LESSONS LEARNT ON SCALING UP

FROM CASE STUDIES

IN

BOLIVIA, NEPAL AND UGANDA

(R7866: Scaling up successful pilot research experiences. Output 1)

August 2002

Tabitha Middleton
Marco Antonio Roman
Jim Ellis Jones
Chris Garforth
Pat Goldey

IDG/02/21

Acknowledgements
This report is an Output from Project R7866: Scaling up successful pilot research experiences, whose purpose is to develop and promote ways to accelerate positive pilot research experiences on soil, water and land resource management to the wider community. It is funded by the United Kingdom, Department for International Development (DFID), through the Natural Resources Systems Programme, for the benefit of developing countries. The views expressed are not necessarily those of DFID.

We acknowledge the inputs of the large number of researchers, field staff, farmers and rural households in Bolivia, Nepal and Uganda in contributing their time, experiences and resources to the individual case studies that make this report possible.

Cover photos
1 Bolivia: stone wall terraces constructed as a result of PROMIC initiatives
2 Nepal: ancient level terraces in the high hills, Nepal
3 Uganda: vetiver, napier grass and ditches, farmer's response to ongoing research and development initiatives

Lessons learnt on scaling up from case studies in Bolivia, Nepal and Uganda

Contents

ACRONYMS and TRANSLATIONS

Amplicación	Scaling up
ASOGACOM	Local livestock owners' association (Bolivia)
CARE	CARE International
CIAT	*Centro Investigación Agricola Tropical*
CIFEMA	Centre for research, training and agricultural extension
CIPCA	*Centro de Investigación y Promoción del campe*sino
CIs	Collaborating institutions
DFID	Department for International Development (of the UK Government)
ELF	Experienced lead farmer
IIRR	International Institute of Rural Reconstruction
ISWC	Indigenous soil and water conservation
FAN	*Fundación Amigos de la Naturaleza*
GO	Government organisation
LF	Lead farmers
NGO	non Government organisation
NRM	Natural resources management
ODA	Overseas Development Administration (former name of DFID)
M&E	Monitoring and evaluation
Municipio	Municipal (Local) Government
PDM	Municipal development plan
PFI	Promoting farmer innovation
PLUSCO	*Plan del Uso de Suelo Comunal* (Community level land use plans)
POP	*Plan de Ordenamiento Predial*
Prefectura	Provincial Government
PROLADE	*Proyecto Laderas* (Hillsides project)
PROMIC	*Programa de Manejo Integral de Cuencas* (Programme for Integrated catchment management)
PROSANA	Programa de seguridad alimentaria (food security programme)
PTD	Participatory Technology Development
SIBTA	*Sistema Boliviano de Tecnologia Agropecuaria*
Sindicatos	Syndicates (Community representative bodies)
SSM	Sustainable soil management
SSMP	Sustainable soil management Programme (of Helvetas, a Swiss funded NGO)
SWC	Soil and water conservation
SWOT	Strengths, weaknesses, opportunities and threats
Superintendencia Agraria	Agricultural superintendent
UMSS	*Universidad Mayor de San Simón*, Cochabamba

EXECUTIVE SUMMARY

Purpose of the report
The limited measurable impact of natural resource management (NRM) technologies and practices, developed and successful at a pilot level, is causing concern amongst donors and development agencies. In order for successful NRM research to contribute to poverty alleviation and livelihood improvement, widespread scaling up of the practices and approaches developed is necessary.

This report synthesises the lessons learnt from a series of case studies focusing on the scaling up experiences of projects promoting NRM technologies and practices in hillside areas of Bolivia, Nepal and Uganda. It does not provide a prescription for scaling up strategies. It is a step in the project to identify elements that can be built into a strategy. Four institutions in Bolivia are presently using these lessons to develop their own strategies. Further lessons learnt from this process will contribute to the development of appropriate strategies in the next phase of the project.

Methodology
Seven case studies were used to identify important factors, which influence the scaling up process and to learn from the positive and negative experiences of institutions in the process of scaling up the impact of technologies or practices that they had developed or piloted.

Each study consisted of a multiple-stakeholder analysis of the scaling up experiences of a range of NRM technologies and practices. The approach comprised primary institutional analysis, community level analysis, individual farmer analysis and secondary institutional analysis. Although it was intended that these follow a logical sequence, in practice an iterative process was used dependent on time and availability of key individuals.

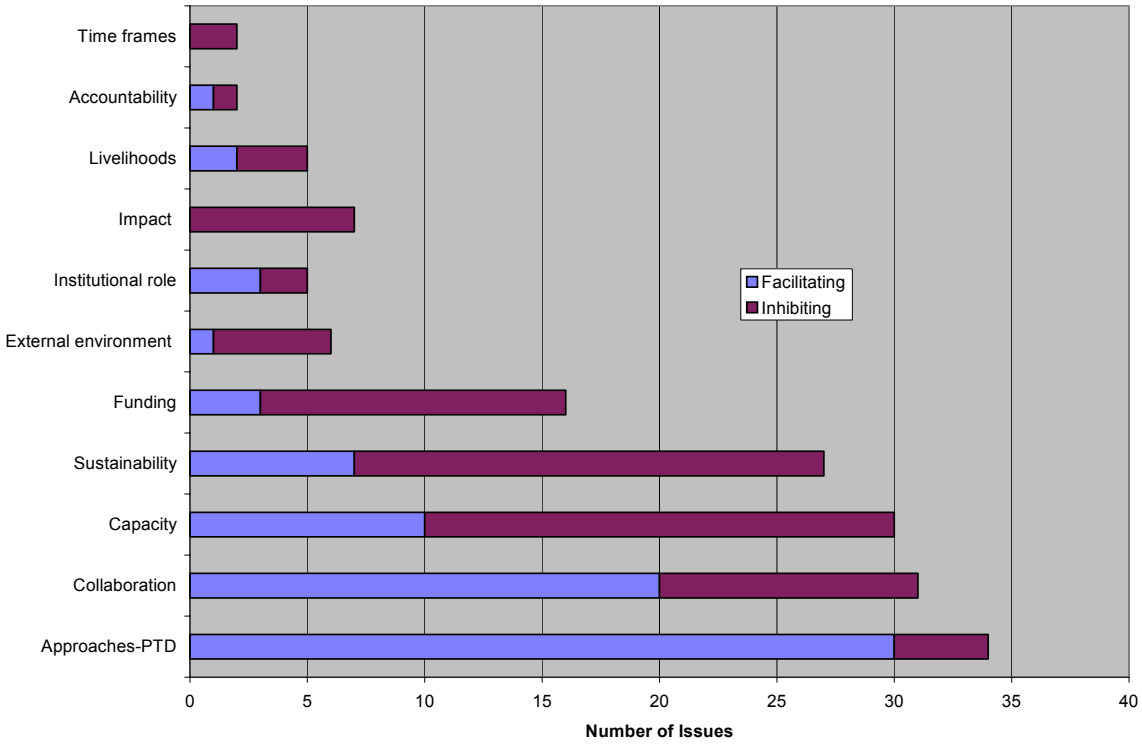
The research questions
The fundamental research question, which served as the Purpose to the project, was: "How to accelerate and upscale positive pilot research experiences on soil, water and land resource management?" For the purpose of case study analysis the key research questions addressed were:

- What were the key factors facilitating and inhibiting scaling up?
- What were the positive aspects of the process and how can these be built upon?
- What problems were experienced and how could these be overcome?
- What is the influence of people's livelihood strategies on the process?

Case study summaries
The case studies varied in both orientation and time that they had been operational.

- PROLADE-3 year's research followed by two years of promotion. Primarily research but includes technology promotion (Bolivia).
- CIAT-3 years. Research only (Bolivia).
- PROSANA-12 years (Bolivia), SSMP-4 years to date (Nepal), PROMIC-12 years (Bolivia). Integration of research, development and training activities.
- CIFEMA-20 years. Integration of research, development, commercialisation and training activities (Bolivia).
- ISWC-PFI-6 years. A period of research, followed by a period of development and promotion. (Uganda)

Notwithstanding the differences between the case studies, a clear picture of facilitating and limiting factors has become apparent. Each factor from each case study has been categorised into one of the following broader categories: institutional roles; accountability concerns; funding; time frames; external project influences; collaboration, networking and partnerships;



capacity building; community approaches and participatory technology development, livelihoods; sustainability and impact assessment. Consolidation from all the case studies identified issues of concern (Figure E1).

Figure E1: Summary of main facilitating or inhibiting scaling up issues.

While all are important, the dominant issues were: approaches to the community (including PTD); collaboration; capacity; sustainability and funding. While use of appropriate PTD approaches were seen as largely facilitating, factors requiring greater consideration included capacity building, improving collaboration, more innovative funding mechanisms, greater appreciation of external environmental issues and a need to assess impact, all of which are likely to address sustainability concerns.

A key concern was a limited understanding of the vertical dimensions of scaling up and the potential role for each institution to make a positive contribution to this. In some cases effort goes into horizontal scaling up, when vertical scaling up may be more appropriate.

Key lessons learnt on the scaling up process

Generic lessons on factors facilitating and limiting scaling up have been identified for each of these categories.

Facilitating	Inhibiting
Vertical scaling up	
Some organisations have given consideration to inter–institutional collaboration, community empowerment and government involvement in scaling up.	There is limited understanding of the term 'scaling up,' beyond dissemination especially in smaller institutions. Vertical scaling up is given limited consideration.
Institutional roles Some scaling up occurs by chance rather than part of a plan.	There is often inadequate collaboration between research and development institutions. Each institution tends to act individually, often in competition with each other.
Accountability Working with existing community groups can reduce duplication and ensure that community	• Institutions are usually accountable to donors and not local communities, where development agendas may be

Facilitating	Inhibiting
needs are taken into account and greater ownership and control over development interventions.	more focused on donor objectives than the priorities of the farmers and local communities. • NRM interventions may not be considered in the context of other community issues and priorities.
Funding arrangements • Long-term financial commitment facilitates scaling up providing a secure institutional environment conducive to long-term planning and the formation of inter–institutional networks and alliances. • Having the resources to plan, budget and undertake scaling up activities (pre-project situation analysis, networking, capacity building) in both research and development institutions. • Availability of local government (municipal) funding with cost sharing opportunities. • Donor willingness to provide funding for scaling up activities.	• Poor integration between research and development funding. • Low priority for NRM activities in local Government funding. • A focus on institutional sustainability through commercialisation/privatisation can compromise a pro poor focus. • Short-term, uncertain and limited funding are predominant factors limiting most scaling up activities.
Time frames • A pre-project planning phase. • Longer-term projects are better able to develop institutional networks and partners at many different levels. • Early development of short medium and long-term initiatives for scaling up. • Long-term support through community based NGOs increases farmers' confidence and improves impact.	Landscape level implementation of NRM practices are unlikely to occur within a short timeframe.
External environmental analysis • Focused and timely situational analysis of the political, institutional, cultural, social and biophysical environment should enhance the impact of scaling up.	• Failure to understand the opportunities and threats of the political and institutional environment can limit scaling up.
Collaboration, networking and alliances Inter-institutional collaboration (from grass roots to local government level) is integral to successful, sustainable scaling up. • Working through existing organisations, where they exist, rather than creating new ones, facilitates the spread of information at the community level and increases farmers willingness to participate. • Working through local government channels can facilitate up scaling where appropriate legislation and capacity is in place. • Collaboration is more successful where there is a capable and committed facilitating institution co-ordinating the scaling up. Development of networks of collaborators with well-defined roles and responsibilities and regular meetings is a successful mechanism for improved communication. • Binding agreements help to ensure that commitments are fulfilled. • Consultation with a wide range of stakeholders in the planning stage and identification of potential collaborators can facilitate scaling up by improving the options for later networking and collaboration.	• The success of working through local government structures is highly dependent on government capacity and is vulnerable to political change. • Weak capacity, lack of funds and lack of true motivation on the part of collaborating organisations can undermine the success of inter-institutional collaboration in scaling up. • Lack of opportunities for inter-institutional communication and knowledge sharing is a key factor limiting scaling up. • Lack of institutional lobbying for NRM to be raised on the political agenda.

Facilitating	Inhibiting
• Collaboration is facilitated by a shared commitment to the goals of scaling up.	
Capacity	
• Strong organisational and technical capacity at institutional and community level is essential for scaling up.	• Lack of sufficient capacity will undermine the effectiveness of inter-institutional networks. Appropriate capacity building is a necessary activity in order to facilitate the scaling up process.
Approaches and participatory technology development	
• Raising farmer awareness of NRM issues and their influence on farming can generate demand for appropriate technologies and increase commitment to improved NRM practice. • Participatory technology development and dissemination approaches, which bring together local and scientific knowledge, ensure that the technologies/practices promoted are adapted to farmers' needs and that farmers are aware of the wider options available to them. • Practical field demonstrations, exchange visits and technical support allow farmers to see the benefits of new practices and to understand how to implement them on their own land. • In certain cases, well timed incentives in combination with sufficient awareness raising and motivation may be justified. ▪ Technology builds on local practice, uses local materials are used, low levels of investment are required, short term benefits accrue and multiple benefits are derived	• When farmers are not involved in the planning process their daily realities are often overlooked resulting in inappropriate or poorly timed activities. Involving farmers in planning project activities increases their commitment, ensures that activities are responding to their needs as well as fitting in with their realities. • Incentives which mask the true cost of a practice or which are more attractive than the practice in itself may increase the short-term uptake of NRM technologies and practices at the expense of sustainability. • Where technology is given greater importance than process can inhibit PTD activities
Sustainability	
• Improving local organisational capacity, increased partnership, long-term access to materials and technical support need to be available to local communities	
Livelihoods	
	• Those who adopt NRM technologies tend to be better resourced, with key factors influencing adoption being access to resources, migration, education and levels of non-agricultural income.
Impact assessment	
	• Lack of M&E makes it difficult to measure impact and ascertain whether scaling up is occurring. • M&E is often not undertaken due to lack of funds and confusion over who should take responsibility and how it should be done.

Actions needed to accelerate scaling up

Different organisations with their own strengths and weaknesses need to develop their individual objectives, programmes and responsibilities for scaling up. A number of actions have been identified which can be used to inform the formulation of such programmes. These include:

Ensuring issues of vertical scaling up are addressed

Institutions at all levels require clear vision of how vertical and horizontal scaling up can be promoted. Each should clearly define their role in scaling up, plan, implement, monitor and evaluate appropriate activities.

To facilitate this, appropriate materials and activities to increase institutional capacity in scaling up should be developed and disseminated.

The need for research and development institutions to work closely together

i) Institutions should incorporate scaling up into their goals to ensure that they undertake appropriate activities. These may be better achieved through building alliances with partner organisations.
ii) Research institutions need to link with development organisations with greater capacity for networking and political advocacy in order to increase impact.
iii) Technology development requires a flexible process approach to ensure that the technology is appropriate.

Improving accountability to local communities

i) Institutional development activities need to focus on a broad understanding of community priorities and needs rather than institutional priorities and interests.
ii) Institutions need to be as accountable to local communities and their organisations as they are to donors.
iii) Institutions should work with existing community groups to foster greater local ownership and control over development interventions.
iv) Mechanisms should be developed to promote greater control over development interventions, by local community organisations.

Seeking more innovative funding mechanisms

i) There needs to be improved integration between funding of research and development activities.
ii) Institutions need to plan, budget for and carry out scaling up activities in particular: situation analysis; networking; capacity building and M&E.
iii) In building alliances, institutions should consider funding mechanisms such as cost sharing and securing existing government funding in order to promote local sustainability.
iv) In order to develop better local funding opportunities, institutions need to promote and lobby for higher political priority for NRM.
v) Attempts to ensure institutional sustainability need to ensure that they do not compromise the pro-poor focus of activities.
vi) Donors need to consider longer-term flexible funding approaches, which take into account the need for pre-project analysis with clear intermediate milestones.

Increasing time horizons

i) Institutions need to develop short, medium and long-term plans, which define how they will contribute to scaling up.
ii) Innovative ways to provide longer-term technical/organisational support at the community level need to be developed.
iii) Achieving landscape level impact is a long-term process and interim targets need to be established with local communities and donors.

Ensuring external environment analysis

i) Institutions taking the lead role in scaling up technology or practice should always undertake a timely situational analysis focused on the opportunities and threats to scaling up. Such analysis should go beyond the community level and include consideration of political, institutional, social, cultural and biophysical factors identifying the strengths, weaknesses, opportunities and threats associated with each.

Improving collaboration, networking and forming alliances

i) A key stakeholder is required to facilitate and co-ordinate the process, if successful collaboration for scaling up is to occur.
ii) The 'primary' institution needs to plan for collaboration (vertical and horizontal) early in the project cycle, identifying demand, supply and support stakeholders.
iii) A wide range of stakeholders should be consulted in the project-planning phase to improve options for later networking and collaboration.
iv) 'Primary' institutions should work with/through existing local groups and help build their capacity when needed.
v) Opportunities for institutional knowledge sharing and collaboration should be increased.
vi) Networks of collaborators with regular interaction to resolve issues arising and share experiences should be created.
vii) Where appropriate policy is in place, strategic alliances should be formed with local government taking into account the problems of lack of capacity that may exist.

Building capacity

i) Capacity building activities should be targeted at both institutional and community level stakeholders according to their specific needs.
ii) Successful capacity building activities should be prioritised and funded as a vital part of the up scaling process.

Improving community level approaches to technology development and dissemination

i) Awareness raising activities should always be undertaken in conjunction with or prior to technology promotion.
ii) Farmers should be involved in planning project activities to ensure that they respond to their needs and fit in with their realities.
iii) Participatory technology development approaches should bring together local and scientific knowledge.
iv) Farmers should be made aware of the wider NRM options available to them and helped to understand the concepts underlying the technologies or practices.
v) Practical field demonstrations, exchange visits and technical support should all be provided to allow farmers to see the benefits of new practices and how they can be implemented in their own land.
vi) Incentives should only be used where they can be justified and there is evidence that they are not the overriding factor influencing adoption.
vii) Where incentives are used, there should be sufficient awareness raising activities.
viii) In order to facilitate uptake amongst farmers where possible technologies should be based on locally available materials, require low investment and demonstrate tangible short-term benefits.

Ensuring sustainability after project completion

Farmers should be aware from the start of the project timeframe so that they do not feel disillusioned and let down when the project withdraws.
Institutions need to develop strategies that ensure that farmers have access to the resources that they need to continue once the institution has left.
Key elements of an exit strategy should include improved local organisational capacity, long-term access to materials and technical support.

Including the poorest and marginalised

Institutions need to seek improved understand about the way in which people's different livelihood strategies are influencing adoption in order not to overlook and to target poorer farmers and marginal groups.

Assessing impact

i) Capacity needs to be built in M&E at both institutional and community level.

ii) Institutions need to consider M&E from the start of the project cycle and incorporate it into their plans so that it can be funded.

Next steps in the research process

Each of the individual case studies was presented and discussed at a Workshop in Bolivia during February 2002. At this workshop, institutions considered and drafted work plans that would assist them in scaling up their Outputs faster. Support is now being provided to CIFEMA, PROLAD, PROMIC AND PROSANA in finalising their plans, monitoring the implementation and evaluating the results. The end product of the evaluation and analysis of this action research process will be the provision of guidelines for improved scaling up practices.

1 INTRODUCTION

1.1 Purpose of the report

This document synthesises the lessons learnt from a series of case studies focusing on the scaling up experiences of projects promoting NRM technologies and practices in hillside areas of Bolivia, Nepal and Uganda. These studies have provided lessons some case specific others more generic on factors, which facilitate and limit the scaling up process, contributing to the requirements of Output 1 of the project (Annex 1).

Output 1 Processes for scaling up successful pilot NRM management and technologies at community and individual level analysed and understood with key constraint and success factors identified.	**OVI** Processes evaluated and key opportunities and constraint documented and used by collaborating institutions in Bolivia and at least one other country.
Activity 1.4 In each case study processes of NRM innovation and scaling up from the individual, community, NGO and researcher perspectives analysed and evaluated.	**OVI** Key issues in scaling up identified and documented

The report does not provide a prescription for scaling up strategies. It is a step in the project to identify elements that can be built into a strategy. This analysis is now providing a basis for specific action research. Further lessons learnt from this process will contribute to the development of appropriate strategies, which should then allow Guidelines[1] for scaling up to be developed.

The first part of this report provides a brief background to the issue of scaling up and to the development of this project. Chapter 2 describes the methodology used for the case studies. Chapter 3 sets the scene for analysis, with a brief description of each of the case studies identifying common factors between the case studies. Chapter 4 uses these common factors, drawing upon specific examples, to identify and draw lessons from key constraints and success factors to scaling up. Conclusions and actions required to address in particular the inhibiting factors on how scaling up can be made more effective are presented in Chapter 5.

This provides the starting point for a number of institutions that have participated in the study to date to examine their own goals and strategies and revise them accordingly.

1.2 Background

The limited measurable impact of natural resource management (NRM) technologies and practices, developed and successful at a pilot level, is causing concern amongst donors and development agencies. In order for successful NRM research to contribute to poverty alleviation and livelihood improvement widespread scaling up of the practices and approaches developed is necessary. Acknowledgement of this fact has resulted in recent in the concept and practicalities of 'scaling- up'.

In 1999 and 2000, pioneering international workshops in Washington and the Philippines (IIRR 2000), discussed concepts and principles for scaling up in the context of agriculture and NRM. These workshops produced the currently accepted definition of scaling up (Box 1), and the first publication dedicated to the issues of scaling up in an NRM context which synthesised existing thinking and experience on the matter.

[1] . Output 2 of the project provides for "Best Options" -*Processes* for scaling up developed, refined and *validated* through participatory action research.

Box 1: Definition of 'scaling up'

The currently accepted definition of 'scaling up', as agreed in the IIRR workshop in the Philippines is:

'…..*More quality benefits* to *more people over a wider geographical area, more quickly, more equitably and more lastingly'*.

This comprises 2 components:

Horizontal scaling up (scaling-out) is a geographical spread to more people and more communities involving expansion within the same stakeholder group. Achieving geographical spread is also realised through increasing participation by decentralisation of accountabilities and responsibilities (breaking down large programmes into small programmes or projects) **(sometimes called scaling down).**

Vertical scaling up involves an institutional spread involving other stakeholders in a process of expansion from grassroots organisations to policy makers, donors, development institutions and international investors.

