

Part VI: Synthesis



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People and Pro-Poor Innovation Systems

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"Improving access to technologies and services for resource-poor farmers, men and women, is one thing; considering them as partners, not just as recipients or beneficiaries, yet another."

EXTENSION, COMPLEXITY AND POVERTY

Innovations in Rural Extension **shows that extension is about working with multiple actors, each with their personal and institutional histories, norms, values and interests. It is about getting the technologies right, improving access to inputs, knowledge and markets within existing policies, and stimulating learning and experimentation. These dimensions, and the level to which they are addressed in an integrated manner, determine the success of extension.**

Adding a poverty aspect further complicates each of the above mentioned dimensions. The need for farmer participation becomes more stringent when developing and promoting pro-poor technologies and markets. But private businesses, scientists and governmental extension agents often have little or no experience in working with the poor, especially with women. Illiteracy rates are higher among poorer people, their personal networks are less elaborate and transaction costs (which represents time and costs to access information, services, markets and technologies, negotiate contracts, and so on) are comparatively higher compared to better-off farming families. High transaction costs not only affect the poor in getting access to support, but also affect service delivery agents who want to target the poor while developing extension or business models. To add to the complexity of reaching the one billion rural poor in this world, one has to consider the diversity of poverty itself (Berdegúe, 2000). The diversity of strategies people use to cope with poverty adds to the need for plurality in extension.

Participatory technology development is an integral part of the innovation system and has been addressed as such in the various chapters. Reader-friendly overviews can be found in books by Ashby et al. (2000) and Bentley and Baker (2002). The multi-faceted needs of poor farmers and the multiple demands on their precious time influences our choice of methods for situation analysis, communication and training. This calls not only for diversity in extension mechanisms, but equally for a flexible use of multiple communication and learning tools fine-tuned to the specific client group, and building on the strengths of the range of service providers available in the system. This innovation systems approach not only moves away from the idea of a one-size-fits-all technology, but also of an ideal blue-print extension method (Biggs, 2004).

This chapter synthesises lessons learnt from the PETRRA project and ventures into some new areas. We will first describe the influence of policy on people driving the innovation system, followed by a discussion on the dynamic roles that multiple actors play in pro-poor extension and business development, and how actors interact in the 'theatre of agricultural innovation', to quote Röling and Jiggins (1998: 304). We further discuss the concept of transaction cost theory, illustrated with experiences from PETRRA. We then explore some of the promising innovations that emerged, followed by suggestions for future research.

From 1999 to 2004, PETRRA inspired partners to innovate not only with technologies, but also with farmer education, communication, organisational and institutional models in delivering pro-poor services and inputs. *Innovations in Rural Extension* offers us a rich menu for the reader to select their own dish. Ingredients can be replaced, spices added.



PEOPLE MATTER

People are the drivers of change. This is true for policy-makers, donors, service providers and clients, and hence justifies having a closer look at the human dimensions, social contexts and organisational cultures of these actors. In what follows, we use the term service in its broadest sense, including advice, training, technologies and anything that brings benefits to the intended target group.

Extension policy and public sector

In Bangladesh, changes in policy created an enabling environment for innovations to

emerge in seed systems (see Part V of this volume) and more broadly in the extension system. In what follows, we will give a brief overview of how large projects influenced policy at the Department of Agricultural Extension (DAE), followed by the various ways PETRRA interacted with DAE.

During the 1980s the World Bank funded DAE to implement the top-down training and visit (T&V) system of extension. The field extension agents or block supervisors visited mainly better-off farmers and hoped that technologies would spread spontaneously to other layers of the farming community. To trigger desired changes in the T&V model, in 1992 a first DAE reform initiative took place through the Agriculture Support Services Project (ASSP), funded by the World Bank, DFID and the Government of Bangladesh.

By 1996, the DAE had a new agricultural extension policy (NAEP), which also embraced the livestock, fisheries and forestry departments (Hassanulah, 2002). DFID further strengthened this initiative through the Agricultural Services Innovations and Reform Project (ASIRP) from 1999 to 2003. Major outputs of this project were a mission statement and a strategic plan to help motivate change in the organisation.

"The Department of Agricultural Extension's mission is to provide efficient and effective needs based extension services to all categories of farmer, to enable them to optimise their use of resources, in order to promote sustainable agriculture and socio-economic development."

DAE, 1999

With its large bureaucracy and roughly 24,000 staff members, the largest resource of extension staff in the country, the challenges to induce institutional change were enormous. Stakeholders within and beyond DAE felt that donors drove the agenda and pushed for the quick achievement of outputs in some areas, resulting in reduced internal ownership (Pasteur, 2002). In an interview with the *New Agriculturist* in April 2000, Donal Brown, a former natural resources advisor for DFID in Bangladesh, confirmed this: "One could try and impose [changes] but, if one imposes, the long-term sustainability of these activities is just not going to happen."

PETRRA's *modus operandi* was guided by principles that stood in contrast to this charge of 'lack of ownership'. From its very inception it nurtured a 'learning by doing' environment. PETRRA developed ideas jointly with their partners through personal or group interactions, and helped them to reflect on their own comparative advantages, their strengths and experiences, as such cultivating local ownership. Many technologies and extension methods developed or fine-tuned under PETRRA became mainstreamed in their respective partner organisations.

PETRRA worked with multiple service providers at the field level, while maintaining good links with policy makers and DAE senior management. DAE block supervisors were invited to participate in field activities in most of its sub-projects. This shift from DAE contracting out others to deliver services, as was the case

under ASSP and ASIRP, to NGOs asking DAE to partner, indicates a move towards better balanced partnerships and power, as was recommended by World Bank expert Gary Alex (2001). He also indicated that the mechanisms set up under the ASIRP project, although they supported decentralisation and improved extension support to farmers, failed to strengthen research-extension linkages. This shortcoming partly explains why in August 2004 the state minister for agriculture so strongly endorsed the newly established focal area forums that bring representatives of poor farmers, researchers, private sector and intermediaries together (see Box 21.1).

Donors and flexibility

Creating a learning system requires commitment, flexibility and fundamental changes in norms and values, not only within implementing organisations (Pretty and Chambers, 1994; Röling and Wagemakers, 1998), but equally within the donor community.

"For far too long, the heart of development practice has been characterized by an irony which saps the energies and motivations of even the most enthusiastic practitioner: those very institutions that are established to facilitate societal change at one moment, invariably become its next constraint."

Bawden, 1994: 258

A project-wise and planned approach with logical frameworks or logframes is often proposed as the most appropriate way to organise innovations and development (Leeuwis, 1995). This philosophy, however, presumes that people proceed based on rationally organised decision-making and learning, which goes at the expense of creativity and scope to respond to new learning and unpredictable change.

"Funding agencies of innovation and development activities usually wish to know in advance which goals have been set and how these goals will be realized... thereby the capacity to learn, in intervention processes can be severely hampered."

Leeuwis, 1995

"Institutional innovation itself needs to be recognised as an important and valid (if difficult) research subject and output."

Dorward et al., 2000

"Some of these [donor programme management systems] will require a long time scale and a process approach, chipping away at problems, and being willing to be opportunistic and flexible."

Duncan et al., 2002

The new challenge for donors and implementing agencies alike is to develop mechanisms that allow one to capitalise on the diversity of perspectives, ideas and opportunities that arise when implementing a project. This points us to the principles of change management and organisational learning, which has been present in business literature for decades, but which has only been widely recognised more recently (Easterby-Smith and Araujo, 1999).

"The challenge for development agencies is whether they want to provide the incentives to encourage a learning and change culture and incorporate professional people with these skills into their staff and development projects."

