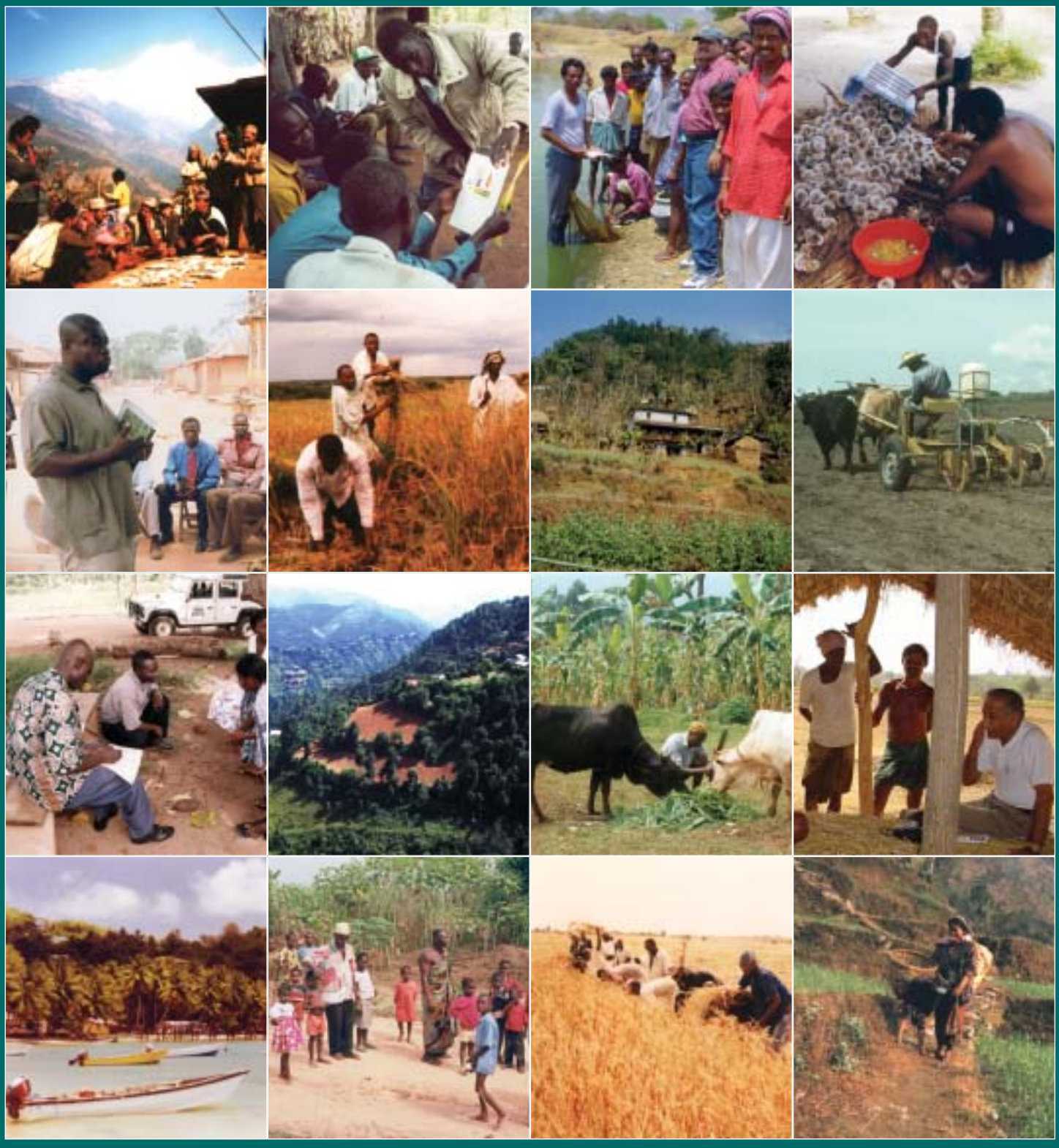
2001 - 2002 Research Highlights

Natural Resources Systems Programme



Poverty reduction through partnerships in natural resources research

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This document is an output from a programme funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

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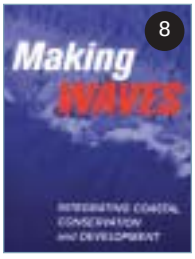

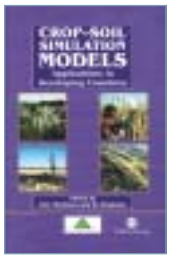

We wish to thank the following projects for supplying the photographs on the front cover; R7412, R7514, R7517, R7559, R7866, R7995, R8088, R8090, R8100. Also David Simon for photographs on p19 & 20. Technical Editor; Melvyn Kay, Email: melvynkay@rtcs.co.uk. Designed and produced by Visual Identity, Milton Keynes.

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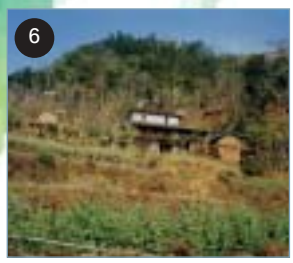

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NRSP Management Team

Margaret Quin – Programme Manager
Duncan Barker – Assistant Manager
David Short – Finance Officer

Steering group

John Beeching, Mike Carr, John Gaunt, Elizabeth Harrison, Michael Mattingly, Chris Mees, Michael Stocking, Gil Yaron

Programme Advisory Committee

Michael Mortimore (Chairperson), Jon Lovett, Peter Street, Kate Young

NRSP Research Highlights

Poverty reduction through partnerships in natural resources research

The Department for International Development (DFID) is the British Government department responsible for promoting development and the reduction of poverty.

The central focus is a commitment to the internationally agreed target to halve the proportion of people living in extreme poverty by 2015. To contribute to achieving this objective, DFID funds a group of programmes that cover various aspects of natural resources research. One of these programmes is the Natural Resources Systems Programme (NRSP).

NRSP is a 10-year programme that began in 1995. In response to the Government's White Paper on International Development ('Eliminating World Poverty: A challenge for the 21st Century') in November 1997, NRSP's research strategy was revised to focus more explicitly on ways to improve the management of natural resources that could have beneficial outcomes for poor people. Thus, since 1999, NRSP has aimed to deliver new knowledge that can enable poor people, who are largely dependent on natural resources, to build their livelihoods and move out of poverty in a sustainable way. The programme's research covers the social, economic, institutional and biophysical factors that influence people's ability to both use and maintain the productive potential of the natural resource base over a relatively long timeframe.

The programme's research is implemented as contracted projects that are undertaken by government, non-government and private institutions with expertise in natural resources management. Often these different types of organisations work in partnership in a project, each contributing their differing expertise and experience towards attaining the project's aim. During the past year, NRSP's portfolio comprised 33 projects. Overseas organisations were the leaders of ten of these projects and several of the other projects had substantial inputs from overseas teams.

The new knowledge that the programme generates is of varying types. In broad terms nine research themes are covered but projects are not dedicated to a single theme. Usually, in addressing a particular opportunity or issue around changing natural resources management, a project will address two or three themes.

The research themes are:

1. **Enriching knowledge of livelihoods in relation to NR management.**
2. **Gaps between development and adoption of NR technologies.**
3. **Better information for pro-poor service delivery.**
4. **Institutional constraints and options.**
5. **Links between households, communities and policy makers.**
6. **Livelihoods knowledge for pro-poor policy dialogues.**
7. **Efficacy of participation in decision making for reaching the poor.**
8. **Piloting new NR management strategies.**
9. **Strategies for scaling-up research findings.**

During the past year, NRSP's portfolio comprised 33 projects. Overseas organisations were the leaders of ten of these projects and several of the other projects had substantial inputs from overseas teams

The following articles are some examples of the work of the Natural Resources Systems Programme. A complete list of on-going projects is provided at the end of this document.

Connecting farmers with research (p4) (themes 2 and 3) is about bridging the gap between technology generation and adoption in Uganda. It investigates ways to improve the service that local professionals (extension agents) provide to farmers through testing ways to improve the linkage of research with extension and farmers, and strengthen the capacity of extension agents to respond to farmers needs.

Farmers can play an important role in research and *Research farmers in Nepal* (p7) (theme 3) looks at how their knowledge and experience of hillsides farming can be exploited and the growing acceptance of its value among research scientists as they seek to help farmers and communities to improve soil and water conservation.

Coral island (p10) (themes 4, 5, 7 and 8) examines the dilemma that islanders in the Caribbean face when they wish to see their communities prosper but also want to conserve the coral reefs from which they derive their livelihoods. It shows how institutional as well as technical issues have to be addressed in order to change resource management in a sustainable way.

Voices to influence policy (p14) (themes 4 and 5) investigates how some of the poorest castes and tribes in India are taking innovative steps to influence government policy so that they can obtain the support services that they need in order to include aquaculture in their farming activities.

NGOs put research into practice (p18) (themes 4 to 8) is about local NGOs putting research into practice

to improve the livelihoods of peri-urban poor in Ghana. Working with local communities they are helping poor men and women to develop a range of viable natural resource related strategies that respond to the larger market opportunities that exist in a city as well as helping them to cope with the pressures they come under from urban growth.

Community forestry in Nepal, *A round peg in a round hole* (p21) (themes 4, 5 and 6) is an example of how complex and inappropriate institutional structures can be changed to fit more closely with the real needs and livelihood activities of the poor and give them a stronger stake in decision-making and better access to forest products which are important for their livelihoods.

Sustained effort can pay well (p24) (theme 6) brings together a suite of research projects on rainwater harvesting in Tanzania. It provides an excellent example of how a programme of research and communication pursued with determination and sustained by funding over a long period can result in significant changes in government policy that can bring benefits to the poor.

Connecting farmers with research

Most African farmers would rank soil erosion and the need to maintain fertility among their main constraints to improving crop yields and no doubt national and regional organisations would highlight similar issues.

There is also no shortage of research into these problems and practical advice on ways of dealing with them. Yet they persist across many parts of Africa on a wide scale. The problems and their solutions appear not to be connected and so the uptake of good soil fertility and water management practices is poor.

The reasons for this are many and varied. Critics point to promoted practices not being well matched to local physical and socio-economic conditions and not addressing the priorities of local people. Some information is confined to research journals and reports while other, more widely disseminated practices, are blanket recommendations that do not take account of different crops, soils and farming practices.

But it is not just a matter of bringing the right tools together. There must be effective links between researchers and farmers. Although this is the role of extension services and local NGOs, they often lack well-trained local professionals with the resources to do the job properly and so they have little to offer farmers and are often too formalised in what they have to say.