(Source: IIRR, 2000)

Despite the richness of the outputs from the IIRR workshops, relatively little information was available on practical strategies to facilitate scaling up. In order to fill this knowledge gap, DFID's Natural Resources System Programme (NRSP/Hillsides) commissioned this two year research project (R7866) which seeks to identify strategies for the successful scaling up of promising pilot NRM experiences. R7866 aimed to build upon the outputs of the IIRR workshops using case studies to answer some of the key questions that had arisen and validate potential scaling up strategies through a process of action research with interested institutions in Bolivia. Table 1 provides a framework for analysing scaling up experiences that was developed during the Philippine workshop (IIRR 2000) and used as the starting point for developing the R7866 case study methodology (see chapter 2).

Subsequent to the undertaking of the case studies, understanding of scaling up issues for NRM research was further strengthened by the publication of a review of documented scaling up experiences (Gündel *et al.,* 2001). The review included a conceptual framework for identifying scaling up strategies (Table 2). This framework was used as a tool for analysing the findings from the R7866 case studies at a stakeholder workshop held in Cochabamba, Bolivia, in February 2002 (Roman *et al*., 2002).

Key findings from the case studies are currently being implemented by collaborating institutions in Bolivia as part of the action research process. This report focuses on the initial lessons learnt from the case studies themselves. The action research component of the project will be analysed in a separate report.

Table 1.1: A framework checklist for analysing scaling up processes

The Pilot Stage	The sparks	Understanding scaling up	MANAGING THE SCALING UP PROCESS		The desired impact	The desired outcome
			Planning and implementing	Monitoring and evaluation		
SMALL SCALE INITIATIVE OR EXPERIENCE	Who are the catalysts for scaling up?	What are the ***concepts*** and ***principle*** that guide the scaling up process?	Whose vision of development should we be scaling up?	How do you build monitoring into scaling up?	More benefits to more people over a wider geographical area, more equitably more quickly and more lastingly	Empowerment and social change
	Who influences the decision to scale up?	How do different stakeholders perceive scaling up?	Which different stakeholders are or could be the target in scaling up? How doe this effect our approach?	How do you know when quality has been achieved? What are the indicators of quality?	Environmental sustainability	
	What are the most important things that influence the decision to scale up?	What are the ***issues*** involved in scaling up?	What are we scaling up? Technology, process, projects, institutional innovation methodology and policy innovations?	What are the costs and benefits of going to scale?		
	What kind of environment drives innovation behind successful pilot projects?		What are the facilitating and limiting factors for scaling up?	Do benefits accrue to different actors at different levels of scaling up?		
	How can this environment be scaled up?		Do we sacrifice participation when we scale up? How?	As one scales up can you maintain the quality that catalysed the process in the first place?		
			What are the strategies for engaging local stakeholders more deeply in scaling up? How can effective partnerships be fostered? (as against competitive ones) What are the characteristics of spontaneous diffusion that might be relevant to scaling up? How do you deal with external factors such as research agendas, markets and funding? What are the capacity building needs? At what levels? What resources are required?	How is sustainability compromised?	**Adapted from IIRR, 2000**	

Table 1.2: A conceptual framework for identifying scaling up strategies

Project phases	Activities relevant to scaling up	Strategic elements towards successful scaling up	Attributes
Pre-project	Situation analysis	Engaging in policy dialogue on pro poor development agendas.	Inclusive and plural
		Identify community institutional environmental enabling and constraining factors to scaling up.	Recognise the difference
	Identify target groups	Appraisal of capacity of agencies involved in scaling up required.	
	Setting objectives and outputs	Identifying appropriate research objectives and outputs within the development processes to ensure widespread uptake.	Consultative Collegiate
	Developing monitoring and evaluation system	Identifying indicators and planning, monitoring and evaluation methods to measure impact and the processes of scaling up.	Participatory
	Collaboration	Building networks and partnerships to increase local ownership and pathways.	Constructivist
	Funding mechanisms	Develop appropriate funding mechanisms to sustain capacity for expansion and replication.	Innovatory
Implementation	Capacity building	Building capacity and institutional systems to sustain and replicate.	Vertical sharing
	Institutionalising		Start early
	Partnership forging	Demand, supply and support actors identified.	Collegiate
	Networking	Other resource organisations contribute with products and by building technical capacity.	Inclusive
	Raising awareness	Multi media dissemination of findings.	
	Policy dialogue	Aggregate and assess findings from individual projects and derive policy relevant information.	Pro-active
	Monitoring and evaluation support studies	Central to scaling up processes in providing evidence to influence policy makers, in deciding what should be scaled up and how this might be achieved.	Participatory Plural
Post-project	Exit strategy	Concerted action required at a regional level.	Concerted
	Dissemination	Should involve the target group as disseminators.	Accessible
	Impact assessment	Built upon monitoring and evaluation. Representatives of target group part of assessment team. Technological and livelihood assessment required.	Participatory

(source: Gündel et al 2001)

2 Methodology

2.1 Introduction

A number of case studies were used in order to identify important factors, which influence the scaling up process and to learn from the positive and negative experiences of institutions in the process of scaling up the impact of the technologies/practices that they had developed or piloted. A total of seven case studies were selected, five in Bolivia (Roman *et al*., 2001a, 2001b, 2001c, 2001d, Linzer and Rojas 2001), one in Uganda (Ellis-Jones *et al*., 2001) and one in Nepal (Neupane *et al*., 2002).

Each study consisted of a multiple-stakeholder analysis of the scaling up experiences of a range of NRM technologies and practices. The approach comprised primary institutional analysis, community level analysis, individual farmer analysis and secondary institutional analysis. The scaling up process was followed from its starting point with the 'primary institution' via the intermediate stakeholders to the target beneficiaries. This provided opportunity to learn from different stakeholders their perceptions of the factors, which facilitated or limited the process. This methodology was used as a guideline for each case study research. In practice the extent to which it was followed varied, depending on time constraints and availability of key staff and institutions. In practice an iterative process was followed, to ensure all relevant information was provided.

In all cases the primary institution was the starting point for the research providing an overview of the process and providing information on other stakeholders and the target communities. This analysis was used to identify communities and secondary institutions that could be interviewed. It also provided the baseline information on the scaling up process with which to compare the opinions of the other stakeholders.

Figure 1 summarises the research approach for the project with arrows representing the flow and subsequent use of information. The initial lessons from the case studies were presented and explored at a stakeholder workshop in Cochabamba in order to validate them (Roman *et al* 2002). During the workshop, collaborating institutions developed work-plans that could be used for improving scaling up. These are currently being implemented, where practical and are being monitored over the remainder of the project with lessons learnt e used to identify guidelines for scaling up approaches.

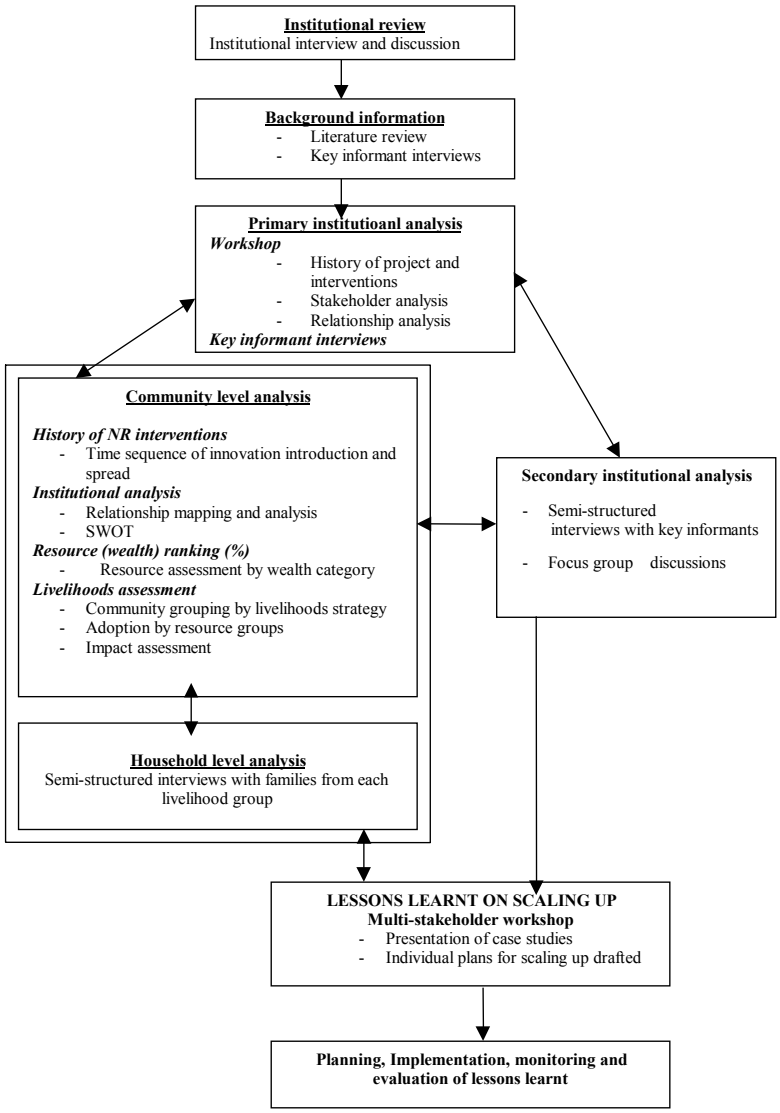


Figure 1: Flow diagram summarising the process in the research approach

Each case study comprised a similar process (Figure 1). This included an institutional review and interview to assist case study selection. Following selection key literature and further interview a process of primary institutional analysis involving a staff workshop at which project history and stakeholder analysis were undertaken. This, in turn, was followed by an iterative process of community (including household) and secondary institutional analyses, detailed in Sections 2.4-2.7. Where local practicalities (time and people availability) dictated, an iterative process was followed fitting local requirements. Results from each case study were documented and shared at a stakeholder workshop (Roman *et al.,* 2002). The lessons learnt are now being used by individual institutions in a process of planning, implementation, monitoring and evaluation of improved scaling up.

2.2 The research questions

The fundamental research question, which served as the Purpose to the project, was:

"How to accelerate and upscale positive pilot research experiences on soil, water and land resource management?"

For the purpose of case study analysis the key research questions addressed were:

- What were the positive aspects of the process and how can these be built upon?
- What problems were experienced and how could these be overcome?
- What is the influence of people's livelihood strategies on the process?

Since scaling up is a complex process with multiple dimensions (IIRR 2000), meaningful analysis required an increased understanding of the ways that political, institutional, socio-economic, technological and biophysical issues affect the process. It was considered necessary to gain background information on the nature and history of the process and of the areas involved. It was also important to understand the dynamics between the different stakeholder groups and to be aware of the extent of local participation, ownership, accountability and resource mobilisation. The question of who drives the process and their motivation. For example whether implementing institutions responding to the needs of farmers or donors may greatly influence the sustainability of the process. Since many of these issues are interrelated, it proved useful to categorise the questions under the different dimensions identified in the IIRR and World Bank workshops (IIRR 2000) (Table 3).

Table 3: Questions for scaling up

Dimensions of scaling–up	Key issues	Key questions
Methodological/Process	Empowering Learning Social change	How were the technologies/practices/principals promoted? *Who controls/drives the process?* *(farmers, donors, NGOs?)* *Was the process technology or principal led?* Was the scaling up process planned or spontaneous? Was local capacity strengthened? *How?* *How can we measure this?* How do we evaluate success and failure? *What indicators should be used?* *Over what time scale?* *How should this be monitored and by whom?*
Temporal	Entrance points Stages Adaptability sustainability	At what point was the scaling up process initiated? *What influenced this?* *What impact did this have on the process?* What were the key decision points? At what point did different stakeholders come on board? *What influenced this?* How long does the process realistically take (to what level)? Is the process sustainable? *How do we monitor this?*
Spatial/Geographical	Horizontal spread Target areas Agro-ecology Site-specificity	What is the geographical/biophysical context? Which groups were targeted? Why? What unit was considered (watershed, community, region etc)? Have NRM practices been scaled up to an extent that improves/maintains the environmental services of the watershed? Are there tangible benefits? (time scale?)

Dimensions of scaling–up	Key issues	Key questions
Institutional/organisational	Vertical and horizontal networks Stakeholders and players Catalysts Policy and legislation	What is the institutional context? What is the social context? Who are the key stakeholders? What are the relationships between these groups? How do they evolve over time? Where there are gaps/weaknesses how have /could these be addressed to improve collaboration/partnership? Who makes the decisions? How are decisions made? How are conflicts resolved? *Are there compatabilities and synergies?* *Are there trade off mechanisms?* How do national and local policy influence the process? Are there local bye-laws or traditions that influence the process? ***How are these enforced?*** Are local needs/views incorporated into policy? • ***How was/could this be done?***
Technological	Options Site specific vs. broad	What was being scaled up? What adaptations/innovations occurred?
Economic	Resources Cost benefit Markets Credit	What are the costs? What are the benefits? What resources are needed (finance, labour, materials, expertise etc)? Who supplies them? Over what time scale? *Is this sustainable?* *How can it be made sustainable?* What is the role/importance of markets?
Equity	Winners and losers Social risk Cost sharing	How are costs and benefits distributed between stakeholder groups? Are some groups excluded/poorly represented? Does the process disadvantage some stakeholders?

2.3 Selection criteria for the case studies

Project selection was based upon the fulfilment of some basic criteria.

Bolivia

The three key criteria for the selection of the Bolivian cases were as follows:

- That the technology/practice or methodology/process has been successful at a pilot level.
- That there is evidence that its is being adopted or adapted in communities beyond those involved in the pilot stage.
- That there is evidence that at least one organisation, that is not the research/initial organisation is promoting this practice.

The success of the scaling up process in itself was not a selection criterion since it was difficult to define success. However, the key criteria demonstrate that the process has at least begun. In order to enrich the process and ensure a varied range of cases, a list of secondary criteria were considered to be factors which might have significant impact on the process including:

- *Geographic location (cultural context).*
- *Horizontal vs. vertical scaling up.*
- *Government institutions vs non-governmental /private institutions.*
- *Participatory vs. non-participatory approaches***.**
- *Technological vs. methodological focus***.**
- *Different levels of financial investment.*

- *Different project time scales.*

The case studies were selected through a series of institutional interviews during which these criteria were considered. Ultimately, a key criterion proved to be the availability and disposition of the institution to collaborate.

Uganda
The Uganda case was specifically selected due to its long history of project involvement and participatory research and development within the wider context of learning from farmers and promoting innovative technologies not only in Uganda but also form a number of other African countries. Project Outputs and activities have been well documented allowing lessons to be learnt without extensive field studies.

Nepal
The Nepal case was selected due to the known familiarity of the primary institution with the concept of scaling up and the fact that there was a positive existing relationship with some of the key staff. This facilitated the undertaking of fieldwork in a short space of time.

2.4 Primary institution analysis

The primary institution, the one promoting the practice that it had developed, was the starting point for an exploration. This stage involved a grey literature review, key informant interviews and an institutional workshop. It provided the main body of information on the process that could be used as a baseline against which to compare the views of the other stakeholders.

Literature review and key informant interviews
The literature review and key informant interviews provided an understanding of the political, institutional, geographical, and socio-economic context of the scaling up process for each case study. They ensured that the project team had knowledge of the broad objectives, aims and strategies of the institution prior to the institutional workshop.

Institutional workshops
These workshops brought together the main institutional stakeholders in order to analyse the scaling up process together. The activities listed below were used to stimulate discussion and help visualise the scaling up process in order to answer the key questions (Table 3).

- *Mapping the process (actors and linkages)* was a visualising activity that showed the way in which the case study had evolved over time as well as providing a list of key stakeholders and their relationship to the primary institution. Interrogation of the map enabled many of the research questions to be explored by the group. The map were also used to plan future interviews and possible community level interventions.

- *Analysing stakeholder roles and linkage performance* was based on Ramirez's (1997) methodology for analysing the quality/performance of linkages between different stakeholders. Once limitations had been highlighted, the potential for improving the linkage performances was discussed.

- *SWOT analysis* was used to analyse the factors, which limit and facilitate the process, as well as the opportunities for improvement and the external threats.

2.5 Community level analysis

The community level analysis explored the different factors (political, institutional, social, cultural, economic, biophysical) influencing the spread and uptake of new

technologies/practices within a community. It provided the farmers' perspective on the dissemination strategies used by the primary institution and an understanding of the ways in which differing livelihood strategies and assets affected people's ability to access, adopt or adapt new practices. It also sought to understand any conflicts or problems that might limit the spread of NRM practices within the community.

Although the case studies mostly focused on the spread of a given technology or practice, it was important to gain an understanding of the communities' history of NRM involvement and the relationships that they had had with different projects and institutions. This was to gain an idea of how the case study technology fitted into the broader picture. For example there could have been a case where a particular study technology had not successfully scaled up whilst in the same community a different technology or practice had spread rapidly. Understanding why one had failed where the other succeeded was considered vital in identifying scaling up strategies.

Key questions were:

- What type of activities best assist farmers in adopting improved NRM?
- How do their different livelihood strategies facilitate or limit their ability to adopt or adapt new technologies and practices?

Criteria for community selection:

Where possible community visits were made without the presence of the primary institution to ensure that the local informants were able to speak freely. Analysis was undertaken where possible in a range of representative but contrasting communities, including at least one, which had been reached by a secondary organisation. Examples of selection criteria include communities where uptake had been high; those where it had been low; those recently involved in the project and those which had been involved for a number of years. Logistical considerations also played an important role.

Community workshop

The workshop involved a range of activities designed to provide a clear perspective on NRM practices within the community. Exploring the history of NRM interventions was important in understanding why some had failed to spread when others had succeeded. Farmer analysis of community level institutional linkages provided a forum for discussing the relationships with different institutions, the ways in which their modes of operation were perceived by the community members and how this affected scaling up.

The main activities were.

- *A transect or tour of the community lands*-helped to build a picture of the extent to which villagers were undertaking NRM practices in their fields, providing an impression of NRM practices at a landscape level. Particular attention was paid to the work of the primary institution.
- *A matrix of NRM interventions* – provided the starting point for discussing the approach taken to introduce new practices into the community and the way that this was perceived. e.g. How was the technology promoted? Was the process driven by a technology or by a concept? How useful did they find the approach? How were the costs and benefits distributed? Were some groups excluded? What was the impact? Is the process sustainable?
- *Institutional mapping* - was a visualising activity, which showed the relationships between the different stakeholders at a community level and provided a view of the relationship between different stakeholders and the key institution. Interrogation of the map enabled many of the research questions to be explored by the group.
- *Analysis of stakeholder linkage performance* - was based on Ricardo Ramirez's (1997) methodology for analysing the quality/performance of linkages between different stakeholders. Once limitations had been highlighted, the potential for improving the linkage performances was discussed.
- *Livelihoods assessment and wealth ranking* - aimed to provide an understanding of the different livelihood strategies existing in the community and the way that these influenced people's ability to adopt new practices/technologies. The focus was on livelihood strategies rather than wealth but the community members were asked to choose their own criteria for stratification. Attempts were made to find out how many families from each stratum were involved in the work of the case study project.

2.6 Household /Family level analysis

The results of the wealth ranking were used to select individuals to participate in semi-structured interviews.

The aim of these interviews was to:

1) Gain more detailed information on different livelihood strategies.
2) Gain households' opinion of the case study project and its dissemination strategies.
3) Understand in greater detail the factors that influence the ability of families from each strata to adopt NRM practices.
4) Validate the findings from the community meetings.

The criteria used to select these farmers were as follows:

- Minimum four per wealth stratum.
- Families that are involved with the project and those that are not.

2.7 Secondary institutional analysis

Both the 'primary' institutional analysis and the community analysis provided opportunities to identify 'secondary' institutions involved in the scaling up process. 'Secondary' institutions were considered to be organisations, other than the primary institution, such as donors, NGOs or local government, which played a role in the scaling up process.

This part of the research was particularly important in understanding the vertical component of scaling up, for example, the importance of inter-institutional alliances in increasing impact and the potential for local government policy to support up scaling. It also provided the opportunity to validate information gained in the primary institution and community analyses.

Semi structured interviews were used to explore the role and perceptions of secondary institutions involved in the scaling up process. These were tailored to be relevant to the specific institutions whilst bearing in mind the key research questions.

3 CASE STUDY SUMMARIES

3.1 Introduction

The selected case studies represent a wide range of approaches to the scaling up of NRM practices. This chapter sets the scene for the main analysis in chapter 4 by providing a brief description of each case study[2]. The project history was gained from discussions with key informants from the primary institution. The subsections on secondary institutional analysis and community analysis summarise the main findings from interviews and workshops with these stakeholders. For each case a summary table presents a synthesis of the main factors mentioned as facilitating and limiting scaling up during the institutional and community level workshops. Individual case study reports (Roman *et al* 2001 *a-d*, Ellis Jones *et al* 2001, Linzer& Rojas 2001, Neupane *et al*., 2002) can be referred to for more detailed information.

The case studies vary in both orientation and the time period they have been operational.

- Integration of research, development and training activities (PROSANA-12 years, SSMP-4 years to date, PROMIC-12 years)
- Integration of research, development, commercialisation and training activities (CIFEMA-20 years)
- A period of research, followed by a period of development and promotion (ISWC-3 years and PFI- 3 years)
- Primarily research, but includes technology promotion (PROLADE- 3 years research followed by two years of promotion)
- Research only (CIAT-3 years).

3.2 Bolivia

Proyecto Laderas - Development and dissemination of live barriers for soil and water conservation

Project history

Proyecto Laderas (literally hillside project) is a small University based project focused primarily on the development and dissemination of live barriers and to a lesser extent on cover crops for soil and water conservation. The project life can be split into two distinct phases; an initial 3 year phase of participatory research and technology development followed by a phase of dissemination. The research phase consisted of one DFID funded project with collaboration between a UK based research institute and the University of San Simon in Cochabamaba. The dissemination phase consists of several short-term projects undertaken by the 'PROLADER' team with various sources of funding, including the British Embassy and the EU-funded project PRODEVAT. PROLADER is currently seeking ways to diversify their funding base and continue the dissemination activity, which they have started.

The participatory research project led to the species *Phalaris* being selected as the most popular for live barrier formation by the majority of farmers. This was due to its drought resistant properties and the double benefit of soil protection and quality fodder production.

The dissemination strategy of PROLADER consists of a package of activities at the field level. These include: Training courses for farmers and NGO field staff in soil conservation issues and the practical application of live barriers, knowledge exchange workshops and inter-community visits, distribution of plants and the establishment of *Phalaris* nurseries. This

[2]The livelihood analysis is not included in this section since it was not undertaken in all the cases. The results from the livelihood analysis can be found in section 4.13

approach has led to an increased demand for training and support at a community level, which the project is unable to fulfil itself without further funding.

