between the environment and people's lives, and how they are situated in the broader social, political and economic context. This process also aims to contribute to the learning of all stakeholders involved, and the development of a well-written 'story' that acknowledges the voices and multiple perspectives of the people involved.

Key partners: Afro-Colombian communities and resource-users (small-scale fishers, clam collectors), community councils, government officers, local institutions, government extension services and regional environmental agencies.

Institutional arrangements to improve the responsiveness of agricultural innovation systems to the needs of the poor: An investigation of participatory monitoring and evaluation in Bolivia

Edson Gandarillas

This thesis presents research examining the Bolivian System for Agricultural Technology (SIBTA), which has developed a demand-driven and market allocation of projects to service providers who bid to deliver adaptive research and extension projects to farmer associations. New institutional economics, participatory monitoring and evaluation (PM&E), and social capital provide the conceptual framework for the study, which uses quantitative and qualitative data collected, taking into consideration the experiences of and uncertainties facing the main actors in the system (service providers, farmer organizations and bidding administrators). The study examines the 'rules of the game' in this system and then investigates the potential for PM&E as an institutional innovation to improve the system's accountability to the poor.

Current institutional arrangements and modifications using PM&E were evaluated in terms of their effects on transaction costs, risks, and institutional and relational social capital. Results show that current institutional arrangements do not provide good incentives for the participation of service providers and farmers, because of high transaction costs and risks, and in particular they exclude poor 'demanders' and discourage competition among service providers. Institutional innovations to address these problems were developed in a participatory process and proposed by the main actors to SIBTA's consultative committee.

Analysis of trial PM&E arrangements demonstrated that its implementation can provide a better distribution of transaction costs and risks among actors and can also change power relations among them. In addition, farmers increased their human capital, institutional social capital, and their bridging and linking type of social capital. PM&E may also improve structures of new farmer associations faster than established associations. R&D service providers also became more accountable to the needs of the poor, since they improved their innovation services on the basis of farmers' monitoring information generated from the PM&E process.

The use of insights from transaction cost and social capital theory constituted a powerful conceptual framework for analysis of processes of linking research with institutionalization and policy-making.

Rethinking monitoring for concerted action: Dealing with the complexities of a ‘messy partnership’ in Brazil

Irene Guijt

Since 1996, Centro de Tecnologias Alternativas – Zona da Mata (CTA-ZM), a local Brazilian NGO, has been actively developing an integrated learning system to keep track of its pro-poor institutional transformation endeavors in Minas Gerais. CTA-ZM works on sustainable agriculture alternatives (in the broad sense) for small-scale, marginalized farmers in Zona da Mata, e.g. social justice, gender and inter-generational equity, enhanced productivity and incomes. It operates within a ‘messy partnership,’ including farmer trade unions, associations, social movements and academia. This type of partnership has several features with implications for monitoring and impact. Over the years, the combined challenge of institutional transformation and messy partnerships has made it clear that mainstream monitoring, based on a singular ontological perspective and assuming a specific type of organizational set-up, is seriously inadequate in triggering the diversity and depth of learning required within concerted action such as occurs in Zona da Mata.

I trace the organizational learning journey. The current menu of diverse and intertwined methodologies ensures that learning occurs on various fronts and different levels in ways that strengthen the messy partnership. One method—socio-economic farmer monitoring of the impact of agro-ecology-based livelihoods—has been examined in depth. A series of presuppositions about mainstream and participatory monitoring and evaluation (M&E) are articulated and critiqued, drawing on a decade of empirical material. A framework of nine learning purposes is offered as an essential starting point for ‘rethinking impact.’ Drawing on recent insights from the field of cognitive studies and organizational learning, a set of design principles has proven fundamentally important in CTA-ZM’s evolution toward developing a comprehensive, feasible and relevant progress and impact tracking system.

The design principles are a response to the limitations of mainstream and participatory monitoring, and not a comprehensive set of design principles for learning-oriented monitoring. The first three principles relate to the purpose of monitoring, the next three relate to operational concerns, and the last two to sustaining monitoring practice.