Biggs and Smith, 2003

Organisational learning at the donor level also requires regular consultation with those implementing the projects and the clients to develop evidence-based policy, while at the same time, for gender for instance, gender-sensitive and gender-knowledgeable people in decision-making positions will be needed at both donor and project level.

"While there are some positive developments in donors' policies and practice, the key challenge to gender mainstreaming occurs at the implementation stage."

Macdonald, 2003

'Strength in diversity' has strong resonance in development circles (Chambers et al., 1989; Hall et al., 2003b; Biggs, 2004), and more recently in donor thinking about rural poverty alleviation (Berdegué and Escobar, 2001; Farrington et al., 2002a). Donors have a large responsibility in stimulating local innovations, but their support to mainly the largest NGOs with heavy management structures may push the development landscape into the other direction. Vertical integration has its limitations, especially for development organisations. Small, flexible and professional NGOs are often ignored despite their ability to quickly respond to emerging local needs and mobilise the poor, irrespective of their membership of microcredit programmes. To unlock the potential of more local actors, donors could support innovation systems research to identify champions, and to unravel their personal, historical and institutional contexts that shaped them.

Projects, service providers and potential champions

Innovations require more than creative capacity to invent new ideas; they require managerial skills and talent to transform good ideas into practice (Van der Ven et al., 1989 in Ayas, 1995). To this, we would like to add the need for motivation and a long-term vision.

"Unlike buying stocks, it is hard work to put ideas into practice.
And no one can do everything."

Nalebuff and Ayres, 2003: 10

Ways to identify potential champions among project partners and to nurture their commitment deserve equal emphasis to the policies and regulations shaping institutional change. In their report for DFID on drivers of pro-poor change, Duncan et al. (2002) say that reform can be stimulated in two ways: by promoting broader processes of social and economic change (such as education, in particular of women); and through identifying and supporting champions of change (including

NGOs, community-based organisations, reform-minded elements of the political parties and of the civil service, the media, the private sector, professional associations, the research community and the Bangladeshi diaspora). The cases presented in this book highlight some of these champions. We believe that committed people are the glue that make partnerships successful and drive institutional change. Understanding the historical context and personal characteristics of those people shaping innovation systems is crucial, yet often ignored.

Short-term projects like PETRRA may be criticised for not having changed the institutional context in which scientists work or for not having brought in enough international extension experts. But one could argue that values, once experienced, become part of people's personal history that will remain within the system. All four top management officials from BRRI interviewed and more than 80% of the people involved in PETRRA sub-projects actually improved their knowledge, attitude and practices with regard to value-based, demand-led research (Solaiman et al., 2004). As for bringing in experts, the way in which new ideas are introduced and their *modus operandi* are at least as important as their actual technical or methodological expertise. Creating local ownership and empowering project staff are key to the sustainability of induced change. Although these are popular contemporary advocacies, they can easily fall to pieces in one's hands.

"Project cycle planning and management could be improved a great deal if it was acknowledged that all parts of projects are carried out by people working in social contexts, with all the features of social relationships that are present in human interactions."

Biggs and Smith, 2003

Professional pride and personal satisfaction after having worked through a problem with farmers can become major motivational factors for researchers and extensionists alike. But often scientists and governmental extension agents lack the opportunities of getting heart-warming feedback from resource-poor farmers, policy-makers and donors alike. It is with this in mind that PETRRA created an enabling environment for government, non-government and private sectors to experiment and develop or test new technologies and methods with farmers, together. Nurturing a shared hope for change was a prerequisite for PETRRA and its partners to walk the extra mile.

"Hope, as an ontological need, demands an anchoring in practice. Hopelessness and despair are both the consequence and the cause of inaction or immobilism."

Freire, 2003: 9

A first experience is a lesson for life. Through effective partnerships that build on complementary skills and mutual benefits, the chance of having a rich first experience increases. Besides, professional pride and ownership is shared from the on-set and boosts scaling-up, as witnessed by the video sub-project (Chapter 5) and

several others (Solaiman et al., 2004). Innovation systems research, which addresses organisational culture, can help in bringing 'like-minded' organisations or individuals closer together and ensure a higher partnership performance. We believe that win-win situations could occur both more frequently and with better planning.

"A more systematic consideration of organisational culture issues within project planning and management is likely to improve the effectiveness of development interventions."

Biggs and Smith, 2003

Cultivating local ownership is important, no doubt, but professional pride can also close one's ears for criticism and stifle one's creativity. We also experienced that ownership can lead to protectionism. Occasionally, PETRRA had to intervene to overcome partners' apparent resistance in bringing their innovations into the public domain, as was the case when trying to scale up a new rice-duck farming system. Involving additional partners and shifting responsibilities offered solutions (see Chapter 12).

Appropriate incentives and communication mechanisms are important for lifting motivation of staff who are involved in developing innovations to a higher level of organisational pride and ownership. Some sub-projects had inadequate communication between local, regional and national offices and lacked clarity about mandate and decision-making power at each level, as such undermining staff motivation.

While we recognise professional pride, personal satisfaction and heart-warming feedback as important incentives for people to engage in participatory research, there also exists the risk of them sticking to their newly acquired comfort zone. We believe that researchers and extensionists need to be stimulated more to continuously challenge their own work, get out of their professional comfort zone pro-actively, and change their culture of non-listening to farmers.

Reaching rural women: policy and reality

Resource-poor farmers, women in particular, are extremely motivated to receive training in all aspects of agriculture (see Part II on gender). A selection of quotes presented by Orr et al. (2004a) from women and men who participated in PETRRA sub-projects illustrates the impact training has had on gender and livelihoods. "When we used to fail to preserve good quality seeds, husbands used to quarrel with us." "When you are poor, you don't want to consult with your wife or family members." "We are not interested to sharecrop anymore, we want to work with our own agricultural land." But also links to scientists and government extension agents improved: "Before we were afraid of the Rural Development Academy, it is a well-protected area and big officers may not talk with us. Now we are proud to talk to scientists." "Now block supervisors come to us and even ask us for solutions."

But women's involvement in training programmes is still largely determined by donor policies. Reviewing EU and UK development co-operation, Khan (2003)

mentions that gender remains a low priority despite policy commitments to the contrary. She suggests donors to increase their collaboration with civil society organisations and to open up their dialogue with multiple actors.

Gender studies are useful for analysis of separate household needs, responsibilities and roles, but it has also led to new knowledge being compartmentalised. Perceived wisdom often reinforces existing gender discrimination in access to information:

"More attention must be paid to traditional women's roles, such as post-harvest activities and livestock care, as well as to new off-farm livelihood activities."

Gill et al., 2004

This stands in sharp contrast to PETRRA's findings, which promote women to get training on all aspects of agriculture, also on those areas where they do not necessarily do the work. Limiting women's training to their traditional roles excludes them from household decision-making about agriculture and inhibits empowerment.

"Women can be empowered by giving them equal access as men in training and extension programmes."

Hossain et al., 2004

Under PETRRA, resource-poor women, once trained, emerged as strong advocates. In some cases also women solidarity was a driving force for female farmer extension agents to establish new groups in new villages and promote low-cost agricultural technologies. Tools for identifying these champions among the rural poor as important actors in the innovation system, not just as beneficiaries, need further attention.

The transaction cost theory offers additional insights into forces that shape the innovation system, and into how access to technologies, services and markets can be improved for the poor.