Dissemination of technical know how and experience to other organisations has been part of the process but the main emphasis has been on PROLADER winning contracts to carry out the work themselves. The PROLADER team has tended to focus on horizontal spread and retaining their core team (institutional sustainability). Scaling up of impact was not planned in the research phase since it was hoped that a second project would be funded on the demonstration of the success of the technology. At the time of this study they had not integrated into local government plans although this is one of the strategies that they intend to adopt in an attempt to scale up.

The project has intervened directly in 22 communities in 3 provinces in Cochabamba Department and has provided plants to 517 families. Indirectly, live barriers have reached a further 21 communities.

Secondary Institutional analysis
PROLADER's alliances with secondary institutions were explored in an institutional workshop and through interviews with 4 institutions. PROLADER formed some sort of linkage with over 20 institutions. However, this was not part of a planned scaling up strategy and the majority were focused on shared research interests. 20% of the inter-institutional agreements that were signed were not fulfilled. Most of the 'failures' were focused on training and implementation. The reasons given for this failure were; institutions having to follow their own agendas, lack of funding, lack of time and lack of space for inter-institutional communication. Despite these limitations inter- institutional linkages resulted in live barriers being promoted to 530 more families in a further 21 communities. Interviewees felt that it was significant that the successfully implemented training activities for field staff were funded as part of the PROLADER 'dissemination package' meaning that collaborating institutions did not have to pay for the service. Plants and written dissemination material were also donated.

The institutional interviewees unanimously agreed that the dissemination activities of PROLADER were effective and that scaling up was facilitated by the strong communal demand for the technology. However, they felt that the short duration of project interventions; limited finance and the fact that the interventions were not part of an integrated natural resource management programme limited the scaling up process. They also identified the need for PROLADER to get more involved in municipal planning as a way of generating funds to fulfil the community demands for the technology. The potential of this was high lighted by the fact that one of the main donors for the dissemination phase of the project had been motivated to fund live barrier work due to the strong communal demand for fodder expressed in the PDMs (municipal development plans) of their target areas. Interviewees also suggested that, in order to facilitate scaling up, PROLADER's planning activities should involve institutional stakeholders familiar with the different zones where they hope to work and that they should strengthen their focus on local capacity building to ensure that live barrier implementation is sustainable.

Community level analysis
Community workshops and interviews were held in six communities. These communities had been involved with PROLADER for different lengths of time, some of them in the research phase and others in the dissemination phase.

The experiences of the 2 communities involved in the research phase were very different. In one, Pairumani, there has been very little adoption beyond those farmers involved in the on farm trials, whilst in the other, Yunkataki, live barriers had been adopted widely within the community. Various key factors were identified as being the cause of these different

experiences. In Pairumani, the community perceived that only an elite had been able to participate in the technology development process and that this activity had really been for institutional benefit. Moreover, although they had all ultimately been supplied with plants and a day of practical training, they felt that the institution then ceased to visit or offer on going support. They felt that there was no infrastructure in place to enable them to continue with the spread of live barriers within the community. There was a nursery but it was owned by the most wealthy community member who sold the plants to interested NGOs. In contrast, farmers in Yungataki had selected families to participate in the research through voting at a community meeting. Moreover, once *Phalaris* live barriers had proved successful, a local NGO with a long-term presence in the area had taken on the role of promoting them and providing on going technical support. As a result the community perceives that its needs have been met.

There was also variation in the experiences of the communities involved in the dissemination phase. In the communities of Lambramani and Quotu Mayu, 100% of families were involved in the PROLADER training workshops and all but 3 families planted live barriers in their fields as a result. The main success factors identified were, the fact that live barriers were promoted primarily as a solution to the known shortage of fodder and the fact that all families were immediately invited to participate in training and given support in implementing the live barriers. Since the technology responded to a key need, the community was enthusiastic about developing and maintaining a community nursery to ensure that there was long-term access to the material for live barriers and they felt capable to take control of the long-term management of the technology spread. However, in the community of Japo K'asa, farmers felt dissatisfied, despite the same training opportunities because PROLADER had delivered the plants at an inopportune moment which had resulted in most of them drying out and failing to grow. They were then unable to access the institution to request more plants. Farmers in the community of Jullchuma felt a similar sense of frustration at their dependence on the whims of the institution. Although PROLADER had visited the community and begun the process awareness raising and demand generation it had failed to return and deliver the planting material. The farming families had pressed the syndicate to obtain municipal support for training and materials for live barriers but this had failed. The municipal government had little interest in incorporating the community demand into their plans.

Table 3.1: Summary of main factors facilitating and limiting scaling up identified in the PROLADER case study

Main approaches	Recorded impacts/results	Facilitating Factors[1]	Limiting factors[1]
• On-farm research (1995-1998). • Training farmers on soil conservation issues. • Practical field demonstrations. • Knowledge exchange workshops. • Inter community visits. • Plant distribution. • Submitting proposals for competitive development funding. • Offering consultancy services. • Dissemination of experience to other NGOs through workshops, literature and training.	• Direct assistance given to 22 communities. • Further spread to another 21 communities. • Plants provided to 517 households.	• Technology developed with farmers. (PTD) • Farmers awareness of SWC raised. (PTD) • Popular communal training workshops and inter community visits. (PTD) • Local NGOs take on responsibility of dissemination (in some cases) (C) • Donation of vegetative material for families and communal nursery. (PTD) • High community demand as result of activities in neighbouring communities. (PTD) • Project based in university that provides some salaries, equipment and office space. (I) • Open attitude of project staff – willing to share information freely with other projects. (C) • Technology promoted as solution to the fodder shortage with soil conservation as a secondary benefit. (PTD)	• Insufficient funds to meet demand from communities. (F) • Insufficient funds/institutional security to develop a long-term strategy. (F) • Lack of integration into local government plans/larger development programmes. (C) • Lack of awareness/interest at the municipal level. (C and Cap) • Limited effective institutional alliances. (C) • Effective institutional alliances often of a coincidental nature. (C) • Lack of space for inter-institutional collaboration and communication (C) • Limited training opportunities for project staff. (Cap) • Failure to deliver at community level leading to disillusionment. (F and Cap) • Limited follow up with farmers. (Cap) • Limited access to relevant materials at the community level. (S) • No clear exit strategy. (S) • No long-term monitoring or evaluation. (Imp)

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

PROSANA - Community level land use plans (PLUSCO)

Project history
The PLUSCO is a methodology for community planning of natural resource use, which has been developed and promoted by the Food Security Programme for the Provinces of Arque, Tacopari and Tacopaya (PROSANA). PROSANA is the product of an agreement between the German government and the Departmental Government (*Prefectura*) of Cochabamba. It has a holistic approach to the problem of food security in these very deprived areas and the PLUSCO is only a small component of the entire programme, which encompasses education, health, infrastructure and natural resources. PROSANA focuses on providing technical assistance and institutional strengthening in the target provinces in order to ensure food security.

The PLUSCO benefits from being part of a well funded broadly focused institution, which has 12 years of experience in the zone. PROSANA was initiated in 1991 and will end in 2002. A short, medium and long-term plan were developed from the start. The programme has moved through three phases:

- *Orientation* (which produced a development proposal for the provinces).
- *Implementation* (during which an institutional framework was developed to facilitate the implementation of the proposal).
- *Consolidation* (during which PROSANA withdrew taking on the role of overseer to ensure that the different stakeholders assumed their roles and responsibilities).

The PLUSCO is part of a process developed to enable the communities to interact with development agencies (local government and NGOs) and participate actively in the planning of their future. The strategy of developing a '*carpeta comunal'* (community file) ties in with the national laws of popular participation and decentralisation. It enables the community to reflect on their reality and formulate solutions to their problems (in the four sectors mentioned above) in the form of project proposals. These proposals or demands can then be incorporated into the municipal development plans (PDMs) which the local government is obliged to fulfil. The 'community file' aims to provide mechanism that ensure that community demands are transformed into practical actions and funded by the local government.

The PLUSCO is part of the '*carpeta comunal'*. It is a natural resource use plan based on a combination of local and technical/scientific knowledge. The PLUSCO methodology is based on community consensus building. It uses active community participation and empowerment as a way of ensuring community ownership and thus increasing the chances of implementation and maintenance of NRM activities.

To give weight to the plans, PROSANA attempted to gain support from the *Superintendencia Agraria* for their incorporation into a legal framework. Currently the legally binding requirement for sustainable land use planning only operates in the Bolivian tropics.

The methodology was developed in collaboration with a range of government and non-government organisations. In order to ensure sustainability at a community level PROSANA trained 179 community level facilitators and 24 local facilitators, the latter working in 5 communities each and receiving a wage. They channelled the work through institutions working in the area whose staff were trained and supported by PROSANA and 3 external consultants.

Within the local government they facilitated the creation of municipal natural resource committees, which provided a space for analysis and discussion between the main bodies active in the municipality.

PLUSCOs have been prepared in 175 communities and have spread to two Provinces of the Santa Cruz department. However, they have not yet been incorporated into the legal framework and, as yet there are no mechanisms to ensure their implementation. Although in 1999 food for work was used as a mechanism to begin implementation as part of a provincial 'Emergency Plan' designed to combat the negative effects of *'El Niño'*. The implementation rate has not been monitored.

Secondary institutional analysis
Four institutions were interviewed with regards to their role in the scaling up of the PLUSCO and their view on the challenges of the scaling up process. The factors they identified as facilitating up scaling were: the involvement of multiple stakeholders in the process (community and government); effective awareness raising; training of local promoters and technical staff in local NGOs and appropriate capacity building of both farmers and municipal staff. The main limitations to scaling up which they identified were: changes in institutional vision of donors leading to the sudden termination of funding; the lack of funds at a municipal level for implementing the plans; the lack of legal status for the PLUSCO, which reduces its legitimacy and the fact that NRM work always requires a high level of economic support but tends to be low priority for donors and communities due to its long-term benefits. They believed that the process could be strengthened by increased follow up and monitoring. The Agricultural Superintendence warned of the risk of the plan being seen as an end in itself rather than a planning document that needed to be implemented. They felt that although the PLUSCO was not a legally recognised plan it was considered legitimate in the eyes of the community. The municipal government felt that the PLUSCO needed to be recognised by the Bolivian state to give it more weight as a planning document. However, they recognised the strength of the 'community file' as a mechanism for incorporating community demands into municipal plans. The government had co financed some of the activities included in the PLUSCO once they had been incorporated into the municipal plan.

Community level analysis
Community workshops and interviews were held in four communities where a PLUSCO had been undertaken. All participants agreed that the PLUSCO was a very important tool for planning short medium and long-term NRM at the community level. Participation in the planning process varied between 78 and 100% of the community members. They were motivated to participate by the fact that the process encouraged the bringing together of local and technical knowledge in a way that allowed them to analyse their own problems and plan optimal solutions based in their reality and their capacity. Those interviewed considered that the elaboration of a PLUSCO and development of the 'community file' mechanism had strengthened the community's organisational capacity and its ability to voice its demands at the municipal level. They considered it to have been successful because they were starting to see a reduction in soil erosion due to the measures undertaken. The main limiting factor identified was the lack of funding for planned activities and that fact that the municipal government did not see longer term funding for NRM as a priority.

Despite the enthusiasm about the plans and their potential, the level of implementation varied considerably between the communities. Two of the four communities consulted, were unwilling to carry out SWC measure on their own account in the absence of direct institutional support and incentives. As a result the implementation was limited. In another community most families had continued implementing measures beyond the minimum required in order to receive 'Food for Work'. Here projects to implement some of the measures identified in the PLUSCO were also being financed by the municipal government. However, the community expressed concern. One community had received no incentives, y*et al*l participants had implemented more than double the quantity of simple terraces planned and planted twice as many trees. They felt that the process of developing the PLUSCO had empowered them to manage their own NRM issues and had managed to persuade various organisations to provide the necessary plants and equipment for their planned activities. This demonstrates the importance of community capacity and motivation in defining the level of response.

Table 3.2: Summary of main factors facilitating and limiting scaling up identified in the PROSANA case study

Main approaches	Recorded impact	Facilitating factors[1]	Limiting Factors[1]
• Community empowerment through awareness raising, sharing local and scientific knowledge and training of community facilitators. • Participatory development of NRM plan in response to local analysis of problems and solutions. • Working through local and close liaison with local government NGOs (strategic alliances). • *'Community File'* used as mechanism to support implementation with municipal government funds. • Food for work used in some cases. • Attempt to make plan implementation a legal requirement.	• Plans prepared in 175 communities in Cochabamba dept. • Methodology now being used in Santa Cruz department. • Local government have formed natural resource committees.	• Part of a multi-sector development program with long-term funding and high capacity (C and F). • PROSANA has short medium and long-term strategy (I) . • Capacity built both at community and local government level (C). • Awareness of NRM issues raised through generation of discussion fora (C) . • Multiple stakeholder involvement in the planning process (C) • Planning in tune with local capacity (Cap). • Plans responded to community felt needs (PTD). • NRM needs, problems and solutions identified in a participatory manner (PTD). • Strong institutional networks developed to ensure continuity (C). • Potentially effective mechanism for communities to demand relevant projects developed ('community file') (C). • Enables community needs to be incorporated into municipal plans and financed with government funds (S). • Key institution increasingly handing over control and responsibility to other actors (NGOs local government, community) (S). • Costs shared between donor and local government with farmers contributing in kind (F).	• No long-term monitoring or evaluation. No mechanism to ensure plans are implemented (failure to make PLUSCO a legal requirement) (F). • Success linked to strong facilitator role played by key institution (I and C). • Communal level success dependant on the capacity and empowerment of local leaders (Cap and PTD). • Change in institutional vision of donors leads to project curtailment (A) . • Limited municipal government involvement in the planning process (C and Cap). • Lack of response from the municipal government leads to community cynicism and loss of interest (Cap and Env). • Poor past experience with projects makes communities suspicious (C, Cap and Env). • Limited time available to achieve goals (T). • High institutional costs (F). • Municipal government does not have sufficient finance therefore dependant on external funding (F). • Uncertainty as to the role of food for work (Cap). • Secondary institutions do not always use the methodology appropriately (Cap). • NRM work has an initial cost but long-term benefits (F). • Municipal government does not prioritise NRM work (Env). • Political instability undermines implementation through the municipality (Env). • Potentially facilitating laws are not known/understood at the local level (Env).

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2

CIFEMA- Improved animal traction equipment

Project history
CIFEMA (the centre for research, training and agricultural extension) has more than 20 years experience in the development and dissemination of implements (ploughs and harnesses) for improved animal traction. The institution is part of the state-funded University of San Simon in Cochabamba and was funded for 20 years by the Swiss government.

In order to achieve its objective of increasing the agricultural productivity of small farmers through the improved use of animal traction, CIFEMA has used an integrated strategy based on research, training, production and marketing. Each sector is inter-dependent and none is viable in its own right.

Research
The research consisted in the development and adaptation of prototypes based on the needs of the users and the reality of the zones. The research work was undertaken in continuous contact with extension workers, farmers and national and international organisations. Of 30 prototypes developed and adapted to the zones, 15 were used for commercial production and sale.

Training
The training was undertaken at various levels with different target groups in mind:

- Practical training aimed at students from the rural areas so that they would be equipped with the knowledge and experience to open their own workshops in rural areas (1,147 mechanics trained).
- University training to familiarise the students of 'Agricultural mechanisation' with the realities of rural life and the need for appropriate technologies (acceptance of the need to adapt technologies to farmers' realities rather than providing tractors required a change of mentality in this era).

CIFEMA sees itself as having put animal traction onto the agenda and trained students to carry their learning to all levels of activity (Government and NGO staff, rural mechanics and farmers).

Production
A central CIFEMA factory ensured the high quality production of equipment adapted to the needs of the target user groups (based on participatory evaluations). However, the low cost of the equipment was only possible due to hidden subsidies. Since the end of the Swiss financing costs have increased and much of the equipment is no longer within the reach of the target farmers.

Extension
The extension process has evolved over the life of the project with different actors taking a key role at different phases. The changing strategies can be divided into four phases and are highly related to level of resources available.

1) Initially when there was a lot of finance available, prototypes were given to many interested institutions, there were many field days and demonstrations with high subsidies to create demand and ensure that the farmers could afford the products.

2) Local promoters with good knowledge of their field also sold implements to selected farmers with short-term credit agreements. At this stage, private agri–input businesses sold them for payment in instalments.

3) NGOs and donors such as USAID bought large quantities of the products and sold them at subsidised costs, this created a critical mass in interest and opened new channels for sales.

4) During the later phases there was a significant increase in the number of farmers buying directly from the factory.

In order to ensure sustainability at the field level, CIFEMA implemented a network of 200 rural workshops to mend and supply animal traction equipment. These were supported by the institution with regular visits. However, the support slowly diminished and finally stopped in 1997 due to budgetary limitations.

Since 1998 CIFEMA has been self-financing. The removal of external financial support has meant the end of subsidised implements. This has resulted in many small farmers being unable to afford the technologies promoted even when they are interested in them. The lack of accessible rural workshops has also meant that those with implements are unable to get them mended easily and often resort to their old practices. Monitoring and evaluation of the process and its wider impact have not been undertaken by the institution.

Secondary Institutional analysis
CIFEMA's main relationship with secondary institutions is commercial in nature, based on the sale of CIFEMA implements for promotion in their areas of activity. Although many implements have been sold to NGOs, there is no data available on the impact of these relationships. Two secondary institutions were interviewed to gain an idea of their role in the scaling up process and the challenges of increasing impact. One of these institutions worked with CIFEMA at the community level opening the way for them to promote their implements. They believed that CIFEMA needed to place more emphasis on extension strategies and less on commercialisation in order to achieve greater uptake. However, they understood that this commercial emphasis was primarily based on financial necessity. The other institution was a funding body which sent mechanic apprentices to CIFEMA as part of their training programme. They valued CIFEMA as a centre of learning and considered that training mechanics at CIFEMA could support scaling up by increasing awareness of the role of implements for improved animal traction.

Community level analysis
Workshops and interviews were held in three communities. All of them had been exposed to CIFEMA's implements for a significant period, two since 1985 and one since 1992. The level of adoption within the communities varied between 20 and 100%. In all cases the farmers had appreciated the practical field demonstrations and training and were very interested in the implements offered due to their ability to optimise on labour requirements. However, they did not consider them in terms of improved NRM. The main factors limiting further adoption were the high cost of the implements and the lack of readily available repair facilities. Although CIFEMA works though local promoters, the farmers complained that they often lacked the appropriate spare parts and/or technical knowledge. Extensionists were not very helpful since their visits were so infrequent. Farmers felt that their dependency on a distant institution for parts and support was a significant factor limiting further spread of the technologies offered. They unanimously agreed that uptake would be 100% if the tools were less costly, spare parts were available locally and farmers had access to technical support when they required it.

Table 3.3: Summary of main factors facilitating and limiting scaling up identified in the CIFEMA case study

Main approaches	Recorded impact/ results	Facilitating factors[1]	Limiting factors[1]
• Integrated strategy of research, training, production and marketing. • Technologies developed and refined in consultation with farmers. • Practical field demonstrations. • Subsidised products. • Network of rural workshops. • Promotion through NGOs, small businesses and local promoters. • Initially dependant on donor funding, now self financing.	• 15of 30 implement prototypes promoted. • 1147 mechanics trained. • 200 rural workshops established, supported by a central workshop. • Adoption rates varied between 20% and 100% in communities visited.	• Integrated strategy of research, training, production and marketing (I). • Implements developed and refined in accordance with farmers needs (PTD). • Developed a network of promoters and local sales points for the technologies (S). • Institution no longer donor dependant (S). • High level of expertise and experience developed over 20 years (Cap). • Technology directly benefits farmers in terms of reduced labour and input costs (PTD).	• The projects were not based on community demand (PTD). • Hidden subsidies on equipment costs (F and PTD). • Self financing CIFEMA must be commercially minded (S). • Unsubsidised implements only affordable to better resourced farmers (L). • Many rural workshops closed down (S). • Nowhere local to repair implements (S). • Farmers feel dependent on inaccessible institution (S and Cap). • Lack of on going technical assistance (S and Cap). • Limited field level monitoring and evaluation (Imp). • No integration with government planning (C). • Lack of opportunities for inter-institutional communication and planning (C)

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

Integrated Catchment Management (PROMIC)

Project history
PROMIC (Programme for Integrated Catchment Management) is an example of an institution, which with high financial input has successfully implemented the necessary infrastructure for integrated catchment management. However, its replicability is uncertain since the circumstances were exceptional. Moreover, it does not have a pro poor focus.

PROMIC is the product of an agreement between the Swiss government (COSUDE) and the *Prefectura* of Cochabamba. The programme was established in 1991 with two main aims:

- To reduce the risk of flooding and landslides in the areas influenced by the main watersheds of the Central Valley of Cochabamba.
- To reduce soil erosion in the Tunari Mountain range.

In a pilot stage (1991-94) PROMIC worked in a single watershed (Taquina) using action research to develop a strategy that would ensure the implementation of appropriate soil and water conservation measures. This process had a technical bias (focusing on understanding the basic biophysical conditions and selecting a range of technologies that would work) but also involved undertaking detailed socio-economic studies and considering how best to ensure the implementation of appropriate technologies.

The basic strategy consisted of raising farmers' awareness of soil and water conservation issues and then training them in the construction and use of a range of SWC technologies. PROMIC worked through the local farming syndicates, involving 100% of the farmers in the process. Awareness raising involved the identification of problems followed by discussion of potential solutions and practical field demonstrations of various technologies. Inter community visits and videos were used to demonstrate the benefits of some of the techniques suggested.

The implementation strategy had two main components:
- Gully control
- Soil and water conservation

Gully control consisted of forming working groups to undertake the larger physical measures required to control gullies and streams. Since these required hard labour and were more for the benefit of the city than the individual, farmers were paid a wage and provided with all the necessary inputs (tools etc). Groups of 7 –15 workers were contracted to undertake this work.

Carrying out *soil and water conservation* measures in one's own land was a pre condition for participation in a paid working group. Since the wages were so important to the farmers, this mechanism ensured a high rate of implementation at the field level. Farmers were provided with technical support and either given or lent the appropriate inputs. However, they were not paid for their labour as they were to be the direct beneficiaries.

After their pilot experience, PROMIC reflected on the process and refined the methodology for implementation in 10 more watersheds. In order to ensure funding for this they became further integrated into the plans of local and regional government. They have now established themselves as a '*Fundación*' and are offering their services at a national level.

Their methodology can be considered to have been successful in the short-term since they have implemented all the measures planned and the city has not flooded in recent years. However, the high costs in terms of finance and labour put a question mark over the sustainability of the works. Such an approach would not be possible in more deprived areas as the subsidies were required to motivate the process.