1. Understand the nature of institutional transformation being pursued as a social change process, in order to know the degree of complexity one is dealing with, and the extent to which information needs can be anticipated and learning functions will be significant (see also principle 3).
2. Recognise the nature of actors and partnerships on monitoring, by analyzing the partners’ commitment to concerted action, their governance structures and decision-making processes, allocation of responsibilities in the partnership, degree of overlap of information needs, way in which information is shared, and monitoring capacities. The reality of ‘messy partnerships’ in development forces a questioning of a hierarchical, intra-organizational model that underpins mainstream monitoring.
3. Specify distinct monitoring processes in terms of learning purposes to enable a more precise definition of tasks, protocols and responsibilities. For institutional transformation on the basis of deliberate concerted action undertaken by a messy partnership, nine learning purposes are likely to be relevant (though not all necessarily simultaneously or equally prominently). Five of these pertain to management of the development intervention: financial accountability; operational improvement; strategic adjustment;

contextual understanding; and capacity strengthening. Four learning purposes are also part of the development interventions themselves; research; self-auditing; advocacy; and sensitisation.

4. Plan for sense-making as well as information. The sense-making process must be appropriate for the type of situation and issue being considered (i.e. multi-ontological). Seek to understand what is needed for critical reflection to be possible among and between the partners and how insights are best communicated, which capacities must be built to make this possible, which additional communication processes are needed, and allocating resources to this end.
5. Balance formal protocols and informal processes, incorporating everyday interactions of sharing and debate into the monitoring system, and linking the informal sphere to formal processes and channels. Informal processes are not only crucial for ongoing sense-making, but also a source of information sharing.
6. Value and seek diverse types of information, related specifically to the nature of development (principle 1) and the learning function (principle 3) that has to be met, and understand which processes exist or are needed to ensure that such information is shared and debated and informs decisions.
7. Ensure the institutionalization of learning-oriented monitoring. Concerted efforts are needed to ensure that policies, practices, methodologies, responsibilities and incentives are all helping make monitoring possible.
8. Approach monitoring as an evolving practice, thus allowing it to become a dynamic knowledge-production process, which when subjected to regular critical reviews and adaptations retains relevance and usefulness.

The answer lies not in finding another method or tweaking existing methods. It requires fundamentally rethinking the ontological and epistemological foundation of monitoring. Only then can insights be gained about pathways to ‘impact.’

Key Partners: Centro de Tecnologias Alternativas – Zona da Mata, Brazil.

Learning to find ways to increase farmer access to innovation resources: Monitoring and evaluation of Local Innovation Support Funds

Maxwell Mudhara, Anton Krone, Laurens van Veldhuizen and Mariana Wongtschowski

In the more marginal areas of developing countries, natural resources and livelihoods are threatened *inter alia* by poverty, population pressure, climate change and ineffective interventions. Conventional, top-down approaches to address this have had limited effectiveness. At the same time, land-users themselves have made efforts to change and innovate in the face of these challenges. Supporting such local experimentation, adaptation and ingenuity is vital for finding locally effective practices. Following examples from Latin America, organizations forming part of the international PROLINNOVA network in five countries (Nepal, Cambodia, South Africa, Uganda and Ethiopia) have initiated a participatory action-research process to develop effective ways to make small amounts of money available to local innovators to help accelerate local innovation processes. This is being developed through the establishment of so-called Local Innovation Support Funds (LISFs). Experiences during the first 2 years, 2006–2007,

show that these LISFs require a combination of institutional innovation at the community level, which are in turn linked to funds managed at the larger institutional level.

The design, implementation and monitoring and evaluation (M&E) activities are part of the action-research process and revolve around two components. The first is the interactive learning process with the communities and their organizations, including the disbursement of LISF resources. The second is the systematic data collection of the key parameters assumed to have a decisive influence on the feasibility, effectiveness and sustainability of the LISFs. To this end, the five countries have developed a common framework which formed the starting point for an easy-to-use data-management system based on MS Access.

