



Community-based natural resource management

How knowledge is managed, disseminated and used

Enabling the rural poor to overcome poverty



Contents

- 1 Natural resource management – targeting learning**
Planners and implementers of natural resource development projects must learn to learn and share knowledge from past experiences
- 4 Managing rainfall with *tassa***
Rediscovering practical, low-cost soil and water conservation methods in semi-arid West Africa
Niger
- 8 Cultural identity – a force for change**
Cultural identity and pride – driving forces in rebuilding livelihoods in a remote Andean community
Peru
- 12 Research for development – fruits of the forest**
'Domesticating' high-value trees for marketable products and income in West Africa
Cameroon
- 14 Poor people prosper in an ecological 'hotspot'**
Improving the livelihoods of communities that use slash-and-burn cultivation in an ecologically sensitive area
India
- 18 Land for labour**
Solving the problems of local rice production when it can be cheaper to import
The Gambia
- 22 Leases for fishers' groups**
Empowering landless poor people whose livelihoods depend on fishing
Bangladesh
- 26 Participation in irrigation rewards farmers**
Paying dividends – participatory approaches to irrigation development
United Republic of Tanzania
- 30 Tribal communities manage the rangeland**
Community-based approaches to improving and sustaining the livelihoods of pastoralists
Morocco
- 32 Biogas – an alternative to fuelwood?**
A solution to fuelwood shortages in rural communities
China
- 34 Research for development – solutions crossing frontiers**
Transferring cassava cultivars from Brazil to drought-prone areas of West Africa
Brazil, Colombia, Nigeria
- 36 Tackling persistent poverty**
Some insights and the importance of partnerships and ownership
Bolivarian Republic of Venezuela
- 40 Preventing land conflicts**
Providing step-by-step support in decentralizing the land administration system
Madagascar
- 44 Targeting learning – a key IFAD product**
Planning for the future can mean to learn from past experiences

Natural resource management

Targeting learning

Natural resources are the foundation from which rural poor people can overcome poverty. However, planners and implementers of natural resource development projects do not always profit from the lessons learned – either information is lost or it is not easily accessible or changing circumstances may limit its value. Whatever the reason, learning from the past still makes sense. Knowledge does not wear out – although it is sometimes difficult to find, synthesize and use. It is against this challenging background that IFAD has targeted learning as one of its key products.

Poverty is still very much a rural problem. One in five of the world's inhabitants – some 1.2 billion people – live in extreme poverty, and 75 per cent of these live in rural areas. Their livelihoods depend on natural resources, their capacity to use and manage them effectively, and the institutional environment in which natural resource management strategies are designed and implemented.

Rural poor people are not just 'the poor'; they have faces and names. They are real people: poor farmers, poor fishers, poor nomads and poor women producers. Overcoming poverty means individual and collective empowerment, strengthening productive and income-generating capacities and increasing opportunities. This requires a clear understanding of the activities of poor people and of the natural, social, economic and political environment in which they live. It also requires supportive policies, institutions, services and investment.

IFAD's mission is to reduce rural poverty: "enabling the rural poor to overcome poverty" pervades its strategic framework for 2002-2006. Its experience has demonstrated that secure access to natural resources and to the technologies to exploit them productively and sustainably are important steps in the process of poverty reduction. Indeed, one of the three core objectives of IFAD's strategic framework is "improving equitable access to productive natural resources and technologies".

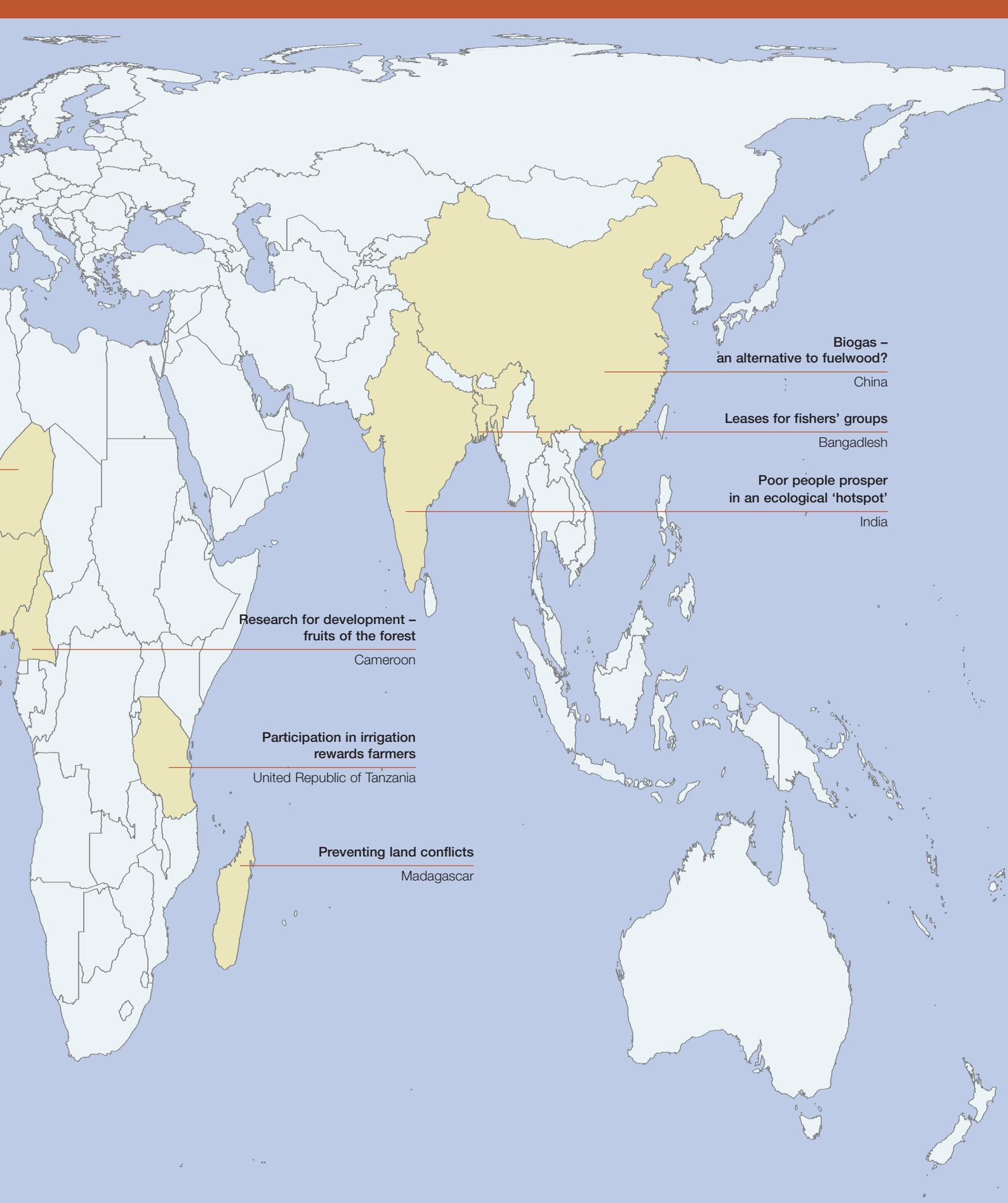
Community-based natural resource management was the focus of over 80 per cent of the IFAD-approved programmes and projects for 2000-2004. These programmes and projects addressed a wide range of natural resource development issues – land, water, forests, rangeland, fisheries and rural institutions. Gender, governance, culture and partnership also assumed greater roles.

Central to this process of development are the concepts of learning to learn and sharing knowledge. In this publication, IFAD shares its learning on community-based natural resource development. Twelve case studies from recent lending programmes and grants demonstrate how knowledge is managed, disseminated and effectively used by others. They show that people can learn to learn and that learning is crucial to reducing poverty and to meeting the development challenges ahead.

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Project areas





**Biogas –
an alternative to fuelwood?**

China

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**Poor people prosper
in an ecological 'hotspot'**

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**Research for development –
fruits of the forest**

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**Participation in irrigation
rewards farmers**

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Most farmers learned more by looking over the fence and copying techniques from other farmers.

Managing rainfall with *tassa*

There is no shortage of good ideas for conserving soil and water in West Africa. Researchers have developed many simple and useful technologies to harvest scarce rainfall for crops, but farmers have tended not to adopt them on a significant scale. For various reasons, farmers' problems and researchers' solutions have not connected. However, one idea is making a good connection. *Tassa* is a traditional soil and water conservation practice that is being revived and adopted at a surprising rate in Niger. Why is *tassa* special and what has made it successful?

Farmers in semi-arid West Africa understand the value of water, how its lack limits crop production and how essential it is for survival. They must contend with unreliable rainfall and short, unpredictable rainy seasons. To sustain their livelihoods, farmers need good strategies for capturing and conserving rainfall and making the best use of it.

In Niger...

The Tohoua region in Niger is a typical drought-prone area. It is hilly with fertile valleys, alternating with badly degraded plateaux. In the past, the valley bottoms were flooded regularly, bringing in fertile sediment. However, droughts have led to a loss of vegetation on the valley slopes, and water now runs off rapidly, causing gully erosion on the slopes and damage to fields downstream.