TRANSACTION COSTS: BRINGING PEOPLE INTO ECONOMICS

In 1985, Williamson articulated the evolution of modern institutions as a key contributor to the theory of new institutional economics (NIE), which tries to apply economics in the real world where people and organisations engage in both transformation (production) and transaction (contracting and exchange) activities. As people are given a more central position, the theory borrows liberally from social science disciplines. More recently, it is finding its way into development and rural extension literature (Dorward et al., 2000; Morrison et al., 2000; Farrington et al., 2002a). The seeds of awareness and practice can be seen in the concept of institutional intermediation as used by the Bangladesh Rural Advancement Committee (BRAC) for developing a pro-poor poultry business model that reduced linkage weaknesses (Lovell, 1992). Similarly, in Magor (1996) the enterprise web

adds understanding as to why some promising technologies failed to be extended. Political economy aspects of research and development, as addressed by Biggs (1978, 1992) and Biggs and Farrington (1990), also relate to new institutional economics.

Transaction costs in pro-poor service delivery

The concept of transaction cost theory, which is central to new institutional economics, is described in Box 11.2. We do not claim to be specialists in new institutional economics, but in this book we have tried to use transaction cost theory as a pragmatic tool for analysing uptake pathway models for specific technologies. Below, we expand this line of thinking to a more generic level, namely to innovation systems and how transaction costs are affected when bringing in a pro-poor agenda.

It is important to note that transaction costs only mean anything in the social system in which they are analysed: the purpose of the system determines what is defined as a good transaction cost minimisation and what is not (Biggs, personal communication). For example, the highly socially differentiated agrarian sector of Bihar, India, used different modes of transactions in the labour, land and credit markets that were very transaction cost efficient. However, that was in a social system that maintained poverty and social exclusion over time (Biggs, 1978).

Establishing contacts and capacity

Service providers require contacts with multiple institutes and farmer groups, and they need time to source information or technologies and fine-tune them to the needs of their clients. In some cases they may also require training to upgrade their skills in order to perform. Basically, all these make up the transaction costs that by and large determine whether an actor will embark on providing a certain service to their clients or not; or whether a partnership or a network will be established to fulfil specific tasks. The PETRRA sub-projects described in this book illustrate the underlying principles.

To reduce transaction costs for pro-poor agricultural development, PETRRA facilitated the establishment of networks and partnerships between scientists, NGOs, and private sector entrepreneurs, from technology development and validation, all the way to promotion and developing communication materials. Establishing initial contacts between actors requires a facilitator and in the case of pro-poor agricultural development initial public or private investment is needed. Experimentation with institutional and organisational innovations does not happen spontaneously, nor does it happen overnight. The majority of the twenty sub-projects on uptake and extension were led by NGOs; seven established partnerships with community-based organisations.

Once capacity is built, other incentives take over. NGOs and private entrepreneurs were trained by national and international experts, a major motivational factor at the

early stages. But as the sub-projects gained more experience of working with poor farmers, NGOs started to realise how well-suited agriculture was for poverty alleviation and for integrating it with their other on-going programmes. After the Rangpur Dinajpur Rural Service (RDRS) embarked on seed production, other federations started producing polythene-lined jut bags as part of their income-generating activities (Chapter 20).

Sourcing and validating information

Sourcing and validating information may be a major constraint for service providers to embark on new areas. Bangladesh counts thousands of NGOs, yet only a few have agricultural expertise. Lack of technical capacity and information being a global issue for NGOs (IIRR, 1999), what would motivate them to engage in agriculture, where could they get relevant agricultural advice and technologies, and at what cost?

Under PETRRA, NGOs established technical links with government research and extension, and learnt to commit financial resources for tapping into this expertise. Links were established through the uptake forum, focal area forums or specific partnerships.

The focal area forums provide a mechanism for a wide range of actors to get continuous access to sources of technical expertise and streamline their efforts in validating technologies for local suitability, feasibility and acceptability (see Box 21.1). This breakthrough not only helps to optimise use of human and financial resources between actors from the government, NGOs and private sector, it also allows for local innovations to enter the formal research, extension and education systems.

The Bangladesh Agricultural University and the NGO RDRS signed a memorandum of understanding for students to conduct action research with poor farmers. The role of NGOs as intermediaries between formal educational institutions and the rural people remains an area of great potential for developing innovations (Wallace, 1994), and may help to institutionalise participatory approaches in higher education.

Establishing farmer groups

Working with the poor may initially increase costs. The case on the aromatic rice value chain (Chapter 14) raises the issue of cost-effectiveness in establishing producer groups for domestic and export markets. There is an extra cost involved in organising a larger number of poor farmers compared to working with a few well-off farmers, but in reality this approach has the potential to create a substantial volume of rural employment (Farrington et al., 2002a). Public fund allocation strategies need to take these implications for the labour market into account. Working with the poor also allows for economies of scale, especially when NGOs are involved to coordinate their members or those of local NGOs and community-based organisations (see Chapters 18-20).

But organisations that have the necessary skills and contacts, such as commercial businesses, researchers and governmental extension officers, often lack the knowledge or confidence to facilitate the establishment of groups of poor farmers, despite them constituting the largest part of the farming community. So, one of the questions that arise is: Do I organise farmer groups myself or establish a strategic partnership with someone else who can facilitate this more efficiently than me? In communities where various groups already exist, building on these rather than establishing new ones limits transaction costs.

Vertical integration or strategic networks

For establishing contacts, building capacity, sourcing and validating information, and establishing farmer groups, an actor can opt to go solo or link up with others. The governmental research and extension institutes along with many NGOs are generally used to doing things solo; only since the reshuffle of public funds, the need has arisen to start thinking about strategic partnerships. Also, international companies operating in developing countries often lack the usual infrastructure and support system: market intelligence, manufacturing capabilities, or distribution channels. So, they have much to gain from tapping into local networks and local knowledge (WBCSD, 2004).

A strategic network is a way to lower transaction costs without having to vertically integrate (Jarillo, 1995). As the different partners remain independent, there is more flexibility, but also the need for building trust becomes more prevalent. Under PETRRA, especially the smaller NGOs chose to build strategic networks with local organisations. By having worked with over 150 local NGOs and community-based organisations in various projects, the Agricultural Advisory Society (AAS) has filtered out the 'opportunistic feeders'. They now have a rich source of sincere organisational relationships on which they can build, as and when they see fit.

Strategic networks may be formed based on economic considerations, although organisational history and personal contacts often play an equally important role in selecting partners, as indicated by several case studies in this book. It is our experience that the success of a partnership between NGOs and community-based organisations, for instance, is determined by the size, history and organisational culture of the partners, along with the influence sphere of the individuals leading the partnership.

Partnerships are dynamic and context-specific: multiple scenarios are possible depending on the diversity and density of service providers, their intrinsic strengths, the type of service to be delivered, the intended client group, and so on.

DIVERSITY OF SERVICE PROVIDERS

We use the term diversity to indicate both the number of different actors and their relative abundance or density in a given area. These dimensions affect choice and

quality of service delivery, from the community level up to the national and international level.

Multiple actors: competing or complementing?

Who has what role to play in developing pro-poor technologies and establishing pro-poor markets? We will address how different actors may compete with or complement one another in the delivery of quality seed supply, complex technologies, and training and advice. These key 'commodities' will help to clarify the need for diversity in service providers.

Seed suppliers

According to Tripp and Pal (2000) plenty of private sector seed enterprises have emerged in developing countries, but there are few examples of those embarking on public crop varieties, such as self-pollinated rice and wheat that are not hybrids. Also, NGO and private seed enterprises not only compete with public sector seed providers and farm-saved seed, but also between themselves (Almekinders and Louwaars, 1999). Despite this, a number of innovations in the rice seed system emerged under PETRRA. As the rice seed market in Bangladesh is far from saturated and poor farmers are eager to get access to quality seed, we anticipate that more competition will strengthen self-imposed quality control mechanisms (see Part V of this volume).