Secondary institutional analysis

The majority of PROMIC's inter-institutional collaboration has been in the area of technical research with a view to perfecting their watershed management technique. Alliances for scaling up have not been considered in a deliberate manner although responsibility for the maintenance of SWC measures has been passed to the municipal government. Representatives from two secondary institutions, The Centre for Fodder Research (CIF) and The Municipality of Tiquipaya were interviewed. CIF has a commercial relationship with PROMIC providing all the necessary vegetative material for SWC measures. They consider that this may undermine sustainability since farmers have not been given the opportunity to multiply their own supplies in community nurseries. The municipal government provides 20% of the cost of the undertaking. Although they now have the responsibility for long-term maintenance, there seemed to be no clear plan of how this would be undertaken. They only had one technical officer responsible for monitoring, evaluation and maintenance of all the work. This could undermine the sustainability of the existing measures. Both institutions agreed that scaling up potential was limited to highly productive areas by the high cost of the process.

Community level analysis

Workshops and interviews were held in three communities. The first had been involved with PROMIC since 1992, the second since 1995 and the third since 2000. Despite the fact that all of the project undertakings were imposed from above, there was a consensus among the farmers that the SWC measures undertaken were beneficial and important. In the communities that had implemented measures in the 1990s, the farmers reported that the environmental benefits for them were significant since the rivers no longer flowed out of control during the rainy season and they had not suffered flooding in their own fields. In all the communities 100% of the population had participated in the process, both in protecting the main rivers/gullies and in implementing SWC in their own fields. They felt that they had benefited from the awareness raising and training provided by PROMIC. However, they thought that the measures had been costly both in time, labour and materials and that it would not have been possible to carry out the measures without the support and payment from PROMIC. Many had been motivated primarily by the opportunity to earn a wage and there was little feeling of community ownership of the implemented measures. Farmers felt that since PROMIC provided no long-term support the maintenance of both the communal and plot level measures was under threat due to lack of technical know how, lack of time and lack of financial resources. They felt that the situation could be improved by institutional follow up and support, both technical and financial. Responsibility for maintenance has now passed into the hands of the municipalities but the farmers were unaware of this.

Table 3.4: Summary of main factors facilitating and limiting scaling up identified in the PROMIC case study

Main approaches	Recorded impact/results	Facilitating Factors[1]	Limiting factors[1]
• Highly technical appraisal of the NRM problems and solutions in the watershed. • Raising farmer awareness on soil conservation. • Promoting a range of soil conservation options. • Field demonstrations. • Inter community visits. • Payment groups for work of communal benefit. • Support and subsidy for private field level SWC measures (a prerequisite for paid employment).	• After an initial pilot scheme 10 further watersheds were addressed. • No city floods experienced in the project life span. • 100% of farmers involved in communities visited. • Integration into local and regional Govt.	• Farmers' awareness of NRM issues raised (C and PTD). • Local technical capacity developed (trained in SWC implementation) (Cap). • A range of NRM practices successfully scaled up to the watershed level (PTD). • Environmental benefits perceived in the short-term (PTD). • Has allowed the visualisation of community problems in relation to the landscape (micro watershed and watershed) (PTD).	• Extremely high cost and therefore limited replicability (S). • High labour input (S). • Farmers motivated by wage rather than NRM issues (S). • Little ownership by farmers or by local Government who are responsible for maintenance (S). • High level of institutional dependence (S). • No on going institutional support (S). • Farmers do not feel technically competent to maintain measures (S). • No monitoring and evaluation (Imp).

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

CIAT: development and dissemination of a silvopastoral system in the mesothermic valleys of Santa Cruz

Project history
This case provides an example of a technology developed and disseminated by the Bolivian Centre of Tropical Agricultural Research (CIAT), using a traditional technology transfer approach. The scaling up process can be divided into three stages: 1) generation and validation of the technology, 2) assisted dissemination 3) spontaneous adoption.

The silvo-pastoral system in question was developed in 1991 in an experimental station as a result of the need for more available fodder in the dry season, which was identified through a study into native fodder and silvopastoral systems in the Chaco region. This technology was then validated by CIAT with cattle ranchers in the Chaco zone. As a result of its success, in 1997 CIAT decided to set up trials with a few collaborating farmers in the very different environment of the mesothermic valleys of Vallegrande.

From 1998 onwards CIAT organised field days in co-ordination with local NGOs in the Vallegrande province. The main participants at these events were local farmers, with opportunity for local technical staff to familiarise themselves with the CIAT developed technologies.

In 1999, an opportunity arose to disseminate the technology further. The silvopastoral technique was compatible with the conservationist agenda of the DFID-funded, CARE managed 'Amboro Forest Conservation Programme'. An 8-month dissemination project was financed in conjunction with FAN (Foundation of Nature's Friends) who was undertaking a 3-year NRM planning project in the communities at the forest margins as part of the CARE programme. The dissemination was managed by the technology transfer department of CIAT and consisted of planting validation plots in six communities with six collaborating farmers as well as organising field days, farmer to farmer visits and technical training. At the end of the project the CIAT technical staff left the area and despite the continued presence of various institutions in the zone (FAN, CARE, CIAT) no more institutional support was provided to farmers. Despite this, in the communities studied, 55% of the farmers with land appropriate for livestock had established plots with the silvopastoral system. This spontaneous spread was due to the visible success of the practice in the demonstration plots in an area of fodder shortage as well as the availability of necessary information and materials from ASOGACOM the local livestock owners' association. In 2000 they sold 80kg of the grass seed, which has been used to sow 160 ha of grass in a silvopastoral system.

Secondary institutional analysis
Key informants from 5 secondary institutions were interviewed with regards to their role in the spread of the silvopastoral system and the challenges and opportunities of scaling up. ASOGACOM was the key institutional actor in the continued spread of the technology since they received all the technical recommendations and necessary seeds for the practice from the livestock department of CIAT. Since the head of ASOGACOM was a teacher, he ensured that the practice was incorporated into the local agricultural college.

The role of other secondary institutional actors was limited and not deliberately planned for. The Municipal Government was weak with no mechanisms to ensure the implementation of national laws and policies, which could have allowed farmers to include silvo-pastoral work in the municipal development plans. Their support was limited to providing transport for farmers to the demonstrations since they did not include sustainable agriculture in their budget. The impact of the involvement with the CARE programme was limited to the FAN project since CARE did not fund any follow up work. Although FAN had signed many inter institutional agreements related to dissemination, it failed to fulfil them when the CARE

funding programme ended abruptly. Small credit programmes already available in some areas were beneficial since they helped farmers afford the barbed wire necessary for the control of livestock.

Community level analysis

Farmers were interviewed in the two communities were the silvopastoral system had been piloted. There was no investigation of the spread of the technologies beyond the targeted communities. According to the interviewees the continued spread of the technology within these communities was as a result of strongly felt shortage of fodder. Farmers unanimously agreed that seeing a practice working in your own environment at field days was the key to successful spread at a local level. They thought that the practical training was also vital but that theoretical advice was of little use. Although they valued the field days and training activities, there were also complaints that the field staff used language that they found difficult to understand and that in some cases field staff ridiculed the farmers own practices resulting in farmer alienation. Failure of institutions to fulfil their promises was a regular complaint, which the farmers believed, ultimately led to loss of community interest.

Reasons for non-adoption included small land holdings, inability to afford or obtain the necessary materials (seeds and barbed wire). One farmer explained that he could not put up the necessary barbed wire fences since all the local springs were concentrated on his land, by putting up fences he would deny other farmers access to drinking water for their cattle. Participants generally felt that the communities had a strongly rooted tradition of exploiting that land without considering sustainability. They believed that NR problems had to have direct negative consequences on the farmers' lives before they took an interest in them.

Table 3.5: Summary of main factors facilitating and limiting scaling up identified in the CIAT case study

Main approaches	Recorded impact/results	Facilitating factors[1]	Limiting factors[1]
• Promotion of successful on station researched technology. • Demonstration/validation plots (in 6 areas). • Field days, farmer visits and technical training.	• 55% of farmers in communities visited had established plots. • 160 ha of pasture established via livestock association sales.	• Appropriate technology results in spontaneous spread (PTD). • Information and key materials shared with influential stakeholders (C). • Well attended field days and on farm demonstrations (PTD). • Inter community visits (PTD). • Initial take up of technology by existing local programme (CARE/FAN) (C). • Existence of a producers organisation which is recognised and stable with a long-term relationship with the research organisation (C and S) .	• Short dissemination period (T). • Limited institutional vision (I). • No long-term technical support after project completion (S). • Local government does not have any agricultural staff (S and Cap). • Weak municipal government with no funds for NR activities (S and Cap). • Poor inter institutional communication and co-ordination (C). • Lack of opportunities for inter-institutional planning and collaboration (C). • No M&E (Imp). • Technology benefits the better-resourced (L). • Difficulty in obtaining necessary inputs (S and PTD).

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

3.3 Nepal

The Sustainable Soil Management Programme

Project history
This case study focused on the scaling up processes of soil management practices under maize based farming systems in the Kavre district of Nepal. Kavre is one of the 10 districts in which The Sustainable Soil Management Programme (SSMP) of Helvetas (a Swiss NGO) has helped local people to adopt innovative soil management practices integrated into various cash and subsistence crops. The goal of the SSMP project is to improve the livelihoods of resource poor farmers.

SSMP is designed to promote improved sustainable soil management practices through extension and diffusion of improved knowledge, skills and practices to the farmers of the Mid hills of Nepal. The programme is funded by the Swiss Agency for Development and Co-operation (SDC).

The general development objectives of SSMP are to:
- Promote improved sustainable soil management practices
- Support farmers in increasing the soil fertility in their dryland (*bari*) land through use of SSM practices.
- Support farmers in achieving higher levels of food production and/or income in their *bari* land.

The specific objectives are to:
- Support farmers, through collaborating Institutions (CIs), to take the lead in the diffusion process.
- Integrate gender aspects into all SSM projects.
- Promote indigenous and/or new technologies for productivity and sustainability.
- Develop and strengthen linkages among organisations on SSM.
- Initiate a multi actor approach to the implementation of SSM projects.

In order to achieve its development objectives in a sustainable manner, SSMP has developed a structure which supports and involves national, district and local level governmental and non-governmental organisations in the promotion of SSM. Apart from the collaborating institutions (CIs), the programme structure involves various levels of support through a steering committee, technical committee, soil testing and service section and a project support unit. Resource organisations and independent experts have also collaborated with SSMP in the development and implementation of 5 training modules. SSMP also provides the CIs with key support.

Technical support: SSMP provides technical support and advice on innovative technologies and practices as well as methods for the improved promotion of SSM. The 5 technical training modules are part of this support and include relevant key technical issues such as compost management and the introduction of legume inter-cropping. Three methodological training modules on diffusion methods, participatory planning and monitoring and evaluation have also been developed and implemented.

Networking support: SSMP has supported the development of various networking, exchange and co-ordination mechanisms that should gradually develop into collaborative activities on SSM among different institutions. District level fora have been initiated and are functioning in five districts.

Financial support: SSMP provides a source of competitive funding to CIs to promote and strengthen SSM activities at a field level. These are complementary funds designed to strengthen SSM related activities in on going projects of the CIs. The fund is divided into different areas from on farm testing to networking between institutions.

The basic idea is that with SSMP support and advice, CIs provide extension services in the target areas, create awareness and build their institutional capacity in the area of soil management.

Figure 3 gives the working modality in rural communities for piloting of successful technology diffusion within the command area and wider diffusion outside command area through a farmer-to-farmer diffusion approach.

Secondary institutional analysis

Institutional mapping demonstrated that there was a wide range of community groups and external development organisations working in the two study communities. Eight secondary institutions/CIs (3NGOs, 3 GOs and 2 users associations) were consulted on their role in the scaling up of SSM practices. Each identified their perceptions of the challenges and opportunities of scaling up (Neupane *et al.*, 2002). The stakeholders all agreed that the involvement of a network of local GOs and NGOs in project implementation, and working through existing farmers groups, demonstrated potential for sustainability. They also praised SSMP's farmer focus, promotion of local resources and technology and gender consideration. However, the challenge of ensuring that these positive strategies resulted in impact at the community level remained. NGOs and GOs, generally found the stakeholder network developed by SSMP to be effective, for the scaling up of SSM practices in the study area. However, the village User Groups felt that there was poor communication between the User Group and NGOs and that the network was not effective. Another major problem identified was the fact that User Associations are financially and institutionally poor with few committed members. Moreover, Village Development Committees (VDCs) were often unable to benefit from the new agricultural opportunities provided by the SSMP project since they lacked the funds, capacity and technical manpower required to respond (no experience in proposal writing, very few extension staff).

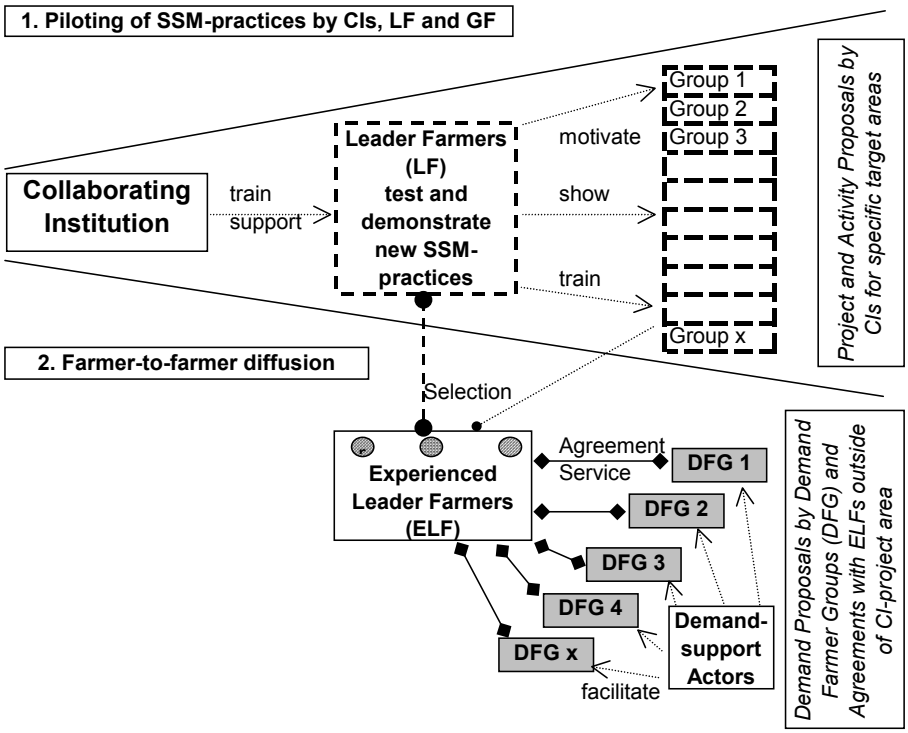


Figure 1: Process supported by SSM: Piloting of SSM-practices and Farmer-to-farmer wider diffusion

Community level analysis

Community perceptions were gained through two focus group discussions held in the Panchkal and Sanga VDCs. Despite the organisational limitations mentioned above, participants appreciated the formation of one single farmers group to deal with community development issues, rather than the creating of several single issue groups involving the same farmers. They found that this minimised duplication of effort, allowed for different services to be provided in an integrated way, allowed for efficient usage of the diverse expertise of different CIs and reduced the level of competition among CIs. They felt that this had significantly contributed to the scaling up process.

Factors, which encouraged the widespread adoption of SSM practices, included reduced household expenditure, due to a reduction in the levels of chemicals used and increased levels of income from the production of valuable crops such as coffee. However, uncertainty about the market for new products limited uptake. There was a complaint that practical field demonstrations of the technologies had been overshadowed by capacity building activities. More demonstrations and farmer field school activities were requested. Farmers also mentioned the need for more skilled technicians to support them and the need for cheap credit to enable them to access the necessary inputs.

Concern was expressed that Lead Farmers did not actually share knowledge with the whole community but only with their family and friends, resulting in the exclusion of many families from SSM activities. Participants also felt that those who benefited tended to be the better resourced and educated with the poor and landless unable to participate due to lack of awareness and lack of necessary inputs. Despite increased gender sensitivity and attempts to empower women, they were often unable to participate due to cultural barriers.

Table 3.6: Summary of main factors facilitating and limiting scaling up identified in the SSMP case study

Main approaches	Facilitating factors[1]	Limiting factors[1]
• Competitive development funding offered to support NGOs collaborating NGOs with funds and training. • Supports farmers and farmer groups, through trained lead farmers. • Facilitates inter institutional and farmer to farmer collaboration and networking. • Involves local and district government.	• Builds capacity in both technical and institutional issues (C). • Focuses on indigenous innovations (PTD). • Provides funding to NGOs for scaling up activities (F). • Has integrated technology development with a planned up scaling strategy (C). • Has facilitated strong inter-institutional network which facilitates scaling up (C). • Reflective and flexible institutional process allows for learning and improvement (C and Cap). • Farmer driven (PTD). • Technology providers are accountable to farmers (A). • Farmers have ownership (PTD). • Builds on farmer experiences and communication skills (PTD). • Cost effective dissemination (S and F). • Effective in heterogeneous environments with illiterate communities (Cap and S). • Awareness of NRM issues raised (PTD). • Community level capacity built (Cap). • Gender taken into consideration (Env). • Technologies adopted are likely to be sustainable (PTD). • Opportunities for inter cropping and increased revenues (PTD). • New organisational model for local organisations (Cap). • Increased opportunities for collaboration among farmers (PTD and Cap). • Employment opportunities created (PTD). • Household expenditure reduced (L). • Household income increased (L).	• Little information on impact (Imp). • Focus on lead farmers may be at the cost of group farmers (S and L). • Success dependant on strong facilitatory/guiding role of key institution (SSMP) (I). • Wide scattered coverage (Env). • Difficulties in financial management and monitoring (Cap). • Highly dependant on ELFs (Cap). • Facilitation by collaborators is important (C). • Limited availability of successful cases for wider dissemination (PTD and Cap). • Farmer interest is primarily on short-term profitable technologies (PTD). • Limited capacity of collaborating institutions (Cap). • Lack of timely availability of agricultural commodities (PTD). • Work focused on accessible areas (Env). • Blind adoption of indigenous knowledge by institutions (PTD). • No market guarantee for new produce (PTD). • Limited on going technical support (few technicians) (Cap). • No financial support from NGOs/projects (F). • No availability of low interest loans PTD and F). • Very low participation of women for cultural reasons (Env). • Farmers lack required inputs (land, irrigation, tools) (PTD). • Farmers high expectations of financial and material support not met (PTD and F). • Limited funds and technical manpower at the level of the community 'village development comitees (VDC) • Projects biased towards the more wealthy and better educated.

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

3.4 Uganda

Indigenous soil and water conservation and promoting farmer innovation

Project history
The Uganda case study focuses on the strategies used by various projects to scale up the impact of SWC technologies within a number of African countries. These projects have focused on indigenous soil and water conservation (ISWC), and promoting farmer innovation (PFI) using participatory research and development processes over a number of years.

The initial project, Conserve Water to Save Soil and the Environment (CSWSE) was funded by the ODA (now DFID) and ran from 1994-98. Its objective was to build on local traditions of soil and water conservation. Initially the project set out to validate indigenous soil and water conservation practices through joint evaluation by researchers and farmers. The next stage was to add value to these practices through a participatory technology development (PTD) approach. By the end of 1997, the project had identified and tested improvements to two traditional practices, namely trash lines and banana mulching. A program of network visits and study tours that was concurrently taking place amongst farmers working on the project was resulting in the dissemination of these improved practices to more farmers in different areas.

In 1998 when the British funding ended, the Government of the Netherlands took up the work and funded ISWC II with its focus on Promoting Farmer Innovators (PFI). The approach and philosophy were similar but there was less emphasis on research with more emphasis on promoting farmer innovation through exchange visits and farmer-to-farmer extension approaches. It formed part of a wider network of projects operating in eight African countries (although this case only focuses on the Ugandan component). The new project expanded spatially to further areas and broadened to include a greater number of land management practices.

The project operated within a specific geographic area with horizontal scaling up restricted to these areas. Farmer exchange visits to other areas and with other projects have benefited all projects, promoting informal and spontaneous vertical scaling up with NGOs and other projects building upon the methodologies developed.

Secondary institutional analysis
The institutional analysis was based upon interviews with key informants from seven stakeholder institutions including NGOs, Local councils and research organizations. Interviewees identified factors which they believed facilitated or limited scaling up of NRM practices in the project area. A key facilitating factor was the strong support from the project from Government ministries and departments. The long-term support of donors has ensured a security. The fact that scaling up was considered from the start provided the vision and driving force to find a new donor when DFID funding ceased. Networking with researchers and policy makers at a national level has increased the acceptance and use of participatory technology development methodologies. The fact that the project started small, expanded slowly and is currently a component of a larger programme has facilitated networking between countries and scaled up the impact of research findings. However, at a local level, limited communication between the project coordinators and other institutions working in the Kabale area was identified as a problem. It was considered that scaling up would require greater awareness of the farmer innovator approach on the part of other NGOs and research groups. Another problem identified was the strategies of NGOs and researchers for working at the community level. Uncoordinated interventions lead to a proliferation of short lived local community groups all taking on the name of the supporting NGO. Interviewees suggested the need to work through already existing groups in an integrated

manner. Institutional stakeholders also identified farmer incentives as a problem. Although PFI has a strict policy of no incentives other than on study tours, many farmers have built up an expectation of handouts and do not consider the longer-term objectives of NRM projects. This is exacerbated by the fact that each organization has its own incentive policy and farmers have high expectations resulting from past interventions that provided generous incentives. Shortages of trained field staff and limited resources for carrying out fieldwork amongst NGOs and GOs were also identified as major factors limiting horizontal scaling up.

Community analysis

The community level analysis was undertaken through a one-day workshop in Kabale with 29 Network farmers working with the project from three different communities. They identified various strengths in the ISWC approach, which they thought would facilitate scaling up of NRM practices. The main strength was the fact that exchange visits created awareness of improved technologies and the importance of SWC, allowing knowledge to be gained through seeing what others do. They also appreciated the opportunity to learn improvements to already practiced technologies. They felt that the farmers network enhanced relationships between farmers in the neighborhood. However, jealousy on the part of those not involved in the network sometimes resulted in malicious damage. Much emphasis was placed on the need for the innovator farmers to receive more financial allowances and material inputs. They said that farmers resented attending meetings if there is no compensation provided. Although the workshops and courses were considered very useful, it was thought that there were not enough of them. Other problems included, lack of funds to develop new ideas; lack of transport for farmers to attend meetings; limited number of farmers participating and benefiting often due to lack of resources.