Since the 1960s, several projects had intervened to protect the valley slopes and plateaux, but without much success. They tended to use methods unfamiliar to local farmers and ignored traditional techniques, even though the remnants of old conservation practices were still evident.

In 1988 IFAD funded a ten-year programme of soil and water conservation to reintroduce simple, replicable conservation practices. This was IFAD's first major natural resources management programme that addressed land-degradation issues in relation to poverty and drought. In the beginning there were implementation problems. Government staff had no experience with the proposed, simple technologies and wanted to continue the usual practices, even though these had failed in the past. However, in 1989 a study visit to Burkina Faso by 13 farmers, including four women, was the catalyst of a major change.

The group visited the Yatenga region of Burkina Faso and made two discoveries. The first was that farmers carried out their own soil and water conservation without the need for incentives such as 'food-for-work'. The second was that planting pits used extensively and successfully in Yatenga to rehabilitate degraded land (known in that region as *zai*), looked very much like their own traditional planting pits used in the past (and known in the Tohoua region as *tassa*).

'Tools-for-work' not 'food-for-work'

In Burkina Faso, there were no incentives such as food-for-work to encourage farmers to undertake soil and water conservation work. In Niger, the situation was quite different. A long tradition existed of offering gifts or incentives to farmers involved in bund construction and other conservation measures. The IFAD programme broke with this tradition and adopted a policy of providing food-for-work only in drought years, when harvests failed. At other times, conservation efforts were rewarded with new community infrastructure such as classrooms for the school or a village well. This new approach to incentives required careful explanation, but villagers gradually accepted it.

Zai reminded farmers of tassa

The *zai* pits in Yatenga were a low-cost (some US\$8 per hectare), low-maintenance method of conserving water in the field in small hand-dug pits, some 20-30 cm in diameter, 15-20 cm deep and 8 metres apart. The removed earth was placed on the downstream side of the pit to form a small ridge and thus retain more water. The bottoms of the holes were covered with manure to provide nutrients and enhance water infiltration and retention. When it rained, the holes filled up with water and farmers planted millet or sorghum in them.

On returning home, some of the farmers decided to revive *tassa*. They rehabilitated 4 hectares of land, including one field next to a main road so that people traveling by would see the impact. The results were so impressive that the following year *tassa* use increased to 70 hectares. This was a drought year and only those farmers using *tassa* got a reasonable harvest. Over the next few years, *tassa* was instrumental in bringing a total of 4,000 hectares back into production. In surveys, farmer cited several reasons for this rapid uptake: doubling of yields, rehabilitation of barren land, easy maintenance and easy weeding and thinning.



For further information

Special Country Programme
(1988-1995)

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Tassa revived

Today *tassa* is again an integral part of the local farming scene. The technique has spread at a surprising rate, adding an additional 2-3 hectares per year to some holdings. It has even spawned a new industry of young day labourers, who have mastered the technique and, rather than migrating to find work, tour the villages working for local farmers.

Interestingly, the initial programme appraisal mission did not list *tassa* as an option to promote among farmers. Preference was given instead to promoting contour stone bunds and *demi-lunes* – more expensive forms of in-field soil and water conservation promoted by researchers. These are also useful techniques and were adopted by some farmers, but not to the same extent as *tassa*.

The extension workers promoting *tassa* were also able to provide tools and training. However, most farmers did not wait and went ahead on their own. It seems they learned more by looking over the fence and copying techniques from other farmers.

Tassa may not be rocket science, but it has already contributed to mitigating agricultural risk and improving household food security for many impoverished families in Niger. The technique is now being promoted beyond Yatenga in Burkina Faso and is being introduced in Cape Verde.

Why it succeeds

Three key factors have contributed to the success of *tassa*:

- an action-research approach that identified and assessed local practices, facilitated cross-regional learning, encouraged farmers to watch what their neighbours were doing, let farmers choose without added incentives and supported them in fine-tuning their preferred options
- a simple, cheap, traditional technology that produced immediate results, could be integrated into existing cropping systems, and was easily replicated using local labour
- a technology that could be adapted to suit the changing local context



Project staff did not ask what problems farmers had, but rather what they wanted to do and how they wished to do it.

Cultural identity

A force for change

Terraces farmed by poor families on the remote hillsides of the high Andes are highly vulnerable to the impacts of soil erosion and land degradation. Farmers had a long and knowledgeable history of ancient natural resource management practices, but over 500 years much of this had been lost and the terraces were abandoned. The past 13 years have seen this process reversed. Three IFAD projects have empowered communities to rebuild their livelihoods based on natural resources and to restore their ‘lost’ knowledge – using the communities’ cultural identity and pride as driving forces for change.

Peru’s national strategy for conserving the country’s natural resources works on two levels: a macrolevel focusing on watershed planning, which integrates the management of land and water resources; and a microlevel, which encourages small communities to take responsibility for developing and sustaining the natural resources on which their livelihoods depend. The latter represents a shift in policy from traditional supply-driven services, which focus on infrastructure and technology, to an approach that empowers farmers as the motivators of development by meeting farmer demand for investment and support services of their own choosing.

This is the very essence of three IFAD-funded projects, the first of which began in 1993 in the south-eastern and south-central regions of Peru. Most of the country’s rural poor people live in this area, in which natural resources have deteriorated to a critical level. Project staff did not ask what problems farmers had, but rather what they wanted to do and how they wished to do it – and each has effectively applied lessons learned in the previous project, shifting from supply- to demand-driven service management by communities.

Reviving ancient practices

Most of the cultivation practices of the region's hillside terraces date back to pre-Colombian times. Although much of the knowledge and skills had been lost over the centuries, one small community managed to keep them alive and serve as the source for their reintroduction. Water is distributed among terraces of varying sizes (from 100 to 2,000 m² – depending on the gradient of the mountain). Stone walls of up to 4 metres in height contain packed soil, which is planted with maize and fodder for livestock. Some terraces are irrigated. This requires considerable skill to avoid saturating the soil profile, which can lead to the collapse of the walls. Most women in the community have acquired the skill of judging when the soil profiles are sufficiently watered, and they use *composturas* – a long-forgotten, zig-zag furrow irrigation system.

The strategy

The Management of Natural Resources in the Southern Highlands (MARENESS) Project used farmer-to-farmer training to bring about technological change and increase the capacity of farming communities to undertake their own development activities. Innovative means were used to disseminate knowledge and skills, but they were soundly based on the traditional values of the community. Farmers needed support during this process, so well-respected local craftsmen and women were trained to provide advice on cultivation practices, run on-farm trials and disseminate information. 'Short-chain' market linkages were also established to connect rural production to urban demand for produce. The local mining community also proved to be a good market.

Many of these features may be commonplace in projects in other developing countries, but in Peru they were driven by three unique and innovative ingredients.

Pacha Mama Raymi

Pacha Mama Raymi was the most important one. It literally means 'Festival of Mother Earth', but in this context it refers to a community-managed programme of experimentation and information on new technological practices for natural resource management, agricultural production and living conditions. It differs from other programmes of this kind by drawing upon Andean cultural, mythological and religious traditions related to cultivation, and it uses terms that have special meaning for the communities. It particularly exploits their competitive nature. Competitions have always played a strongly cohesive role among Andean communities, and regular competitions were organized between individuals and between communities. These provide an opportunity for farmers to show off their newly found skills. Substantial cash prizes are offered to the winners – up to US\$20 for a household and US\$3,000 for a community – and awarded at the annual Festival of Mother Earth, where the spirits are thanked for the harvest.

The competitions are serious affairs and although the prize money is significant, the sums invested by farmers to enter the competition are also considerable. On some participating farms, production has doubled and even tripled. Communities now consider it a great honour to participate, and competitors are respected within their communities. The impact on production and livelihoods has been considerable. It has improved social cohesion among communities and greatly enhanced the dissemination of resource management techniques. The competitions are the initial impetus that gets others involved; then the concrete results of increased production take over as the main motivation.



For further information

Promotion of Technology Transfer
Project to Peasant Communities in
the Highlands (1993-1999)

Management of Natural Resources
in the Southern Highlands Project
(MARENASS – 1997-2005)

Development of the Puno-Cusco
Corridor Project (2000-2006)

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‘Talking maps’

‘Talking maps’ support *Pacha Mama Raymi*. This is a planning tool that also enjoys wide social acceptance among Andean farmers. The ‘maps’ are a means of focusing households and communities on their farmland and economic activities at three levels – the past, the present and the future – using symbols such as crafts and birth-to-death rituals. They evoke feelings and emotional attachments to the land and natural resources and enrich the community’s oral tradition. Each year communities use the maps to develop community action plans and make collective decisions in a truly participatory manner that strengthens household and community interests. It is the coming together to talk about the community’s future that is the true strength of the maps. Cash prizes at the festival for the best maps offer an additional incentive.