The process of developing an impact culture at the International Maize and Wheat Improvement Center (CIMMYT) and enriching impact assessment

Roberto La Rovere and John Dixon

Impact assessment (IA) at CIMMYT has an outstanding tradition, yet has tended to focus on assessing adoption rates and rates of return from investments in crop improvement. CIMMYT's new vision emphasizes people-centered, livelihoods- and poverty-oriented approaches to research. Accordingly, IA must assess a broader range of impacts than in the past, including direct and indirect impacts arising from linkages within farming systems and between agriculture and the non-farm economy. Building of an IA culture, enriching IA at CIMMYT, and the new IA strategy to 2012 all reflect a shift in thinking about IA. The process of establishing a learning and operational platform for IA across programs for relevant, high-quality IA, started in 2005. This served to define the roles and *modus operandi* on IA of participants and to start overcoming disciplinary and knowledge barriers, hence initiating a process of learning on effective IA among people and programs. One benefit was the opportunity to reflect on IA experiences; on individual, program and on regional capacities for IA; and how colleagues and partners understand and define impact. Since then, project-based IA training courses have been conducted in Africa and Asia, and meetings on IA held with breeders and agronomists. Preliminary progress was assessed, pointing to the benefits of building on past achievements, of moving to broader livelihood and poverty approaches, and of integrating more closely with other disciplines. Assessment of the learning and change that occurred through these activities is ongoing and is being monitored using learning and change indicators. One workshop in late 2006 aimed to describe the impact pathway of the projects identified in Medium-Term Plans (MTPs); the result of this and of the overall IA learning platform is that this whole process probably contributed to the preparation of better MTPs. Indicators of change and progress on IA culture refer to changes in behavior and attitude of colleagues and partners, and of funding levels for IA. Indicators of an expanded IA culture can consist of the number of projects with an IA component, invitations by others to conduct externally commissioned IA, or that economists are now more closely integrated into maize and wheat projects. Though it is too early to assess whether this has changed how CIMMYT does IA, plans exist to make such an assessment during the next 3 years.

Partly as a result of these activities, IA networks and innovation systems have received more consideration by CIMMYT management. There is also a growing acceptance of the complexity of IA and of its key role for supporting strategic decisions and priority-setting, as testified by the need to have more *ex-ante* IAs. It was recognized that IA processes should be

approached openly to give a credible picture that includes both successes and less successful events, as it is possible to learn from both. Some indication of achievement on learning is that it raised the profile of IA in CIMMYT and initiated institution-wide learning processes. Several biophysical and social scientists are now more aware of what IA can mean for them. IA is being increasingly developed in issue-oriented (rather than commodity-oriented) ways, broadening the earlier focus by including livelihood aspects, modes to discern attribution and to capture poverty impacts, while maintaining the key elements of robust economic analysis. Recent implementations of this approach include IA studies in Mexico, Nepal and the Indo-Gangetic Plains, an IA and monitoring system in East Africa, and an integrated *ex-post* / *ex-ante* IA study on maize in Africa.

This process is linked to the new IA strategy to 2012, and the strategic studies and activities that will allow CIMMYT to consistently assess impacts of the key areas of work of the Center and its partners. We propose systematic evaluation of the institutionalization of IA and IA culture.

Partners in these activities are CIMMYT's partners worldwide; in particular for the cases provided, NARS collaborators in various African countries where the projects discussed in the paper are currently running.

Institutional innovations for enhancing impact of research in Eastern Africa Highlands

Chris Opondo, Jeremias Mowo, J. Tanui, Adolf Nyaki and W. Mazengia

The rationale behind institutional innovations within national agricultural research organizations is the expectation that the outcomes will be used to bring about improvements in organizational policies and programs, and thereby contribute to economic and social betterment among the target rural communities. We address a number of issues related to why recommendations and strategic options from institutional innovation processes and competence development sessions with researchers and managers are not always utilized in national agricultural research. Over time, the African Highlands Initiative (AHI) has employed a number of mechanisms—such as learning workshops, peer mentoring and coaching, and interdisciplinary teams—to promote innovations. In the learning workshops, participants (mainly researchers and research station managers) learn skills and knowledge in new topics relevant to their works, such as methods for action research and integrated agricultural research and development, gender and systems analyses, documenting process to enhance monitoring of outcomes and impacts, communication and feedback processes, all aimed at enhancing the quality of their work. Institutional innovations—reforms required for effective institutionalization of integrated natural-resources management (INRM)—and participatory approaches require changes in research practice and organizational culture. The research question being addressed is what changes in institutional values, mind-set, structures, practices and incentive systems are required to institutionalize INRM approaches. Further, we identified enabling and impeding factors to institutional innovation process from the perspective of the managers and researchers who participated in the process. Results showed that research projects were compelled to integrate components of new approaches in their work. The effort to scale up participatory methods and ultimately institutionalize them within the activities of partner organizations is a critical challenge, and is best conducted in tandem with policy changes. These endeavors are coupled with research to