Most of the private seed enterprises in India offer few economies of scale, but high economies of scope as they can expand into other seed crops (Tripp and Pal, 2001). This may be only partly true for Bangladesh. Some NGOs embarked on wheat, mustard, potato and onion seed production, after having learnt about rice seed production. But as the rice seed market is far from saturated in Bangladesh, economies of scale are still possible. Syngenta started producing rice seed in the late 1990s, and is gradually increasing their production while they gather experience and explore the market.

But the incentives are not merely economic. While for seed-producing agribusinesses it offers an option to diversify their income and strengthen their customer base, for poor farmer seed entrepreneurs it more often is an end to a means. Rice seed production offers a pathway out of poverty and a pathway into community respect. "I no longer have to buy, but can actually sell seed," says Shamima Akhter during a village fair in Kishoreganj, "My husband, mother-in-law and neighbours respect me much more now."

In brief, governmental organisations, agribusinesses, NGOs and farmers each have a role to play in the production and supply of quality seed. While most actors reach their clientele through an existing distribution network, small-scale farmer seed entrepreneurs diversify the outlets for seed in the community exponentially. By 2004, the awareness of quality seed was still growing, leading to increased demands.

Public funds are especially required in the initial phase to build capacity among NGOs and small-scale, private seed entrepreneurs. But once capacity is built, one should be able to produce and trade seed on a full commercial basis, in absence of market distorting policies.

Suppliers of complex technologies

Do the same principles in developing pro-poor seed businesses hold for the dissemination of a complex technology, a new farming system or a value chain for exporting aromatic rice? Often these innovations are non-existent at the time of intervention, resulting in a higher perceived potential to position oneself in these new markets. But these innovations are intrinsically complex; as more side conditions need to be fulfilled, initiatives by individuals or small-scale enterprises are less likely to take place.

To disseminate or establish complex technologies, also larger organisations or businesses need to make crucial decisions on opting for vertical integration or strategic partnerships, on addressing all required activities themselves or outsourcing some. Partners are selected based on their competitive strength, interest in participation and for a variety of motivational and personal reasons. Establishing contacts and trust between the various actors is part of the initial transaction costs. To help organisations in this decision-making process, Magor introduced the enterprise web as an analytical tool for strategic planning (see Part IV).

Irrespective of the level of market integration, public funds are likely to be required to help disseminate complex pro-poor technologies. Once networks and necessary conditions are fulfilled, the system should be self-sustaining.

Suppliers of training and advice

In a synthesis of a six-country study on extension, Farrington et al. (2002b) recommended to create and support opportunities for the poor, not just as producers and labourers, but also as consumers. However, they fail to acknowledge the active role poor farmers can play in delivering services, advice and technologies, themselves. Pioneering large businesses already started to blend social and financial values under the umbrella of corporate social responsibility, and involve the poor in their markets, as customers and entrepreneurs (WBCSD, 2004). Training the poor is considered a necessary investment.

Cases presented in this book support the need to consider poor farmers as partners, not just as recipients or beneficiaries. Giving them the opportunity to play a role in delivering services themselves, as a means to social and economic empowerment, opens up a whole new debate on public fund allocation. Several interesting concepts and experiences have been presented recently (Katz, 2002; Rivera and Zijp, 2002; Scheuermeier, 2003). Rather than channelling money through service providers, for

instance, public funds could be assigned to farmer groups who then decide how to best use it.

This book gives examples of poor farmers, men and women, taking on the role of seed producers, sellers and marketing agents, but also of extension agents. Once trained, they quite easily established new groups of poor farmers in other villages and taught them about rice and seed production, as well as soil fertility management. RDRS federations started to use communicative female farmers as resource persons to train other groups, paying them Tk 50 (US\$ 0.90) per session.

Public funds allocation is needed in well-integrated areas for the delivery of services related to health, safety and the environment, whereas substantial support will remain crucial for agricultural extension related to subsistence crop and for those areas where access to information, advice and markets is weak (Farrington et al., 2002a and b).

Local government

One would be tempted to think that local governments are more aware of people's needs, constraints and opportunities, and should be better able to respond to these than the central government. Although they can play a significant role in community initiatives for agricultural development, local governments are not a necessary or sufficient condition (Tendler, 1997; Bentley and Boa, 2004). So far, in Bangladesh social development organisations have been much more pro-active in involving local government than actors working in the field of agriculture have been. Shifts may gradually occur with some NGOs (re)discovering the importance of agriculture in rural development.

Although clear benefits could be reaped, most PETRRA partners did not establish links with the local government or Union Parishad. For the rice-duck and mobile pump sub-projects, both complex enterprises with clear impacts on the wider community, local government support was a prerequisite. Also, the Rural Development Academy (RDA) in Bogra built strong links with the Union Parishad, whose chairman was well known to the deputy director agriculture at RDA. The latter involved the local government in organising various awareness and scaling-up activities under the Seed Health Improvement sub-project. Good human relationships are the corner stone for a successful collaboration.

Learning networks and forums

Arising from the need to provide farmers with consistent information, PETRRA sub-projects started to interact more at the regional level among themselves and with other projects, NGOs, farmer representatives, governmental organisations and commercial businesses with an interest in rice.

Two focal area forums, namely in the Northeast and the Northwest, emerged as multiple actor platforms for: (i) channelling the voice of poor farmers, men and

women; (ii) establishing a network that facilitates quality control and dissemination of quality seed in the region; (iii) screening, validating and transforming information into consistent advice, as well as for (iv) pooling resources in training farmers (Samsuzzaman and Mazid, 2004). The focal area forums are a practical example of decentralised decision-making in agricultural research and extension.

Currently, two farmers are members of the Northwest focal area forum, along with representatives of governmental institutes (BRRI, BARI, BINA and BADC), NGOs (RDRS and GKF), the government extensions service (DAE) and private companies. Mrs. Bulbuli Rani, vice chair of one of the RDRS federations, was elected as a farmer representative. Over the years, she has established contacts with multiple organisations and interacted in action research with scientists and university students. She now critically assesses new technologies in her own field, helps to coordinate seed production at the community level and set up a small tailor workshop at her house, where she teaches young ladies from the neighbourhood.

RDRS, stimulated by PETRRA, started the initiative for a focal area forum in August 2002. Although they asked the DAE numerous times to sign a memorandum of understanding to become a formal member of the Northwest focal area forum, their initial reaction was one of reservation and hesitation.

Several events brought the various actors closer together, but it wasn't until the state minister for agriculture provided his support during a policy dialogue in 2004 that the director-general of DAE came on board (Box 21.1). Immediately after, the DAE block supervisors were asked to collect the meeting times of all RDRS federations, and received instructions to meet the farmer groups at times that these already gather for other activities. As such, DAE saves considerable time by not having to organise group meetings, and farmers save time by having to interrupt their schedule only once a week.

"I could not believe that the minister would accept the idea so strongly; he was brilliant," said Dr. Syed Samsuzzaman, one of the focal area forum initiators from RDRS, immediately after the policy dialogue.

"Honouring an agreement is a strong motivator to behave in the collective interest."

Kerr and Kaufman-Gilliland, 1994 in Röling, 1996

Clearly the new agricultural extension policy enabled an initiative like the focal area forum to emerge and crystallise, but until this event, the country lacked good examples of how partnerships and decentralisation in research and extension could take shape on the ground. The focal area forums became a reality, and the endorsement by the minister a historic event, probably as significant as the establishment of the new agricultural extension policy itself. Mechanisms of cost-sharing were discussed from the early on-set and ensured that this platform got a life-span that transcended the PETRRA project.