Contrato de donación con carga

In most aid-supported projects, funds are administered by either the Government of Peru or the project itself. In this case, however, the responsibility for public funds was consigned directly to community organizations, using a regulatory instrument called a *contrato de donación con carga*. This represented more than just a legal relationship between provider and recipient. It created an alliance and trust between the state and the community that enabled the two to work together in close cooperation – a win-win situation. A contract was drafted between the project and the community, and a bank account was set up to receive the funds. This had the added benefits of establishing a firm relationship with the banks and of involving communities in civil society and the formal economy.

Regaining ownership

The projects successfully fostered widespread use of technologies that formed part of the shared cultural heritage of the farmers, but had been long forgotten. As a result, some 20,000 families have now moved from subsistence farming to a position of increased food security and production surplus, which has enabled many to increase their financial and physical assets. They have assumed ownership of the project and, with it, an increased sense of responsibility for something that is theirs already: the terraces, houses, water and pastures, as well as a labour-intensive technology that produces high returns with little or no external input. Above all, they have assumed ownership of community-friendly activities that involve technologies within their reach – rooted in their culture and ancestral practices. The project’s sustainability depends largely on this concept of regaining ownership.

This suite of projects was a useful pilot for the Government’s poverty reduction programme, and scaling out is in progress through the National Compensation and Social Development Fund. The success of an approach that respects cultural identity and traditional values is further demonstrated by its uptake in other sectors in Peru, such as the Ministry of Transport, and in other programmes in other countries, such as the joint technical assistance fund of IFAD and the International Bank for Reconstruction and Development in Nicaragua and projects financed by the European Union in Chile and Guatemala.



Fruits of the forest

Wild, uncultivated fruit trees and medicinal plants have long provided smallholders on the margins of tropical forests with food and medicine and, in more recent times, with income-earning resources. However, excessive logging and slash-and-burn agriculture have reduced the number of useful trees, and smallholders are being impoverished. ‘Domesticating’ high-value tree species to produce marketable forest products is one way of strengthening this source of income and of improving the nutritional value for rural poor households. It is also helping restore the region’s biodiversity.

West Africa’s tropical moist forests are rich in biodiversity. Cameroon, alone, hosts 14,000 species of plants and 3,500 different tree species. Many resource-poor farmers living at the edges of forests have relied mainly on cocoa and coffee for their incomes. However, the volatile nature of international market prices has led many to diversify into collecting and marketing the fruit, nuts and bark from wild trees. This livelihood, too, is now under threat, as population pressure has led to increased forest clearing to make land available for cultivation – a process exacerbated by logging.

Even though smallholders cause some of the damage through shifting cultivation, most of them recognize the economic, nutritional and ecological importance of indigenous fruit and medicinal trees. For this reason, they have tended to preserve those trees that were once part of the forest and are now part of their newly cleared plots. This mixture of annual subsistence crops and perennial tree crops has enabled smallholders to diversify their sources of income – a bag of bush mango, for example, may fetch three-to-four times the income of an equivalent bag of cocoa or coffee.

For further information

Diversification of smallholder farming systems in Western and Central Africa through cultivation of indigenous trees (Technical Assistance Grant No. 456)

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Participatory tree domestication

The practice of preserving useful trees on the farm is now being transformed into a formal cropping system. Researchers recognized an opportunity and are working with farmers to select and mass-produce the most productive trees for planting on small farms – a practice that has become known as “participatory tree domestication”. The environment benefits as well – the trees protect topsoil and help restore biodiversity.

In 2000 IFAD provided a three-year grant to the World Agroforestry Centre (ICRAF) to support this work in Cameroon, Equatorial Guinea, Gabon and Nigeria. ICRAF’s role was to increase the incomes of rural communities and the resilience of their livelihoods by cultivating and domesticating indigenous fruit and medicinal trees and developing a strategy for marketing the produce. Farmers and researchers jointly selected several species for investigation – kola nuts, African plum, bitter kola, bush mango, *yohimbe* and red stinkwood (both have medicinal bark) and *essessang* (a condiment).

Researchers listened to farmers to understand the role of these trees on small farms, as well as their cultivation needs. Surveys established desired patterns, densities and diversity of trees in farmers’ fields, and demonstration plots showed farmers how different trees performed in different cropping systems. Germplasm was collected from those trees considered to be both high in economic value and important to biodiversity conservation. In all, more than 9,000 plants of different species were collected and raised in 16 nurseries in pilot villages – more than double the planned number.

Smallholders are realizing that tree domestication can bring quick returns. Early fruiting is already being achieved on some African plum and bush mango trees, only two to three years after planting.

Surveys undertaken in the four countries revealed a potentially good market for the tree products, but distribution and commercial channels were needed in order to connect smallholders to the market. For their part, smallholders needed additional capacity to cope with both tree domestication and the marketing of their produce. These capacities were developed by training technicians from NGOs, extension services and community-based organizations, and through farmer-to-farmer visits. Pamphlets, technical sheets and posters summarizing the main findings of the grant project were disseminated to share the knowledge gained.

Spreading the benefits

The project demonstrated that collaboration between researchers and farmers can produce a win-win situation for both farmers and the environment. It produced a robust, yet simple technology, low in cost, and well-adapted to communities living on the margins of forests – and has already led to a second phase designed to introduce the benefits of tree domestication to many more families. IFAD is also using this approach in its loan projects in Cameroon, but the potential for scaling out to other countries and ecosystems is considerable.



Having instilled a sense of confidence in communities, local organizations are now seen as a means of breaking with the past.

Poor people prosper in an ecological ‘hotspot’

North-east India is a region renowned for its rich biodiversity, with many rare and endemic species. It is also home to many remote and vulnerable tribal communities that rely on slash-and-burn cultivation (*jhum*) for their basic subsistence. Population pressures are reducing regeneration cycles from ten years down to three in some cases. So is it possible to improve the livelihoods of these communities and at the same time protect and sustain this ecological ‘hotspot’?

Poverty in India is essentially a rural problem, with almost one third of the country’s population living on less than a dollar a day. In the states of Meghalaya, Manipur and Assam – three of the seven states in north-east India – many poor and vulnerable people belong to tribal communities in small, isolated villages in the mountainous landscape. With their own cultures and languages, the communities tended to be closely knit, having strong traditional institutions that usually excluded women from participating in village affairs. Over the past 150 years, however, successive waves of migration have rapidly changed the region’s social complexion. They have reduced traditional tribal groups to minorities in some areas and fuelled an upsurge of feeling against ‘outsiders’.

Most communities rely on the cultivation of wetland rice in the valley bottoms, together with other crops grown on terraces in the foothills. They practise *jhum* – a long-established form of shifting cultivation. Land is cleared by slashing and burning in order to grow one or two crops. Traditionally, farmers moved on to another area and left the land for up to ten years to recover its fertility naturally.

Some people argue that *jhum* is well adapted to the local climatic conditions and terrain and that clearing small patches of forest with long fallow periods can enhance the biodiversity of the landscape. Others, however, blame *jhum* for loss of forests and productivity, soil erosion and desertification. This view is reinforced by the increasing population pressures that have forced farmers to reduce the recovery cycle from ten years down to five, and in some cases even to three.

Rich and poor

In sharp contrast to the poverty of the rural population, the region is renowned for its rich biodiversity. It is one of only two areas in India classified as an ecological 'hotspot' possessing rare and endemic species. However, increasing *jhum* cultivation and indiscriminate mining of forest resources are threatening this reservoir of biodiversity. This has led to *jhum* becoming an undesirable farming practice and an unsustainable livelihood system for the majority of households.

It was essential to restrict *jhum* and the felling of forests in order to protect the region's unique ecology. A nine-year, IFAD-funded project is focusing on improving the productivity of former short-cycle *jhum* plots through changes in crop mix and agronomic practices and by encouraging farmers to plant permanent plantation crops. It is also introducing alternative sources of income, such as forestry, agroforestry, livestock, fisheries and non-farm enterprises.

Involving communities

The project's approach was to involve communities as a whole and to empower them to take responsibility for the changes by offering financial and technical support. Natural resource management groups (NaRMGs) were formed within village communities to facilitate the process, and by 2004 nearly 40,000 households in 867 villages had mobilized almost 1,000 groups. NaRMGs proved to be effective in initiatives requiring community action, such as fishing, aloe vera and passion fruit plantations, and village-level support services for managing and maintaining springs. The provision of drinking water to over 400 villages and the construction of over 12,000 latrines not only reduced domestic drudgery for women and improved household hygiene, but also served as incentives to bring about change in community attitudes and behaviour.

Community-based, biodiversity conservation areas were established across the three states. It was envisaged that these would eventually be converted into community forestry areas to enable households to sustainably harvest timber and other forest products. In 2005, after six years of project activities, there were signs that this was beginning to occur. Many NaRMGs were taking on the wider responsibility of conserving and managing the natural resources on which their members' livelihoods depend.

NaRMGs have initiated adult education programmes, and this has led to a wider awareness of the need for education, especially for girls. The groups have also been instrumental in transferring land belonging to tribal chiefs and private landowners to community ownership. In the Senapati district, for instance, the village chief agreed to donate 458 hectares of land to the local NaRMG.