Table 3.7: Summary of main factors facilitating and limiting scaling up identified in the PFI case study

Main approaches	Recorded impact	Facilitating factors[1]	Limiting factors[1]
• Establishing farmer groups to undertake and monitor research. • Identification of innovative farmers and practices. • Exchange visits between farmers. • Encouraging further farmer testing of potential improvements. • Promoting farmer adoption.	• Farmers are enthusiastic partners in the research and development. • Other farmers have adopted technology.	• Improved land management is a priority for the local people (PTD). • The project started small and expanded slowly (I). • The main stakeholders have been open and interested in participation with knowledge sharing at all levels (PTD and C). • The possibility of achieving impact was recognised and scaling up was included in planning from the start of the project although this required funding from different donors (I). • Research and development strategies have been integrated in the development and promotion of indigenous technologies (PTD). • There has been continuous, although often intermittent funding from donors (F). • There has been enthusiastic extension at grass roots level, with a strong social organisation of innovator farmers linked to farmer groups and local councils (C). • Effective linkages between innovator groups have developed (C). • There has been strong support from Government Ministries and Departments, including the District Agriculture Office in Kabale throughout the various stages of the project (C). • There has been exposure of researchers and policy makers to farmer experimentation and PTD approaches (PTD and Cap). • Capacity in participatory approaches has increased with improved relationships between scientists and farmers developing (Cap).	• Poor infrastructure (communication, logistics and transport) (Env). • Capital limitations (particularly financial, human and social) (Cap, F and Env). • Lack of involvement by major NGOs and research organisations operating in the area (C). • Lack of support for the District Council co-ordinating efforts by some NGOs (C). • A need to increase the size of networks using existing farmer groups and promoting increased farmer-to-farmer extension (C). • Appropriate incentives for farmer involvement as community mobilisers PTD and F). • Lack of adequate indicators of success or failure (Imp). • Lack of appropriate exit strategies (S). • Digestible information at all levels, especially for farmers (Cap and S).

[1] Letters in brackets refer to a specific category and have been summarised in Figure 2.

3.5 Summary of facilitating and limiting factors from the case studies

Notwithstanding the differences between orientation and time-frame of the case studies, a clear picture of facilitating and limiting factors has become apparent. Each factor from each case study (Tables 3.2-3.7) has been categorised into one of the following broader categories: institutional roles (I); accountability concerns (A); funding (F); time frames (T); external project influences (E); collaboration, networking and partnerships (C); capacity building (Cap); community approaches and participatory technology development (PTD), livelihoods (L), sustainability (S) and impact assessment (Imp). These have then been consolidated to identify the extent of the main issues (Figure 2).

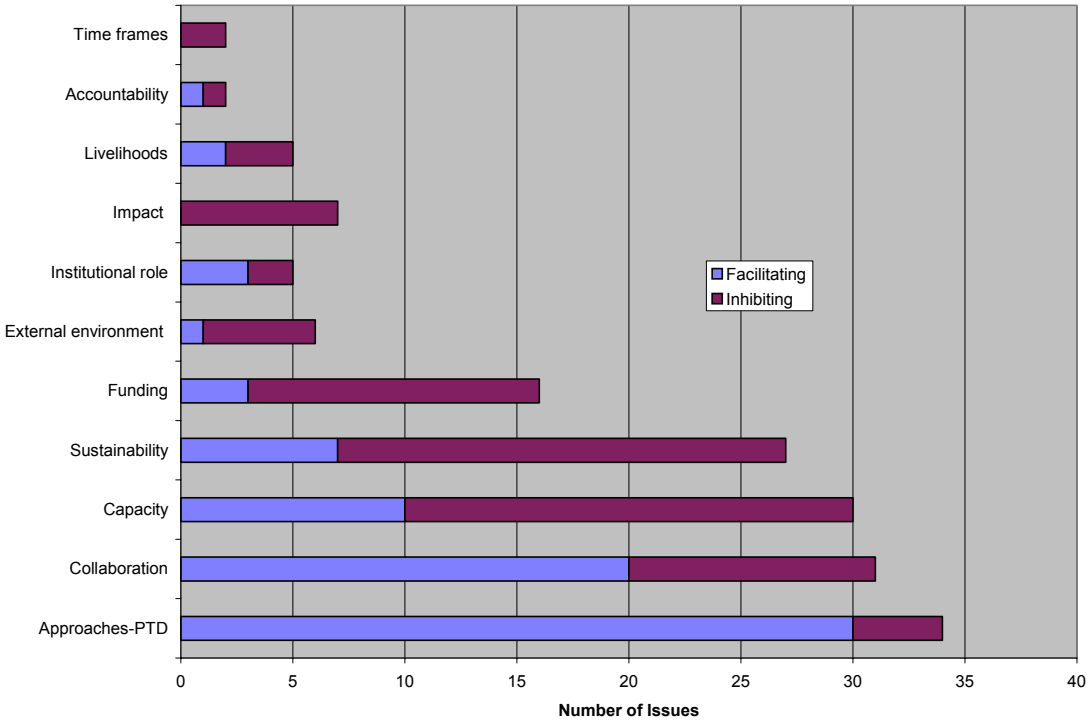


Figure 2: Summary of facilitating and limiting factors from all case studies

While all are important, the top five factors contributing to scaling up include approaches to the community including participatory technology development (largely facilitating), collaboration, capacity, sustainability and funding concerns (Figure 2). The key factor recognised and used by most institutions, as making a positive contribution to scaling up is approach and PTD. The main areas of concern that are presently inhibiting scaling up include taking action to improve sustainability, collaboration, capacity building, approaches and use of PTD, collaboration and impact assessment. The fact that many issues appear as both facilitating and inhibiting (Figure 3) reflects different institutional experiences, orientation, activities undertaken and individual capacities.

The lessons learnt from each of these main issues and how they contribute to scaling up is considered in the following Chapter. Specific examples from each of the case studies are used to identify generic considerations. Although not specifically coming out of the case studies, an area of concern was the need for understanding the elements of vertical scaling up.

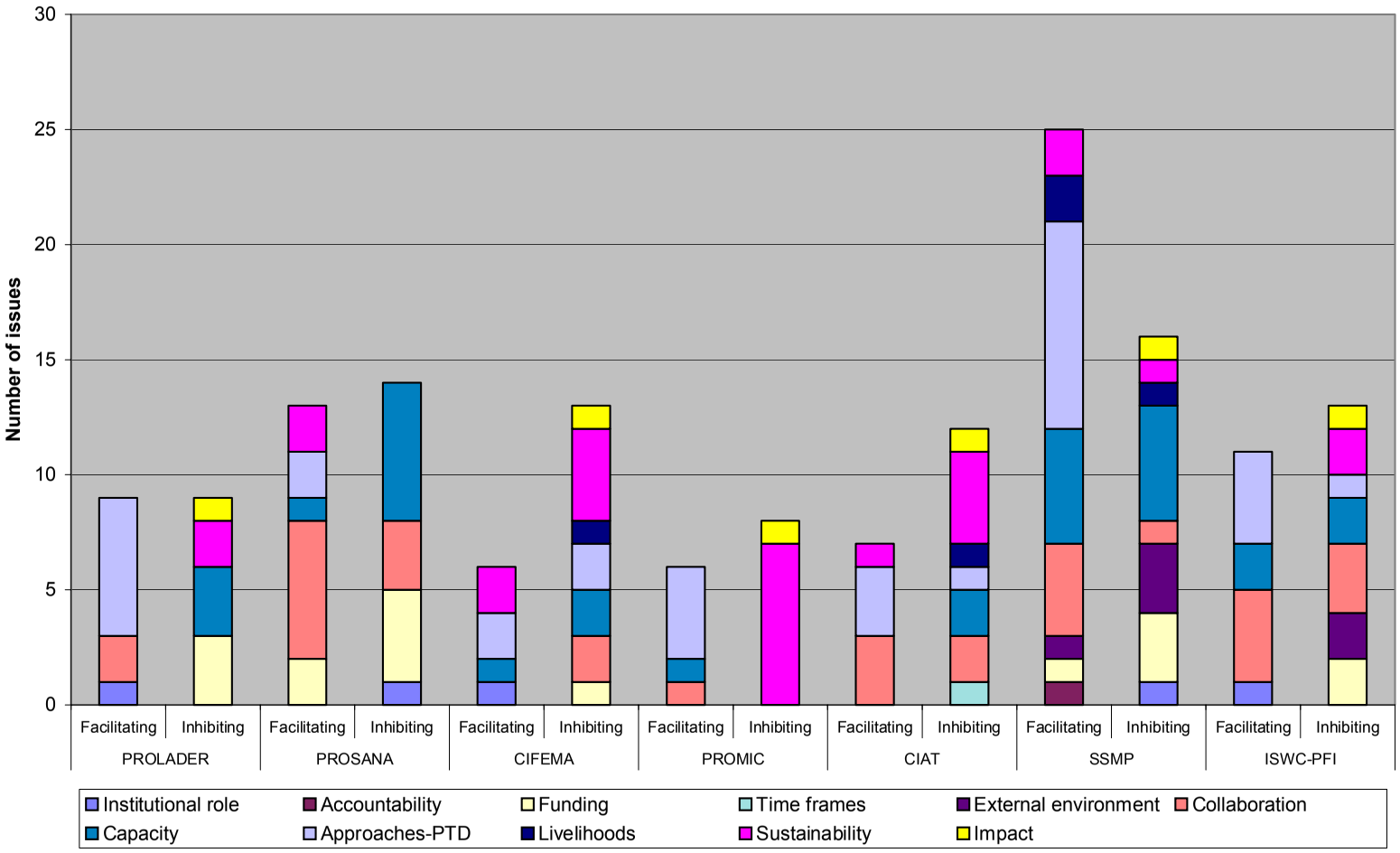


Figure 3: Summary of facilitating and limiting factors from each case study

4 LESSONS LEARNT FROM THE SCALING UP PROCESS

4.1 Introduction

This chapter discusses the main issues affecting scaling up arising from the case studies, drawing out generic lessons on factors that facilitate and limit scaling up. The chapter is subdivided into sections, each of which focuses on a key issue. For clarity, key points are presented in a table at the end of each section identifying facilitating and inhibiting factors. Due to limited information on impact in many case studies, and to the complex interaction of various factors, it was not possible to demonstrate causal relationships between impact and factors. In many cases an issue discusses under one section is further discussed under another section indicating the interrelationships that occur. However, the conclusion that some factors facilitate or inhibit scaling up is based on a combination of the responses given at the workshops and interviews undertaken as part of the individual case studies.

4.2 Vertical 'scaling up'

In most of the cases studied, understanding of scaling up was limited to the horizontal dimension (technology transfer or dissemination). This was particularly evident in Bolivia where the translation of the term to '*ampliación*' does not adequately capture the various dimensions of the concept. As a result, most Bolivian institutions had not considered 'vertical scaling up' but only 'horizontal' scaling up (dissemination).

Failure to consider the vertical aspect of the concept (integration into government planning and influencing the policy of higher institutional levels) was a key factor that has limited the process. Two of the more successful case studies had considered the vertical aspect. SSMP, in Nepal, and PROSANA in Bolivia, focused heavily on creating mechanisms for inter–institutional collaboration, community empowerment and government involvement. In the Ugandan case, ISWC-PFI had initiated some inter-institutional collaboration but locally their approach was focused on farmer-to-farmer dissemination. Transfer of the process to other semi-arid parts of Uganda by new institutions was underway.

Table 4.2: Facilitating and inhibiting factors influencing vertical scaling up

Facilitating	Inhibiting
Some organisations have given consideration to inter–institutional collaboration, community empowerment and government involvement in scaling up.	There is limited understanding of the term 'scaling up,' beyond dissemination in smaller institutions. Vertical scaling up is given limited consideration.

4.3 Institutional roles

Scaling up successful pilot experiences are powerfully influenced both by institutional objectives (research, development, community based) and the nature of the technology or process for scaling up. The case studies can be divided broadly into two categories, those focused on the up scaling of a given technology or practice (PROLADER, CIAT, and CIFEMA) and those focused on processes to facilitate the uptake of a range of NRM practices and technologies (SSMP, ISWC-PFI and PROSANA). PROMIC focused on both aspects with the overriding need to guarantee watershed management that would protect the city of Cochabamba from flooding.

The IIRR workshop highlighted the fact that scaling up is not just a process of replication, but rather, the expansion of options, knowledge, processes and technologies such that people have an improved capacity to make decisions and/or influence decision making authorities (IIRR 2000). In this context, the broader capacity-building approach of PROSANA and SSMP is more likely to achieve sustained scaling up. Low budget research projects, such as PROLADER and CIAT, cannot be expected to achieve the same level of networking and capacity building as a large well funded development projects or institutions such as

PROSANA. Smaller research projects did not see themselves as responsible for scaling up but rather for developing and disseminating appropriate technologies at a pilot level.

The fact that institutional role strongly influences institutional capability and capacity with regards to scaling up highlights the importance of networking and partnership with well defined roles in order to promote scaling up. Research based technology focused projects have a key role to play in the process by providing innovative technological options that can be used in process based NRM development projects and programmes. Examples of this in Bolivia include, PROLADER's *Phalaris* live barriers being incorporated into the community level PLUSCOs and the silvo-pastoral system developed by CIAT being incorporated into the CARE Amboro Forest Protection Programme. However, neither of these examples had been deliberately planned as part of a scaling up. Unless research outputs are systematically incorporated into larger development activities scaling up will be mostly limited to dissemination efforts of the research organisations themselves. Since the final goals of scaling up often fall outside the remit of research, researchers need to understand the concept and develop linkages with development institutions whose goals are to increase impact. (Adam Behrendt *pers com* 2002).

Table 4.3: Facilitating and inhibiting influencing institutional roles

Facilitating	Inhibiting
Some scaling up occurs by chance rather than part of a plan.	There is often inadequate collaboration between research and development institutions. Each institution tends to act individually, often in competition with each other.

4.4 Accountability

Local development activities are often dictated by the agendas of external development institutions, namely NGOs, researchers and donors. This can limit long-term uptake at the community level where the development agenda does not respond to local development priorities. NGOs and researchers are primarily accountable to donors and only a few have mechanisms by which they are directly accountable to farmers (Neupane et al., 2002). For example, in the Uganda case, key informants indicated that well funded international NGOs often arrived in the area with pre-set objectives, which overrode local priorities. In the village of Pairumani in Bolivia, one of the reasons cited for poor farmer involvement in the PROLADER project was the fact that farmers perceived the work to be primarily for the benefit of the institution rather than for the community.

Two key factors limiting the match between development and community priorities was the lack of community control over which projects intervene in their area and the sector specific nature of most project interventions. Most communities have little or no control over the development projects that they are offered. For example, only in the cases of PROLADER and PROSANA were any of the community interventions in direct response to community demand. Community analysis in Bolivia also demonstrated that, with the exception of the PROSANA, farmers felt that they had no control over their relationship with development institutions (Ramirez linkage analysis in PROLADER, CIFEMA, PROMIC case studies). In the Nepal, key informants stated that interventions were often based on perceived needs rather than those expressed directly by the communities. Moreover, institutional targets, such as implementing activity x in y communities, was often seen as taking precedence over community needs resulting in a cycle of piecemeal short-term project interventions at the community level which sometimes overlapped and duplicated each others work (Neupane *et al.*, 2002, Ellis Jones *et al* 2001, Roman *et al*, 2001a).

The problem of piecemeal projects and duplication was particularly highlighted in the Nepal and Uganda cases where many farmers groups were established on institutional interests rather than local people's needs. These groups tended to form with the arrival of a new project and disintegrate with its withdrawal limiting community empowerment and long-term impact. SSMP in Nepal had tried to overcome this problem by working with existing farmer groups to reduce duplication of efforts. Although being an NRM based programme it also maintained a broader focus on community needs and empowerment rather than individual NRM issues.

PROSANA attempted to increase the farmers' control over project interventions by increasing the ability of the community to make informed choices about the projects and activities they wished to undertake. This was enhanced by the multi disciplinary nature of the programme which tried to establish a mechanism by which the community plans NRM activities in conjunction with their other needs and according to their own agenda. The success of this approach was demonstrated in interviews where farmers explained that one of the most important benefits of the PROSANA approach was that it enabled them to consider their NRM problems within the local context and to plan solutions accordingly.

The problem of sector specificity was identified through some of the interviews with farmers who had not become involved with PROLADER. Despite the widespread use of PRA tools for problem diagnosis, the predetermined nature of many project interventions means that there is little opportunity to really consider where proposed project activities fit into farmers' livelihood strategies and whether they are of priority. In many cases the fact that the NRM agenda promoted by the institutions is not the farmers' top priority is masked by the use of problem analysis which only focuses on NRM issues. This means that even where the technology is appropriate and well adapted to the environment, it may not be adopted as widely as hoped in the early phases of the project because there are other needs unrelated to NRM which are taking precedence and the farmers' resources are limited. This highlights the strength of the PROSANA and SSMP approach, which considers NRM issues within the context of general community needs, and priorities.

Table 4.4: Facilitating and inhibiting factors influencing accountability

Facilitating	Inhibiting
• Working with existing community groups can reduce duplication and ensure that community needs are taken into account providing benefit from greater ownership and control over development interventions	• Institutions are usually accountable to donors and not local communities. Institutional development agendas may be more focused on the donor objectives than the priorities of the farmers and local communities. • NRM interventions may not be considered in the context of other community issues and priorities.

4.5 Funding issues

In their conceptual framework, Gündel *et al* (2001) identify the need to develop appropriate, innovative funding mechanisms to sustain the capacity for expansion and replication. The availability of financial resources was identified by all stakeholders as one of the most important factors affecting scaling up. All the basic activities identified as facilitating scaling up, including pre project planning, inter-institutional networks, fora for multi-stakeholder communication, improved dissemination strategies, capacity building, community empowerment and monitoring and evaluation (IIRR 2000 and Gündel 2001) imply a cost that must be met. Without funding, recommendations for improved practice will remain

unimplemented. The case studies clearly highlight the importance of funding in the scaling up process. Key concerns are:

The need for longer term commitment

Those projects with longer term funding, such as SSMP and PROSANA, have been able to achieve greater impact in terms of community empowerment, developing mechanisms for sustainable adoption and raising the importance of NRM in the local and institutional agenda. Long-term programme funding, with intermediate milestones, allows a more holistic approach to NRM practices. It provides a level of institutional security, which allows for better longer term planning and ensures the necessary resources for building up institutional networks and capacities. Many of the innovative strategies for technology promotion and capacity building in PROSANA and SSMP required secure funding over a number of years. This does not imply that the level of funding has to be high, but that it should last long enough to ensure continuity of activities.

The importance of budgeting for scaling up activities

In their conceptual framework, Gündel *et al* (2001) identify the need to plan and budget for short, medium and long-term scaling up strategies early in the project cycle. However, the case studies demonstrated that many of the key activities, which promote up scaling) are not get planned or budgeted. This is partly due to a grey area over where the responsibility lies in terms of instigating scaling up, partly due to short-termism in project activities and partly due to limited awareness of the costs of scaling up.

Planning horizons are intricately inter-linked with funding mechanisms. Poor linkage between research and development funding, for example, can limit the scope for early long-term planning and negatively influences scaling up of technologies developed in research projects. Comparison of the PROLADER and CIAT cases with the ISWC-PFI and SSMP demonstrates the limitations of funding mechanisms, which draw a clear line between research and development activity. ISWC-PFI in Uganda and SSMP in Nepal, benefit from the fact that the distinction between research and development has been removed. In these cases research and development work were funded as one integral process. Technology development was not separated from scaling up. In the cases of PROLADER and CIAT, however, project planning and vision was initially limited to the development of successful technologies at a pilot level. Wider scaling up, and hence development funding, was only considered on the demonstration of technological success. In the case of CIAT, researcher involvement in scaling up ended at the pilot stage and no active effort was made to continue the scaling up. In the case of PROLADER, it was the start of a search for funding for scaling up from a variety of donors.

Improved integration between research and development funding would ensure either that successful pilot technologies were integrated into appropriate existing development projects or that scaling up activities could be identified and funded during the research stage as the technology proves itself to be successful.

A failure to fund scaling up is also a factor, which limits the success of the process. This is particularly notable with regard to activities, which go beyond the immediate aims of the project, such as involving more stakeholders in the process, or at monitoring and evaluation of longer-term impacts. None of the case studies had planned or budgeted for an on-going M&E mechanism. This made it difficult to ascertain the level of success in terms of impact and spread. Key informants suggested that one of the reasons for the lack of M&E was that the process required a cost that went on beyond the life span of the specific projects and was therefore not included into the project plans and budgets. In the case of necessary activities for collaboration and formation of strategic alliances, only the longer-term projects such as SSMP, PROSANA and CIFEMA had planned and budgeted for these. In such cases they tended to be successful. However, in the case of PROLADER where strategic alliances for

increasing impact in the 'research phase' were only considered when opportunities arose, lack of funds was cited as the main reason for the failure of inter-institutional agreements focused on training and dissemination. In the 'dissemination phase' when PROLADER had a specific budget for training field staff from secondary organisations these activities went ahead successfully. SSMP on the other hand is attempting to solve the problem of limited funding for scaling up activities through the creation of a competitive funding mechanism for local organisations

Funding strategies for scaling up

The case studies demonstrated a range of funding opportunities, which could enhance the scaling up process.

De-centralised Government funding

In Bolivia, one of the greatest opportunities for sustainable funding at the community level has arisen with recent laws of popular participation and decentralisation, which have passed funds and responsibilities into the hands of the municipal governments. Municipal Government is now obliged to fund projects which fulfil requirements mapped out in their Municipal Development Plans (PDMs). Such plans must be developed in consultation with local communities. PROSANA is empowering communities to tap into these funding sources, using the 'community file' as a mechanism to ensure that the activities included in "PLUSCOs" are incorporated into the PDM and subsequently funded. The main risks associated with this funding mechanism are its dependence on municipal capacity, the fact that municipal funds are still quite limited and their vulnerability to political change and corruption. Further NRM issues have been to date low on the municipal government's priotities. NRM projects currently receive only 2% of municipal funding. In order for this to increase NRM needs to be given greater priority through increased community demand for NRM interventions (A Behrendt *pers com* 2002).