Box 21.1
Minister
Endorses Focal
Area Forums

August 3, 2004 was a great day for all Northwest focal area forum members as the state minister for agriculture and other distinguished guests participated in a policy dialogue with them and other agricultural players in the region. The top decision-makers not only expressed their appreciation of the concept, activities and progress made, the minister also instructed all to immediately take necessary action to formalise the forum and replicate it. seholds with 3-8 months food security from own rice production, with some flexibility depending on region, actor and technology

"Congratulations to the organisers who have invited me to such an enthusiastic meeting. I had been thinking over this issue for a long time. My experience with farmers was that there is a gap between scientists and farmers; I failed to see hope. But today I see some light and hope for the first time that it can work. The focal area forum concept has come to us as a big opportunity and the director-general DAE should go for signing a memorandum of understanding involving all relevant DAE offices. We should try to replicate it all over Bangladesh."

Mr. Mirza Fakhrul Islam Alamgir M.P., state minister for agriculture

"Advice of the minister is very vital to sign a memorandum of understanding with relevant partners in the focal area forum. We will start the revolution. We start with rice but will expand to various other crops. PETRRA has made a revolutionary contribution to all this. ... Focal area forum activities are like a one-stop service. ... We have reduced the gap between the different actors."

Mr. Tariq Hassan, director-general DAE

"We talked about research linkage and its importance. The focal area forum showed the pathways as to how it can be done. ... Coordination, capital and credit can play a very important role. ... The focal area forum is a model that can be replicated all over Bangladesh if encouraged and supported by the government."

Dr. A. R. Gomosta, director research, BRR

"We started with rice because it is very important and it still needs continued development. The Focal area concept very much matches with the new agricultural extension policy. Within the focal area forum we are not only governmental organisations and NGOs, but also private sector. We are supporting farmer groups organised by RDRS. We are doing it in addition to, but not hampering our regular programme, rather strengthening it."

Mr. Elias Hossain, additional director DAE, Rangpur

(Salahuddin, 2004)

Extension services can tap into multiple resources of actors, methods and tools. Under PETRRA a vast range of methods and tools were developed, tested and validated in order to make the learning environment more accommodating for the poor, women in particular. Each of the examples, or elements out of them, can be used by any service provider depending on the situational context, as such adding further to the desired diversity in extension and pro-poor business development.

MULTIPLE EXTENSION AND LEARNING METHODS

Which extension method is the best and which one do we promote, is a question often asked. But does it make sense to promote a single method? By proceeding under the perspective of the 'pipeline' model of linear transfer of methods (in analogy to the concept of linear transfer of technologies), many opportunities to reduce poverty in a cost-effective way are missed (Biggs, 2004). The scope for local actors to innovate with extension methods and institutional models is reduced from the very beginning. Clearly new thinking is required as to how to reach more people more quickly (IIRR, 2000). Promoting diversity and cross-fertilisation between various extension, farmer education and organisational development methods point the way ahead (Hagmann et al., 1998; Braun et al., 2000; Van Mele and Braun, 2004; this volume). A lesson for donors and decision-makers, therefore, is to avoid endorsing extension monocultures.

Techniques from anthropology and other social sciences allow us to prioritise problems of communities (or groups within), learn about areas where new knowledge is likely to result in innovations, as well as what opportunities exist to build learning methods into existing organisational structures. There is no single extension method that reaches all farmers, neither is there a service delivery system that works under all conditions.

In what follows, we will first discuss how transaction costs influence poor farmers' access to information and education. We then consider farmer field schools (FFS) as one of the main innovations in farmer education, followed by a range of other methods and tools tested under PETRRA, and which we believe have great potential to complement farmer field schools.

Transaction costs in receiving extension services

Under PETRRA, a number of transaction cost reducing innovations emerged in terms of capacity building and awareness raising. Demonstration plots were no longer in the fields of better-off farmers, but in poor farmers' fields. Women received training in their courtyard or in buildings of community institutions, rather than having residential training sessions (see Part II). Through partnerships with community-based organisations poor farmers, men and women, easily engaged as group coordinators and in some cases as extension agents in their own and neighbouring villages.

For access to technologies such as seed, transaction costs for the clients is lowest when the retailers are actually farmers within their own community. To remain workable, these systems rely on regular supply of foundation seed, resolved by the rice seed network, NGOs and strategic networks with community-based organisations (see Part V). The potential benefits of decentralising a system lie in the strengths of its local institutions.

Bringing multiple services together through carefully identified local champions significantly reduces transaction costs for the poor. This concept builds on the one-stop shop. The idea is definitely not to go for one model, one method or one service provider, but to offer multiple services in the same person, locality or facility. To give some examples, the NGO AAS trained resource-poor farmers to become seed producers, so people in the community know where to get good quality seed. But AAS also trained the same people as village soil fertility management experts, as such bringing multiple services together in the same persons (Chapter 8). Going Public, to interact with people where they already gather such as in market places, or linking agricultural extension to traditional entertainment brings multiple services together in the same locality (Chapters 9 and 10). The NGO Shushilan, on the other hand, uses their facility as a one-stop shop. They sell quality seed, trustworthy fertilisers, vaccines for livestock among other inputs, while farmers can also bring in samples of soil, water or diseased plants and consult the small library and field workers at their Agricultural Service Centre. When we asked the librarian, Ms. Suriya Sultana, how she would like to see her small rural library evolve, she mentioned that pictorial children books would be a good addition, as women tend to bring their children when visiting the library.

Under PETRRA, many of the NGOs moved towards inclusion of agricultural programmes. RDRS organised weekly training sessions on rice-potato-rice cropping for groups of women in the village. But these were generally held the day after they had gathered for their credit programme. As women already meet on a weekly basis, this opportunity could be grasped to identify their interests and needs, and give them access to other services, be it public health, information or markets.



Apart from reducing transaction costs by improving access to information and technologies, service providers need to assess the critical amounts of information that farmers need in order to trigger local innovation. By capturing this critical amount in farmer education programmes, impact can be realised more efficiently and at lower cost.

Learning from farmer field schools

The idea to replace recommendations with education based on experiential learning has brought about a major paradigm shift in extension (Kenmore et al., 1987; Röling and Pretty, 1997; Röling and Wagemakers, 1998), with farmer field schools being

one of the best documented examples (see Box 21.2).

The farmer field school uses experiential learning to improve farmers' agroecological knowledge, as well as their experimentation and decision-making skills (van de Fliert, 1993; Gallagher, 2003; Winarto, 2004). A field school usually comprises season-long regular group meetings with a set pattern of activities. This includes agroecosystem analysis whereby farmers visit their field on a regular basis, observe the crop, its pests, natural enemies and environment, after which they return and draw what they just observed on a large poster paper. The whole exercise involves measurement, analysis, peer review and experimentation. But a field school also involves presentations and special topics along with group building activities. Farmer field schools, which were initially developed to tackle the brown plant hopper problem in rice in the late 1980s, are now promoted in various agricultural, fisheries, livestock and forestry programmes. For examples see LEISA Magazine March 2003 at www.leisa.info.