For further information

North Eastern Region
community resource
management project for
upland areas (1999-2008)

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Reducing dependence on *jhum*

On the home front, some 18,000 households have developed gardens. This has reduced their reliance on *jhum* and has improved household food security. Whereas families would normally travel up to five hills away from their homes to find suitable *jhum* areas, the change to homestead gardening has reduced this to just half a hill.

Women in the communities have started other activities to move away from *jhum*. Some 2,000 self-help groups (SHGs) support alternative income-generating activities by providing loans to women for such enterprises as soybean cultivation, bee-keeping and duck and goat breeding.

Though some are still in need of support from the project, there is a good gender balance in all NaRMGs. This is surprising in such traditional communities. The status of women has improved through social mobilization and the establishment of SHGs, which have promoted savings, investment and income generation. Communities have begun to accept women's participation, their changing role in the household and their inclusion in NaRMG decision-making.

Building confidence in the future

Less tangible is the change taking place in the mindset of the people. NaRMGs and SHGs have instilled a sense of confidence in communities, and the groups are now seen as a means of breaking with the past. The project is creating a solid foundation on which people can build a sustainable future for both themselves and the unique ecological environment on which they depend.



Combining ‘a labour force of women without land’ with ‘landowners without labour’ produced a win-win situation.

Land for labour

Although rice is the preferred staple food in the Gambia, only modest quantities are grown locally. Most of the domestic demand is met by imports, principally from Thailand – which is a strategy not without its problems. A lack of foreign exchange often limits imports, and many rural poor communities have neither adequate access to markets nor sufficient funds to purchase rice. Are there strategies for growing more rice locally, particularly when the full costs of production can be higher than import costs? ‘Land for labour’ offers one solution to the problem.

Early in the 1980s, the Gambia entered a phase, common to many developing countries, of investing in lowland rice irrigation schemes to increase local production of staple foods. The strategy was to build capital-intensive production systems using high-input technology. However, it did not function well – neither for the Gambia nor for many other countries. Although it temporarily increased rice output, it was not sustainable. The strategy relied on imported technology, substantial foreign technical assistance and scarce foreign exchange, and it was implemented in an environment in which agricultural support institutions were weak.

In the mid-1990s, the search continued for other ways of increasing rice production, especially in poor households with a food deficit and little or no cash for buying imports. It was thought that rice could still be produced competitively – even with falling world prices and increasing costs of production – by working directly with disadvantaged people and using the right technologies. But there proved to be no quick solution. A long-term strategy was needed – set within a strong policy and institutional framework – that would engage rural poor communities in the planning and implementation process. This was the beginning of the Lowlands Agricultural Development Programme (LADEP) – the first phase of a 20-year commitment to a programme of community-driven development of lowland areas. LADEP sought to improve traditional rice production using simple technologies and self-help labour.

Changing the land-tenure system

Women are the traditional rice growers in the Gambia, but to grow more rice they needed access to more land. Most of the lowland areas suitable for rice growing were owned and controlled by a small number of influential farmers – the original founder-settlers. Not having access to enough labour to exploit the land, they allowed some landless poor farmers, most of whom were women, to borrow and work the land seasonally. However, incentives for borrowing land to improve productivity were few. Once the season was over, the founder-settlers took the land back, including land that had been improved.

Through discussions with communities, a plan was formulated to devolve land ownership from the founder-settlers to those landless poor farmers willing to participate in its reclamation. This would ensure that the investments made by individuals would be retained by them. It would give people a clear incentive to contribute labour for reclamation in return for a secure landholding, and to assume responsibility for infrastructure operation and management after the end of the programme.

The founder-settlers also gained by the agreement. They had 'idle lands' with difficult physical access that hindered cultivation. Once landholders and the women agreed to this new arrangement, LADEP invested in infrastructure that opened up the land for use. The women farmers also agreed to provide labour as a group to the founder-settlers. So combining 'a labour force of women without land' with 'landowners without labour' produced a win-win situation. In the Gambia, when such an agreement is made at the community level, it gains legal value under traditional law. This 'land for labour' agreement was the foundation on which the programme was built.

From 1997 to 2005, LADEP worked as a catalyst to bring about this change in the traditional land-tenure system. Individually owned land was first devolved to the community, which distributed it equitably among those individuals, mainly women, participating in land reclamation. This was done irrespective of lineage. Women participants – some 22,000 – now own land definitively, and their children will be able to inherit it.

A problem of work loads?

A review of the programme has shown very promising results. There has been an increase in rice production, and this is having a positive impact on household food security, incomes and, in most villages, on asset ownership. But are there any downsides?

One risk of encouraging women farmers to participate in the programme was an increase in their workloads. They already provide most of the labour for rice growing. So would additional reclamation work, availability of more land and processing of increased rice yields just add to their burden? Interestingly, surveys found that only five of the eleven impact assessment sites reported an increase. At the others, women actually said their workload had decreased.

Workload increased in areas where the area under cultivation increased. However, this tended to be in areas where people were not so heavily involved in rice growing before the programme began.



For further information

Lowlands Agricultural
Development Programme
(LADEP – 1997-2005)

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Workload decreased where the investment in flood control dikes reduced land preparation time by as much as one third, where swamp access bridges were constructed to reduce travel time (as much as an hour in each direction) and where tractors were used for ploughing.

Workloads may also have been reduced because the work is now shared among a larger number of people. The number of rice growers has increased significantly – men, co-wives and daughters are taking up rice farming on their own account. So some households now have as many as five rice farmers, and some of the new land is being farmed by these new entries.

Gender roles slow to change

A conscious effort was made throughout LADEP to ensure that it did not undermine women's traditional access to and control of rice and the resources needed to grow it, as had occurred in earlier projects. Assessments suggest that programme inputs have caused little change in the division of labour. Women traditionally have responsibility for rice growing and harvesting, hoes, seed, small ruminants, vegetables and, now, also for the reclaimed swamp rice land. Men continue to take responsibility for cattle, donkeys, carts, draught animals, ploughs, land, upland crops, housing structures and money.

In three villages, however, the programme has enabled the entry of men with no previous tradition of rice cultivation. The review showed that the men were beginning to access and have responsibility for hoes, seed and rice land. Although women still managed these items, they no longer had exclusive access.

Lessons learned

The LADEP approach to land tenure is now widely accepted in the country and is ready for scaling up to the national level. A new project – the Participatory Integrated Watershed Management Project (PIWAMP) – was begun in 2005 and will follow the LADEP principles:

- Poverty can effectively be reduced when rice land is equitably distributed between poor women farmers and founder-settlers.
- Household food security can be improved if the landless are assisted in permanently acquiring productive land.
- Land reforms must be initiated by the participants and agreed upon in mutually binding arrangements (under traditional or other law) before infrastructure measures are put in place.



Mobilizing poor fishers, pioneering innovative methods of transferring lease rights to water bodies to fisher groups, and developing communal resource management systems proved to be invaluable – and replicable.

Leases for fishers' groups

Inland fisheries are critically important to food security and livelihoods in over 80 per cent of the rural households of Bangladesh. However, access to lakes and ponds is problematic for many of the landless poor people whose livelihoods depend on fishing, particularly women. Government control of the lakes has not worked well for poor people. But would they fare any better if encouraged to manage the lakes themselves?

Getting to the lakes

The Government of Bangladesh had managed the inland fisheries by leasing lakes to fishers' groups by auction on an annual basis. However, the auctions tended to be monopolized by the more wealthy and influential people in the community. This meant that most poor fishers worked as share-catchers, which limited their rights to only 25 per cent of their catch. Moreover, the lack of secure tenure from one year to the next meant that there was little incentive for anyone – lessees or share-catchers – to invest in the lakes. So they remained in a poor, often derelict condition, overgrown with water hyacinth. Productivity was low and the system of lake management did little to sustain and improve the livelihoods of poor people.

With World Bank support, the Government tried to improve the system by taking full control of some of the lakes in the 1980s. However, this approach proved to be unsustainable. It relied on continual maintenance and fish-stocking using government funds, and the management system was open to corrupt practices.

In 1989 IFAD initiated the Oxbow Lakes Small-Scale Fishermen Project, using a social fisheries approach, at 23 lakes in south-western Bangladesh. The project aimed to rehabilitate lake infrastructure and decentralize management of the resource by offering long-term leases to groups of poor fishers. In this way, they could invest with confidence in fish-stocking and in maintaining and improving lake infrastructure. Various fishers' groups were formed to assume the leases and manage the lakes based on equal sharing of costs and benefits among group members.

Setting up fishers' groups

Security was a key to forming the groups – the security of long-term leases increased the confidence of groups to invest in the lakes, and the security of individuals as members of a group, with equal rights and responsibilities, strengthened their confidence to participate. Transparent procedures enabled members to monitor key transactions, such as fish stocking and sales, and ensured that new knowledge was not monopolized by a few but was spread widely throughout each group.

Membership was weighted in favour of poor fishers: those already fishing for a substantial period each year and that had less than 0.4 hectares of land or a household income of below US\$300 per year. Needless to say there were many local elite who tried to obstruct this process. Gradually, however, all but one of the lakes were successfully transferred to fishers' groups – a process that took over two years to complete.