Cost Sharing

Cost sharing helps to ensure that the financial burden of scaling up does not fall too heavily on one stakeholder. It will also ensure a greater sense of commitment and ownership on the part of the various stakeholders. However, it will only succeed where there is sufficient commitment to the process by relevant stakeholders and where these have the financial capacity to shoulder some of the costs. PROSANA and PROMIC for instance have both undertaken a gradual process of handing over the costs to local organisations. In the case of PROMIC, the funding ratio between the Swiss Government and the Cochabamba Prefecture has changed, over a 10-year period, from 80:20 to 60:40, and is intended ultimately to be 0:100.

Many smaller organisations and community groups do not have the funds to share the financial burden. In such cases funding 'in kind' (time, personnel, local materials etc) provides a mechanism for the contribution of resource-limited institutions (Gündel *et al.,* 2001). In all case studies this proved successful at the community level where farmers contribute labour, land and other relevant materials that are available to them.

In an attempt to move towards sustainability, SSMP is building farmer contributions into overall cost, in an endeavour to create a greater sense of ownership and responsiveness to demand. The concept that farmer' groups or communities will pay for an "innovator farmer" to come to their community and train them in specific improved NRM practices is being tested. . Demand is stimulated by cross-visits funded by the project). As yet there is no information on whether this approach has been successful.

Competitive Funds
SSMP has recognised the need for extra funding to support activities, which will promote scaling up. As a result, the programme now includes a competitive funding mechanism for collaborating institutions (CIs) catering for:

- Farmer led experimentation on SSM innovations.
- On farm testing and SSM related studies
- Diffusion of SSM practices and awareness creation.
- Human resource development for SSM.
- Networking between institutions.

This helps to mitigate the previously mentioned failure of many projects to budget for key scaling up activities.

Offering services and commercialisation
Offering support services to other organisations, competing for new project contracts with donors and commercialisation of developed technologies are all strategies used for securing institutional continuity and therefore continued ability to promote scaling up. However, focus on institutional sustainability may occur at the expense of pro poor activities. This is the case with CIFEMA where an end to Swiss funding led to an increased focus on commercialisation and a reduced focus on poor farmers. This was due in part to the fact that implements were no longer subsidised and the factory functioned as a business. The need to continually seek new projects to secure funding reduces commitment to longer-term action in a given area. This reduces probability of successful scaling up as it can undermine confidence at the community level.

Table 4.5: Facilitating and inhibiting factors regarding funding arrangements

Facilitating	Inhibiting
• Long-term financial commitment facilitates scaling up providing a secure institutional environment conducive to long-term planning and the formation of inter–institutional networks and alliances. • The resources to plan, budget and undertake scaling up activities (pre-project situation analysis, networking, capacity building) in both research and development institutions. • Availability of local government (municipal) funding and cost sharing opportunities • Donor willingness to provide funding for scaling up activities	• Poor integration between research and development funding • Low priority for NRM activities in local Government funding. • A focus on institutional sustainability through commercialisation can compromise a pro poor focus • Short-term, uncertain and limited funding are predominant factors limiting most scaling up activities

4.6 Timeframes
The timeframe of project interventions affects impact and sustainability since it influences the nature and quality of activities undertaken at both institutional and community levels. Project timeframes are intrinsically linked to funding and donor strategies.

Longer-term projects are more able to consider scaling up and to plan for this early in the project cycle. This is demonstrated by the PROSANA and SSMP who have planned the necessary institutional networks, provided support mechanisms and funding structures to

increase the uptake of the NRM practices promoted. In the case of PROSANA, which has been active for 12 years, project life was split into three phases: orientation, implementation and consolidation. Four years were taken in the orientation and planning of the institutional strategy alone. This long planning horizon allowed the institution to use an iterative approach, learning from its mistakes and refining its strategies in order to meet the goal of poverty reduction. The success of this approach helps to validate Gundel *et al*'s (2001) identification of the need for a pre-project planning phase during which the ground work for scaling up is established.

In terms of implementation, PROMIC demonstrates that achieving impact at a landscape level requires long-term vision. Landscape impact cannot be realistically expected to occur in the short-term. PROMIC required a 10-year planning horizon combined with high levels of resources to undertake technical research, develop watershed management strategies and motivate local communities to implement appropriate NRM practices at field and landscape level. Although such a high input strategy is not widely replicable and may not be sustainable, it demonstrates that achieving results at a landscape level requires a relatively long time frame even when all the inputs are provided. Achieving similar impact with fewer resources with a focus on community empowerment rather than wage labour would probably require a longer time frame.

With this in mind, research projects such as CIAT and PROLADER with short planning horizons cannot expect to achieve landscape level impact during their intervention periods. In both cases dissemination activity were only funded for a matter of months providing opportunity for geographically and temporally limited dissemination. This highlights the importance of identifying secondary institutions that can continue to support scaling up at the community level.

Community analysis in all the case studies demonstrated the significance of the timeframe of institutional support. Farmers identified long-term institutional presence as a key factor facilitating the uptake of NRM practices since it gave them more confidence. For example, uptake of PROLADER's live barriers had been much more successful in a community where a local development NGO, with the continuous presence of field staff providing advice and support, had taken over the role of promoting the technology (Roman *et al.,* 2001a and Mason 1999). In most case studies, lack of on going support was identified as a major factor limiting both the spread and maintenance of measures that had been adopted by a few members of the community. In the case of CIFEMA, one of the main factors limiting uptake at the community level was the lack of access to important information and repair parts for the implements disseminated. Farmers linked this to lack of long-term project support.

Since even long-term projects tended to have only a short-term presence at the community level, preferring to briefly access many communities, strategies for ensuring adequate on going support at this level are a vital component of scaling up. PROSANA has tried to ensure on going support by providing appropriate training to locally active NGOs, building community capacity and involving the municipal government. These measures seem to have been relatively successful.

Table 4.6: Facilitating and inhibiting factors regarding project time-frames

Facilitating	Inhibiting
• A pre-project planning phase. • Longer-term projects are better able to develop institutional networks and partners at many different levels. • Early development of a short medium and long-term initiatives for scaling up.	Landscape level implementation of NRM practices are unlikely to occur within a short timeframe.

Facilitating	Inhibiting
• Long-term support through community based NGOs increases farmers' confidence and improves impact.	

4.7 External environment

In their conceptual framework, Gündel *et al* (2001) identified the need to undertake a detailed situational analysis prior to project implementation. This is of key importance since political, institutional, social, environmental and cultural factors can powerfully influence scaling up, providing either an enabling or a hindering environment. Analysis of these factors early in the project cycle will help to ensure that the activities undertaken are appropriate to the specific situation, that opportunities are exploited and that over-riding limitations are understood. Some factors, such as environmental extremes and political unrest, are beyond the control of the key stakeholders but must be taken into account. Others, such as policy or cultural prejudices, can potentially be influenced although this may be a slow process. Bolivia, Nepal and Uganda represent a variety of contexts, each with their own opportunities and challenges. Their variety demonstrates the need to tailor strategies to local realities and not focus too heavily on generic considerations.

Although all the case studies undertook some level of situational analysis, most focused on community issues specifically related to NRM interventions and did not consider the opportunities and threats of the political and institutional environments. The following sub-sections highlight areas where situational analysis would have been beneficial in order to appropriately plan for scaling up.

The political environment

The political environment influences stability and structure of research institutions, extension services and regional institutional networks related to agriculture. It also influences national and regional policies.

Unstable political situations can have a negative impact on the scaling up. For example, Maoist uprisings in Nepal interrupted work and rendered activities such as large group meetings difficult. In Bolivia, unstable party politics often undermine the effectiveness of municipal work. Political infighting at a municipal level takes the focus away from project implementation and can effectively paralyse activity. High staff turnover due to political change breaks up continuity.

Decentralisation and increased political awareness of NRM and sustainability issues potentially provide a highly enabling environment for the scaling up of NRM practices. In Bolivia, the current government policies dictated by the laws of Decentralisation and Popular Participation and the National Dialogue are highly favourable to scaling up, although corruption, inefficiency, political conflict and lack of capacity at a municipal level can undermine their implementation. Only PROSANA was actively aware of the implications of these laws and designed a strategy to benefit from them. This meant that most case study projects were not benefiting from the opportunity to scale up the use of NRM technologies through local government planning activities.

The biophysical environment

Biophysical factors play an important role in the ability of farmers to adopt new practices as well as the extent to which poor and isolated communities are accessed. In Bolivia and Nepal, extreme weather conditions and poor road access can isolate some of the poorest communities for certain periods of the year. Biophysical factors also dictate the

appropriateness of a specific technology to a given area and the seasons which are appropriate for implementation.

The case of PROLADER provides examples of where increased awareness of biophysical issues could have been of benefit. The project's failure to consider the significance of seasonal variations in rainfall on the establishment of live barriers meant that some communities, without irrigation, were provided with plants which dried out and could not be used. Low adoption rates for live barriers in the community of Pairumani were partly due to the fact that deep top soil reduced the immediate impact of erosion which meant it was not a top priority for farmers.

The Cultural environment

Culture plays an important and often overlooked role in scaling up. In Nepal, the caste system and the view of acceptable behaviour for women influence who has access to new information and technologies at the community level. Most adopters in the SSMP case are from the higher Brahmin caste (91%) whilst those of the medium and lower caste do not participate in projects due to their limited access to information and land. Women were poorly informed on SSMP project activities and were poorly represented in the community level committees. Women were unable to undertake SSM practices due to a lack of information. This was because they could not travel away to participate in training/exposure visits, a fact which suggests the need for alternative information sharing strategies designed to include women.

In Bolivia, different cultural groups occupying the Andean region have distinct strategies for community management. In the more traditional *Aymara* speaking communities of the Alti-plano, older communally focused patterns of land management are still functioning. These provide a very different context to the syndicate structures of the post agrarian reform communities in the mid Andean valleys where most farmers work private land. The sense of pride and communal commitment in the more traditional communities provides a facilitating environment for scaling up since it lends itself to strong highly motivated community organisations.

Unlike Nepal, Bolivian women are not culturally excluded from project activities. However, they are less likely to be bilingual and are often inadvertently marginalised in meetings with NGOs etc. Due to the many conflicting demands on their time they tend to have less time than the men to become involved in project activities. Their agricultural roles are well defined and tend to be focused on management of small livestock as well as specific tasks in the field. However, they often lack the confidence to take on new practices, even when their husbands are absent due to migration.

The institutional environment

Lack of awareness of the opportunities and threats provided by the institutional environment can limit scaling up. For example, institutions may miss opportunities for funding and forming strategic alliances or they may undertake work with institutions lacking appropriate capacity to achieve the desired goals (see section 4.9). In Bolivia, some organisations were unaware of which institutions they could potentially collaborate with to increase impact. They also lacked information on alternative sources of funding.

The social environment

Awareness of the ways in which livelihoods influence farmer ability to adopt new NRM practices is vital if benefits are to be available to the poorest of the poor and not only the better resourced community members. Section 4.13 demonstrates the importance of livelihood analysis in appropriate targeting of interventions. The fact that in all the cases technologies were mainly accessible to the better-resourced members of communities

suggests that livelihood analysis had not been given significant consideration in the development of technologies and dissemination strategies.

Table 4.7: Facilitating and inhibiting factors regarding external environmental analysis

Facilitating	Inhibiting
• Focused and timely situational analysis of the political, institutional, cultural, social and biophysical environment should enhance the impact of scaling up.	• Failure to understand the opportunities and threats of the political and institutional environment can limit scaling up.

4.8 Collaboration, networking and strategic alliances

Involving multiple actors in scaling up is one of the strongest needs for ensuring increased impact and sustainability. Institutional collaboration facilitates scaling up by ensuring that the responsibility for reaching more people is not only in the hands of the 'primary institution'. It increases the chances of sustainability since, when successful it results in a larger number of more competent actors being involved in the process at many different levels. All cases showed some evidence of working with different partners. However, the extent to which this was undertaken as a deliberate policy varied, as did the success on the ground of the signed agreements. Achieving effective inter-institutional collaboration is shown to be a complex and often problematic activity. Understanding how best to manage inter-institutional partnerships to ensure impact is vital in scaling up

The cases of PROSANA and SSMP demonstrate the potential for success of a multiple stakeholder approach to scaling up. Both SSMP and PROSANA actively support national, district and local level governmental (GOs) and non-governmental organisations (NGOs) to achieve the promotion of NRM practices.

In Nepal SSMP works with a large number of collaborating institutions (Cis) working at the community level providing opportunities for integrating the promotion of SSM activities into existing institutions rather than creating new organisations. In order to support inter-institutional collaboration, between key institutional stakeholders SSMP established and co-ordinated a successful linkage mechanism. This included district level networks between the collaborating institutions. This approach had various strengths, including: the activities of each actor were well defined; each actor supported the activities of the others; network meetings, held each trimester, provided an opportunity for sharing and learning from each other's experiences and have proved effective for the solution of various problems. A yearly meeting also provides an opportunity to discuss training, collaboration, ways to avoid the duplication of efforts and intra district collaboration.

In Bolivia, farmers work in community syndicates. PROSANA worked through NGOs already working with the syndicates of target areas. However, this was problematic in highly deprived areas where there had been no institutional intervention and in communities where the syndicates were weak. PROSANA solved the first problem by contracting relevant organisations to work in these very deprived areas, however this entailed a high financial cost since they had to pay for the interventions.

PROSANA did not only focus on horizontal spread but also considered the vertical aspect of scaling up trying to raise the importance of NRM in the local political agenda. In order to promote sustainability they tried to exploit the existing government legislation which requires the local government to include community demands into legally binding Municipal Development Plans (PDMs) (see 'carpeta communal' in PROSANA summary pg 16). They raised the profile of NR issues through the formation of Municipal Natural Resource Management Committees. These included representatives from the communal and district

level farmers organisations, the mayor and NGOs working in the area, thus providing a forum for different stakeholders to air their views. Unfortunately, their attempt to gain the support of the Agricultural Superintendence in making the implementation of PLUSCOs a legal requirement has not yet been achieved.

Both PROSANA and SSMP demonstrate the importance of a single stable body for the co-ordination and development of inter-institutional networks. However, weak capacity, corruption and lack of true motivation on the part of the municipal government and other organisations can undermine the success of these strategies. This fact was highlighted in the Ugandan case where, the existence of a state structure for inter-institutional collaboration had proved insufficient for the development of functional partnerships. Key informants complained that plans agreed with the district council planning unit were often not adhered to or did not translate into activities on the ground. This was exacerbated by the fact that the NGO forum was not functioning. The key informants suggested the need for an organisation to provide an effective co-ordinating role to ensure joint planning and implementation with assigned responsibilities within binding agreements between the NGOs and the District Council.

In their framework, Gündel *et al* identify the importance of identifying demand, supply and support actors early in the project cycle. This is supported by the PROSANA case where a wide range of stakeholders were identified and consulted during in the planning stage in order to incorporate their views into the development strategy and to facilitate future collaboration.
In many of the case studies (see PROLADER pg 15, CIFEMA pg 22 and CIAT pg 28) the lack of opportunity and space for inter-institutional communication and planning were identified as the key factors limiting the opportunities for forming strategic alliances with supply and support actors. Key informants felt that their organisations had a poor awareness of relevant activities being undertaken by different organisations and therefore poor awareness of the potential for collaboration. Moreover, where they were aware of similar interests, the fact that each institution had its own agenda, linked to its existing funded projects, often reduced the motivation to find the time or financial resources required for effective collaboration.

Motivation to achieve impact on the ground was demonstrated to be a key factor facilitating the success of inter-institutional collaboration. For example in the case of CIAT, although little deliberate attempt was made to increase impact through inter-institutional collaboration, provision of materials and information to the Comarapa Cattle Owners Association (ASOGACOM), which was committed to improving livestock management practices, proved to be the key factor in the continued spontaneous spread of the technology.

Positive linkages with community groups (demand actors) were more successful. The achievement of sustainable impact at the community level is greatly facilitated by working through existing community groups and organisational structures. In the Nepal case local co-operatives and producer groups were shown to facilitate the flow of information on new innovations as well as providing a forum for new adopters to raise their concerns and users to discuss their problems with a given innovation. In Bolivia, the local farming syndicate, to which all community members are affiliated, provides a similar role. The community syndicate consists of a democratically elected committee for managing community level issues and is part of a network of syndicates with regional fora and links with local government. Working through the syndicate ensures that most farmers will be aware of new project activities. Farmers feel more confident in getting involved in activities which have syndicate endorsement. Where project interventions have not been made through the syndicate farmers have expressed suspicion and unwillingness to become involved.

Table 4.8: Facilitating and inhibiting factors regarding collaboration, networking and forming alliances

Facilitating	Inhibiting
Inter-institutional collaboration (from grass roots to local government level) is integral to successful, sustainable scaling up. • Working through existing organisations, where they exist, rather than creating new ones facilitates the spread of information at the community level and increases farmers willingness to participate • Working through local government channels can facilitate up scaling where appropriate legislation and capacity is in place. • Collaboration is more successful where there is a capable and committed facilitating institution co-ordinating the scaling up. Development of networks of collaborators with well-defined roles and responsibilities and regular meetings is a successful mechanism for improved communication. • Binding agreements help to ensure that commitments are fulfilled. • Consultation with a wide range of stakeholders in the planning stage and identification of potential collaborators can facilitate scaling up by improving the options for later networking and collaboration.	• Collaboration is hindered by lack of a shared commitment to the goals of scaling up. • The success of working through local government structures is highly dependent on government capacity and is vulnerable to political change. • Weak capacity, lack of funds and lack of true motivation on the part of collaborating organisations can undermine the success of inter-institutional collaboration in scaling up. • Lack of opportunities for inter-institutional communication and knowledge sharing is a key factor limiting scaling up. • A lack of institutional lobbying for NRM to be raised on the political agenda

4.9 Capacity

Adequate stakeholder capacity in technical, social and organisational areas is essential scaling up. It is important from the level of local government to grass roots. However, there is a tendency to focus capacity building activities at the institutional rather than community level. Institutional capacity is important in ensuring successful inter-institutional alliances. Community level organisational and technical capacity is vital for the on going implementation and management of NRM practices at the local level. Community capacity building increases the sustainability of the scaling up process by providing members of the community with the confidence and ability to make decisions and to manage their own NRM projects. Where lack of capacity is limiting scaling up appropriate training is required. The specific nature of capacity building activities will vary according to weaknesses. Capacity building requires that individuals and organisations acquire new skills. Although the term capacity building often implies issues of an organisational nature, the case studies highlighted the importance of technical, social and organisational skills.

In Nepal, lack of technical capacity amongst the collaborating organisations was a key factor limiting the dissemination of SSM practices. In contrast, CIAT and PROLADER emphasised training in the technical aspects of technology implementation but did not consider the limited organisational capacity of the target institutions and communities to maintain and spread the technologies further. CIFEMA focused on technical training for farmers attending their courses to ensure that there was a network of rural workshops able to maintain and repair the instruments that they were promoting. However, many of these farmers lacked the management capacity to continue running their workshops in the absence of CIFEMA

support. PROMIC trained farmers in the implementation of SWC measures but overlooked the issue of maintenance or the need of farmers to increase their involvement not only in the practical field activities but also in decision making and facilitating change.

In most cases, key institutions were not consciously focusing on increasing capacity. PROSANA and SSMP, on the other hand, have both undertaken deliberate policies of capacity building in an attempt to ensure sustainability and scaling up. In response to identified capacity limitations with CIs, SSMP developed and provided training modules on a range of key issues and acknowledged the need for more continuous backup. They also used experience exchange workshops between collaborating institutions as a way to capitalise on the different comparative advantages of each one. These increased effective collaboration between CIs. By developing the technical and communicative abilities of lead farmers they also hoped to increase community capacity for local level dissemination. PROSANA focused on developing community analytical and decision-making skills, as well as organisational capacity to support local empowerment. They achieved this by training representatives from local NGOs and local and community facilitators in community planning and interaction with the municipal governments. The process of reflection and planning used to develop the PLUSCO strengthened farmer capacity to analyse and solve their own problems. By developing NRM committees at the municipal level PROSANA also increased local government capacity to reflect and act upon NRM issues.

Other factors were identified as limiting institutional capacity for scaling up. These included: the limited number of staff combining technical knowledge with appropriate communication skills; the high project dependency on a key charismatic character/champion; regular staff transfer and absence; lack of written records of activities and achievements.

Table 4.9: Facilitating and inhibiting factors regarding capacity

Facilitating	Inhibiting
• Strong organisational and technical capacity at the institutional and community level is essential for scaling up.	Lack of sufficient capacity will undermine the effectiveness of inter-institutional networks for scaling up. Where there is insufficient capacity, appropriate capacity building is a necessary activity in order to facilitate the scaling up process.

4.10 Community approaches and participatory technology development

The strategies used by institutions to develop and disseminate NRM technologies or practices at the community level play a key role in horizontal spread. In all the case studies farmers had clear ideas about which interventions they found most helpful, as well as the problems that needed confronting. This section looks at some of the approaches and the important elements for success.

Increasing awareness and raising demand

Farmers want technologies and practices that respond to their priority needs. As suggested by Gündel *et al* (2001) the ability to respond appropriately can be facilitated by an in depth and timely situational analysis. However, where farmers are unaware of the significance of NRM issues in their lives they may not feel the need for innovative NRM technologies. This does not mean that they would not ultimately benefit from their adoption. Awareness raising activities are important in broadening farmers horizons since they help them to understand some of the underlying causes of their problems, which they may not necessarily relate to NRM issues. Armed with a better understanding of their problems they have an improved base from which to make their decisions on NRM.

Increased awareness of the negative impact of NR degradation on farm productivity can stimulate demand for new practices. For example, in the case of PROLADER, farmers did

not initially identify soil erosion as a priority issue. However, they were very concerned about diminishing yields and reduced soil fertility. Use of simple awareness raising techniques such as the erosion box and educational videos made a significant difference to their perception of the problems. Several farmers stated that if they had known about soil erosion and the effects that it was having on their soil then SWC would have been a priority for them many years previously.

In the cases of PROSANA and PROMIC, awareness raising proved important for increasing farmer commitment to and involvement in the planning and implementation of a range of NRM practices at the landscape level. In both cases participating farmers were provided with accessible technical information on the problems of land degradation through training days, videos and leaflets. In the case of PROSANA they were then encouraged to analyse the new information in relation to their perceived problems. They had the opportunity to consider a range of technological options, both traditional and new. Solutions to their problems were then developed based on an increased awareness of NRM issues and the range of technological options available. In the case of PROMIC, although the technological interventions were predetermined by the requirements of the institution, farmers stated that they had benefited from an increased awareness and that this would motivate them to maintain the SWC measures in their own fields in the absence of ongoing incentives.