Box 21.2
Farmer Field
Schools at a
Glance

In rice-based cropping systems, the immediate benefits of field schools continue to be closely linked to the use of inputs, especially insecticides. According to Bartlett (2004), farmer field schools are not designed for rural families with no access to land, and there are fewer immediate benefits for poor farmers who have not been using high levels of purchased inputs. Also, women from poor households often sell their labour and find it difficult to participate in regular training sessions, whereas the better the economic position in society, the stricter the form of purdah or seclusion that women in Bangladesh practice (Banu and Bode, 2002). They may avoid contact with men with whom they have no direct kinship relation or simply avoid public places altogether. What scope is there to strengthen cultural and social sensitivity of extension methods?

We believe that the shift to learner-centred approaches in extension is one of the better evolutions over the last two decades, but at the same time we want to pose a challenge: that farmer field schools and other learner-centred approaches should be promoted as part of a broader framework of farmer and community development, complemented by other methods, and based on local institutional strengths. Rice farmer field schools have been developed longest, yet we still lack evidence of them experimenting with or being complemented by small or mass media to reach those millions of farmers that haven't been lucky to be part of a field school. How to reach more farmers with quality education remains an issue (Heong et al., 1998). Bangladesh has roughly 12 million farm families of which 9.4 million are small farm holdings with less than one hectare (BBS, 2004). By 2001 and under various projects, the Department of Agricultural Extension established 6,200 farmer field schools across Bangladesh; roughly 157,000 farmers received direct training in integrated pest management (IPM) in rice (see www.communityipm.org). Even if all rice farmer field school efforts undertaken over the past 15 years across the world were to have been concentrated in Bangladesh, still only two million farmers would have been reached.

Even if one takes an optimistic view of how farmers might use their field school education to offer this to other farmers, and to develop community-based organisations that undertake progressively more ambitious self-directed development, the impact would not meet the need. Are farmer field schools designed for and suited to become a mass education approach? If not, how might we redefine their role?

Barzman and Desilles (2002) pointed to an excessive preoccupation of their farmer field school programme to train a certain number of farmers annually, under pressure of donors, and at the expense of quality of the learning process. This was confirmed later by a report for CARE Bangladesh by Andrew Bartlett (2004) who mentioned that in the scaling-up, project staff became stuck in delivery mode. In an early review of farmer field schools in Asia, van de Fliert (1993) mentioned that training quality and intensity deteriorated as the programme scaled up. So how can quality be maintained in farmer education methods when going to scale?

We consider the key objective and strength of farmer field schools to lie in its focus on learning, not on reaching large numbers. Understanding ecological relationships, and changing learning and experimental behaviour can be achieved through participatory learning approaches, such as farmer field schools, which offer great opportunities to develop, validate and select the most relevant learning exercises that trigger experimentation and innovation. But additional value could be obtained, once these methods, exercises and materials are developed, if they were incorporated into other learner-centred methods such as video, entertainment-education, or mass media (see Part III on learning with rural communities), used by champions positioned in organisations outside the field school.

Other methods: going to scale

An overarching factor stimulating creativity was the competitive tender mechanism that PETRRA used in approving sub-projects. As none of the extension methods were imposed, but built on the organisations' strengths and philosophies, most innovations became mainstreamed in the respective organisations that researched them. Ownership was cultivated through a learning by doing culture and a flexible management system.

By adding a certain element of competition and stimulating cross-fertilisation between methods, PETRRA speeded up the innovation processes. During regular uptake forum meetings, each partner had to present their methods to other sub-projects, DAE staff and other non-participating NGOs. A knowledge, attitude and practice study revealed that out of 27 sub-projects covered by the study, findings of 21 were used by a wide range of governmental and non-governmental organisations (Solaiman et al., 2004). Folk songs, for instance, were readily taken up by other organisations, indicating that extension methods should not only be appropriate and attractive to the client group, but equally to those implementing it.

External reviewers asked us to make comparisons between methods, but this would mean taking methods out of their context: any method may have a high or a low impact, be cost-effective or not, depending on those implementing the method, the learning content, and the characteristics of the clients and communities. Nevertheless, we have tried to extract some generic characteristics in terms of investment requirement and anticipated outputs (see Table 21.1). A service provider who wants to try out any of these methods could use this as a decision-making tool.

Table 21.1 Qualitative assessment of extension methods

METHOD	INPUT			OUTPUT	
	FACILITATION SKILLS	MONEY	TIME TO ORGANISE	HUMAN CAPITAL	SOCIAL CAPITAL
Farmer field schools	High	High	High	High	High
Farmer-to-farmer extension	Medium	Medium	High	Medium	Medium
Video-supported learning	Low	Medium	Medium	High	Low ¹
Going Public	Medium	Low	Low	Medium	Low
Entertainment-education ²	Low	Medium	Medium	Medium	Medium

¹Will be high if objective of video is social mobilisation. ²Can be live shows or programmes on radio or TV.

Women-led extension approach

A recent FAO survey showed that female farmers receive only five percent of all agricultural extension services worldwide and that only 15% of the world's extension agents are women (FAO, 2004). Women farmers in Nigeria were more satisfied with the quality of the services delivered by female than by male extension agents (Lahai et al., 2000). That more women should be recruited by service providers is well known, but often social, cultural or institutional barriers have hampered this. Under PETRRA, trained village women who displayed a high level of solidarity and commitment became extension agents; they organised events in their neighbouring villages once a month (Chapter 3). Working through community-based organisations and having flexible employment formulas for village women extension agents may help to reduce the gender imbalance in extension services and increase women's access to extension.

Family approach in training

This approach showed that training husbands and wives together (with or without children) improved intra-household decision-making and community respect

(Chapter 4). The family approach helps to reduce social and cultural barriers; it enables women to get access to services delivered by outsiders more easily. The method has been pioneered in Bangladesh by CYMMIT for wheat post-harvest (Meisner et al., 2004), and has been expanded under PETRRA by giving women access to information about all agricultural topics.

Farmer-to-farmer extension

Farmer-to-farmer extension can be very powerful, especially when linked to experiential learning and participatory rural appraisal (PRA) techniques, such as village soil fertility maps (Chapter 8). Building a vast network of local NGOs and community-based organisations may lead to a more efficient use of social capital, and allow a more coordinated approach in training farmer extension agents.

Video-supported learning

Unexpectedly, comparative analysis revealed that women learnt more things from meticulously designed videos on post-harvest technologies, including insect and disease management, than from farmer-to-farmer extension (Chapter 7). The videos resulted in higher levels of experimentation and adoption of new technologies.

Over the last couple of decades we have seen many changes in the use and role of media for communication in development (Norrish, 1998). The potential of using video within the framework of an interactive dialogue, and still having a video product at the end is an enormous advantage when it comes to scaling-up. Especially for quality maintenance of methods like farmer field schools, videos can add tremendous value, as the messages can be carefully engineered and remain the same. The instant playback feature of video enables continuous participation and immediate feedback. Besides, images have a high credibility and can easily motivate people (Dagron, 2001).

Apart from the potential of video adding value to farmer field schools, field-based experiential learning methods can also provide useful inputs for making mass media farmer education programmes (see also Chapter 6).

Going Public

A method whereby extensionists or scientists go to public places, such as markets, to interact with farmers was developed earlier by CABI Bioscience in another project in Bolivia (Bentley et al., 2003), and tested in Bangladesh with AAS, BRRI and the Rural Development Academy at Bogra.

To address the criticism that farmer field school graduates hardly share their learning with the wider community, as was the case in the Philippines (Rola et al., 2002), Going Public offers one of the possible solutions. Van Mele and Zakaria (2004) invited trained farmers to man a stand at a weekly hat or market and to share their

newly acquired seed health expertise with interested visitors. And because women in Bangladesh remain mainly confined to their homestead, Going Public was further modified to reach more women by going to the uthan or courtyard (Chapter 9).