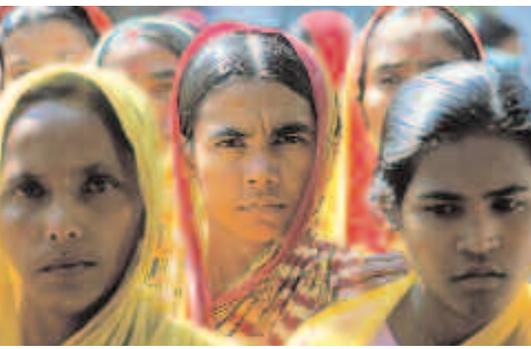
The project successfully established over 2,000 fishers' groups of various sizes, involving some 45,000 fishers, as well as instigating major reforms in lake leasing arrangements. It was not without problems, however. There were many difficulties and delays in organizing leases and fees, solving social conflicts when forming groups, offering credit to groups without collateral, and providing adequate support for institutional and infrastructure development.

Nevertheless, the experience of mobilizing poor fishers, pioneering innovative methods of transferring lease rights to water bodies to fisher groups, and developing communal resource management systems proved to be invaluable – and replicable. To this end, a second IFAD-funded project was initiated in 1998 to scale out the experience. It focuses on community participation in order to ensure empowerment and access to water bodies. National and local NGOs were recruited to form new groups for 740 hectares of lakes, and to strengthen the links between groups, line agencies, the private sector and NGOs in order to improve technology transfer and open access to markets.

Women assume more responsibility

Members of fishers' groups in the first project were predominantly men, which obviously made it difficult to secure user rights for single, poor women. Although additional rules sought to encourage women's participation, few groups successfully provided them with full access to inputs and benefits.

In the second project, women were specifically targeted and, as a result, almost half the new fishers' groups are managed by women. Some 30 per cent are managed jointly by men and women and 25 per cent by men. Although the women-managed groups are in communities in which fish culture was not a regular male activity, this still represents an institutional shift in pond management. Through their knowledge, labour, management and ownership of capital, women established an ownership right over fish. Men still own the ponds, but women now own the fish. "My husband cannot take fish from the pond", says one participant, "if he wants fish, he must ask me, for the fish are mine".

**For further information**

Oxbow Lakes Small-Scale
Fishermen Project (1989-1997)
Aquaculture Development
Project (1998-2006)

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There is now much value attached to women's income-earning capability. Women can practise pond management within the homestead and still maintain the traditions of purdah that require men to mediate with outsiders when buying and selling fish. This overcomes such concerns as "If we [women] sell in the market, it will affect our dignity". The outcome is that women pond managers now have substantially more income and more influence over expenditure. Families have benefited from this increased income and the new influences in the home, and communities are benefiting from the improved productivity of scarce resources.

A learning process

Although long-term leasing was a central feature of the first project, there are now doubts about pursuing leasing rather than user rights in subsequent activities. The concern is that if user rights are not protected, fishers' groups might be subject to market pressures that would lead to takeovers by more powerful economic forces. This would defeat the poverty reduction objectives of the project.

Nevertheless, this pioneering experience in the fisheries sector has many lessons for the management of other common-pool resources. A leasehold forestry and forage development project was formulated for Nepal along similar principles. A comparison of the two experiences might eventually provide global lessons on the transfer of common-pool resources to group management systems.



Working with government engineers, village artisans and local contractors constructed irrigation systems to a high standard.

Participation in irrigation rewards farmers

Since the late 1990s, IFAD has been financing smallholder irrigation development in the United Republic of Tanzania. Although there were successes, there were also problems, not the least of which was the traditional top-down approach prevalent at that time. However, lessons learned ‘the hard way’ are now influencing the Government towards a new participatory approach in irrigation development that is beginning to pay dividends.

Intervening from the top down in smallholder irrigation development always involved difficulties: too many implementing agencies; long delays caused by bureaucratic tendering procedures; and a lack of counterpart contributions from the Government of Tanzania as a result of poor revenue generation and low export earnings. Compounding these administrative problems were the difficulties in establishing rural financial services for farmers; a focus on irrigation infrastructure rather than on the participants; and research-driven farming systems that took precedence over the needs and desires of farmers and extension workers.

This was IFAD’s early experience in investing in smallholder paddy rice irrigation in semi-arid, marginal areas. Rice is slowly becoming the staple food in the central plateau, but drought and uncertainty still dominate the lives of rural poor people. In spite of this mix of problems, some irrigation schemes did prosper. Average paddy rice yields increased from 1.8 to 2.3 tonnes per hectare and farm incomes grew as a result. The investment needed was modest – US\$1,000-2,000/hectare – in sharp contrast with the approximately US\$10,000/hectare required at that time to build larger irrigation schemes. This was enough to demonstrate that supplementary irrigation of paddy in these marginal areas could be financially viable and economically attractive. Yet how could it be made to work for the majority of schemes and not just the few? A serious shift in thinking was needed to move investment away from the top-down approach to one that encouraged farmers to take responsibility for irrigation development, so that schemes reflected their needs and not those of planners.

Guiding principles

With this in mind, IFAD set about planning the next tranche of investment in small-scale irrigation by outlining some guiding principles. The first and most important principle was to harness the strengths of communities to enable them to fully participate in the planning, construction and, ultimately, the operation and maintenance of the schemes. This was a key ingredient missing from most past investments. However, local capacity needed strengthening to make the best use of participatory methods and to set up and run water users' associations (WUAs). Improved technical knowledge and skills were also needed – to permit the Government and the private sector to provide good design and construction services.

The second principle was to choose simple designs and construction methods so that farmers could easily operate and maintain the irrigation networks – design for management. This would also limit the investment costs per hectare of land irrigated. Earlier experience had shown that village artisans and local contractors could construct irrigation systems to a high standard under the supervision of government engineers. So this mode of construction was continued and more private-sector involvement encouraged.

The third principle was to ensure a good return on investment in terms of productivity and income. This required a mix of crops to meet both local food needs and the demand for high-value cash crops for urban markets, such as rice and vegetables.

Finally, there was the principle of cost recovery. Participants would be expected to pay the full cost of scheme operation and maintenance, and possibly part of the capital investment. This would not only relieve the Government of its financial burden, but would also help ensure local ownership and management of the schemes, and hence their financial viability and sustainability.

Principles into practice

In 2000, applying these principles, IFAD embarked on a six-year programme with the Government, whose policy was now to support the development of smallholder irrigation schemes. The goal was participatory irrigation development in the central plateau and rehabilitation of some 12,000 hectares of land, to the benefit of more than 15,000 people. The programme targeted the poorest farming families, particularly those headed by women, which rely on paddy production for food and income. The families had small landholdings and few resources. Their crop yields were low and they depended on income from casual labour for up to eight months a year.

Programme activities included construction of new schemes and rehabilitation of existing irrigation infrastructure; domestic water supply and sanitation facilities; market access roads; village extension services; farmer-managed on-farm trials; technical training for farmers and district government staff; credit facilities; and general strengthening of local institutions such as WUAs.

The villages that expressed the most interest were involved first. When others saw the results, they became motivated to join – even those from outside the immediate programme area. The communities themselves defined who were the most impoverished and should be included in the schemes.



For further information

Participatory Irrigation
Development Programme
(PIDP – 2000-2007)

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Practice into results

Some 42 irrigation schemes have now been completed successfully, while others are under construction or at the tendering stage. Great care was taken to ensure that WUAs were fully involved at each step. Over 327 kilometres of roads have been constructed and some 50 village road groups formed to oversee road maintenance. First the capacity of 12 district councils and of government officers was developed. These in turn trained farmers' representatives in such topics as bookkeeping, paddy husbandry, HIV/AIDS awareness, and operation and maintenance of irrigation schemes. The farmers' representatives then trained farmers' groups so that, in all, some 24,000 farmers have received training.

A programme review in 2005 recorded improvements in household food security for the most impoverished as a result of increased crop yields. Most schemes reported average rice yields of 4 tonnes/hectare for the 2003/04 season. Improved housing and more ox ploughs, ox carts, bicycles and radios were all indicators of increased wealth. Road transport costs also went down after completion of improvements to the farm road network.

The proportion of women with plots and membership in WUAs is now over 30 per cent, and they are producing vegetables for both food and income. The women manage shallow wells and benefit from the time saved in water collection. Some have taken leadership roles in WUAs and district councils and participate in savings groups and credit associations.

The programme has benefited from collaboration with other IFAD-assisted activities, such as the Rural Finance Services Programme and the Agricultural Marketing System Development Programme. It has also contributed to changes in the Tanzanian agricultural development policy. At the national level, the Ministry of Agriculture and Food Security has given the highest priority to smallholder participatory irrigation development. A national irrigation fund is being set up, and a testimony to the strength of the government's commitment is a direct investment of US\$2 million to develop similar small irrigation schemes. Throughout the country, districts now include irrigation in their planning and can take advantage of the capacity-building of district professionals and technicians that was undertaken for this programme.