In the Mbale and Kapchorwa Districts of eastern Uganda a research team from the Ugandan National Agricultural Research Organisation and the University of East Anglia, UK has been examining this problem. Population densities and land-use intensities in this area are some of the highest in the country. Research information on soil and water management practices is readily available but local professionals appear ill-equipped to satisfy the diverse demands of large numbers of small-scale farmers.

A complex situation

A household survey revealed the complexities of providing support to farmers. They were different in many ways – in their access to resources, knowledge, perceptions of soil degradation and constraints to crop production. There were differences between districts, communities and villages and between households within the same village. Farmers on steep slopes, for instance, were concerned most about worsening erosion and loss of soil fertility. On more gentle slopes, poor soil fertility was still a problem but farmers' were more concerned about the lack of inputs for crop production. Rich farmers were worried about physical constraints and labour shortages while poor farmers wanted finance for farming inputs and access to land.

Although the common problem was how to improve land management, the survey clearly showed that there was not one common solution. Each farmer faced a unique set of physical, social and economic circumstances and so each was seeking his own unique solution.

A key constraint is the poor communication between researchers and farmers

So how can tools and local services be developed to meet this diverse range of needs? It was most unlikely that more resources would be made available for extension and so the approach taken was to examine ways of improving existing services using 'resource-light' options that offer a more practical and immediate way of supporting local professionals in their work. This focused attention on the role of local professionals and how they communicate with farmers and on the tools they needed for their job.

Four key roles were identified:

- Identifying problems: Are there soil management problems? How important are they from the farmers' perspective?
- Teaching and learning: What are the key soil properties and processes; common problems and their causes; options for improved soil management building on existing local practices?
- Identifying management options: What options are available to cater for the diversity of farmers' situations. How can farmers address their problems? What are the resource costs of different management options?
- Fine-tuning: How can farmers be helped with adapting/fine-tuning new management options to suit the local conditions?

Simple tools

There is already a wealth of information available in the project area on assessing soil fertility, on crops and their susceptibility to pests and diseases and on hillside field management practices such as run-off retention ditches and contour bunds with grass strips for erosion control. In addition to this, researchers set up observation plots of legume cover crops, and shrub and fast growing tree species at key locations to assess the adaptation and suitability of various species for highland conditions. All this formed part of the complement of options that local professionals can offer to farmers.

To communicate this information a field handbook was developed for the recognition of nutrient deficiencies in a range of relevant crops and tailored to meet local requirements. In this way, it could prove useful to the whole of the eastern hill zone of Uganda as well as other similar agro-ecozones and farmer circumstances in eastern Africa.

Analytical tools such as nutrient-flow mapping and participatory financial appraisal for soil management were also introduced for assessing farmers' circumstances.

However, these tools were not just about providing technical information. They were also designed to improve the way in which local professionals communicate with farmers. They needed to be sensitive to the way in which farmers went about their work, such as knowing the best times to approach them for discussions and with information and to understand how they go about making their decisions. It was equally important for them to be able to work confidently with researchers to make sure their information was accurate and well-founded.

Farmers made the final decision and typically, they selected methods that best fitted their situation

Facilitators, not decision makers

Local professionals learnt to be facilitators and not decision makers. They learnt to offer farmers a variety of soil management options that they could adapt to their circumstances rather than make decisions for them. Technical options were jointly identified and assessed using criteria such as the benefits that can be derived, resource requirements, limitations, potential risks and the conditions under which the option was most likely to be successful.

Farmers made the final decision and typically, they selected methods that best fitted their situation. For example, most farmers selected Napier grass (*Pennisetum purpureum*) strips for erosion control. Others decided upon tree planting, manure management, mulching and fertilizer application for soil fertility. Napier strips were popular because they provide fodder for animals as well as erosion control. They are cheap, easy to implement and manage.

Local professionals learnt to be facilitators and not decision makers

Fine tuning, not imitating

There is huge scope for fine-tuning land management practices to fit local conditions and for local professionals to facilitate this process. Evidence showed that farmers did modify their practices differently depending on their particular needs. Some planted Napier grass strips for erosion control while others wanted to produce fodder. Some dug trenches to prevent soil erosion while others used them to trap fertile soils washed down from further up the slope. The opportunity is there for local professionals to pass on such experiences to others in similar circumstances.

Good partnership

A good partnership between researchers, local professionals and farmers is seen as an effective way of understanding and coping with the complexity and diversity of local farming conditions. Farmers are the key informants for identifying and assessing soil fertility problems; they make the final decision about which soil management option to choose and they lead the fine-tuning to fit their individual circumstances. The local professionals are the facilitators who support them and make the link with the researchers who provide the expert knowledge. These partnerships, together with the tools developed by this research can be an effective way of addressing farmers' priorities for soil management.

R7517 Bridging research and development in soil fertility management: practical approaches and tools for local farmers and professionals in the Ugandan hillsides

Onesimus Semalulu
Kawanda Agricultural Research Institute
National Agricultural Research Organisation (NARO)
Kawanda, Uganda
Email: landuse@infocom.co.ug

John McDonagh
School of Development Studies
University of East Anglia
Norwich, NR4 7TJ, UK
Email: j.mcdonagh@uea.ac.uk

Research farmers in Nepal

Farmers have always engaged in research: testing out new ideas, crops and techniques. But how many researchers are fully aware of this and are willing and able to exploit this plentiful resource?

Maya Thapa, a 51 year-old farmer living in the mid-hills of Nepal is a research farmer. She keeps cattle and goats to supplement the family income and her village asked her to join the research farmers committee to work with local scientists and experiment with new methods of controlling soil erosion and nutrient losses. She planted new grasses on terrace risers and mixed hedges of mulberry on the edge of terraces. She commented, 'The new grasses grow faster, they are nutritious for livestock and are good for multiple cuts. With mulberry I can now rear silkworm, which is becoming popular in the village. These forage species are also good for the soil. I am happy that I joined the research farmers committee.'

This is just one example of how agricultural research is changing in Nepal. Researchers are beginning to recognise the importance of farmers' knowledge and experience and the significant contribution they can make to research with a little help and support.

In Nepal

There are more than 12 million people in the mid-hills of Nepal subsisting on hillside-terraced land-holdings of less than 0.5ha. *Bari* lands, as they are known, are a focus of great concern. Farmers rely on rainfall and organic manures as their only inputs. But heavy rainfall and poor soil and water management practices are eroding the soil in the pre-monsoon period in April and May and soil fertility is declining as nutrients are lost through leaching later in the season. If farming livelihoods are to be protected then alternative farming practices are urgently needed that help to conserve water, soil and fertility in these marginal and fragile hillside environments.

These are not new problems and yet current research, knowledge and practices have not solved them. Technology is already available but many farmers have not adopted interventions such as the Sloping Agricultural Land Technology (SALT) in spite of their demonstrated effectiveness in reducing runoff and controlling erosion. Farmers though are not ignorant when it comes to farming the hillsides. Studies suggest that many of them already have a sophisticated understanding of soil and water related ecological processes, and that they make rational use of this to devise practices to combat erosion and declining soil fertility.

Incorporating farmer knowledge into research and technology development would seem to be a promising way forward, but how can this be achieved?

If farming livelihoods are to be protected then alternative farming practices are urgently needed in these marginal and fragile hillside environments

Exploiting farmers' knowledge

The first step in this process was the growing acceptance of the value of farmer knowledge and experience by research scientists and development workers. Until now this was known about but it was just documented as part of field studies and not exploited in any way. The studies showed that farmers have both knowledge and practical experience but a clear distinction was needed between the two. They did not translate all their knowledge into practice and conversely not all their farming practices were adopted with a good understanding of the underlying principles.

The links between cause and effect were also not straightforward and so what seemed to be an obvious solution might turn out to be quite inappropriate. The perceived problem of poor crop yield is just one

example (see diagram). Analysing both knowledge and practices in this way helped to identify the intervention options. These were then tested using a process of Participatory Technology Development (PTD).

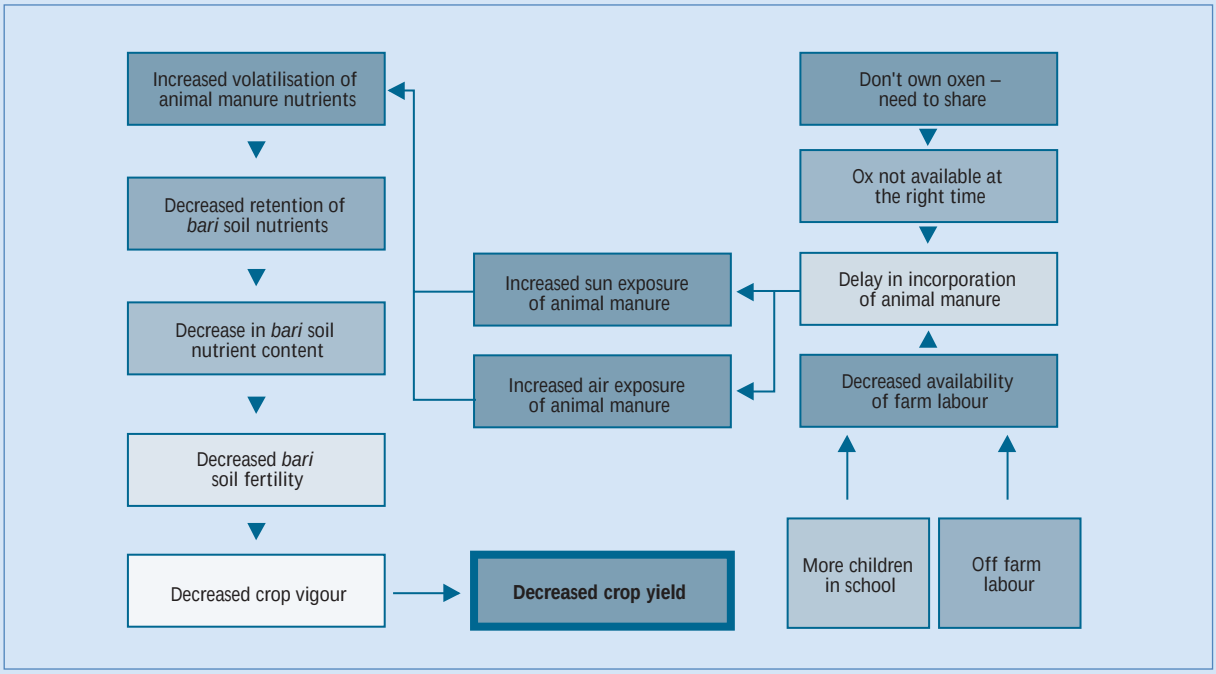
Combining this on-farm knowledge with scientific research information from runoff plots was achieved using workshops that local farmers, invited by their village leaders, and scientists attended. Scientists shared soil and water management knowledge with participating farmers with the help of charts, posters and demonstration equipment that the research team had prepared. Particular attention was given to the findings of scientific trials that were not well recognised or articulated by the farmers, such as the leaching of soluble nutrients.