Entertainment-education

When Shushilan embarked on their sub-project to test improved seed uptake pathways, they started with the more familiar field demonstration days. Through the regular uptake forum meetings, organised by PETRRA, they started to discover their own organisational strengths. The picture songs emerged as a jewel in the crown. With their vast experience in using traditional media such as drama and songs, Shushilan developed a new cultural programme with agricultural messages. Music, lyrics and paintings all came nicely together in the picture songs, which turned out to be a culturally appropriate way to reach large numbers of rural women (Chapter 10).

Traditional media, such as folk songs, drama and puppet shows were, for instance, proposed in Sri Lanka to complement group training in integrated pest management (IPM) (van de Fliert and Matteson, 1989). But FAO perceived multimedia strategic extension campaigns as only suitable for awareness raising. Soon afterwards, they piloted farmer field schools in Indonesia and since this was perceived a more effective approach to promote IPM, it replaced all other IPM extension approaches in Sri Lanka.

Only in the mid 1990s, and under supervision of Dr. KL Heong from IRRI, entertainment-education was successfully applied to address pesticide misuse by Vietnamese rice farmers. Because farmers depend on local radio broadcasts as their primary source of information, the researchers placed the farmers' ever-present radios at the heart of a media campaign. "We got a group of actors to play out a series of brief comedies, relating solid scientific facts through rustic situations to make the audience laugh," Dr. Heong explained. "We found these simple, humorous messages fixed themselves in the minds of thousands of farmers."

Entertainment-education refers to "the process of purposely designing and implementing a media message to both entertain and educate, in order to increase audience knowledge about an educational issue, create favourable attitudes, and change overt behaviour" (Singhal and Rogers, 2003). Considering that entertainment-education is a major approach used to trigger behavioural change on public health issues, it is quite remarkable how little it is used in agricultural development. A quick search on the internet yielded 94,300 results for entertainment-education and health, compared to only 4,130 when combined with agriculture, indicating the huge potential for agricultural extension to draw from cross-sector experiences. Likewise, experiences presented in this book may have practical applications for fisheries, forestry, public health and other sectors.

Primary school and college education

Reaching farmers through their children is a very powerful extension approach (Nathaniels, 1998; CIP-UPWARD, 2003; Arnst et al., 2004). Although several national NGOs in Bangladesh (e.g. BRAC, PROSHIKA, FIVDB and RDRS) develop their own non-formal education curricula and learning tools, integrating these with their agricultural development programmes has so far remained under-explored. NGOs in Nepal, such as the Centre for Agro-Ecology and Development (CAED), have been using schools for years with very promising outcomes.

In Table 21.2 we present the potential circumstances in which each of the methods described can be used. As stated earlier, these offer some broad guidance only.

Making small modifications of education curricula can be a real challenge, even if the environment seems conducive at first. In 2002, Van Mele tried to introduce some of the seed health exercises in the non-formal primary education programme of the NGO BRAC, the largest non-formal education system in the world (Mednick, 2004). With a group of women teachers the curriculum for biology

Table 21.2 Suggested use of extension methods

METHOD	CIRCUMSTANCES UNDER WHICH METHOD MAY BE USED
Women-led group extension	Requires communities where a certain critical mass of social capital is already in place
Family approach in training	Is applicable for any community, irrespective of the level of social capital
Farmer-to-farmer extension	Requires solid organisational support for it to be effective and will work best if implemented alongside other rural development activities
Farmer field schools	Requires skilled facilitators and high initial investment cost. Ideally used in pilot phases to develop and test learning tools that can be incorporated in all other methods. Principles and processes could be built into curriculum of wide range of service providers
Video-supported learning	Requires multidisciplinary approach in developing scripts. Adds value to any other method. Can be effective to educate farmers in remote areas without the need for well-trained facilitators. May need adjustment to fit regional or local culture
Going Public	Can be tried by any service provider with little preparation. Lends itself well to reach people in remote areas where general organisational support may be weak
Entertainment-education	Requires multidisciplinary approach in developing scripts. If no use is made of radio or TV, the method is limited to areas where live performers operate. Highly appropriate to reach rural women
Primary school and college education	Requires flexibility of education system and teachers' corps to include processes and tools of farmer field schools, or to organise video or agricultural entertainment shows. Children welcome this as a shift from sterile teaching methods in most rural areas

classes was assessed: as sowing seed, observing plant growth, and weekly drawing was already part of their curriculum, only minor modifications were needed. Children would bring a small amount of rice seed from their home, manually clean it in the classroom, and sow the spotted and irregular seeds in a separate pot from the healthy seeds. Within one season and after having trained the teachers, more than 2,000 children in 70 schools learnt about rice seed health. Children brought the message back home and stimulated parents to test the importance of seed health for themselves. The monthly parents meetings revealed an increased awareness and improved practice. The experience looked promising: as BRAC operates thousands of schools across the country and educates mainly girls, the potential was enormous. But it was never mainstreamed, illustrating one of the challenges of vertical scaling-up (between programmes) within large rural development organisations.



Multiple learning tools

Sometimes discussions arose in meetings between PETRRA sub-projects as to whether video is a tool or a method. Basically, the process of developing a video can be empowering in terms of the experiential learning that occurs among those involved in its development; the end-product, the video tape or DVD, is the tool that can be used to share information contained in the video with many others. The method deals with how this end-product is used in training and determines the quality of the learning that takes place among those watching it. Building a common understanding of terminologies used in extension method research was one of the hurdles PETRRA had to tackle during various uptake forum meetings. All its 20 sub-projects on uptake and extension involved partnerships with NGOs and various other actors. Seven of them were led by researchers, the others by NGOs mostly in partnership with researchers and DAE staff. Especially those sub-projects that were approved at the earlier stages of PETRRA embarked on doing extension, rather than on extension method research. This challenge was addressed in an iterative and interactive way, as part of the project learning cycle.

Discovery learning exercises

Discovery learning relies on engaging people in experimentation, observation, measurement and so on, activities which allow people to draw their own

conclusions. Creating tools for discovery learning has emerged as an important challenge for scientists (Röling and Jiggins, 1998).

Before developing discovery learning exercises, testing scientists' perceptions about local knowledge is required. As farmer field schools have not included issues like seed storage management (Bjoernsen Gurung, 2003), seed health discovery learning exercises were developed with Bangladeshi scientists from national research institutes and universities under PETRRA (Van Mele, 2002). According to one of the senior entomologist who participated in the workshop, "Farmers don't know the exact role of seed moisture content on the development of storage insect pest." A discovery learning exercise was developed to address this knowledge gap on the life cycle of storage insect pests. However, in-depth knowledge analysis carried out for the video project on post-harvest about one year later (see Chapters 5 and 7) revealed that women knew all too well that high seed moisture resulted in higher insect infestation (without knowing about increased insect fecundity rates). Addressing the issue of insect life cycle was useless in this case: the missing knowledge was that moisture was carried by air through the pores of the earthen storage pots. Porosity had to be addressed, not insect life cycles. Scientists' perceptions about local knowledge shouldn't be taken for granted when developing farmer education curricula and tools.



Overall, creativity and flexibility are needed to develop conditions in which these discovery learning exercises can be used. Exercises developed in farmer field schools are currently being used in the formal education system (CIP-UPWARD, 2003; Arnst et al., 2004). As a learning platform, Going Public also allows similar exercises to be used, but only those that allow people to observe or experience something in a short time, let's say 10 minutes, rather than exercises requiring weekly or season-long observations (see also Bentley et al., 2003).