Tribal communities manage the rangeland

Morocco's Eastern Region is one of the most disadvantaged areas of the country. The most common occupation is the rearing and pasturing of sheep and goats on the extensive and arid rangeland. Services – health, education, drinking water – are generally poor, and there are few opportunities for alternative employment. Technology-led range improvement projects have generally failed to improve the situation. Can community-based approaches that have proved successful in other aspects of development improve and sustain the livelihoods of rangeland people?

In the 1970s, the Government of Morocco introduced state control to improve rangeland management, as did many other developing countries. Pastoral improvement perimeters (PIPs) were established, and government technical institutions were entrusted with the process of range development. However, PIPs paid little attention to existing socio-cultural and institutional tribal management systems. Consequently, rangelands continued to degrade, jeopardizing the livelihoods of pastoral households.

A revolutionary step

In 1991 IFAD embarked on a project of community-based rangeland management. The plan was to reverse and rehabilitate rangeland degradation and improve the incomes and living conditions of the most impoverished households. The project empowered livestock producers to take responsibility for range management by forming range users' cooperatives, and it provided them with technical and financial support.

This was quite a revolutionary step at the time. Cooperatives were to be organized along tribal affiliations to promote and reflect traditional decision-making mechanisms and to select suitable livestock management systems. Microfinance was also needed, together with mechanisms to organize 'feed compensation' (subsidies for supplementary feed and reduced taxes on feed) and pricing access to services and resources provided by the project. There was little experience in tribal institution-building and thus the risks were high – would the technical institutions relinquish control over PIPs? Would tribal communities resist the formation of cooperatives? Would those with influence and wealth take over services and marginalize poor people in decision-making processes?

Users' cooperatives succeed

Concerns dissipated rapidly as the project was implemented. Forty-four cooperatives were successfully established in 15 rural communities involving 9,000 households. Productivity improved from 150 to 800 kilograms per hectare, with only modest violations during resting periods – when grazing is 'deferred' – on 400,000 hectares over a two-year period. Many herders now realize that collective action is a win-win situation – the best way to get the most out of limited range resources while maintaining long-term sustainability.



For further information

Livestock and Rangelands Development
Project in the Eastern Region – Phase I
and Phase II (1991-2001 and 2004-2010)

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Almost half the cooperatives are now performing well and are self-funding, while the rest are still in need of support. Nevertheless, cooperatives have fostered a new dynamism in rangeland management by coordinating service provision, marketing produce and controlling grazing. They have been particularly effective in empowering marginal pastoral communities – through the development of rules that control membership and access to resources – and in providing an effective vehicle for expressing views and identifying needs.

Some lessons

- Cooperatives formed along ethnic or tribal lines can be inserted into existing socio-institutional systems to foster collective action and sustainable resource management. Their success and sustainability require appropriate technologies and relevant institutional and policy frameworks.
- Granting local communities common property, full managerial roles and the possibility of delimiting and registering land are important preconditions for the successful and participatory implementation of projects.
- Empowerment and further democratization of community-based local institutions will ensure that poor people are not marginalized to the benefit of rich, influential livestock herders. These factors include access to improved grazing areas and cooperative services.
- Compensation was an essential complement to range improvements such as resting and reseeding, but proved difficult to set up and manage effectively.
- Protecting rangeland areas designated for rehabilitation and controlling access to improved range areas should be planned at an early stage. Attention must also be devoted to the pricing of services and resources by cooperatives to ensure the sustainability of activities and investments.
- A legal framework, formulated through the participation of all stakeholders, is essential if cooperatives are to function effectively, take full responsibility for land registration, and grant common property and management roles to tribal institutions.
- Government institutions still have an important role, providing leadership for projects, technical support services, research and development and advice on technical issues.

Next steps

The project has now entered the second phase, which is designed to consolidate the achievements of the first, and users' cooperatives are achieving national impact. However, even though all new rangeland development processes use the community-based approach, the Government has yet to consolidate these gains in its policy and institutional frameworks. Many pastoral cooperatives still need the support of government administrative and technical organizations.

IFAD is also supporting these community-based approaches in Algeria, Iraq, Jordan, Lebanon, Libya, Syria and Tunisia.

Biogas – an alternative to fuelwood?

Planting trees for fuelwood is not always the best way to solve energy shortages in remote, rural poor communities. When the need is immediate and forest resources are badly depleted, as in west Guangxi, China, people cannot wait for trees to grow. One alternative in such circumstances is biogas.

China has very successfully promoted the use of biogas as a source of household energy since the 1980s. A nationwide network was founded to research and apply the technology, and some 7.6 million households now produce nearly 200 million m³ of biogas annually. In the 1990s this strategy was extended to remote communities in west Guangxi, where fuelwood was in short supply and rural electricity was not available. In 2002 it was a key component of a six-year, IFAD-funded project designed to improve and sustain the livelihoods of rural poor people while rebuilding and conserving natural resources.



For further information

West Guangxi Poverty-
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(2002-2008)

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Biogas

Biogas units turn human and animal waste into a mixture of methane and carbon dioxide gases that can be used for lighting and cooking. Each household builds its own plant to channel waste from the domestic toilet and nearby shelters for animals (usually pigs) into a sealed tank. These contaminated wastes ferment and are naturally converted into gas and compost, leaving improved sanitary conditions in the home. This double bonus of energy and compost has motivated poor people to adopt this technology in significant numbers.

Households provided the unskilled labour to build the units and received food-for-work rations, while the project supplied materials and skilled labour. The poorest households, with only one pig, built small units that could produce enough gas for lighting in the evening, while households with two or more pigs built larger units that could produce gas for cooking as well. In all, some 22,000 units were installed in 72 townships and 492 villages.

Benefits to production and health

Biogas units produce gas for ten months a year – in the winter, temperatures are too low for the fermentation to work properly. This downtime provides an opportunity for families to empty and repair their units, which they must do themselves, as there is no external support for maintenance. Fuelwood is needed during this time, but during the rest of the year, families, especially women, save 60 work days by not having to collect wood and tend cooking fires. This additional time is invested in raising pigs and producing crops.

The potential for improved sanitation is also significant. Pig manure and human waste are no longer left near the house as a potential source of infection; eye problems from smoke are likely to be less; and the fermentation process kills harmful parasites.

A catalyst for others

The Guangxi project has become a catalyst for other initiatives in the region, known locally as *shengtaifumin* programmes. The term means rebuilding the local ecological environment and reducing poverty by integrating biogas production with homestead trees and crops and by reforestation. From 2002 to 2005, some 2.1 million biogas units were installed in the Guangxi region, accounting for about 30 per cent of all rural households.

The Agricultural Department of Guangxi is now preparing another *shengtaifumin* programme, using a World Bank loan of US\$1.2 million. The planned start date is 2007 and it will bring a further 287,000 biogas units to five provinces. There are also plans for an outreach programme to help build 50 demonstration biogas plants in Cambodia.



Solutions crossing frontiers

Cassava is a tropical crop that can produce more food calories per cultivated area per day than any other crop except sugar cane. Its tubers are rich in starch, its leaves are a good source of protein, and it provides food and livelihoods for more than 500 million people across the developing world. Cassava is less successful in semi-arid environments, but new cultivars – selected in cassava’s South American home and transferred to West Africa – are now providing poor farmers in drought-prone areas with the opportunity to take full advantage of this valuable crop.

Cassava is a staple food in humid and semi-humid West Africa. It is grown mainly on small farms and is an important source of food, employment and income, especially for women. It is also grown to a lesser extent in the semi-arid areas of Burkina Faso, Chad, Ghana, Niger and Nigeria. But if farmers are to cultivate this crop successfully, they need cultivars better adapted to these harsh growing conditions.

One solution came from South America. Cassava had been domesticated in Brazil long before recorded history. It still features strongly in Brazilian cuisine and is a staple food of poor people. It is even grown successfully in the semi-arid parts of Brazil. Recognizing the potential benefits for West Africa, IFAD provided grant support in 1996 to a collaborative research programme of the International Center for Tropical Agriculture (CIAT), based in Colombia, the International Institute of Tropical Agriculture (IITA), based in Nigeria, and the Brazilian Agricultural Research Corporation (EMBRAPA) to enable African farmers to benefit from recent advances in micropropagation and plant breeding.

For further information

Programme for Enhancement of
Income-Generation Potential through
the Development and Transfer of
Improved Cassava Genetic Material and
Adoption of Post-Harvest Technologies
in Latin America and Africa
(Technical Assistance Grant No. 318)

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From Brazil to Nigeria

The journey began in Brazil, where EMBRAPA and CIAT, together with smallholders, selected drought-resistant cassava varieties. At that time, northern Brazil had been hit by a severe drought. Some cassava plants survived, producing a good root yield, and this provided an opportunity to select the best-performing, most drought-resistant plants.

Cassava is normally propagated by means of stem cuttings. However, international regulations prohibit the movement of cuttings across international borders in order to prevent the spread of pests and disease. So CIAT used tissue-culture procedures that involved growing the plantlets in flasks or test tubes. CIAT certified the tissues as disease free and sent them to Europe for quarantine before they went on to IITA in Nigeria.