Choosing research farmers

Farmers and village leaders attending the workshops were asked to collectively identify and select farmers to participate in on-farm research into soil and water interventions that might prove suitable for their farms and their community. Twelve farmers were selected at each of three sites and became known as research

farmers. All thirty-six met regularly as a research farmers' committee.

They spent one week together on a study tour visiting research and demonstration sites in different parts of the country. Not only did they acquire new knowledge from this but they also saw at first hand several improved soil and water management practices. On returning to their farms they were highly motivated to try out the new practices. But enthusiasm was not enough and researchers were keen for farmers to understand some of the basic principles behind



research so that results would have added value by being more widely applicable. Such issues as how to evaluate new ideas, how to test them out in practice and how to compare them with existing systems would help them to appreciate that:

- Trials are needed over several seasons to obtain meaningful results
- Trials should be compared with current practice to test their effectiveness (the concept of a control)
- Selecting land for trials is important for comparing different approaches
- Means/indicators are needed to judge the effectiveness of trials
- Trials are needed in different environments to judge their robustness or reliability (the concept of replication).

Farmers eventually came up with four intervention designs for each research site including the use of legume and non-legume forage species, fruit trees and water harvesting structures. The scientists supported them by supplying seed and planting materials and providing advice.

Reaping the benefits

After two years of experimentation, farmers' were impressed with the results. All of the thirty-six original research farmers were still actively monitoring the effectiveness of their experiments. A clear encouragement was that the interventions not only reduced soil and nutrient losses but also increased their supply of fodder, fruits and vegetables as well as their cash income.

Farmers are more impressed when they hear directly of experiences from other farmers and see them in practice. So it was not surprising that the trials also attracted the attention of other farmers, many of whom began working with both the research farmers and the scientists. Some 40,000 grass slips, 1,200 mulberry, 200 orange and 121 coffee saplings were supplied in the second year to support the initiative.

Involving the farming community at all stages ensured their continued support in the smooth running of the research activities. They also developed a responsibility for the process and provided feedback for further improvement. Research farmers felt they had an individual responsibility to the community that appointed them and this ensured a commitment to their experiments and the sharing of information and findings with others.

The result

Understanding and giving value to the knowledge that farmers already possess about their systems and the rationale behind their practices and finding ways to motivate and empower them to experiment with new interventions, is a significant research tool. They can see for themselves that they are an important source of information and innovation and this lays the foundation for farmers' participation in the technology development process.

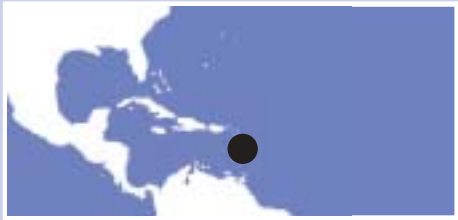
LI-BIRD, a local NGO and partner in this research specialises in supporting smallscale farmers to develop good soil and water management practices. It has now adopted this approach to development as part of its future strategy.

R7412 Incorporation of local knowledge into soil and water management interventions which minimise nutrient losses in the middle hills.

B P Tripathi and G P Acharya
Agricultural Research Station, Lumle
PO Box 1, Pokhara, Nepal
Email: dirlarc@mos.com.np

Pratap Shrestha and Anil Subedi
LI-BIRD PO Box 324 Bastolathar
Mahendrapool, Pokhara, Nepal
Email: pshrestha@libird.org

Morag McDonald
School of Agricultural and Forest Sciences
University of Wales, Bangor
Gwynedd, LL57 2UW, Wales, UK
Email: mamcd@bangor.ac.uk



Coral island

While pictures of Caribbean coastlines and beaches may evoke images of peaceful relaxation to outsiders, the reality for local people is sadly very different.

In the village of Laborie in St Lucia, typical of the many small island communities in the region, they are feeling the uncomfortable effects of globalisation and the way this can economically marginalise people. Unemployment among young people has grown from 22 percent in 1991 to over 50 percent in 2001 and indications are that this is getting worse.

Central to the well-being of such communities are the coral reefs which surround the islands. They protect the coastline and provided food and a source of income. More than 450 million of the world's people live within 40 miles of coral reefs, with the majority directly or indirectly deriving benefit from them.

Opportunities and threats

In recent years the Caribbean has seen a rapid increase in the number of tourists who want to visit the reefs, to sail, swim, dive and fish. This has brought new prosperity to the islands but paradoxically it threatens the reefs on which the tourism depends. Tourists swell coastal populations and want modern roads, hotels and marinas and land must be cleared for construction and agriculture. This increases pollution from oil, gas and pesticides that poison coral and marine life. Eroded soils reach the reefs as mangrove trees and seagrasses, which normally act as filters, are cut for firewood and to open up beaches. Human and animal waste and fertilisers are washed into the sea increasing nitrogen levels that cause algae overgrowth that smothers reefs by cutting off their sunlight. Urban rubbish kills coral reef animals. Turtles choke on plastic bags and fish and other marine animals are strangled on discarded fishing nets. To all this can be added the natural stresses from severe storms and hurricanes, coral bleaching resulting from the warming effects of El Niño and the proliferation of coral diseases.

Local people face a difficult dilemma. They wish to see their communities prosper but they also wish to conserve the mangroves and the coral reefs on which their economic growth is based. How can they strike the balance?

Protecting the reef

Most of the region's experience in protecting and managing coral reef resources has taken place in areas of outstanding ecological value and in almost every instance it has led to the creation of marine parks or reserves managed by autonomous organisations set up specially for the purpose. Some have been successful but this has depended to a large extent on their ability to generate funding through user fees and tourism. But not all areas are well suited to this form of management and in general they have failed to address the broader concerns of social and economic development and in particular the issues of poverty.

Local people face a difficult dilemma. They wish to see their communities prosper but they also wish to conserve the mangroves and coral reefs

Laborie is typical of the poor communities that are too small to take full advantage of the benefits of tourism while at the same time they suffer the consequences of manmade pollution and natural forces. They need alternative strategies that promote reef conservation and natural productivity while continuing to focus on ways of sustaining and improving the livelihoods of coastal communities.

A team from the Caribbean Natural Resources Institute (CANARI) supported by the Institute of Development Studies, University of Sussex, UK has been helping the community to achieve this. Their aim was to develop a proto-type for new institutional structures by testing and developing tools for sustainable development that would initially help the people of Laborie but would have wider application in other similar communities. The tools

included participatory methods for planning and management and new technologies for natural resource management. Existing participatory approaches were used that were adapted and developed to the local situation and their impacts assessed. Technologies tested included mariculture, application of management tools, and alternative livelihood activities that could result in reduced reef degradation.

Sea urchin fishery

One technology that has proved to be important to the community at Laborie is the harvesting of edible white-spined sea urchins. This was a well-established industry some 20 years ago and provided seasonal income for many households. But it fell into decline because of continual poor harvests. Recently there have been encouraging signs of recovery and harvesting began again in 2001. Unfortunately this was marred by conflicts. People from other villages also came to harvest in Laborie Bay but it was not so much the sharing of the harvest that caused the problem as much as the way it was done. Because of the many years of inactivity some harvesters, who were new to the fishery, were unaware of previous harvesting practices. The outsiders cleaned the urchins on board their boats and discarded the empty shells in the sea. The people of Laborie believe this is what drove away the urchins from their shores.

Following the harvest a series of community meetings were convened that confirmed the need to improve harvesting practices if there was to be a harvest in 2002. A priority issue was the need for better and wider community awareness of the resource and its potential in order to build ownership of and support for its management. To assist this process a public exhibition was set up prior to the harvest and national media were used to disseminate information.

Sorting out the rules for harvesting was one problem but making sure that there were enough urchins for future harvests was another. The community, through the key stakeholders, took on the responsibility of routinely monitoring urchin stocks throughout the year to provide sound data on which to base future decision-making. The results of this and the implications for harvests were discussed publicly and the outcome was a set of recommendations made to the Department of Fisheries that decided the timing and conditions for the 2002 harvest.

The community meetings and consultations also highlighted the need for fairer marketing arrangements so that harvesters could maximise their profits. A one-day festival was organised that enabled harvesters and other members of the local community to sell a variety of sea-urchin dishes, while at the same time giving wider publicity and validity to the management efforts that had created a successful harvest.

The result of all this activity was significant changes in the 2002 harvest. There were noticeably fewer conflicts and a greater positive impact on the community. More people were involved in the harvest and benefited from it, most significantly the poorer members of the community.

Seaweed

Seaweed, known locally as seamoss, is another reef product that can be cultiviated and harvested for food. Research on seamoss cultivation began in St Lucia in the 1980s in response to the over-harvesting and decline of natural stocks in the region. Laborie is now one of three areas in St Lucia where this is cultivated commercially. But the problem is that they chose to grow a variety that is easily cultivated rather than one of better quality or in greatest demand. Investigations were

When communities are small, how can local stakeholders remain directly involved in formulating and implementing resource management?

made to determine the potential for cultivating these improved varieties and to develop good propagation methods. At the same time assessments were made of the issues and institutions that affect seamoss production. This is now being used to formulate a development plan for Laborie and to identify the public policy requirements for the expansion and viability of the industry at the national level.

Tourism

Although the community is small and is unlikely to be a major tourist attraction there may be some potential on a modest scale for community tourism. This is at an early stage of discussion and the research team are facilitating an informal process aimed at shaping a local vision for tourism development in the area.

There are challenges to face and public health is high on the agenda. For some time there has been concern in the community that the quality of water in the bay has declined and that sewage, pesticides and fertilisers were the most likely causes, although no quantitative information was available. Water sampling revealed unacceptably high levels of coliform bacteria associated with sewage contamination. These greatly exceed the levels in guidelines for bathing waters. The results are now being shared with relevant agencies and groups at local and national levels with a view to producing a coordinated action plan.

The challenge

Although the research continues what is clear is that the combination of new technologies and community participation can be an effective vehicle for change. The challenge now is to put all the pieces together and to see what lessons have been learnt that would be helpful to other communities in similar situations. When communities are small and do not have a dedicated coastal resource management organisation, how can local stakeholders remain directly involved in formulating and implementing resource management and what should be their roles? What are the public policies required to make local management effective? What are the technologies available to sustain and improve coastal livelihoods, whether in tourism, in fishing or in aquaculture? What are the planning processes that can be used to empower people, especially the poor?

These are some of the questions for which the research will propose some answers as it moves into its final phase.