Planning with farmers

Ensuring farmer involvement in project activities from the very start is also important in ensuring that the project is responding to their needs. Through involvement farmers often gain a greater understanding of the issues and a greater commitment to NRM. In Nepal, failure to plan projects with farmers was seen as a significant limiting factor in the achievement of SSMP goals. Most of the collaborating institutions based their projects on perceptions of what might be important for farmers. Even when they identified the right topic this minimised the farmers' feeling of involvement, partnership and commitment to the project.

When farmers are not involved in the planning process their daily realities are often overlooked resulting in inappropriate or poorly timed activities. In the cases of PROLADER and CIFEMA, failure on the part of the institutions to work with community level realities was identified by farmers as one of the factors which limited community involvement in project activities. Failure to consider local realities was manifested in the following ways:

- Arranging community meetings/project activities at inopportune moments (e.g when farmers are too busy with other activities).
- Arranging activities that were too time consuming.
- Bringing materials at inopportune moments (i.e. providing *Phalaris* in the dry season when it will not grow).

These problems were exaggerated by the fact that in most of the Bolivian cases farmers had little or no control over their relationships with institutions.

Community participation in technology development

Participatory technology development approaches increase the chance of technologies or practices being appropriate to the needs of farmers. The farmer innovator approach used by ISSWC and SMMP places farmers in the driving seat of the technology development and dissemination process ensuring that they can explore, test and identify innovations that fit with the unique objectives and conditions of individual farming households. This is particularly important where the heterogeneity of the hillsides farming system means that no single technological option can serve the purpose of all the farmers in the area. In the cases of CIAT , PROLADER and CIFEMA, where technologies were developed and initially tested by researchers, farmer involvement in technology evaluation, adaptation and further

experimentation ensured that farmers ultimately benefited from a technically successful product adapted to their own needs and environment.

Both approaches proved popular with farmers and demonstrated collaboration between researchers and farmers. The farmer innovator approach has the added advantage that it focuses on process rather than technologies or practices. Farmer experimentation is a potentially self-sustaining process; PTD means that local experiments and trials are more likely to continue after the end of the project, than is the case with researcher-led on-farm trials. The key strength of both approaches is the bringing together of farmer knowledge and external scientific knowledge to produce improved options for farmers. Relying entirely on farmers' demands and knowledge could lead to the exclusion of many useful measures. The bringing together of knowledge provides farmers with a sense of ownership of the practices promoted whilst being aware of wider options available to them.

Several pitfalls were identified with the innovator approach. There is a danger of focusing on innovative farmers, who tend to be better resourced, at the expense of other farmers. According to SSMP (2001) many of the collaborating institutions focused their training and work on the leader farmers whilst wider promotion amongst group farmers was overlooked. In the Ugandan case, this focus of attention on farmer innovators was identified as a source of envy for non-participating farmers who felt resentful and excluded. Moreover, in Nepal insufficient resources and poor geographic coverage of local institutions often limited dissemination of technologies, which had proved successful at the leader farmer level.

Encouraging practical field demonstration and inter community visits

Farmers need to see technologies working and providing benefits in order to be interested in adoption. They also need to understand how the technology works and how to implement it in their own fields. This is why inter community visits combined with practical field level demonstrations and with on going technical support were cited by the majority of interviewees as the best methods of dissemination. Participants in the Uganda study highlighted the importance of workshops and courses following the visits to reinforce farmers' confidence in implementing new ideas. Bolivian participants unanimously stressed the benefit provided by the technical support available during and after field demonstrations. In the Nepal case, insufficient practical field demonstration was identified as a limiting factor since many organisations focused only on social mobilisation and awareness raising.

Appropriate, low cost, short term, multiple benefit technologies

In all the technology driven cases the nature of the technologies was a key factor which influenced adoption. This was less significant with PROSANA, PROMIC and SSMP which e focused on the process of facilitating improved NRM practice rather than on the promotion of technology. The following points were identified by farmers as key to the adoptability of NRM technologies.

Origin of the technology

In the cases of Nepal and Uganda, the farmer innovator approach added scientific value to locally developed practices. Basing a technology on local practices meant that the farmers could more easily understand the ideas and processes behind the technology. The case study reports suggest that this resulted in a greater rate of adoption. This strategy has also been used by PROSANA in the development of the PLUSCOs. In this case, future land management plans have been based on an analysis of existing practices combined with scientific input to ensure that farmers are aware of the best options available. Where the technology is simple and its function easy to understand it is more likely to be adopted than a complex one.

Use of local resources
In the Nepal case, it was found that the use of local resources for the technologies was an important factor facilitating adoption. For example, the compost making technology required no foreign tools and emphasised the use of locally available resources such as cow dung, leaf litter and crop residues. In contrast, the adoption of the technologies promoted by CIFEMA, PROLADER and CIAT was limited due to poor availability of the key materials. However, in the case of PROLADER, farmers were not interested in live barriers from local grasses since their key interest was the fodder potential of the *Phalaris* species.

Low level of investment required (cash, labour, time)
Technologies requiring low investment of cash and labour/time are more easily adopted by farmers with limited resources. In the case of CIFEMA, despite their popularity, many farmers were unable to access the ploughs developed due to their high cost. In the case of CIAT, those farmers unable to afford barbed wire were unable to adopt the silvopastoral system. In Bolivia practices requiring a high labour input, such as stone wall building, have proved unpopular without financial incentives. Even in areas where stones must be cleared from the land, farmers often prefer to pile them in the centre of the field as this is less labour intensive.

Demonstrable short-term benefits
One key factor limiting the scaling up of NRM technologies and practices is the long-term nature of the benefits. Farmers expect a quick, stable and higher income from new technologies (Nepal case). Most NRM technologies provide long-term benefits. The evidence of high short-term returns is the main reason why coca, in Bolivia, needed no dissemination or scaling up strategy, production just escalated on its own.

In order to be more attractive there must be a link between NRM practices and tangible livelihood improvements. In the Nepal case this was tackled through the promotion of high value commodities such as coffee and better market links. However small holders were hesitant to adopt coffee, despite its future potential for a higher income since the immediate returns were not guaranteed to be better than those of cereal production. In the case of PROMIC the need for short-term benefits was overcome through the strategy of payment for undertaking communal NRM measures. Since farmers were required to undertake SWC measures in their own fields in order to qualify for paid work, the opportunity for paid labour was sufficient incentive to implement measures despite the longer time frame required to see benefits in their own fields.

Multiple benefits
Developing technologies with multiple benefits is one way of compensating for the long-term nature of NRM benefits. For example, in the case of PROLADE, many farmers explained that they had not yet experienced any soil improvement from live barriers but that the fodder production of the grass made the practice very attractive. The animal traction equipment developed by CIFEMA was highly popular due to its immediate impact on the lives of the users. Apart from improving the soil management the ploughs and harnesses reduced the drudgery and labour inputs required for preparing the land. In the Nepal case, coffee cultivation promoted under SSMP was favoured for its multiple benefits of providing a valuable crop which helps to conserve the soil, maintains greenery and allows the introduction of intercrops such as chilli, ginger, papaya and guava.

Ensuring incentives have long term benefit
During a Cochabamba workshop on Scaling up participants questioned whether incentives impeded or facilitated the scaling up process. All of the Bolivian case studies used some form of incentive at some point in their project lives, from providing refreshments at community meetings to payment for undertaking manual work. In the Ugandan case there was wide variation in the level and nature of incentives provided by different projects. Past projects

offering high incentives had set a precedent which meant that many farmers were unwilling to work with those organisations offering limited or no incentives. Farmers tended to respond more to short-term handouts rather than considering whether the long-term objectives of an NRM project met their needs. In all of the cases, incentives provided a short-term boost to the uptake of technology or implementation of the practice in question. The incentives used in the different case studies are described below. These examples demonstrate how the short-term benefits provided by incentives can, in some cases, be at the cost of sustainability.

Decreasing the role of subsidies
In the CIFEMA case, implements were provided at subsidised prices to farmers and institutions as part of a promotion/dissemination strategy. Since the technologies in themselves were desirable, this resulted in a good level of uptake. However, once Swiss funding ended and the subsidies were removed many farmers could no longer afford the implements on offer. Effectively, the subsidy had allowed the development of quality technologies that were beyond the reach of the target group (smallholder farmers).

Provision of materials
The effect of providing materials on the sustainability of uptake may depend on which materials are supplied. For example, in the case of PROLADER, providing *Phalaris* plants to interested families motivated people to implement live barriers. It also provided a source of future planting material for farmers who wished to propagate and distribute or sell plants to interested neighbours. As a result it increased the chances of sustainability and spontaneous dissemination. PROMIC provided the necessary tools to allow farmers to undertake SWC measures required for watershed protection. This was necessary to ensure that they were equipped to undertake the work, however, the interest in gaining the tools was often equal to the interest in carrying out SWC measures.

Payment for labour
PROMIC paid farmers a wage to carry out SWC measures. Community meetings and interviews demonstrated that the wage had been the greatest factor in motivating them to participate. As such it could be seen as negative since they were not really motivated by the work behind the payment. However, even if this fact may compromise the long-term maintenance of the SWC works once wages are no longer paid, it is important to consider the positive side of the equation. Firstly, as the key actors in the implementation process, the farmers learnt about issues of land degradation and natural resource management. Secondly, they were trained in the implementation of a wide range of soil and water conservation measures both on their own land and in communal areas. Moreover, since the work that they were undertaking for wages was not of direct benefit to themselves, but in order to protect the city, it seems appropriate that they should gain financial benefit.

Food for work
Perhaps the most controversial incentive is food for work. However, PROSANA, with their focus on community empowerment, staunchly defend their use of food for work in the face of general criticism. In 1997, food for work was used by PROSANA as an incentive to undertake communal road maintenance in the aftermath of the 'El Nino' effect. This was part of a provincial 'Emergency Plan' funded by the German Government and administered with PROSANA. Certain communities requested to undertake SWC measures as part of the same plan. PROSANA presented the proposal to the German Government and the local governments. PROSANA saw this as away to potentially ensure the implementation of the PLUSCOs. A second emergency plan was drawn up in 1999 which meant that when the PLUSCOs were finalised PROSANA could use food for work as a method of supporting their implementation.

PROSANA claims that the strategy was appropriate given the circumstances and that it has not detracted from the focus on NRM. In fact, in many cases, the works undertaken for food

have been continued far beyond the levels agreed by the Programme. Community level interviews support this view. Interviewees stated that the PLUSCO was successful since it was based on gaining community consensus on priority problems in NRM. They said that since the plan had been developed by the community, everybody was implementing the suggested measures. Unlike the farmers in the PROMIC case who were overtly motivated by the chance of a cash income, they made no mention of being motivated by the food. However, in the community meetings it was clear that many farmers had only carried out the works for which they received food. The attitude varied from one community to another.

Table 4.10: Facilitating and inhibiting influences on improving local participation

Facilitating	Inhibiting
• Raising farmer awareness of NRM issues and their influence on farming can generate demand for appropriate technologies and increase commitment to improved NRM practice. • Participatory technology development and dissemination approaches, which bring together local and scientific knowledge, ensure that the technologies/practices promoted are adapted to farmers' needs and that farmers are aware of the wider options available to them. • Practical field demonstrations, exchange visits and technical support allow farmers to see the benefits of new practices and to understand how to implement them in their own land. • In certain cases, well timed incentives in combination with sufficient awareness raising and motivation may be justified ▪ Technology builds on local practice, local materials are used, low levels of investment are required, short term benefits accrue, multiple benefits are derived ▪ Process is as important as technology development	• When farmers are not involved in the planning process their daily realities are often overlooked resulting in inappropriate or poorly timed activities. Involving farmers in planning project activities increases their commitment, ensures that activities are responding to their needs as well as fitting in with their realities. • Incentives which mask the true cost of a practice or which are more attractive than the practice in itself may increase the short-term uptake of NRM technologies and practices at the expense of sustainability.

4.11 Sustainability

One of the key problems affecting the sustainability of NRM practices is the failure of most institutions to consider how to withdraw from a community without compromising the continued implementation of the NRM practices promoted. In most cases, once project activities have been completed the project staff withdraw from the community leaving farmers feeling deserted.

In general, farmers felt that they had no control over their relationships with institutions and that the institution would decide when to arrive and when to withdraw. This led to a sense of dis-empowerment and a loss of interest in maintaining practices promoted by the institutions. During the community level analysis, most farmers complained of being let down by institutions, who only provided support whilst promoting a practice or technology but then failed to provide longer term back up or advice. Many felt that long-term technical support from institutions was important for ensuring technology uptake and maintenance at the community level.

In order to overcome this issue, farmers need to feel less dependent on direct institutional support. They need to have access to the necessary elements to enable them to adopt, adapt and disseminate further technologies and practices which they have found attractive. These elements include increased organisational capacity, appropriate materials for implementation and maintenance and technical support when problems arise. SSMP and PROSANA have tried to achieve this through community capacity building, training local facilitators and strengthening the linkages between community groups, NGOs and local government. PROLADER has tried to ensure sustainability through provision of plants for communal and individual nurseries (to ensure that new live barriers can be planted and old ones maintained) and training a local person to provide technical advice and support. These activities can be considered to be exit strategies since they are focused on enabling the farmers to continue to feel supported once the key institution has left, however, they need to be planned an implemented early in the project life if farmers are to gain independence from the project.

Table 4.11: Facilitating and inhibiting influences on sustainability

Facilitating	Inhibiting
• Improving local organisational capacity, improved collaboration long-term access to materials and technical support need to be available to local communities	• Farmers are often dependent on institutional presence for continued implementation and dissemination of NRM practices.

4.12 Livelihoods

Livelihood analysis was used at the community level to help understand whether different livelihood strategies facilitate or hinder adoption of NRM practices, and to ascertain whether some groups are excluded from development interventions.

Nepal

In the Nepal case, there was great diversity in the ways in which people derived their livelihoods with more than 14 sources of income identified. Participating farmers were categorised into 3 wealth groups according to land holdings, agricultural resources, food sufficiency and household income from non agricultural sources. Although agriculture was reported to be the main source of livelihood for the majority of families, non agricultural sources of income were significant, with 51% of the farmers interviewed earning between 25 and 75% of their income from the service sector. The importance of different activities to the livelihood strategy has changed over time in relation to their relative profitability, for example cereal production was decreasing whilst vegetable production was increasing.

A key criterion was the differentiation of innovators and adopters (Table 11). Nearly all the innovators and adopters were from the well and medium resourced groups. All of the innovators were men and tended to be literate and educated. 65% and 35% of the adopters were male and female farmers respectively. Innovators tended to be educated with higher land holdings than adopters. Innovators were older than the adopters and had larger families. The innovator is more likely to come from a family with one or more educated family members with access to business or service. The innovators and adopters are from families with higher income, relatively more access to productive resources, and higher levels of education than the non-adopters. There were no innovators and only 3 adopters from the poorest group. This was explained by the fact that the poorest resource group had less risk bearing capacity, less access to productive resources, less education and less exposure to information.

Table 4.12.1: Characteristics of innovators and adopters in the Nepal case study

Characteristics	Innovators	Adopters
Average age	42	38
Male (%)	100	65
Female (%)	0	35
Average household size	8	6
Level of education	Literate to educated	Illiterate to educated
Average land holding	0.8	0.7

Education is a significant factor affecting adoption of new practices and technologies since educated people have better access to written information and wider exposure to activities beyond the community. They also tend to be better able to articulate their needs and to take on board new ideas. Education was also found to be correlated with resource endowment, which in turn was associated with adoption.

Bolivia

Agricultural production was the main source of income for all the families. The main differences in livelihood strategy were related to the ability to produce an excess of crops for commercialisation. Well-resourced farmers tended to own more irrigated land and more livestock and to sell more of their produce. Poor resourced farmers often only produced enough for subsistence, had no access to irrigated land, had little or no livestock and depended on selling their labour (both in and beyond the community to increase their income). Average farmers tended to produce enough for some sales but were primarily subsistence. They often needed to work others' land with crop sharing in order to access irrigation. Most households in all strata use migration to the coca producing Chapare region and/or the city to increase the cash incomes.

Only PROLADER included wealth ranking. The communities divided themselves into 3 wealth ranks: well, average and poorly resourced. On average (between the six communities stratified) 46% were poorly resourced, 49% were average and 5% were well resourced. However, in all communities they claimed that there was little significant difference between the strata.

In all of the case studies, farmers claimed that they had equal access to NRM projects. However, the limiting factors to adoption that they identified demonstrate the extent to which resource levels actually influence adoption.

Access to the necessary resources was a factor limiting adoption identified by most of the farmers. The main limiting resources were credit, land, irrigation and time/labour.

> Affordable credit was a major factor limiting the purchase of key inputs for improved NRM practices. In the case of CIFEMA it limited the possibility of purchasing the improved ploughs developed. In the case of CIAT credit was required to buy barbed wire for fencing the area. Credit was also required to purchase tools. In the case of PROMIC the necessary tools for field level SWC measures were subsidised. However, there is an issue here of farmers being unwilling to spend their own money on inputs when they perceive the activity as being primarily in response to the institutions requirements rather than their own immediate needs.
>
> Land availability was also a significant limiting factor, particularly access to irrigated land where NRM practices are more attractive since there is greater potential to produce high value crops. Irrigation is also a prerequisite for the success of some of the practices promoted such as live barriers, improved pasture. Farmers who did not own their own land were unable to implement any permanent NRM measures such as live barriers or terraces.
>
> Access to project information and training was a problem for isolated homesteads. These tended to be excluded from project interventions since the effort to reach them was too great given the limited time of the project staff. This problem was identified by staff in PROLADER and could be overcome by training local promoters.

It is the average to better resourced farmers who are most able to benefit from new interventions due to their larger landholdings, better access to irrigation and more available time to invest in improving their own land (rather than selling their labour elsewhere). In the case of PROMIC, the project strategy of payment as well as provision of necessary tools effectively removed the influence of livelihood factors and resulted in100% involvement by the community.

Permanent and temporal migration was also identified as a factor significantly reducing the ability of farmers to adopt and maintain NRM practices. This was for various reasons:

- Absence from the community at key moments results in exclusion from the training and resource distribution offered by many NGOs.
- Farmers who are absent for significant periods of the year do not have time to maintain NRM measures since their time in the community is focused on undertaking the basic activities required to produce crops.
- Where migrant activity provides a significant alternative income, it reduces dependence on agricultural production which can reduce the incentive to improve NRM practice.

Uganda
In the Ugandan case crop production remained the most important source of income for 95% of the participating farmers. However, there was widespread livelihood diversification with outside incomes from for example, civil service, casual labour, transport, brewing, carpentry, and quarrying all contributing significantly (4-5 on an importance scale of 1 to 5) to household income. Crops provided both food and cash whilst the other activities provided cash for purchasing food and other household needs.

Farmers divided themselves into 5 wealth categories from *very well resourced* to *very poorly resourced*. Most innovators and adopters fell within categories 2 and 3 (well resourced and average). Categories 1,4 and 5 rarely adopted new ideas either because they were happy with their situation (*very well resourced*) or because they lacked the time and resources (*poorly and very poorly resourced*). Most innovators as well as selling crops had other sources of household income.

Table 4.12.2: Livelihood influence on technology uptake

Facilitating	Inhibiting
	• Those who adopt NRM technologies tend to be better resourced, with key factors influencing adoption being access to resources, migration, education and levels of non-agricultural income.

4.13 Impact assessment

Monitoring and Evaluation (M&E) are vital components of the scaling up process. Without them it is impossible to ascertain whether the strategies used result in more benefits reaching more people. Although some of the case studies had attempted to monitor their ownl activities in order to refine and improve approaches, none of them provided any concrete examples of functioning systems for the monitoring and evaluation of the impact of their activities. Since M&E activities had not been planned into the project lives of any of the case studies, there were insufficient resources (financial or human) to allow the necessary community visits. As a result it was difficult to ascertain the extent of their success in scaling up.

The main factors limiting the development and implementation of monitoring and evaluation strategies were identified by the institutions in Bolivia as:

- Confusion over who should be doing the monitoring and evaluation.
- Confusion over when and how it should it be done.
- Confusion over the definition of useful and accessible indicators.
- Lack of funds.

In most cases, attempts to measure impact were piecemeal and focused on quantifying activities during the project lifetime rather than on measuring changes brought about over time. For example, CIFEMA was aware that they had implemented 2000 rural workshops but they were unaware of how many of these were still functioning and whether they were satisfying community needs. Community meetings undertaken by this project (PROAMP) suggested that the lack of workshops was one of the key factors limiting uptake of CIFEMA implements since farmers had no access to repairs. In the case of PROLADER and CIAT the projects had already moved on or ended before any meaningful changes had occurred. As a result PROLADER measured success according to the number of families who had received planting material for live barriers whilst CIAT made no attempt to monitor impact. In the case of PROSANA, there is data on the number of PLUSCOs undertaken but none on whether they have been implemented, on the quality of work undertaken and whether this has changed people's lives in any way.

Table 4.13: Facilitating and inhibiting influences impact assessment

Positive	Negative
	• Lack of M&E makes it difficult to measure impact and ascertain whether scaling up is occurring. • M&E have not been undertaken due to lack of funds and confusion over who should take responsibility and how it should be done.

5 ACTIONS NEEDED TO ACCELERATE SCALING UP

5.1 Introduction

This chapter draws on the discussion and summary of facilitating and inhibiting factors at the end of each section in chapter 4 drawing conclusions and identifying actions to address each issue. Where relevant, the key case studies, which lead to the conclusion, are named in brackets. It is recognised that no single factor alone will ensures successful scaling up. Success will require a range of complementary activities combined with a sufficiently enabling environment.

5.2 Ensuring issues of vertical scaling up are addressed

Failure to fully understand the wider implications of scaling up and its implications for institutional strategies and activities are limiting scaling up. When organisations are unaware of the concept they do not plan scaling up activities into their projects and programmes. Only three of the seven case studies (SSMP, PROSANA and PFI) had a deliberate scaling up strategy. The other organisations considered scaling up to be synonymous with dissemination (horizontal spread). Successful scaling up requires that the vertical aspect of the concept is also considered, for example inter-institutional alliances, increasing the priority of NRM issues in government agendas and benefiting from existing legislation and policy (PROSANA, SSMP). In order to facilitate the process, institutional actors (donors, government bodies, research and development institutions, and grass roots organisations) need to have a clear understanding of both the vertical and horizontal aspects of the concept and their implications.

In Bolivia in particular, confusion over the specific levels of impact implied by the general definition highlighted the need for individual organisations to clearly define their role in scaling up so that they know what they are trying to achieve and are able to measure it.

Actions required

Institutions at all levels require a clear vision of how vertical and horizontal scaling up can be promoted. Each institution should clearly define their role in scaling up, plan, implement, monitor and evaluate appropriate activities.

i) To facilitate this, appropriate materials and activities to increase institutional capacity in scaling up should be developed and disseminated.