IITA used plants grown from the tissue-cultured plantlets to breed drought-resistance into a cassava line with resistance to African diseases and pests. High-yielding plants were selected, multiplied and successfully tested under local farming conditions. Some were also transferred to IFAD-funded smallholder projects in the semi-arid parts of Ghana and Benin.

In West Africa

In its short existence, the grant project produced some significant results:

- Promising drought-tolerant cassava varieties were identified jointly by farmers and researchers. This participatory approach resulted in the release of cassava plants that were well adapted to a semi-arid climate, performed well agronomically, had good food and processing qualities and high acceptance among farming communities and could be grown profitably. Farmers in Brazil benefited, as well as those in Africa.
- *Gari* (fermented roasted granules) and tapioca production are now also popular in Niger, Burkina Faso and Chad, both for home consumption and sale.
- New processing equipment was introduced and adopted. NGOs and private companies are manufacturing equipment based on IITA prototype designs.
- NGOs adopted high-quality cassava flour production, used it in bakery products and disseminated the idea in Burkina Faso, Chad and Ghana.
- National agricultural-research strategy capacity was strengthened in cassava breeding, agronomic practices and new, post-harvest technologies.

The project also played a pivotal role in initiating development of a global cassava strategy strongly supported by IFAD. Locally, the United States Agency for International Development (USAID) Office of US Foreign Disaster Assistance (OFDA) in West Africa is continuing the work by disseminating improved cassava planting materials and post-harvest technologies across the region. Modest grant funds can have immense benefits when used to support well-identified areas of need.



Rural facilitators worked with producers' organizations and public and private institutions to build the capacity of rural communities.

Tackling persistent poverty

Despite being a major petroleum producing country, the Bolivarian Republic of Venezuela has pockets of poverty throughout its territory, where isolated rural communities often have not benefited from the nation's overall progress. This is particularly true of the semi-arid areas of the central-western region, which present some of the highest poverty levels. In 1993 the Government and IFAD launched a project to tackle the root causes of poverty in this region.

Roots of poverty

Rural poverty in semi-arid areas is a common and often intractable problem of most developing countries. The perceived roots are low agricultural productivity and the desertification of fragile ecosystems caused by rural poor communities, which depend on these ecosystems for their livelihoods. Faced with this diagnosis, past solutions focused on intensifying smallholder agriculture and communicating the importance of soil and water conservation. However, this approach has largely proved inadequate and is too narrow to achieve an effective balance between production and sustainable ecosystems. It ignores the importance of other social and economic activities such as livestock breeding, mining, woodcutting and irrigation, and the crucial influence of public- and private-sector institutions on the livelihoods of small producers. It also does little to reverse the process of desertification, which usually requires action on a watershed scale that is well beyond the capacity of most small rural communities.

In 1993, the simultaneous tackling of all these aspects – in both problem diagnosis and programme implementation – was an innovative approach. The Government of the Bolivarian Republic of Venezuela and IFAD embarked on the Support Project for Small Producers in the Semi-Arid Zones of Falcon and Lara States (PROSALAFSA). The aim of the project was to raise incomes and improve living conditions for some 7,500 families in the semi-arid states in which poverty was most persistent. Essential project elements were training, institutional strengthening and technological innovation involving the participation of local communities.

The project encountered many constraints during its eight years, not the least of which was the difficult political and economic environment prevailing in the country. Yet PROSALAFAs succeeded in overcoming many obstacles – particularly the acute water shortages – and in introducing a gender-in-development approach. It was very successful in motivating the formation of some 900 water-based, grass-roots organizations where none had existed.

Many valuable insights

PROSALAFAs produced many useful insights into the problems of reducing persistent poverty.

Make use of local, shallow groundwater resources

Water is at the heart of subsistence and production in semi-arid areas – both for human and livestock use and for irrigation. Small dams were proposed for water storage, but there can be large water losses from seepage and evaporation. Deep groundwater resources were also unsuitable because they were too costly to exploit, and the lack of a properly applied legal framework meant that it was not an appropriate option for poor communities. With the benefit of hindsight, local, shallow groundwater close to rivers and streams was an option that should have received greater attention. Shallow groundwater may be complex to analyse because it is so site-specific, but it can be a viable alternative that smallholders can exploit themselves, using local labour and materials.

Try technological solutions

Precious water resources need to be used to best advantage. PROSALAFAs proposed the use of trickle irrigation as a technological leap for smallholders. In spite of the problems of supplying and servicing trickle irrigation, future designs must consider the most efficient and effective technologies in their consultations with participants.

Develop local capacity

PROSALAFAs began with very broad training linked to the promotion of project actions and then fell into a long period of inactivity. Since that initial period, training modules based on structured demand by participants have proved much more effective than a series of unconnected events, which were also highly reliant on what was available from local providers. Rural facilitators worked with producers' organizations and public and private institutions, and this proved to be an effective means of building the capacity of rural communities.

Get rural microfinance right

PROSALAFAs rural bank model successfully met smallholder need for operating credit and was based on self-management of community savings. Not enough thought was given to an 'exit strategy', however. Questions persist as to how to consolidate these services and how to develop more flexible and comprehensive models if this successful start is not to fail.



For further information

Support Project for Small Producers in the Semi-Arid Zones of Falcon and Lara States (PROSALAFAs – 1993-2004)

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Stabilize project management

Despite various political and institutional difficulties, PROSALAFAs's management worked with great efficiency and little staff turnover. This was attributed to managers being appointed through open, fair competition and to the high degree of decision-making autonomy they enjoyed from local authorities and institutions.

Partnership and ownership

Besides providing valuable insights at the project level, PROSALAFAs also encouraged the Government to take some important steps nationally. The Ministry of Environment and Natural Resources, in partnership with the Global Mechanism as a facilitator, took the PROSALAFAs approach as the foundation for the country's National Action Plan. Many of the important elements of the plan were already being implemented by PROSALAFAs, and thus it was a logical step to use the experiences of participatory action research and stakeholder coordination to the benefit of the nation.

This decision produced a coherent strategy for tackling persistent poverty in semi-arid areas on a national scale. The strategy was based on five priority actions: sustainable development of drought-prone areas; education and training in the fundamental elements of development; scientific research and technological innovation; institutional strengthening at national and local levels; and inter-institutional and international cooperation. The National Action Plan involved seven organizations working in partnership, based on the PROSALAFAs approach, and was published in 2004.

The Government has strong commitment to and ownership of PROSALAFAs. With support from IFAD and others, the project is progressing towards the second phase, which will benefit from the learning experience of the first phase and the development of the National Action Plan. The Global Environment Facility (GEF), a second international partner, will complement this phase, building particularly on the organizational bases established by the first phase. GEF's role, in partnership with the United Nations Development Programme and IFAD, is essentially an environmental one and is designed to strengthen the development of sustainable land management practices.



More suitable approaches to titling were needed – ones that represented the voice of rural poor people and considered the different values placed on land.

Preventing land conflicts

Land-tenure conflicts in Madagascar may increase as population grows, land becomes scarce and communal lands are mismanaged. This growing crisis is exacerbated by a weak land administration system and lack of secure tenure. The Government sees these conflicts as a barrier to sustainable investment by rural producers and agribusiness development, as well as undermining the state's credibility. Through various programme loans and grants, IFAD is working with the Government of Madagascar to improve the situation through a process of 'learning by doing'.

Madagascar's economy is predominantly rural, and agriculture is the main engine of economic growth. Rice, the most important crop, provides food and income for some 10 million people. Almost 80 per cent of the population lives in rural areas, and most farmers are owner-cultivators with average landholdings under 1.2 hectares. Rapid population growth has led to land shortages, particularly in the highland region, where common-use forest and hillside resources are under increasing pressure and often are not managed sustainably. Similar pressures are evident in the arid western region, where much of the rice is grown in wetlands. Over the past 20 years, this has led to low and declining agricultural productivity, increasing rural poverty, environmental degradation and a stagnating economy.

At the root of these problems is a weak land-tenure system and an obsolete legal framework. These act as disincentives to investment in rural areas and have led to a growing number of conflicts over land ownership and land-use rights. This is particularly the case in hillside and forest areas where little has been done to stop the mismanagement of communal resources. The current system stems from the country's rich history of human settlement and is a mix of land-tenure arrangements – from traditional systems of community ownership to modern legislative procedures governing the ownership of private lands.

Attempts have been made over the past decade to improve land administration by bringing these disparate systems together, and a law was passed in 1996 to transfer land and natural resource management to local communities. A National Land Administration Service was to be developed, with a public land-tenure inventory, to establish legal parcels of land and formulate land-use plans. It was also designed to promote sustainable land management as part of the country's national environmental action plan. However, a cumbersome bureaucracy, lack of funding and poor technical and administrative capacity slowed its implementation.

A new initiative

In 2004 the Government of Madagascar renewed its efforts by embarking on the development of a National Land Tenure Programme, which included a national land policy and an implementation strategy (<http://www.foncier.gov.mg/>). An overriding principle of this policy was decentralization. It proposed that local land administration offices (*guichets fonciers*) be established at the municipal or inter-municipal level. Given the enormous diversity of the country, however, the Government recognized the need for a pilot activity to help formulate and implement the new policy. IFAD supported this initiative with a grant to ensure that the new systems would respond to the interests of smallholders and marginalized groups. The objectives were to analyse the source of land conflicts and the land-tenure needs and aspirations of small farmers, and to develop appropriate land registration, land-use planning and land management procedures to protect the interests of rural poor households.