R7559 Improving coastal livelihoods in the Caribbean: institutional and technical options

Yves Renard
Caribbean Natural Resources Institute (CANARI)
New Dock Road, Box 383
Vieux Fort, Saint Lucia
Email: yr@candw.lc

Dynamic and restless entities

Seahenge is an ancient wooden monument, some 4,000 years old that was uncovered by a winter storm along the east coast of England in 1998.

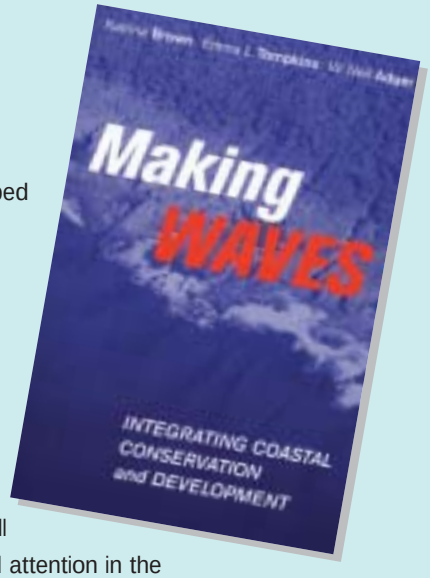
So begins a fascinating book about coastal fringes that affect and influence the livelihoods of more than one billion people across the world. Why begin with Seahenge? It just encapsulates everything about our modern dilemma of social, economic and environmental conflicts that come from a desire to conserve our coasts.

The book's main focus is on collaborative research undertaken in the Caribbean over the past decade but it also draws on insights from the author's research in the Pacific, SE Asia, E Africa and Europe.

'Recently I obtained a review copy of *Making Waves* and I was so impressed with what I read I ordered copies to be purchased for some of our national offices.'

This was the view of a regional marine programme coordinator in south Asia

Buccoo Reef Marine Park on the island of Tobago typifies the problems facing coastal communities that rely on the mangroves and coral reefs for their livelihoods. Tourism is growing and this means more business for hoteliers, boat owners and local traders. But it also means more pollution from sewage and sediments from land clearance work that damage the very reefs on which the tourism depends. Protecting areas by excluding people does not bring about better conservation and so some means of participation by local communities were essential. Trade-off analysis was developed to help local people become actively involved in planning their future and to manage the conflicting issues. It brought out the immediate problems to be resolved as well as those that needed attention in the medium and long term. It also asked such questions as 'what can I and my group do to improve things?' as well as 'what can the government do?'



As the authors point out, coasts are dynamic and restless entities and define the edge of human habitation. If we desire to conserve the nature of coasts we must conserve their dynamism and this is not always easy.

The book provides important reading for researchers and practioners alike and is a blend of theory and practice on multiple-use resources, conservation and protected areas and other problems of coastal zone management.

Making Waves: Integrating coastal conservation and development.
Brown K, Tompkins EL and Adger N 2002.
Earthscan Publications Ltd
ISBN 1 85383 912 4 paperback
1 85383 915 9 hardback.

Voices to influence policy

Natural resources researchers are often frustrated that their findings, honed over many years by careful studies and experimentation and often for the benefit of the poor, are not more widely used in development.

The reasons for this are complex. Many development agents are not well informed of the links between management of natural resources and the issues of rural poverty. Some are unable or unwilling to see how research can change and improve things. Others may not want to hear about how problems of sustainability can be addressed through improving the livelihoods of poor people. Even when people want to take up apparently useful findings, they may not have the resources to do so. All this can add up to a policy environment that is unfavourable to changes that can help the poor.

While researchers have learnt to accept such circumstances and the fact that their work is unlikely to change attitudes and policy, at least in the short term, they have also recognised that the scope of natural resources research needs to be widened. Research can address policy processes and develop and test instruments and mechanisms for negotiating policy change.

Fish farming for poor communities

One example of this approach is a project in the Eastern Plateau states of India, led by the STREAM Initiative, in association with the Network of Aquaculture Centres for Asia-Pacific (NACA). It is concerned with ways of influencing policies that control the provision of support services for aquaculture for disadvantaged tribal groups.

Despite considerable economic growth in India, the situation for the poorest groups has not substantially improved. Programmes meant to help them were ineffective and little effort went into empowering people to contribute to policy change processes to give the poor a voice and to help them to realise their rights.

The Eastern Plateau states are characterised by poverty and inequality, land alienation and seasonal migration. Some castes and tribes are amongst the poorest communities in India. Most farming families rely on rainfed crops and livestock for their livelihoods. They also have access to seasonal ponds that provide them with opportunities for aquaculture to complement their other sources of food and income.

Whilst there is no tradition of fish farming among the poorer communities, research has identified, tested and demonstrated ways of incorporating aquaculture into their existing farming systems that rely on seasonal ponds. Not only are these low-cost they also use water bodies and some fish species that larger scale systems do not use and so they do not pose a threat to the livelihoods of richer fish producers who use perennial water bodies.

Support services for aquaculture in India are well developed but they are totally geared to the needs of large-scale perennial production systems and do not cater for the small-scale seasonal systems. If the research findings are to benefit the poor then the aquaculture extension policy must reflect the needs of all those involved in fish farming.

How should such a policy change be negotiated? What kind of information, forms of communication and ways of interaction are best able to present the issues, raise awareness and stimulate debate and action amongst relevant policy actors?

An opportunity for change

An important part of change is an acceptance of the need for change. The Fisheries Development Commissioner for the Government of India was aware that aquaculture was not adequately addressed in the many programmes that were designed to help tribal groups. As a result he encouraged the project team to play a role in recommending a new "tribal" rainfed fish-farming component that could be launched in the government's Tenth Five-year Plan, which is currently being finalised.

Defining this component provided a unique opportunity to give tribal people a voice in policy-making processes that could have a significant impact on their livelihoods.

As a result, the project has three thrusts:

- Understanding service provision from the recipients' perspective
- Understanding 'lessons learnt from elsewhere', and
- Understanding 'modes and priorities for policy change'.

The final strand was pursued through a process of consultation and consensus-building with stakeholders.

Consultation

Consultations took place at all levels involving recipients and implementer workshops and state-level and stakeholders' workshops. Information was also collated on fish farming issues to present to policy makers. This needed to be interesting to catch the eye of policy makers as well as enabling people to discuss and articulate their opinions on what could be done. It was decided to use six 'live', contrasting case studies to demonstrate examples of current

Case study – A successful tribal farmer

Ras Behari is an example of how struggle and hardship can achieve success. He once led a life of poverty and now he employs 50-60 people from his village.

Ras Behari used to walk barefoot to school, sometimes tying leaves to his feet to save them from burning on the hot sand. He was unemployed after passing matriculation but started to help his father who saved his family from hunger by starting a business selling fish seed.

One day, Ras Behari's father sent him to the local town to bring fish seed. He spoke to an experienced farmer about learning the techniques. He leased a pond in his father's name, started production and sold seed to the local fish farmers. People reported back that the seed grew well in their ponds and the number of customers increased the next year. He says that the reason for his success was that he offers Catla, a fast growing seed most suited to seasonal ponds.

Ras Behari now sells around 5,000-6,000 kg of seed every year. He bought a small truck to supply seed to more distant customers but he finds it difficult to get loans from the Banks and has to depend on local moneylenders who charge high rates of interest.

When transporting seed by truck it must be stored in water in iron containers while men continuously stir the water with their legs to keep oxygen levels high. Scientists need to help develop some other method for transporting seed.

The fish seed business has changed the lives of the villagers. They are employed for at least six months of the year. Some of them work with Ras Behari while others buy seed from him and sell it in other villages. He has shown the villagers a new pathway to income generation and livelihood improvement.

An important part of change is an acceptance of the need for change

service provision, their inadequacies and the complex environment in which farmers live and work (see box on previous page). The idea behind this was to put real issues firmly 'in the face' of policy makers. But having good material is not enough; it needed to be well presented. So considerable thought was given to ways of avoiding long, turgid reports that often go unread and using attractive computer based visual presentations, video documentaries and street theatre involving local actors. The latter is a very popular form of entertainment in India and a tribal playwright was commissioned to write a short play, including songs in Hindi, based on the case studies for presentation at the final workshop with policy makers.

Consensus building

When stakeholders come together to discuss issues, there can be conflicting views over scheme goals, types of outcomes, who to help and how. Sometimes such disagreements can widen their differences rather than heal them. Some are unable to say what they think because they are intimidated or they do not wish to criticise a superior or an older person. The project embarked on consensus building, using a process that is designed to circumvent these problems.

The approach is a potentially powerful tool and involves sharing information from the case studies, workshops and lessons learnt from elsewhere with a group of policy-makers from state and national government in the form of recommendations for policy change and "emerging indicators of progress". Each member of the group knows who the other group members are, but each member works separately. In the first step, information on and options for policy change are presented for comment to establish the various views among the group.

A moderator collates the responses and returns them to the participants, but without participants knowing which comment came from which person. They are now free to agree or disagree and to change their own view anonymously. The moderator highlights any new emerging consensus, and non-aligned participants can accept this or propose further arguments why others should change their views. Through several iterations, usually not more than four, unity of thinking is sought.

The Consensus-building Process keeps the benefits of group decision-making while avoiding some of its limitations. The case studies, lessons learnt from elsewhere, and outputs of the recipients and implementer workshops, and state-level and stakeholders' workshop are the basis of the consultative inputs and give people a voice in this process.

The next steps

The overall success and impact of this project depends on its ability to influence policy change and so the next step is the workshop with policy makers. Considerable time is being devoted to planning the workshop to ensure that the organisation, programme and participants are appropriate. The timing of the workshop is also crucial so that it does not conflict with the government agenda. This should help ensure that key policy actors from national and state government can participate to the full. We look forward to reporting a favourable outcome for pro-poor policy in future NRSP highlights!

R8100 Investigating improved policy on aquaculture service provision to poor people

Graham Haylor and William Savage
STREAM Initiative
Network of Aquaculture Centres in Asia-Pacific
Bangkok, Thailand
Email: ghaylor@loxinfo.co.th

In association with:
Gramin Vikas Trust
c/o V.S.Tomar, Chief Executive Officer
Noida (U.P.), India
Email: honoida@gvtindia.org

Encouraging but can do better

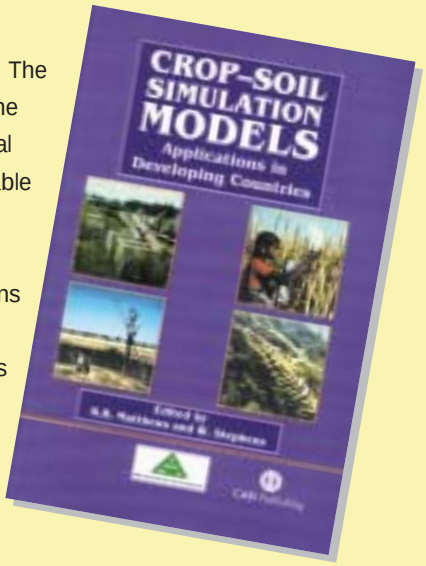
Simulation models provide enormous potential for solving problems and supporting management decision-making. They work quietly in the background running most of the main industries on which we depend, oil, water, power and transport.