Visual aids

All cases described in this book developed or incorporated visual aids for various purposes. Tools in themselves play a flexible role in extension and farmer education; they can be used or modified as one sees fit and, depending on how they are used, can have a greater or lesser impact.

Let us take the example of photos. They were used to stimulate creative thinking in group discussions (Chapters 3 and 7). They also cultivated pride among farmer innovators in various sub-projects (Orsini and Jahn, 2004; Van Mele and

Zakaria, 2004), and helped communities to learn about the social dynamics in the adoption of new technologies (Van Mele and Zakaria, 2002).

But photos were also used as learning tools in training-of-trainers sessions. A4-sized laminated photographs of farmer interviews and focus group discussions confronted project staff with multiple scenarios (Van Mele et al., 2002). It helped young researchers to gain a better eye for details and to be aware of social dynamics when conducting farmer interviews or focus group discussions with a community.

Shushilan combined songs and dance with large paintings depicting major rice pests and natural enemies, how to use organic fertiliser, and so on (Chapter 10). This case, as in the video project, shows the necessity to involve multiple disciplines and farmers in developing messages for rural communities. Scientifically validated information should form the basis of learner-centred farmer education.

The NGO SAFE used agroecosystem analysis in farmer field schools to visualise and evaluate the effect of herbicides on rice plants, earth worms and other living organisms. The tool helped farmers make better-informed decisions; initially they feared herbicides would "poison" the soil or reduce soil fertility if used continuously on the same field (Chowhan et al., 2004). In another sub-project, villagers drew soil fertility maps that helped them in testing and improving their soil fertility management (see Chapter 8).

During a PETRRA workshop on communication material development in April 2004, scientists worked alongside non-formal education specialists and graphic designers to produce diagrams of their uptake and extension methods. Earlier on, the same mix of people had developed extension materials with extensionists and farmers.

But communication is not only about making things visible and easily accessible to a client group. Coordinated efforts are needed to make optimal use of the diversity of information sources, communication tools and learning methods. The way this is shaped is context-specific and depends on the resources available in the innovation system, such as money, motivation, moral support, experience, enthusiasm, knowledge, creativity and collaborative spirit.

The Bangladesh Rice Knowledge Bank: public knowledge organised

PETRRA helped to sustain the research findings in the public domain and to increase user access to updated knowledge and technology beyond projects and organisations by catalysing the Bangladesh Rice Knowledge Bank. This linked to a regional initiative of IRRI to establish digitised, country-specific rice information systems.

Extension service providers are the direct beneficiaries, as both English and Bengali versions of technical information, leaflets and posters can be downloaded for printing. It is regularly updated with an emphasis on low-cost technologies, and is available on CD-ROM, in print and online (www.knowledgebank-bfri.org).

The institutional home of the knowledge bank is the Bangladesh Rice Research Institute, linked to the focal area forums, and with back up support from IRRI to ensure long-term sustainability.

INNOVATION SYSTEMS RESEARCH

Innovation systems research emphasises the relationship between innovations and its evolving political, economic and social context. It provides a framework for (i) exploring patterns of partnerships; (ii) revealing and managing the institutional context that governs these relationships and processes; (iii) understanding research and innovation as a social process of learning; and (iv) thinking about capacity building in a systems sense (Hall, 2002). The success of an innovation system depends on its capacity to change in ways that are positive in a development sense. Although organisations are important, it is often individuals rather than organisations that are critical (Clark et al., 2003).

Röling and Jiggins (1998) have argued for some time that more professionalism is needed in thinking about people if sustainable development is to be reached. Learning about people helps to manage institutions that drive innovation systems, and may require certain tools to facilitate this. To give an example, Van Mele and Zakaria (2002) developed a new tool, namely the Innovation Tree, to visualise and analyse the way an innovation spreads over time between community members. Learning about local innovators led to changed behaviour of staff at the Rural Development Academy, as reflected in the way subsequent activities and project proposals were developed.

During the documentation of the cases presented in this book, which was considered an integral part of the institutional learning process, we used narratives, enterprise webs, photographs, actor linkage maps, innovation systems research methods (Hall et al., 2003b; Matsuert et al., 2004) and various other social science methods. We agree with Biggs and Smith (2003) that more tools are needed to analyse organisational cultures and personal behaviours, but at the same time we recommend a wider use of tools for stimulating creative thinking and local ownership (see also Box 21.3).

UNFINISHED BUSINESS

We wanted to encourage partnerships that equally and effectively combined strengths and eliminated weaknesses of different groups of people and their organisations. This doesn't happen often enough, nor is it the accepted norm among government organisations, NGOs or the private sector. We saw changes in behaviour and better joint working practices, though we're still not sure how wider improvements can be stimulated. Will other NGOs and government organisations

change the way they work and collaborate after observing partnerships forged through PETRRA? Mechanisms to stimulate wider changes are still required.

1. Avoid funding or promoting a single blue-print extension method
2. Use actor analysis to analyse organisational cultures, strengths, ambitions and weaknesses in engineering partnerships
3. Apply innovation systems research in planning projects and identifying local innovations
4. Create early, low-budget opportunities for multiple actors to interact and learn to work with each other
5. Train people involved in community needs assessment to distinguish between implicit and explicit demand
6. Link agricultural R&D activities, whether by government, non-government or private sector, more closely to the established education system
7. Incorporate communication specialist and broad-based professionals with experience in learning approaches from the beginning of the project
8. Build adult learning and discovery learning principles into mass media programmes
9. Increase understanding of institutional elements that are important in developing local ownership over technologies and extension methods
10. Develop mechanisms to increase creative thinking capacity among all actors
11. Introduce new ideas in the system as early as possible in a subtle way
12. Allow for a flexible management structure that can be responsiveness to opportunities
13. Support institutional learning continuously.

Box 21.3
Suggestions for
Successful
Innovation
Systems

The emerging practice of NGOs in Bangladesh to link agriculture to their social development programmes is encouraging but still in its infancy. Better promotion of links with agribusiness and cross-fertilisation between extension and education, whether formal or non-formal, would benefit from 'innovation'. The explicit policy of pro-poor development is already stimulating new ideas, though that must be matched by a flexibility and commitment to change in institutes and organisations. Policies themselves need refining as evidence of success is gathered.

Partnerships and learning networks help to share ideas and create new ones. But ideas need to be tested, to branch out, amplified and be modified if they are to benefit the millions of poor farmers. We do not have enough experience to confidently mix and match extension, education and communication methods and tools. More experimentation is needed and a willingness to accept that not everything works the first time round.

Information sources, such as the Bangladesh Rice Knowledge Bank, are just becoming part of decentralised information hubs. But creating the trough at which the horse can

drink is not enough. How will service providers gain access to these hubs? Validating and incorporating local knowledge and innovations is yet another challenge.

We found many local organisations doing exciting work, but why is this ignored so often? The simple answer is poor documentation. Writing things down takes time, a certain creativity and persistence. It also has to be seen as rewarding in its own right. We hope that the efforts made in writing this book help to shine the light on the forgotten heroes of local development, and that the chapters are seen as a warm tribute in part to local creativity and methodological diversity.

At the end of PETRRA can we say that we've answered all the questions? The short answer is that this is never going to be possible. Development doesn't start and stop. It keeps on refining, applying, going back and then going forward, providing solutions and doing new things alongside old improved things. This book is our way of documenting what PETRRA and its partners have done and achieved. It points to things that still need to be done. Above all else, this book is a testament to the innovations produced by committed champions for pro-poor development in Bangladesh. We hope it suggests how we can each become one and provides the inspiration for you to have a go yourself.

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