understand how methods can be disseminated more broadly without losing quality, and to determine the most effective institutional arrangements for the widespread application of INRM approaches. Despite this and other challenges, policy research institutions are attempting to overcome some of these challenges as they make appoint existing staff as champions of change processes. As more public research institutions become open to change, there are signs that managers are increasingly tolerant of outside input and critique. Researchers are beginning to work more closely with communities and non-traditional partners who need data and analysis to make more informed policy decisions. In this context, opportunities are expanding for independent research to inform and influence policy.

Enhancing research impacts through mainstreaming gender in organizations and research processes: The case of Urban Harvest and the International Potato Center (CIP)

Mary Njenga, Nancy Karanja, Erastus Kang'ethe, Caroline Kabiru, Patrick Munyao, Gordon Prain, Diana Lee-Smith, Pigeon Michael, Jane Ngugi, Barun Gurung and Kuria Gathuru

Despite increased attention to gender issues in the international development arena since the rise of feminism in the 1970s, few agricultural research organizations have integrated gender in their problem diagnosis and technology development. Yet, the omission of gender issues in research, technology development and transfer processes is known to limit adoption of innovations. The United Nations Educational, Scientific and Cultural Organization (UNESCO) describes gender mainstreaming as the process of assessing the implications for women and men, including the young and old, of any planned action, including legislation, policies and programs, in all areas and at all levels. Gender mainstreaming ensures that the experiences, aspirations, knowledge, opportunities, needs, concerns and constraints of women and men are integrated in policy formulations, program planning, budgeting, implementation, monitoring and evaluation. It also ensures that women and men equitably participate and benefit from efforts to alleviate poverty and enhance food security. Thus, gender mainstreaming can significantly enhance the impact of research and technology development.

Engendering organizations and research agendas remains a challenge, which requires political will, accountability, a change in organizational culture and technical capacity within an organization. Recognizing this, the International Potato Centre (CIP), working with the Gender and Diversity Program of the Consultative Group on International Agricultural Research (CGIAR), has established a Gender and Diversity (G&D) Associates Committee as a mechanism for implementing gender and diversity initiatives. The G&D Associates Committee has developed gender and diversity goals, and policies for institutionalizing CIP's organizational gender-mainstreaming strategies. Urban Harvest (the CGIAR Systemwide initiative on urban and peri-urban agriculture) is convened by CIP; hence, all CIP's initiatives to mainstream gender benefit Urban Harvest.

Mainstreaming gender involves the integration of gender perspectives into every aspect of the research project cycle—Urban Harvest and CIP have attempted to do this. For gender-responsive research and development to be effectively incorporated in Urban Harvest and CIP's work, staff need to be capable and have the necessary knowledge and skills. In order to enhance personnel skills in gender issues, Urban Harvest has participated in several international and national technical capacity-building forums. In 2003, Urban Harvest participated in a training workshop organized by the Resource Centre on Urban Agriculture and Food Security (RUAF Foundation) to enhance knowledge, skills and commitment of staff on 'Gender Issues in Urban

Agriculture Research and Development Projects.’ In 2004, Urban Harvest and RUAF organized an international workshop on ‘Women feeding cities: gender mainstreaming in urban food production and food security,’ in Ghana, funded in part by the PRGA Program. Fifteen case studies on previous research and development activities were presented at that workshop. RUAF and Urban Harvest are also jointly publishing a book, *Guidelines and Tools for Gender Mainstreaming in Urban Agriculture* (Havorke *et al.*, forthcoming).