In some countries, predictive models even decide what products will be put onto supermarket shelves ready for us to buy. So why is their use in natural resources management in developing countries so limited with little expression of demand from development agents?

This book reviews the progress in crop-soil modelling and assesses its application to agriculture in developing countries. Modelling began some 35 years ago reaching 'adolescence' in the 1980s and maturity in the 1990s. Models are now in the 'first employment phase' and the authors believe they have acquitted themselves well at this stage but they still have some way to go before they have 'security of tenure' for the job they are designed to do.

There is no shortage of models but a general weakness has been the lack of a clear definition of whom the potential users are. Most models were developed by the research community to help organise knowledge gained in experimentation and not usually in response to a known and well-articulated demand from the end users such as local planners and farmers in developing countries. Indeed many would not understand the relevance of a model or appreciate what it could do.

The authors argue that modelling is now at a cross roads and all the pathways hold potential. One is to go down a specialisation route such as genetics. This can help to improve the efficiency of crop improvement programmes by evaluating the desirable characteristics of plants. The other is to incorporate the broader issues of the real world. Modelling is capable of simulating the complexities of many different farming situations and offers a way of speeding up the process of evaluating options rather than waiting while several seasons of field trials or survey studies are carried out.



This book is an excellent source of information on crop-soil models and the authors clearly make the point that their potential will only be attained through active cooperation between modellers and those they seek to serve, including the provision of advisory support to potential users. Their current target is government and non-government professionals, academics and consultants in the developing world. However, a challenge for the future is to convince front line service providers, farmers and other managers of natural resources of the usefulness of models in their decision-making.

Crop-soil simulation models.
Applications in developing countries.
Matthews RB and Stephens W (eds) 2002.
CABI Publishing ISBN 0 85199 563 2

NGOs put research into practice

It is often said that Africa does not need more research and seminars on poverty alleviation but action to put into practice what has already been written and talked about.

But how can this best be achieved? The pathways from research to helping communities and individuals to improve their livelihoods are many and varied and can be difficult to take. They can become researchable issues in their own right if a great deal of trial and error is to be avoided.

NGOs are usually much better than researchers at connecting with people, especially the poor, and so they can play a very useful role when it comes to linking research with practice. In Ghana, a local NGO, the Centre for the Development of People (CEDEP), is building on long-term research into the peri urban areas that exist in the vicinity of the city of Kumasi for the benefit of poor communities who live and work there.

In Kumasi

There is undoubted wealth in Kumasi, as there is in many towns and cities throughout Africa, and the result has been a relentless urban drift over the past 30 years and more. As cities grow outwards, the urban areas come into contact with their rural surroundings and an interface is created with distinct features that affect natural resources and the livelihoods of those who depend on them. This interface is not static, it is forever changing as livelihoods cease to be based only on rural activities and begin to incorporate opportunities from city-based income sources. Farmlands and forests are changed to supply urban markets with food and building land. The patterns of rural life are altered by the labour demands of the city and the pollution and wastes it creates.

Since 1997 researchers on several NRSP peri-urban interface projects have been examining ways of improving the livelihoods of Kumasi's peri-urban poor who largely depend on natural resources. The initial focus was on information gathering, mapping using GIS and understanding the way in which the peri-urban areas functioned and the processes of change. The effects of urbanisation on the control of, and access to resources and on agriculture were examined as well as the potential for using organic wastes to improve soil fertility.

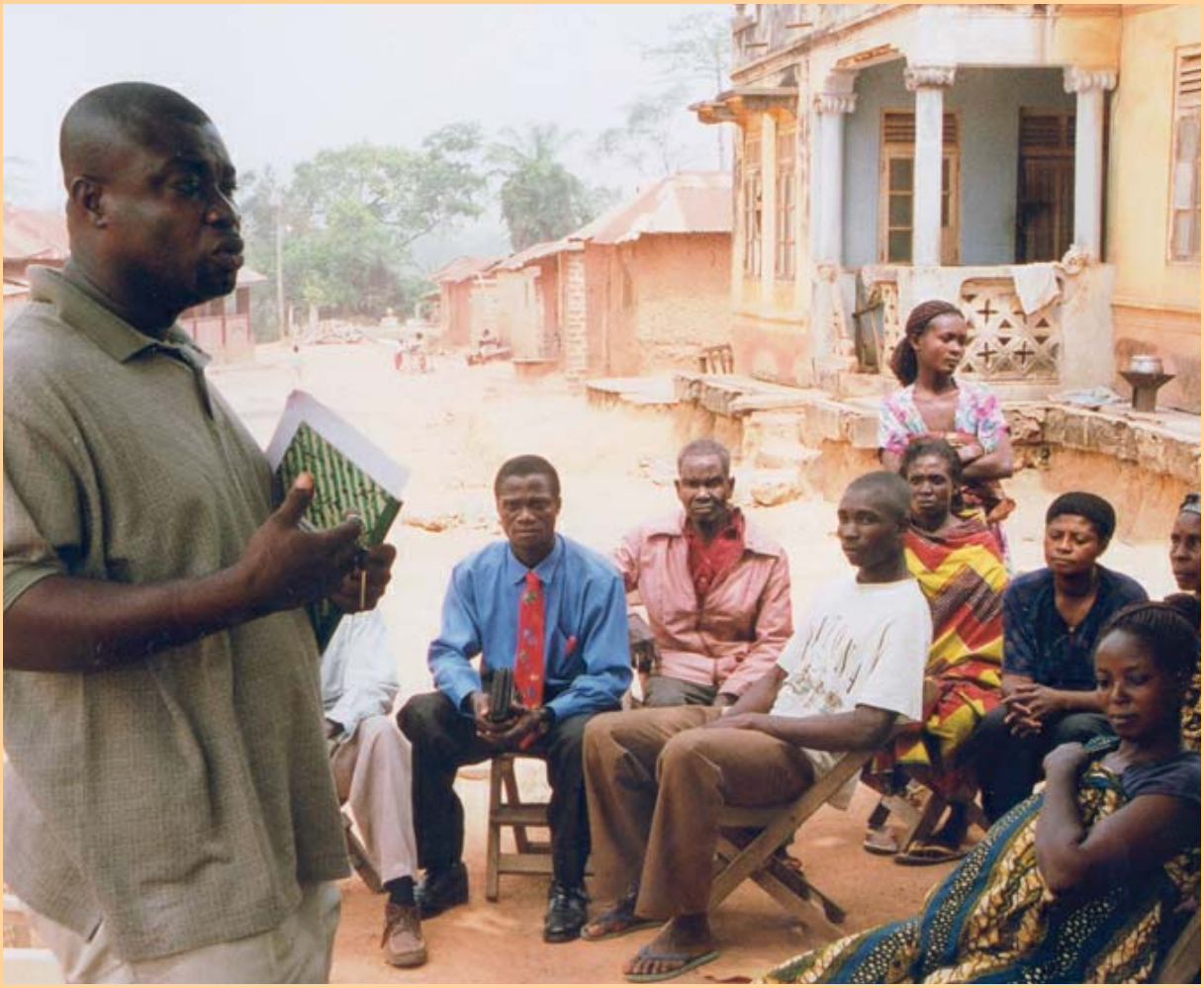
Building on the knowledge that this research had generated, CEDEP examined various natural resources based livelihood strategies accessible to the peri-urban poor. Support came from the Kwame Nkrumah University of Science and Technology and Royal Holloway, University of London. CEDEP was formed in 1983 by a group of young graduates who thought that it was time for Ghanaian graduates to join in the development of the nation. They focused their attention on supporting and building the capacity of marginalised and vulnerable groups in Kumasi.

NGOs are usually much better than researchers at connecting with people

The process

CEDEP's approach was to select twelve peri-urban communities and to use a participatory process for action planning. Participants included not just the poor in the communities but also experienced local skilled workers such as mushroom producers, beekeepers and grass-cutter (a large rodent) breeders who were ready to share their experiences. Local elders, traditional rulers, local government officials and also MPs were invited and encouraged to attend. Facilitation of interaction between these various stakeholders was recognised as very important particularly for considering land tenure.

CEDEP recognised that activities facilitated by outsiders who did not know the area well could create problems with language, culture and difference in status and trust,



all of which could adversely affect the project. They also realised that their staff would not be available at all times. But recruiting local staff could also cause problems. Would they be volunteers or would they be put on the project's pay roll? What would be the implications of this in the community and was it sustainable?

Community Level Facilitators (CLFs)

This issue was resolved with what turned out to be one of the most important and successful elements in the planning and implementation process. The communities agreed to elect and work through Community Level Facilitators (CLFs). These were men and women who would provide the link between the community and CEDEP. It was not necessary for them to have technical skills but they had to be literate and they also needed the trust of the community. Training was provided on facilitation and the methods of mobilising their communities. The salary problem was overcome by the payment of travel expenses and compensation for income foregone when on community business. Many of the CLFs were among the first in each village to implement the new livelihood plans. This was a positive development. It helped to demonstrate viable enterprises by involving the most enthusiastic and also served to secure longer-term enthusiasm from the CLFs since they were obtaining tangible benefits themselves.

In sum, this was a neat solution to a thorny problem. Some of the most heated debates in the early meetings and during CLF training sessions revolved around payment. Most CLFs, like their neighbours, rely on daily labour or farming, so that each day spent on other tasks represents lost income or food production. Moreover, some CLFs demanded payment of regular retainers. However, this would have created resentment and charges of favouritism or bias from neighbours. Similarly, long-term payments as a precondition for CLF activity would have undermined the objective of appropriateness and sustainability, and would have perpetuated dependence on outside donor funding.

This issue was resolved with what turned out to be one of the most important and successful elements in the planning and implementation process

Strategies

Three strategies emerged from the meetings.

The first strategy was developed to help the landless poor. It assumed that very little land and capital was needed, that waste or unutilised resources would be used and benefits would be quickly realised. Breeding grass-cutters, for example, fits into this strategy as does mushroom production and soap making.

Some communities still have land available to them and so the second strategy focused on farm-based livelihoods, such as the production of maize and cassava.

The third strategy looked beyond land-based activities to ways of supplying products for the huge urban markets close by. The plan was to take relatively low-value products obtained from the first two strategies and add value to them by processing or packaging, thus bringing more income into the community. But it was recognised that there are limits to promoting natural resources based strategies in a rapidly expanding urban area and so it was also important to consider any related income generating activities. Examples included bakery, shoemaking, batik production, cloth weaving and brass work.