Several important steps had led up to this pilot activity – it was a process of learning by doing. Over the previous decade, IFAD had accumulated experience in dealing with the complexities of land titling in Madagascar through its funding of three smallholder development programmes in different parts of the country.

Gathering the experience

The first smallholder development programme was an improvement and development project in the hilly north-east. It began in 1997, when the Government was beginning to give priority to the land question. Attempts were made to issue collective land titles to communities (*Opération Domaniale concertée*), but with little success. The process was essentially top-down. Moreover, smallholders did not consider this land as having value and so they did not see the need for or benefits of formal security through land titling. Nor did the National Land Administration Service have the funding and staff to deal with the costly and technically demanding titling programme.

The second, a project centred in the upper Mandrare Basin, began in 2001 and will run through 2008. It is financing irrigation infrastructure and assisting farmers with contractual arrangements with processors for high-potential areas for producing and marketing commercial and export crops. Since the land in this area had 'value', there was a real demand for formal land titles, and a two-step titling process was set up in line with the government decentralization policy. The first step was the transfer of land rights from central to local government – a process that required capacity-building at both levels in titling and in the accompanying administrative tasks. The second was the subdivision of land at the community level. This, again, required capacity-building.



For further information

North-East Agricultural Improvement and Development Project (1997-2006)

Upper Mandrare Basin Development Project – Phase II (PHBM – 2001-2008)

Rural Income Promotion Programme (2004-2011)

Support to Madagascar's National Land Tenure Programme (PNF)
(Country-Specific Grant No. 771-MG)

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The third addresses national rural income promotion. It began in 2004 and focuses on cash crops and on increasing the cooperation between stakeholders along the market chain on the east coast. A key aspect was the establishment of secure land titles so that farmers could invest in their future with confidence. When the programme began, the Government was facing strong demand, under political pressure, for land titling in urban areas. It intended to survey and demarcate the entire country on the basis of land value, using costly satellite images and a computerized registry system at the municipal level. This affinity for high-tech solutions – an urban view – largely ignored the high costs of this approach and the fact that most rural municipalities did not even have electricity and could not afford to buy generators to run the electronic systems.

It was during this period that IFAD agreed to provide the grant support to a pilot project – as part of the National Land Tenure Programme (PNF) – to set up an intercommunal land registration office. The grant project emphasized that more suitable approaches to titling were needed – ones that represented the voice of rural poor people and considered the different values placed on land and the differences in demand for land among smallholders. It was important to overcome the one-size-fits-all philosophy that pervades urban approaches to land administration and to investigate the issues that may arise when responsibility for land registration is passed to the communal level. Additionally, the grant would help secure not only primary rights (ownership), but also existing secondary rights (lease agreements), which are key to current land-tenure systems. The pilot was located on the west coast (Ankilizatao, in the Menabe region), an area covered by the IFAD-funded programmes.

Next steps

As the pilot project was getting underway, a new Small Watershed and Land Tenure Improvement Project was formulated and appraised in 2006 in the Menabe and Melaky regions. This will complement previous initiatives and further strengthen the tenure security of smallholders and rural poor people, as well as support the implementation of the National Land Tenure Programme. As part of the inception process, a study of the sources of land conflict and of land-tenure aspirations among smallholders in four communities in the west of the country has informed the grant project and the land tenure improvement project. The latter is scheduled to start by October 2006, but if it is to have wider impact, it needs an in-depth nationwide assessment, so that the rural population can articulate their land-tenure needs in the policy dialogue process. To achieve this, a national fund will be created for the establishment of the *guichets fonciers*.

These are important steps along the path towards a comprehensive and workable land titling system. And each step brings new insights as to how best to achieve this – a process of learning by doing.



It is now time to mainstream learning through a 'learning agenda'.

Targeting learning

A key IFAD product

The case studies presented in this publication demonstrate innovative ways of developing and managing natural resources for the benefit of rural poor people. These are important messages for others undertaking similar work. But messages alone are not enough. The case studies reveal much about learning as an integral part of the development process – about how to get the messages heard, acted upon and disseminated for others to use. They provide insights into the learning process so that those planning for the future can learn to learn from past experience.

Learning to learn

Learning by doing

This is widely accepted as the most effective way of learning. However, it is a process and not a blue-print. It is learning step-by-step, with each new step based on the knowledge and experience gained from the previous ones.

Madagascar is a good example of this approach. The country's rural-land-tenure administrative system was developed gradually over a ten-year period in parallel with three IFAD-funded programmes and a grant project, each with a focus on rural land-tenure issues. Each project contributed valuable knowledge and experiences to the next – and to the process of empowering rural poor people.

The Gambia also benefited from this process – the “land for labour” initiative evolved as the programme was implemented. The Bolivarian Republic of Venezuela, as well, is gradually learning to deal with persistent poverty in semi-arid areas as people engage with both natural resources management and the social and economic issues affecting poor people.

A similar process occurred in the United Republic of Tanzania, where the approach to developing smallholder irrigation schemes slowly changed from top-down to a more successful grass-roots approach in which farmers participated in the development process.

Learning from each other, past and present

With the right inputs and stimulus, people can and do learn from each other.

Long-forgotten soil and water management practices were revived in Peru, using innovative approaches that relied on the community's cultural identity and pride to rebuild livelihoods in remote Andean communities.

In West Africa, subsistence farmers revived their interest in “fruits of the forest”. Their desire to improve their livelihoods rekindled their appreciation of the potential of forest products. When this was combined with local research initiatives, it led to the ‘domestication’ of economically important trees and increased productivity and incomes.

Sharing learning

Scaling up is not just an ‘add-on’ at the end of a project, but something that needs to be planned at all stages of the project cycle to be effective.

Spreading learning geographically – horizontal scaling – is the traditional approach to project dissemination and beyond to other projects and other countries. Good examples include the spread of drought-resistant cassava cultivars from Brazil to West Africa, and the use of biogas to solve fuel shortages in rural poor communities in China.

Vertical scaling up of learning is much more difficult. It is institutional in nature and involves expansion to other sectors and stakeholder groups, from the grass roots to policy-makers and donors.

In Morocco, community-based approaches that have thrived in many other aspects of development were successfully transferred to organizations of pastoralists for rangeland management.

The adoption of participatory approaches to smallholder irrigation development in the United Republic of Tanzania and the institutional changes in land management in the Gambia – “land for labour” – are also good examples of the transfer of institutional learning. The increased social capital gained through natural-resource-management and self-help groups in tribal communities in India has improved the livelihoods of those farming in ecologically sensitive areas. In the Bolivarian Republic of Venezuela, lessons in reducing persistent poverty at the programme level were successfully scaled up to influence national policy.

Learning through empowerment

People learn when they are motivated to learn, and empowerment can help create this condition. In Bangladesh, fishers’ groups improved their livelihoods by assuming responsibility for leasing and improving lake fisheries, and in Morocco, pastoralists took on the responsibility of managing the rangeland.

Learning from research

The transfer of drought-resistant cassava cultivars from Brazil for propagation in West Africa, using tissue culture procedures, and the research inputs for domesticating economically productive trees in West Africa are both good examples of the timely benefits of research for development.

Lessons in learning

Learning can take many forms

The case studies demonstrate that there are many ways in which people and communities learn about natural resources management. The process of learning is not a linear one, and often several approaches are pursued simultaneously in order to achieve results.

‘Reinventing the wheel’

This is often seen as a failure to take advantage of what has gone before, yet it can also be an asset. Learning in this way can take people back to the fundamental principles of what they are doing, and this helps build stronger foundations, ownership and empowerment. Many of the case studies demonstrate this point.

A slow process

Several programmes funded by IFAD received funding over a period of ten years or more – in the case of the Gambia, 20 years. It is this long-term commitment, often slow, with setbacks, that helps create the most favourable conditions for sustained learning.

An outside stimulus

In many instances, an outside stimulus provides the catalyst for development – for example, finance or specialist services. It is important to recognize that many other ingredients are needed to create the right recipe for each programme. Identifying the ingredients, knowing how to mix them and then adding the outside stimulus are the keys to sustaining the learning and development process.

Circumstances

The circumstances must be right if people and institutions are to learn and to benefit from learning. People must have the desire to take up new ideas and learn new skills. Organizations must be ready and willing to reform their institutional structures to meet the needs of the people they serve. Policies must be shaped to create an enabling environment in which organizations and individuals can flourish. It must also be remembered that individuals learn best when they have food, health and security. Without such favourable circumstances, sustained learning is not likely to take place. But with them, people have achieved change at all levels of capacity development.

Mainstreaming

The ‘gender agenda’ very successfully demonstrated the need to see households and communities in terms of the particular needs of its men and women members. It is now time to do the same for learning in development by mainstreaming learning through a ‘learning agenda’.

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