To institutionalize gender-responsive research strategies, CIP—in collaboration with other CGIAR Centers, NGOs, the RUAF-Netherlands and KARI, with financial support of the PRGA Program—drafted guidelines for gender-responsive research in March 2007. The guidelines are structured in three sections: preamble; an outline of the gender-responsive institutional setup, addressing accountability, political will and organizational culture; and gender-responsive research and technology development and transfer.

Research beyond borders: Five cases of International Livestock Research Institute (ILRI) research outputs contributing to outcomes

Julius Nyangaga, T. Smutylo and D. Romney

Managers of research organizations frequently face decisions about allocating research program resources to exploring the research application process itself. Deciding how much to invest in measures to enhance research utilization is a challenge, as it is widely known that activities in both the pre-research or project design stages, and in the post-research stages can greatly enhance appreciation, acceptance and uptake of new knowledge.

The primary aim of CGIAR research is to make globally- and regionally-relevant contributions to sustainable human and ecological well-being through research. Improvements to well-being on a large scale are the result of synergy among many contributing interventions and circumstances going beyond the traditional sphere of researchers. Many actors and factors play a role in transforming research results into social, economic or ecological benefits. Which of these should researchers engage with as part of their research? How much utilization of our knowledge of post-research processes does the research institution need to encourage through its policies and practices?

ILRI, like other agricultural research organizations, applies a range of planning, monitoring and evaluation tools and methods to capture the diversity and complexities of conducting research and encouraging its utilization. Interested in learning how to increase the effectiveness of its research programs as well as evaluate them, ILRI is experimenting with ways to generate knowledge not only about the quality and reach of its research outputs, but also about the diverse processes by which useful research results are produced and applied.

I applied Outcome Mapping retrospectively to five projects, each one of which influenced innovations, through research and related processes, which address the broad objective of poverty alleviation. The cases are differentiated in terms of the research outputs produced, the types of change targeted and the type of projects or clusters of projects involved.

The first case involved making available a disease control technology—the East Coast Fever (ECF) ITM (Infection and Treatment Method)—to reduce the risk of the disease in the cattle of poor small-holder farmers in areas with endemic ECF. The second was about a new extension approach, Livestock Farmer Field Schools, which does not focus on technology but on building rural and small-scale farmers’ capacity to generate and access information and to

evaluate for themselves what they can use. The third case was the development and use of poverty maps. This research refined existing tools to map poverty hot-spots and produce such maps suitable for use by policy-makers and planners in Kenya, Tanzania and Uganda. The fourth was a policy-oriented program that fostered understanding of the role and importance of the informal milk market for small-scale dairy farmers, traders and poor consumers. The last case sought to support pastoral communities to participate in land-use policy formulation by involving them in measuring and assessing the impact of livestock–wildlife systems on biodiversity and in discussions of the implications of changing land-use practices on pastoral livelihoods and the environment.

The cases were analyzed using a framework based on Outcome Mapping, a method designed to clarify and document intended and actual changes in the actions and relationships of the groups and organizations that directly influence a project’s intended beneficiaries. This framework was applied retrospectively to describe the projects’ intentions and their actual outcomes. The analysis was done through mini-workshops and follow-up meetings held to introduce and explain to project members the various Outcome Mapping concepts. We then worked with project members to explore, and document in summary form, the projects’ development, progress and outcomes or impact.

The findings were a clear demonstration that progress toward outcomes and impacts: (a) does not only come from production of research products; and (b) occurs beyond the research project time-frame. In particular, the cases showed the importance of collaborative involvement of many diverse partners—international and national researchers, working closely with beneficiaries, development agents, and the private sector. Many new roles emerged for the researchers as they created and implemented the necessary innovative strategies. Researchers became engaged as champions, assisting partners to take credit for good-quality outputs. They used pluralistic communication strategies to target ongoing policy processes, and they empowered and motivated groups through capacity-building. These cases depict outcomes as sustained transformation in partners as well in the researchers themselves—transformations that, if kept alive, can continue contributing to the achievement of impacts on a larger scale, giving communities the resilience to respond effectively to challenges to human and ecological well-being that may emerge in the future.