The next steps

Work has now moved from planning to implementation. Researchers will monitor this to see how well the strategies work out and to distil insights on good practice, regarding what works and what does not work in enabling people to improve their livelihoods in circumstances influenced by urban-rural flows of goods and services and pressures of urbanisation.

The result

The project demonstrates how natural resources research at the peri-urban interface can provide a firm foundation on which community-based initiatives for improving livelihoods can develop with confidence. It also shows how local people, with appropriate help, can organise and develop these strategies for themselves.

R7995 Implementation plans for natural resource management strategies for the Kumasi peri-urban interface

This project builds on:

R7854 Further knowledge of livelihoods affected by urban transition, Kumasi

R6799 Kumasi natural resources management

It is being followed up by:

R8090 Who can help the peri-urban poor?

Korsi Ashong
Centre for the Development of People (CEDEP)
Justice Henry Prempeh Memorial House
PO Box 5601, Kumasi, Ghana
Email: Pnkorsi@yahoo.com

A round peg for a round hole

Community forestry was formally introduced in Nepal in 1993 to transfer the ownership and management of forests from government to those who rely on forest resources for their livelihoods.

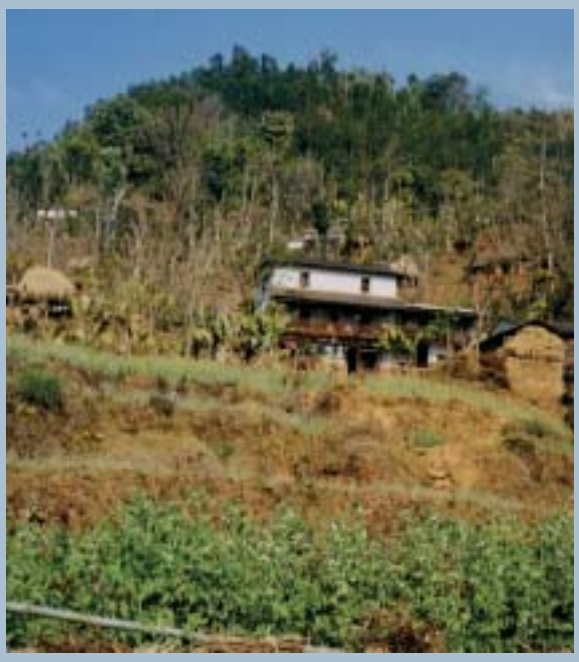
On the face of it this appears a sensible move that could benefit forest users, in particular the landless poor and the disadvantaged. However, after nearly a decade of this style of forest management, there are concerns that it is not working as well as expected and in some cases the poorer groups within communities are worse off.

The Nepalese government nationalised the forests in 1957 as a protective measure and took over the responsibility for their management. In practice however, the Forestry Department did not have the resources to do the job properly. There was continual friction between Department staff and forest users with the result that forests deteriorated and there was over-extraction of resources and illicit tree felling.

Forest User Groups (FUGs)

Nepali foresters realised that this situation could not continue and so in 1993 the Forestry Act formalised community forestry and handed over forest management to Forest User Groups (FUGs) on a wide scale across the mid-hills region. Community forestry seeks to provide stable access rights to forest users for sustainable forest management and for livelihood security. But it also required that people should change the way they use forest resources and the way in which they work together as a community with respect to this resource.

Setting up FUGs was not without its difficulties. Although democratic decision-making is a key element of community forestry there were power problems between individuals within FUGs and between local people and outside agencies. Traditional village leaders tended to dominate and the result was often elitist 'committee-forestry' rather than community forestry. In many cases this led to poor and undemocratic decision-making, bias in benefit sharing, and neglect of the needs of poorer sections of the community. Those most dependent on forest resources were rarely involved in making decisions. Some people did not even know that they had a community forest. The result was that forests were not managed systematically according to the needs of the FUG members.



Some people did not even know that they had a community forest

A square peg

Critics of FUGs point out that the idea did not come from the grass roots but was imposed from outside and so like other imposed systems it was unlikely to succeed. It was like supplying a square peg to fit in a round hole. They were set up too quickly for the gradual introduction of the concepts, roles and

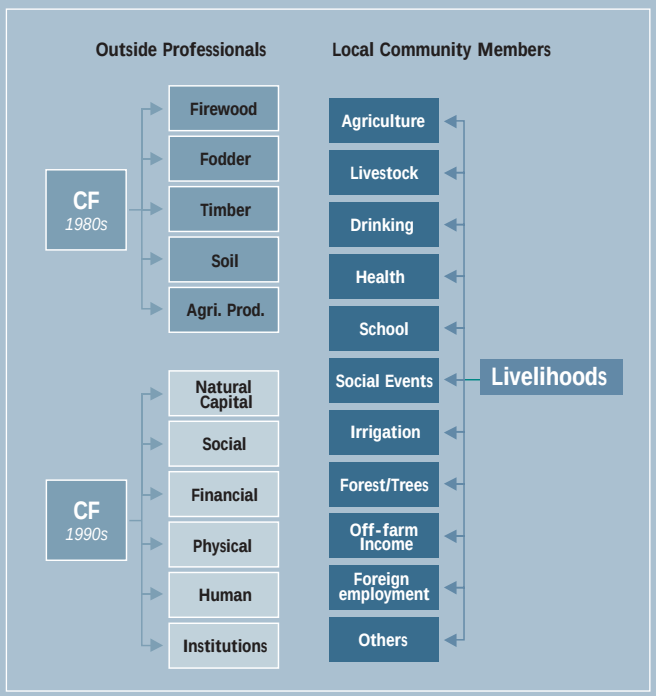
practices of community forestry and the inevitable result was a poor level of understanding of the principles of community forestry and weak decision-making and planning among the Groups.

Reshaping the peg

Researchers from Reading University in association with ForestAction (an NGO based in Nepal), Oxford University and the Livelihoods and Forestry Programme in Nepal have investigated ways of reshaping the peg for a better fit. They examined ways of changing FUGs using group action and learning processes to make them more effective and democratic in the way they operate and to enable the poorer members of the community to have a voice in decision-making. The most obvious way was for the forest users themselves to become the driving force in shaping plans and policy. To achieve this, all forest users within a FUG needed to participate in the process of management. Better communications were required within and between FUGs and other stakeholder organisations and a monitoring system was needed so there was a means of assessing the value and relevance of the actions taken.

Five FUGs were selected for investigation and workshops were arranged with all the stakeholder groups to make sure that everyone involved fully understood the objectives of the research project.

Workshops in the villages were particularly important to select community representatives to attend FUG meetings and to develop communication between people with differing interests and values. They involved over 90 percent of households including poor people and women, and not just the FUG committee members. Poorer people were encouraged to attend by paying them a research allowance to avoid foregoing wages for the day.



Monitoring

Running the workshops created new problems as well as solving old ones. The idea of monitoring, for example, was considered by researchers to be an important and essential part of forest management. It provided a standard set of information that gives a common basis for transparent decision-making. But local stakeholders had differing perceptions of what was important and did not give it such a high priority. (see box on previous page)

There is no direct translation in Nepali for the term 'monitoring' and the words that were available had negative connotations and implied assessment of activities by outside officials. It was also apparent that the practice of collecting data and applying performance indicators was not appropriate in this context. Alternative ways of assessing improvements were needed. People eventually settled for phrases like 'reflect on the work already done,' 'learning' and 'taking action accordingly' as something meaningful to them because it described the context and need for monitoring through familiar activities. From this, users began to recognise the need for monitoring and the challenge of taking action as a group in relation to forest management. It also helped local people to appreciate the views of outsiders on issues such as biodiversity and empowered them to negotiate to fulfil other people's interests as well as their own.

Participatory management

Participatory management appeared to offer significant potential for FUGs to manage their forests more actively and to function better as sustainable and equitable local institutions. However, this approach cannot be solely developed and delivered by outside researchers. It has to be integrated into a support programme involving better information gathering and analysis; better and more equitable forest management planning and encouragement for FUGs to learn through doing and to be flexible and innovative.

Constraints to more participation were many and complex and included the time costs of participation, power relations among individuals and the limited knowledge that participants had of the issues being discussed. Some of the more elite members of FUGs were more concerned with simply closing the forest rather than managing it for everyone's benefit. As one committee member commented: *We decided to leave the forest alone, because we hoped that in future someone might come and reward us for protecting it*.

In spite of these conflicting factors, importantly, in the period since the project ended, there is evidence of continued experimentation at the FUG level, improved communication and transparency within FUGs and more open discourse on how to manage the FUG and the forest in a sustainable and equitable manner. But there remains a challenge to improve institutional and economic support to poorer groups from local sources to increase their negotiating power in decision-making and ensure that FUG planning processes do not stagnate.

The result

The project identified a means by which forest management could be tailored to suit people's local circumstances as well as favouring forest conservation. This system has yet to be fully tested on a larger scale but once it is promoted FUG members should be able to use it and adapt it to their local circumstances with minimal help from external facilitators.

R7514 Development of monitoring process and indicators for forest management, Nepal

Yam Malla
Regional Community Forestry Training Centre for Asia and the Pacific
Kasetsart University, PO Box 1111
Bangkok 10903, Thailand
(previously at Reading University, UK)
Email: oyam@ku.ac.th

Krishna Paudel
ForestAction, PO Box 12207
Kathmandu, Nepal
Email: forestaction@wlink.com.np

We decided to leave the forest alone, because we hoped that in future someone might come and reward us for protecting it

Sustained effort can pay well

...the Government will strengthen and promote the use of rainwater harvesting technology, in both urban and rural areas (Prime Minister of Tanzania Hansard Records, July 2nd, 2001)

Why is the Prime Minister of Tanzania suddenly interested in rainwater harvesting?

The answer lies among the smallholders of the tropical drylands of Tanzania who have to cope with the realities of living in a dry place with unreliable rainfall. They face frequent food shortages and economic losses resulting from either too little rainfall or too much.

Over the past century droughts have caused more than 30 percent of all the declared disasters in Tanzania while floods caused around 40 percent, often in the same place and the same season. The problem is that only a small fraction of the rainwater reaches and remains in the soil long enough to be useful. Up to 70 percent runs off causing soil erosion and flooding downstream.

Policy makers recognised the detrimental effects of droughts but they did not appreciate the importance of runoff during times of flooding. Policies were dominated by two contradicting perceptions. Firstly, that the only solution for drought prone areas was to grow drought-resistant crops and secondly, soil erosion could be controlled by disposing of 'hazardous' runoff safely away from croplands. This led to soil and water conservation programmes that focused on diverting water away from areas where agriculture and livelihoods are affected more by shortage of water than anything else.

Like many big problems the solution was not simply a technical investigation to find ways of controlling and using runoff to provide critically needed soil-moisture for crops. It was essential to educate field agents concerned with change about the new techniques,

make farmers aware of them so that they could integrate them into their farming systems, and make policy makers aware of ways by which government policy could support all of this. Such a challenge requires a broad-based approach covering both the technical aspects of rainwater management and communication and training at a range of levels.

Sustained effort

Over the past 12 years the Soil-Water Management Research Group (SWMRG), based at the Sokoine University of Agriculture has conducted rainwater management research. Importantly the Group has also made sustained efforts to change the perceptions of government and aid donors about ways of increasing the productivity of rainwater and improving the livelihoods of farmers in dry areas.

This is an excellent example of what can be achieved when a programme of research combined with communication is pursued with determination and has sustained funding over 12 years. Few programmes are fortunate enough to have both

Harvesting rainwater is not new to Tanzania and so research began with an intensive and extensive participatory programme of learning from farmers who were already exploiting natural concentrations of runoff in local depressions and valleys. In the 1920s Indian migrant workers introduced the Majaluba system to improve the yields of rainfed rice. This is a macro-catchment system used to capture runoff from large areas often some distance from their farms. It is now gaining popularity among rice and also maize growers in spite of the complexities of managing sudden large flows and distributing it to large groups of farmers.

Next came the farm experiments and modeling to develop a sound scientific understanding of farmers' practices. A computer based simulation model – PARCHED THIRST – originally a research tool, is now being introduced to front-line extension staff to reduce the guesswork when they are helping farmers to set up new water harvesting systems. Although the model is a sophisticated tool, its complex workings are hidden from the user who requires only a simple means of testing out various design options and evaluating long-term impacts on productivity and sustainability.

While conducting the research, SWMRG also engaged in a long and sustained process of communicating with district and national level policy makers not only through the provision of written publications but also through regular contact at meetings, workshops and personalised visits. Technical findings were disseminated through a special issue of the Tanzania Journal of Agricultural Sciences devoted to rainwater harvesting and the production of a planning guide handbook on rainwater harvesting. Booklets and pamphlets were also produced in the national language (Swahili) for use by extension agents and farmers. Training programmes were organised for government extension staff and NGOs who work directly with farmers. All of these activities have played an important role in raising awareness among policy makers.

Pays well

Over the last two years, a supportive policy has emerged to the point were rainwater harvesting is a common feature in the development plans of several district councils and NGOs. In 1997 the Agricultural and Livestock Development Policy contained six policy statements on drought-resistant crops with no mention of soil and water management. By 2001 the Agricultural Sector Development Strategy fully recognised the importance of integrated soil-water management as a key to solving the problems of drought. Members of Parliament debating the budget speech made significant statements on rainwater harvesting:

Over the last two years, a supportive policy has emerged were rainwater harvesting is a common feature in the development plans of several district councils and NGOs

Rainwater Harvesting (RWH) as a Tool for Improving Livelihoods in the Semi-Arid Areas of Tanzania has been accepted by the Global Development Network as part of its Bridging Research and Policy Project. This project aims to highlight research programmes that have had significant impact on government policy.

This and other case studies are available on www.gdnet.org

The first MP to speak stated: *We must do away with the notion that droughts that we face from time to time in many parts of the country are caused by shortage of rainfall. With a good programme of harvesting rainwater we can avoid droughts even in times or places considered to have low rainfall.* Another MP stated: *Rainwater harvesting should be the starting point in our agriculture strategy as without adequate supply of water, even if we provide credit, mechanization and extension, there will be no development in agriculture* (Hansard Records, 18 June, 2001).

In response, the Prime Minister of Tanzania stated: *Starting the 2001/2002 financial year, the government will strengthen and promote the use of rainwater harvesting technology, in both urban and rural areas* (Hansard Records, 2 July, 2001).

Then, the Minister responsible for water development elaborated on the strategy stating: *In order to ensure that rainwater harvesting technology is widely used in rural areas, my ministry will work with District Councils to ensure that rainwater harvesting is included in development plans of the councils.* (Hansard Records, 25 July, 2001).

This is now official policy and the Agricultural Development Strategy states: *The Government, in close collaboration and consultation with the private sector, will enhance the efficiency of water utilisation, especially rainwater, through the promotion of better management practices. This will be achieved by developing and implementing a comprehensive programme for integrating soil and water conservation, rainwater harvesting and storage, irrigation, and drainage. Furthermore, the water policy, approved in July 2002, sets a goal of making more water available to rural communities through rainwater harvesting technologies.*

This is an excellent example of what can be achieved when a programme of research combined with communication is pursued with determination and has sustained funding over a long period. Few programmes are fortunate enough to have both but this one strongly argues for the excellent returns such programmes can deliver for national development.

R7888 Promotion of rainwater harvesting systems in Tanzania

R7949 PARCHED THIRST model: Development of a client-friendly version 2.1

R8088 PARCHED THIRST Help office and upgrading of model from v2.1 to v2.2

Nuhu Hatibu
Soil-Water Management Research Group
Sokoine University of Agriculture
Morogoro, Tanzania
Email: nhatibu@suanet.ac.tz
www.suanet.ac.tz/research/swmrg

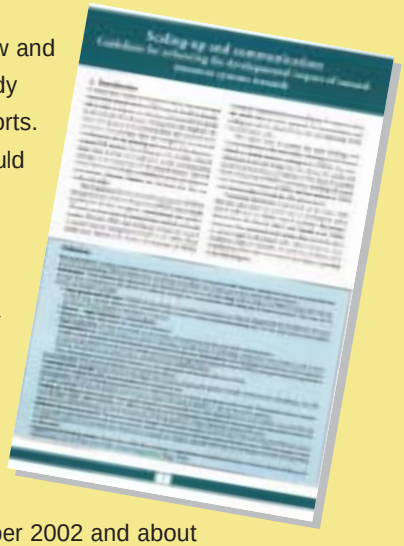
Linking research into development planning and practice

Increasingly donors want to see evidence that funds provided for research produce results that are relevant to development planning and practice.

This especially applies to research on natural resources management (NRM) where reports on such topics as land degradation, fertility decline, coastal pollution, loss of biodiversity and persistent rural poverty indicate that the application of highly relevant research findings to these problems is not occurring at sufficiently intense levels to reverse current negative trends.

So is the development sector sufficiently well informed of research outputs and have researchers prepared the ground for the application of research findings at a developmental scale?

In 2000-2001, NRSP commissioned a review of scaling-up strategies for NRM research and also undertook an in-depth review of the reach, use and impact of NRSP's communication methods and media products through conducting case studies of completed projects in six countries across three continents. Both reviews had very similar findings. A common feature was that NRM projects began to address communication and scaling-up at too late a stage in the research project cycle. As a result, communication with those stakeholders and policy-actors who should be well-informed about the research and well-engaged with its aims and outputs was delayed to the final stages of a project. In addition, the studies found that the ways researchers chose to promote their findings were not appropriate to the needs of their various clients in development sectors. Thus, it appeared that some of the problems of lack of application of research products rested with the mode of working of NR researchers.



The scaling-up review and communications study were substantial reports. In order that they could be more readily accessible to NR researchers, NRSP decided to prepare a digest of their main findings for wide dissemination in the UK and overseas. The digest was published in December 2002 and about 1000 copies were distributed to individuals and organisations involved in NRM research. In March 2003, the document was posted on the website: www.livelihoodsconnect.org

NRSP hopes that the digest will not only be used by those who already are undertaking NRM research but also will become essential reading for those who are newly embarking on this area of work.

DFID-Natural Resources Systems Programme (DFID-NRSP) 2002, Scaling-up and communication: Guidelines for enhancing the developmental impact of natural resources systems research, 8pp.

NRSP projects

Kenya
R7056 Nutrient sourcing and soil organic matter dynamics in mixed-species fallows

Imperial College at Wye, Kenya Forestry Research Institute (KEFRI) and International Centre for Research on Agroforestry (ICRAF) Kenya
Georg Cadisch

Zimbabwe
R7304 Micro-catchment management and common property resources

Institute of Environmental Studies, Department of Research and Specialist Services, CARE International Zimbabwe, Centre for Ecology and Hydrology (CEH) UK
Bruce Campbell

India
R7323 Participatory crop improvement in high potential production system and salt affected areas of Patiala District of Punjab State

Punjab Agricultural University and Krishi Vigyan Kendra Patiala Punjab India, University of Wales
SS Malhi

Ghana
R7330 Peri-urban natural resources management at the watershed level, Kumasi

Centre for Developing Areas Research Royal Holloway, University of London, Institute of Renewable Natural Resources and Bureau Integrated Research Development at University of Science and Technology (UST) Kumasi, Environmental Protection Agency, Ghana Water Company, Centre for Development of People (CEDEP) and Sunyani Polytechnic Sunyani Ghana.
Duncan McGregor

Nepal
R7412 Incorporation of local knowledge into soil and water management interventions which minimise nutrient losses in the middle hills

School of Agriculture and Forest Sciences University of Wales, Royal Geographical Society London, CEH Wallingford, Oxford University, Agricultural Research Station-Lumle, LI-BIRD and International Centre for Integrated Mountain Development (ICIMOD) Nepal
Morag McDonald

Ghana
R7446 Shortened bush fallow rotations for sustainable livelihoods

School of Agriculture and Forest Sciences University of Wales, Forestry Research Institute of Ghana, Ministry of Food and Agriculture and Ghana Organic Agriculture Network Ghana, International Institute of Tropical Agriculture (IITA) Yaounde Cameroon
Morag McDonald

Nepal
R7514 Development of monitoring process and indicators for forest management

International and Rural Development Department (IRDD) Reading University, Centre for Natural Resources and Development Oxford University, Livelihoods and Forestry Programme Nepal
Yam Malla

Ghana
R7515 Knowledge dissemination domains in the forest agriculture interface

Overseas Development Group (ODG) University of East Anglia
James Sumberg

Ghana
R7516 Bridging knowledge gaps between soils research and dissemination

School of Agriculture and Forest Science University of Wales, Forestry Research Institute of Ghana and Ghana Organic Agriculture Network Ghana, IITA Yaounde Cameroon
Fergus Sinclair

Uganda
R7517 Bridging research and development in soil fertility management: Practical approaches and tools for local farmers and professionals in the Ugandan hillsides

ODG University of East Anglia, National Agricultural Research Organisation (NARO) Uganda
John McDonagh

Nepal
R7536 Biophysical and socio-economic tools for assessing soil fertility

Silsoe Research Institute (SRI), Cranfield University, Reading University, Agricultural Research Station-Lumle, Agricultural Research Council, Helvetas-SSMP Nepal
Jim Ellis-Jones