The findings further demonstrate that success and meaningful progress toward impact was made by the researchers supporting changes in the social behavior, attitudes, institutional relationships and responsibilities that were supportive of the desired impacts. The cases demonstrate that research that seeks to achieve impact in poverty alleviation and environmental protection should consider supporting progressive changes in the actions and relationships of essential players—an area that is traditionally considered the post-research domain. These transformations can be captured and reported as outcomes that indicate progress toward sustainable changes in beneficiary well-being or ‘impact.’

Monitoring for change, assessing for impact: The WorldFish Center experience

Natasja Sheriff

Complex, multi-country projects implemented in collaboration with partner country institutes are becoming increasingly common within the CG System, requiring new approaches to monitoring and evaluation (M&E) and impact assessment. At the WorldFish Center, impact assessment has

focused primarily on *ex-post* assessment. Like many other CG Centers, there has been a recent shift in approach to impact assessment, from an emphasis on the adoption of technical innovation and productivity/profitability gains of agricultural research, toward a more holistic approach addressing poverty alleviation and associated changes in equity, food security and health. In comparison to *ex-post* impact-assessment activities, less attention has been given to M&E, and to the process of learning and adaptation, during project implementation. However, the trend towards increased partner-collaboration and impact-oriented, participatory action research requires a more responsive and adaptive approach to impact assessment and M&E than has previously been applied to WorldFish projects.

In response to these emerging trends, new approaches to M&E and impact assessment are being piloted in the type of large-scale multi-country projects involving national research (NARES) partners in which the WorldFish Center is increasingly engaged. The case study draws on experiences from the Challenge Program on Water and Food project, *Community-based Fish Culture in Seasonal Floodplains and Irrigation Systems* in five countries.

The Community-based Fish Culture project is in its third year of implementation. This complex project involves NARES partners in five countries—Bangladesh, Vietnam, China, Cambodia and Mali. The project aims to develop appropriate technologies for community-based fish culture through an adaptive learning approach over a number of culture cycles, encouraging both national partners and direct beneficiaries at the community level to evaluate fish-culture activities each year and modify the approach for the subsequent year based on their learning experience. The scope of the project poses a number of challenges to M&E. A traditional quantitative survey-based approach has proved ineffective in capturing the diverse changes taking place within participating communities as a result of the project activities. In many cases, unanticipated impacts have been reported, which the existing (primarily quantitative) M&E strategy failed to capture.

In order to address this apparent gap in the project's M&E and impact-assessment strategy, qualitative and participatory methods have been implemented to permit a more open and responsive approach to change occurring in the communities. In addition, these approaches broaden the scope of project impact by addressing issues such as capacity-building among NARES partners, and institutional change. The methods currently being piloted include Outcome Mapping and Most Significant Change.

Outcome Mapping has been found to bring a number of important benefits to project M&E by: Creating a longer-term vision for sustainability and impact; Identifying unanticipated problems and constraints to project success and documenting them in a formal way; Revealing outcome and impact priorities held by project participants and stakeholders; Creating a sense of ownership and responsibility for project success, clarifying roles and responsibilities, articulating where change is needed, and monitoring progress towards required change.

However, a number of disadvantages have also been identified, including:

- The capacity of local partners to apply the full Outcome Mapping methodology and to convey the concept of Outcome Mapping across languages is a major influence on the success of Outcome Mapping in a project context. Misinterpretation and miscommunication of the terminology and concept of 'behavioral change' inherent in Outcome Mapping may lead to unequal distribution of power in favor of stronger stakeholders.
- The relative complexity of the approach and difficulties in communicating terminologies and processes may create problems when working in more than one language.

- The substantial time investment of stakeholders to work through the full Outcome Mapping design phase.

In an attempt to address these issues, it is anticipated that the Outcome Mapping process will be modified to place emphasis on progress markers that are more closely related to the impacts that project beneficiaries would like to see as a result of introducing community-based fish culture, and the actions they would need to do as a group if they work towards achieving these impacts. A framework which combines elements of Outcome Mapping with the Most Significant Change is one option for development.