Zimbabwe
R7545 Coping strategies of poor households in semi-arid Zimbabwe

International Development Department (IDD) Birmingham University, Intermediate Technology Development Group (ITDG)-UK, ITDG-Zimbabwe
Andrew Shepherd

India
R7558 Understanding household coping strategies in semi-arid India

NRI, Gujarat Institute of Development Research, Society for Promotion of Wastelands Development Astha Seva Mandir India
Czech Conroy

Caribbean
R7559 Improving coastal livelihoods in the Caribbean: institutional and technical options

Caribbean Natural Resources Institute St Lucia West Indies, Institute of Development Studies Sussex University
Yves Renard

Ghana and Nepal
R7560 Review of technologies being evaluated for the forest agriculture interface

Cranfield University, Reading University, Nepal Agricultural Research Council, Institute of Renewable Natural Resources UST Kumasi Ghana
Robin Matthews

Bangladesh
R7562 Methods for consensus building for management of common property resources

Centre for Land Use and Water Resources Research Newcastle University, Durham University, Centre for the Economics and Management of Aquatic Resources Portsmouth University, International Centre for Living Aquatic Resources Management, Centre for Natural Resources Studies, CARITAS, Banchte Shekha and Bangladesh Centre for Advanced Studies
Julian Barr

Brazil and Ghana
R7577 Environmental policies and livelihoods in the forest margins

Reading University, Crops Research Institute Ghana, Poverty and Environment in Amazonia Programme and Federal University of Pará Belém Brazil
Steve Wiggins

Bolivia
R7584 Community-led tools for enhancing production and conserving resources

Leeds University, Acción Cultural Loyola Tarija and Protección del Medio Ambiente Tarija (PROMETA) Bolivia
David Preston

Caribbean
R7668 Impact and amelioration of sediment and agro-chemical pollution in Caribbean coastal waters

York University, MRAG Ltd, Caribbean Environmental Health Institute, Ministry of Agriculture Forestry and Fisheries St Lucia, University of West Indies, Caribbean Agricultural Research and Development Institute, Caribbean Coastal Area Management Jamaica
Callum Roberts

Caribbean
R7797 Opportunities and constraints for coastal livelihoods

NRI, Caribbean Coastal Area Management Foundation Jamaica, Environment Tobago Trinidad and Tobago
Nick Willoughby

Tanzania
R7805 Understanding household coping strategies in semi-arid Tanzania

NRI, Sokoine University of Agriculture (SUA) Morogoro, Institute of Resource Assessment University of Dar es Salaam Tanzania
Mike Morris

Tanzania
R7806 Human and social capital's role in natural resource management

SUA Morogoro Tanzania, NRI
Emmanuel Mbiha

India
R7830 Integrated management of land and water resources for enhancing productivity in Bihar and eastern Uttar Pradesh

Indian Council for Agricultural Research (ICAR) Research Complex for Eastern Region Patna India
AK Sikka (previously SR Singh)

India
R7839 Improved livelihoods – Bihar and Uttar Pradesh (UP)

Institute of Arable Crops Research (ICAR) Rothamsted, Commonwealth Agricultural Bureau International, University of East Anglia, Silsoe Research Institute (SRI), ICAR Research Complex for Eastern Region Patna, Cirrus Management Services Pvt Ltd Bangalore India, International Water Management Institute Sri Lanka
John Gaunt

Ghana
R7854 Further knowledge of livelihoods affected by urban transition, Kumasi

Birmingham University, University of Wales Bangor, Nottingham University, NRI, International Institute for Environment and Development UST Kumasi, CEDEP Ghana
Fiona Nunan

Uganda
R7856 Strengthening social capital for improving policies and decision-making in natural resources management

Africa Highlands Initiative Uganda,NRI
Pascal Sanginga

Tanzania
R7857 Review of common pool resource management

Environment Department York University, Institute of Resource Assessment University of Dar es Salaam, NORCONSULT Tanzania
Jon Lovett

Bolivia, Nepal, Uganda
R7865 Scaling-up strategies for pilot research experiences – a comparative review

NRI, SRI, Reading University, Imperial College at Wye, Agroecología Universidad Cochabamba Universidad Nur/DPID, Tierra Viva Bolivia, ICIMOD Kathmandu Nepal, Centro de Investigación Agrícola Tropical Cali Columbia, NARO Kampala Uganda
Sabine Gündel

Bolivia, Nepal, Uganda
R7866 Upscaling field level pilot research experiences

SRI, Reading University, University of San Simon Bolivia, Ministry of Agriculture Uganda,Helvetas-SSMP N.epal
Jim Ellis-Jones

India
R7867 Filling gaps in knowledge about the peri-urban interface around Hubli-Dharwad

University of Wales Bangor, Development Planning Unit (DPU) University College London, IDD Birmingham University, University of Agricultural Sciences, Development Service and BAIF Development Research Foundation Dharwad India
Robert Brook

Bangldesh
R7868 Maximisation of joint benefits from multiple resource use in Bangladeshi floodplains

Reading University, Newcastle University, MRAG Ltd, Centre for Natural Resources Studies Bangladesh, Econ One Research Inc Los Angeles USA
Bhavani Shankar

Brazil
R7870 Policies, institutions and interventions for sustainable land management in Amazonia

Overseas Development Group University of East Anglia, Centro Agropecuário and IMAZON Belém PA Brazil
Katrina Brown and Marcia Muchagata

India
R7872 Renewable natural resource-use in livelihoods at the Calcutta peri-urban interface

Institute of Aquaculture Stirling University, Department of Fisheries Government of West Bengal, Institute of Wetland Management and Ecological Design, Department of Environment, Government of West Bengal India
Stuart Bunting

India
R7877 Common pool resources in semi-arid India – dynamics, management and livelihood contributions

NRI, Central Research Institute for Dryland Agriculture Hyderabad, Aga Khan Rural Support Programme Ahmedabad India, Michagan State University USA, Water Resources Management Ltd
Barbara Adolph

Tanzania
R7888 Assessment of rainwater harvesting demand and efficacy

SUA Morogoro Tanzania, Newcastle University
Nuhu Hatibu

Nepal
R7889 Dissemination of research findings regarding community forestry

School of Geography Leeds University
Oliver Springate-Baginski

Tanzania
R7949 PARCHED-THIRST model: Development of a client-friendly version 2.1

Newcastle University, SUA Morogoro Tanzania
John Gowing

Ghana
R7957 Poverty dimensions of public governance and forest management

Overseas Development Institute, Institute of African Studies Legon Ghana
David Brown

Nepal
R7958 Linking field level findings with policy and decision-making

Reading University, GAMOS Ltd, SRI, LI-BIRD, Agricultural Research Station-Lumle, Nepal Agricultural Research Council
Chris Garforth

India
R7959 Natural resource management action plan development for Hubli-Dharwad

University of Wales, DPU University College London, IDD University of Birmingham, University of Agricultural Sciences, India Development Service and BAIF Development Research Foundation Dharwad and Best Practices Foundation Bangalore India
Robert Brook

Kenya
R7962 Linking soil fertility and improved cropping strategies to development interventions

Imperial College at Wye, KEFRI and ICRAF Maseno Regional Research Centre Kenya
Georg Cadisch

India, Tanzania and Zimbabwe
R7973 Policy implications of CPR knowledge

Department of Geography Cambridge University, Institute of Economic Growth Delhi India, Centre for Applied Social Science University of Zimbabwe, Faculty of Law University of Dar es Salaam Tanzania
Bill Adams

India
R7974 Human and social capital aspects of soil fertility management

NRI, Deccan Development Society Hyderabad, Bharat Agro-Industries Foundation Tiptur Mysore University India
Barbara Adolph

Nepal
R7975 Social structure, livelihoods and the management of CPRs

School of Development Studies University of East Anglia, Tribhuvan University Kathmandu, Livelihoods and Forestry Project Nepal
Janet Seeley

Caribbean
R7976 Institutional evaluation of Caribbean MPAs and opportunities for pro-poor management

MRAG Ltd, Caribbean Natural Resources Institute St Lucia, University of West Indies Barbados
Caroline Garaway and Nicole Esteban

Ghana
R7992 Evaluation of a manual entitled 'Improved vegetable production in the forest-savannah transition zone, Ghana: with special reference to the maintenance of soil fertility' (an output from NRSP project, R6789) for use by Agricultural Extension Agents

Sunyani Polytechnic Sunyani Ghana
Kwasi Nsiah-Gyabaah

Ghana
R7995 Implementation plans for natural resource management strategies for the Kumasi peri-urban interface

CEDEP, UST Kumasi Ghana, Royal Holloway University of London
Korsi Ashong

Bangladesh
R8083 Strengthened rural services for improved livelihoods

IACR-Rothamsted, Reading University, PROSHIKA, CARE International, Department of Agricultural Extension Bangladesh, Rice-Wheat Consortium
Stephanie White

India
R8084 Enhancing livelihoods and NR management in peri-urban villages near Hubli-Dharwad

University of Wales Bangor, DPU University College London, IDD Birmingham University, University of Agricultural Sciences Dharwad, India Development Service Dharwad, BAIF Development Research Foundation Dharwad, Best Practices Foundation Bangalore India
Robert Brook

Tanzania
R8088 Parched-Thirst (PT) HELP Office and upgrading of PT from v2.1 to v2.2

Soil-Water Management Research Group (SWMRG), SUA Morogoro Tanzania
Nuhu Hatibu

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R8090 Who can help the peri-urban poor?

CEDEP, UST Kumasi Ghana
Korsi Ashong

India
R8100 Investigating improved policy on aquaculture service provision to poor people

STREAM Regional Office Thailand, Gramin Vikars Trust Ranchi, Central Institute for Fisheries Education Mumbai India, School of Development Studies University of East Anglia
Graham Haylor

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R8103 Consensus for a holistic approach to rural livelihoods in riverine islands

ITDG-UK, Stirling University, ITDG-Bangladesh
Barnaby Peacocke

Tanzania
R8115 Development of improved strategies for soil and plant nutrient management in rainwater harvesting systems

SWMRG, SUA Morogoro Tanzania
Nuhu Hatibu

Tanzania
R8116 Improvement of management of CPRs associated with rainwater harvesting systems

SWMRG, SUA Morogoro Tanzania
Nuhu Hatibu

HTS Development Ltd

Thamesfield House, Boundary Way, Hemel Hempstead HP2 7SR
Tel: 44 (0)1442 214369 nrsp@htsdevelopment.com

www.nrsp.co.uk

and

Marine Resources
Assessment Group Ltd

47 Prince's Gate, London SW7 2QA

in association with

Development Planning Unit

The Barlett, University College London,
9 Endsleigh Gardens, London WC1H 0ED