5.3 The need for research and development institutions to work closely

Scaling up successful pilot experiences are influenced strongly by the orientation of the 'primary institution' be they research, development, or community organisations. The case studies demonstrated that development organisations with a more process based approach to scaling up (PROSANA and SSMP) were more successful than the technology focused research projects (PROLADER, CIAT). One of the key factors, which limited the development of scaling up strategies in these research projects, was the fact that they did not consider themselves to be responsible for scaling up. Their goal was to develop and disseminate appropriate technologies at a pilot level. Although low budget research projects cannot be expected to achieve the same level of networking and capacity building as large development projects, they can improve their chances of impact by collaborating with these organisations. By incorporating scaling up into their institutional goals, research institutions will become increasingly aware of their need to link with development and government organisations with their increased capacity for networking and achieving wider impact.

There is clearly a need for technically orientated organisations to become more process-orientated in its work and good examples of this occurring are seen with ISWC-PFI and SSMP.

Actions required

i) Institutions should incorporate scaling up into their goals to ensure that they undertake appropriate activities, building appropriate alliances where required.

ii) Research institutions need to link with development organisations with greater capacity for networking, political advocacy and closer contacts with local communities in order to increase impact.

iii) Technology development requires a process approach to ensure that technology is appropriate.

5.4 Improving accountability to local communities

Local development activities are often dictated by the agendas of external development institutions, namely researchers, NGOs and donors. NGOs and researchers tend to be primarily accountable to donors with little accountability to their target beneficiaries (all cases). Many NRM interventions are sector specific based on the institutional perception of community needs with little consideration of other community priorities (SSMP, PROLADER, and CIAT). Most of the communities in the case studies had had little or no control over the development projects that they were offered or over their relationships with the intervening institutions (PROMIC, CIAT, CIFEMA, and PROLADER). This sometimes resulted in piecemeal project interventions and duplication of work by various institutions. SSMP, PFI and PROSANA demonstrated that duplication can be reduced and the relevance of interventions increased by working through existing broad based community groups. Where PROSANA has developed mechanisms to give the community greater control over interventions and to consider NRM issues within the context of broader community needs, they have been enthusiastically received at the community level. Clearly local democratic processes are important in ensuring local leaders remain accountable to local communities.

Actions required

i) Institutional development activities need to focus on a broad understanding of community priorities and needs, rather than institutional priorities and interests.

ii) Institutions need to be as accountable to local communities and their organisations as they are to donors.

iii) Institutions should work with existing community groups to foster greater local ownership and control over development interventions.

iv) Mechanisms should be developed to give communities greater control over development interventions.

5.5 Seeking innovative funding mechanisms

Insufficient capital is a factor limiting scaling up at all levels (institutional communal and individual). The way in which funding is planned and managed can influence the success of the scaling up process. The scaling up process is most successful where there is a long-term financial commitment. This is because longer term funding (PROSANA and SSMP) provides the level of institutional security/continuity required for developing a short medium and long-

term plan which includes key scaling up activities such as capacity building and the formation of networks for inter-institutional collaboration. The failure to plan and budget for scaling up activities, particularly those which span beyond the project implementation phase such as, M&E, situational analysis, networking and capacity building, limits the scaling up process. Short term funding and poor integration between research and development limit planning horizons and reduce the opportunity to plan or budget for key scaling up activities (CIAT and PROLADER). Projects that have integrated research and development into one process (SSMP and PFI) demonstrate the benefits of an integrated approach, which include the development of an appropriate infrastructure to support the scaling up process. Of the various funding strategies followed by the case studies tapping into government funding programmes (PROSANA) and cost sharing (PROSANA, PROMIC, SSMP) appear to enhance the sustainability of the process. In the case of government funding, opportunities could be enhanced by stimulating demand for technologies at the community level whilst simultaneously raising awareness of NRM issues within the municipal governments (PROSANA). Provision of a competitive fund (SSMP) for scaling up activities such as awareness raising, capacity building and institutional networking can also facilitate secondary organisations in undertaking positive scaling up activities. Commercialisation of activities can ensure institutional sustainability but often at the expense of a pro poor focus (CIFEMA).

Actions required

i) Closer integration between funding of research and development activities should be undertaken.

ii) Research and development institutions need to plan, budget for and carry out scaling up activities in particular situation analysis, networking, capacity building and M&E.

iii) In building alliances, institutions should consider funding mechanisms such as cost sharing and seek existing government funding to promote local sustainability.

iv) In order to develop better local funding opportunities, institutions need to promote and lobby for higher political priority for NRM.

v) Attempts to ensure institutional sustainability need to ensure that they do not compromise the pro-poor focus of activities.

vi) Donors need to consider longer-term flexible funding approaches, which take into account the need for pre-project analysis, and incorporate a number of intermediate milestones. Such funding would need to be linked to institutional capacity.

5.6 Increasing time horizons

The timeframe of project intervention affects impact and sustainability since it influences the nature and quality of activities undertaken at the institutional and community level. Long-term commitment is a facilitating factor both at the community and institutional level. Long term projects are able to take a more strategic view of scaling up and to plan for it early in the project cycle. Those projects with a short, medium and long-term plan were better able to plan for and undertake scaling up activities (PROSANA, CIFEMA). At the community level, long term institutional support is a key factor facilitating technology uptake since it provides farmers with a point of reference when they have difficulties or queries (PROLADER). Since even long term projects tend only to have a short term presence at the community level, strategies for providing on going support need to be developed (CIFEMA, PROSANA). Successful approaches include building community capacity to manage new technologies, working through NGOs with a long-term local presence and involving the municipal government in the process (SSMP, PROSANA, PFI, PROLADER).

The case studies demonstrate that achieving impact at a landscape level is a slow process, even when all the necessary inputs are required. Only the PROMIC case demonstrated environmental benefits at a watershed level. This had taken 10 years with high levels of control and support. Institutions wishing to promote changes at a landscape level will benefit from a realistic view of the time scale involved.

Actions required

i) Development and research institutions need to develop short, medium and long-term plans, which define how, they will contribute to scaling up.

ii) Innovative ways to provide longer-term technical/organisational support at the community level need to be developed.

iii) Achieving landscape level impact is a long-term process and interim targets need to be established.

5.7 Ensuring external environment analysis

In order to plan for scaling up it is important to understand the opportunities and threats provided by the political, institutional, cultural, social and biophysical environment. Focused and timely situational analysis should enhance the impact of scaling up activities. However, most of the case studies had focused their situational analysis on community PRA activities with an NRM bias. There was limited evidence of a deliberate and systematic consideration of the implications of the political and institutional environment. This resulted in missed opportunities in Bolivia where only one of the five case studies (PROSANA) was benefiting from available municipal funding and support.

Actions required

i) Institutions taking the lead role in scaling up should undertake a timely situational analysis focused on the opportunities and threats to scaling up. Situational analysis should go beyond the community level and include consideration of political, institutional, social, cultural and biophysical factors.

5.8 Improving collaboration, networking and forming alliances

Inter-institutional collaboration (from grass roots to local government level) is the backbone to successful, sustainable scaling up (SSMP, PROSANA). However, achieving effective inter-institutional collaboration was shown to be a complex and often problematic activity. Opportunities for collaboration were often limited by the lack of space for inter-institutional communication and planning, lack of funds and the fact that institutions were too busy with their own projects and agendas (PROLADER, CIAT, PROSANA). This highlighted the importance of institutional motivation for the success of collaboration. In order to participate effectively in the scaling up process collaborating institutions may require additional capacity building (PROSANA, SSMP). Collaboration is more successful where there is a key capable institution facilitating the process, by providing capacity building and supporting network formation as in the cases of SSMP and PROSANA. Scaling up is facilitated by the development of networks of stakeholders with well defined roles and responsibilities and legally binding agreements (SSMP, PFI). Development of effective networks can be enhanced through the early identification of and consultation with demand supply and support actors (PROSANA). Regular meetings to discuss issues arising and to share experiences improve the effectiveness of networks (SSMP). The achievement of sustainable impact at the community level is greatly facilitated by working through existing community groups and organisational structures where they exist (PROSANA, SSMP, PFI). In Bolivia scaling up

can be enhanced through the formation of a strategic alliance with the municipal government (PROSANA).

Actions required

i) A key stakeholder is required to facilitate and co-ordinate the process, if successful collaboration for scaling up is to occur.

ii) The 'primary' institution needs to plan for collaboration (both vertical and horizontal) early in the project cycle and identify demand, supply and support stakeholders.

iii) A wide range of stakeholders should be consulted in the project-planning phase to improve options for later networking and collaboration.

iv) 'Primary' institutions should work with/through existing local groups and help build their capacity when needed.

v) Opportunities for institutional knowledge sharing and collaboration should be increased.

vi) Networks of collaborators with regular interaction to resolve issues arising and share experiences should be created.

vii) Where appropriate policy is in place strategic alliances should be formed with local government taking into account the problems of lack of capacity that may exist.

5.9 Building capacity

The success of inter-institutional collaboration is dependent on adequate organisational and technical capacity. Lack of sufficient capacity at the institutional level will undermine the effectiveness of inter-institutional collaboration. At the community level lack of capacity will limit farmers active involvement in the scaling up process. In order to target capacity building appropriately the technical and organisational requirements need to be considered on a case-by-case to ensure that poor capacity does not limiting scaling up.

Actions required

i) Capacity building activities should be targeted at both institutional and community level stakeholders according to their specific needs, with capacity building activities prioritised and funded as a vital part of the up scaling process.

5.10 Improving community approaches to technology development

The strategies used by institutions to develop and disseminate NRM technologies or practices at the community level play a key role in uptake. Consultation with farmers in all the case studies identified those strategies, which were most effective at stimulating uptake at the community level. Awareness raising activities were shown to be key in stimulating farmer demand for NRM practices since they allowed the farmers to gain a greater understanding of the negative impact that NRM degradation was having on their livelihoods (All cases). Involving the farmers in planning research and development activities was important in ensuring that the project responded to their needs and fitted in with their daily realities (PROSANA, PFI, SSMP). Failure to take these realities into account reduced farmer participation (PROLADER, CIFEMA). PTD and the farmer innovator approach were both popular with farmers since they widened their horizons by bringing together local and scientific knowledge and ensured a sense of ownership of the practices promoted. Practical field demonstrations and inter-community visits are vital components of a successful

promotion strategy since they enable farmers to understand how the technology works and to see its benefits in their own environment (All cases). Incentives can mask the true cost of a practice, they can also motivate rates of involvement of farmers who are not really interested (PROMIC, PROSANA). Where this is the case, they can result in high short-term adoption levels, which are not maintained

Ensuring new technologies and practices have potential for adoption

The nature of the technology promoted is a key factor influencing adoption and hence scaling up. Technologies based on adding value to existing practices are popular since farmers can more easily understand the ideas and processes behind the technology (SSMP, PROSANA, PFI). Use of locally available resources facilitates adoption and maintenance of technologies (SSMP). Poor availability of key materials can limit adoption of otherwise popular technologies (PROLADER, CIFEMA, CIAT). Technologies requiring relatively high investment of cash, labour or time are less easily adopted by farmers with limited resources (CIAT, CIFEMA). The key factor limiting adoption of NRM practices is the lack of short-term benefits. This can be overcome to a certain extent by developing technologies with multiple benefits (PROLADER, CIFEMA, SSMP).

Actions required

i) Awareness raising activities should always be undertaken in conjunction with or prior to technology development.

ii) Farmers should be involved in planning project activities to ensure that they respond to their needs and fit in with their realities.

iii) Participatory technology development approaches should bring together local and scientific knowledge.

iv) Farmers should be made aware of the wider NRM options available to them and helped to understand the concepts underlying the technologies or practices.

v) Practical field demonstrations, exchange visits and technical support should all be provided to allow farmers to see the benefits of new practices and how they can be implemented in their own land.

vi) Incentives should only be used where they can be justified and there is evidence that they are not the overriding factor influencing adoption.

vii) Where incentives are used, there should be sufficient awareness raising activities.

viii) In order to facilitate uptake amongst farmers where possible technologies should be based on locally available materials, require low investment and demonstrate tangible short-term benefits or multiple benefits

5.11 Ensuring sustainability after project completion

Farmers are often dependent on institutional presence for continued implementation and dissemination of NRM practices. Lack of on-going institutional support was a widespread complaint made by farmers interviewed in all the cases. Institutional dependency needs to be overcome if scaling up is to be sustainable. In order to overcome this problem, farmers need ready access to all the necessary elements, which enable them to adopt, adapt and disseminate technologies and practices, which they have found attractive. These elements include increased organisational capacity, access to appropriate materials for implementation and maintenance and technical support for when problems arise (PROSANA, SSMP).

Actions required

Farmers should be aware from project start of the timeframe of the project intervention so that they do not feel disillusioned and let down when the project withdraws.

Institutions need to develop strategies that ensure that farmers have access to the resources that they need to continue with the practices once the institution has left.

i) Key elements of an exit strategy should include improved local organisational capacity, long-term access to materials and technical support.

5.12 Including the poorest and marginalised

Despite the wide variations in livelihood strategies between countries, farmers who adopt or innovate technologies are nearly always the better resourced (SSMP, PROLADER and PFI). Key factors influencing adoption included, the nature of the technology, access to resources, migration, education and levels of non-agricultural income. The poorest resourced farmers had less risk bearing capacity, less access to productive resources, less education and less exposure to information (SSMP). The main limiting resources were credit, land, irrigation and time/labour (PROLADER). Education levels were important since educated people had better access to written information and wider exposure to activities beyond the community (SSMP). Isolated families and those who migrated tended to be excluded as they often could not attend community meetings and missed out on important information and activities. Migrants to the city and those less dependant on agriculture for their income were less motivated to improve NRM practices (PROLADER, PFI). If technologies developed are to benefit the poorest of the poor, then NRM organisations need to understand the livelihood factors, which are leading to their exclusion and develop strategies, which will counter these factors.

Actions required

Institutions need to understand the way in which livelihood strategies are influencing adoption in order to target poorer farmers.
Undertaking a livelihoods analysis will be key to this.

5.13 Assessing impact

The lack of effective systems for measuring impact make it difficult to ascertain the extent to which promoted technologies are spreading and whether they are providing the desired benefits to small holder farmers (All cases). Where monitoring and evaluation has occurred it has been limited to measuring outputs within the project lifetime. Development and implementation of M&E strategies was limited by various factors: confusion over who should be responsible for M&E and how it should be undertaken, uncertainty over the definition of useful and accessible indicators and lack of funds earmarked for M&E activities (All Bolivian cases).

Actions required

i) Capacity needs to be developed built in appropriate M&E.
ii) Institutions need to consider M&E from the start of the project cycle and incorporate it into their plans so that it can be funded.

6 Next steps in the research process

Each of the individual case studies were presented and discussed at a Workshop in Bolivia during February 2002. At this workshop, institutions considered and drafted plans that would assist them in scaling up their Outputs faster. Assistance is now being provided to CIFEMA, PROLADE, PROMIC AND PROSANA in finalising these plans, monitoring their implementation and evaluating the results. This includes:

(i) The identification of a clear scaling up goal by each organisation. This includes the development of short, medium and long-term goals.
(ii) The identification of a strategy for achieving these goals drawn from the lessons learnt and actions required, together with short, medium and long term indicators which will be used to measure success of each.
(iii) The identification of key skills (or capacities), which each institution will need to build together with a strategy for this.
(iv) An assessment of the capacity needs of local organisations with whom they are working.
(v) The design and implementation of technical assistance and capacity building activities based on (i)-(iv).
(vi) Follow up and support of the activities identified.
(vii) Monitoring the performance.
(viii) Evaluating the results.

Particular attention will be given to:

Building ownership and institutionalising a scaling up process between partners;
Harmonising scaling up plans and strategies within the normal planning and operations of the partner organisations, through encouraging increased collaboration and alliance building.
Providing clearly targeted and well planned training and exchange opportunities without becoming too broad or getting off target in order to increase capacity
Providing quality inputs from project staff in monitoring, follow up and evaluation of the process;
Generating long-term capacity to monitor and review the different strategies being implemented.

The end product of the evaluation and analysis of this action research process will be the provisipon of guidelines for improved scaling up practices.

References

Ellis-Jones. J, Miro. D., Lwakuba A., and Critchly.W., 2001. (Unpublished)**.** *Scaling up Indigenous soil and water conservation techniques through the innovator farmer approach, Kabale Uganda.*

Gündel S., Hancock J., and Anderson S., 2001. *Scaling up strategies for research in natural resources management. A comparative review.* Chatham, UK. Natural Resources Institute.

IIRR, 2000. *Going to scale. Can we bring more benefits to more people more quickly. International Institute of Rural Reconstruction*, Y.C. James Yen Centre, Cavite, Phillipines.

Linzer. K and Rojas. N., 2001. (Unpublished). *Estudio de Caso de un sistema silvopastoril de pasto mejorado bajo sombra (CIAT/CARE)*

Mason.T (1999) *Factors affecting the adoption of live barriers for soil and water conservation in the mid Andean Valleys of Bolivia***.** Cranfield University MSc thesis

Neupane H., Ojha H., and Garforth. C., 2002. (Unpublished). Scaling up of Sustainable Soil Management Practices: Case studies of Panchakhal and Sanga Villages in Kavre district, Nepal. A report prepared by ForestAction, Nepal, in collaboration with the University of Reading, UK. NRSP project R7866.

Ramirez, R (1997). *Understanding farmer's Communication Networks: Combining PRA with Agricultural Knowledge Systems Analysis*. 1997**.** IIED gatekeeper 66,

Roman. M A, Quinteros.W, Plata.V and Middleton.T., 2001a. (Unpublished). *Estudio de Caso del Plan del Uso del Suelo Comunal (PROSANA)*

Roman. MA, Quinteros.W, Plata.V and Middleton.T., 2001b. (Unpublished). *Estudio de Casodel Programa de Manejo Integral de Cuencas (PROMIC)*

Roman. MA, Quinteros.W, Plata.V and Middleton.T., 2001c. (Unpublished). *Estudio de Caso del Centro de Investigacion, Formacion y Extension en Mecanizacion Agricola (CIFEMA)*

Roman. MA, Quinteros.W, Plata.V and Middleton.T., 2001d. (Unpublished). *Estudio de Caso del Proyecto Laderas*

Roman. MA, and Middleton.T., 2001. (Unpublished). *Resumenes de los Estudios de Caso Realizados por el Proyecto de Ampliacion*

Roman. MA, Plata, V and Sims, B 2002e. (Unpublished) *1er Seminario Taller: Estrategias para ampliar el impacto de tecnologías, practicas y metodologías exitosas a nivel piloto.* Universidad de San Simon, Cochabamba Bolivia.

Annex 1: Upscaling pilot research experiences – logical framework (4 May 2001)

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Goal			
Improved hillside farming strategies relevant to the needs of marginal farmers developed and promoted.	By 2003, this new knowledge incorporated into strategies to increase the local availability of food and/or fodder supplies and adopted by target institutions in two targeted countries.	Reviews by programme manager. Reports of research team and collaborating/target institutions. Dissemination products Local national and international statistical data Data collected and collated by programme manager.	Target beneficiaries adopt and promote systems and approaches. Enabling environment exists. Budgets and programmes of target institutions are sufficient and well managed.
Purpose			
Ways to accelerate and upscale positive pilot research experiences on soil, water and land resource management to the wider community developed and promoted. This will give emphasis to the processes required	By 2003, local professionals in NGOs and research organisations use these processes and - Routinely make land management evaluations taking into account household and community assets, as well as production benefits in different parts of the landscape. - Integrate new methods into policy decision-making processes. - Use the processes and strategies in training courses. By 2002, local administrations (*municipios*) accept the contribution these processes can provide for upscaling	Reviews by Programme manager. ***Organisational plans of NGOs and research organisations.*** Reports of methods in use by target institutions. Funding requests incorporating the use of the processes.	Target beneficiaries adopt methods and approaches. Budgets and programmes of target institutions are sufficient and well managed.
Outputs			
1 Processes for upscaling successful pilot NRM management and technologies at community and individual level analysed and understood with key constraint and success factors identified. 2 "Best Option Strategies" for scaling up developed and tested through participatory action research. 3 Strengthened capability of local professionals in collaborating institutions to promote upscaling.	By December 2001, processes evaluated and key opportunities and constraint documented. By June 2002, institutions in at least three target sites in Bolivia and at least one other country are actively using the options in a participatory manner. From June 2002, dissemination materials for use jointly prepared by UK and overseas partners From December 2001, new knowledge promoted and disseminated to research and development professionals in both collaborating and target institutions.	Quarterly and annual project reports. Research programme reports Peer reviewed publications Dissemination material	Lack of political support for target institutions and leadership changes willingness to utilise new approaches and strategies Collaborating institutions have the resources to use these Outputs

Activities		
Processes of scaling up identified	ByNov 00 , scope of review agreed	Institutional stability at UMSS-Bolivia and collaborating institutions in Nepal and Uganda
1.1 Scope of review agreed with HS1.3.1b		
1.2 Selection of case studies through institutional review and discussions with key stakeholders.	By March 2001 case studies selected	
1.3 In each case study processes of NRM innovation and upscaling from the individual, community, NGO and researcher perspectives analysed and evaluated.	By December 01, key issues in upscaling identified and documented -(5 in Bolivia, 1 in Nepal and 1 in Uganda)	All NR user groups within the watershed/landscape participate in the research activities
		Farmer groups and local government supports the collaboration., recognising that land management is an important policy issue
Strategies for scaling up developed and tested		
2.1 Knowledge sharing workshop to review findings from Output 1, to facilitate the selection of appropriate areas for action research on appropriate options	By Feb 02 , workshop proceedings avaliable, at least 3 areas selected and tasks developed for Activity 2.2	Potential and/or actual conflicts between NR user groups can be resolved.
2.2 Processes tested, refined, and taken up. (This includes Scaling up options detailed, discussed, and prioritised with farmers, community organisations, local professionals and district administration in project target sites)	By Dec 02), strengths and weaknesses of best options, findings evaluated and results reported	
2.3 Processes through the life of the project. documented and evaluated	By Dec 02 processes documented and evaluated to provide guidelines for improved scaling up practices	
Capability of local professionals strengthened		
3.1 Capacity building workshop(s) held for local professionals on strategies for scaling up impact.	By Sept 02 (Q2 Y2) workshops held and proceedings available	
3.2 Dissemination material will be developed with collaborators and made available and promoted to local professionals	From July 02 (Q2, Y2), most appropriate form of dissemination material assessed, developed and distributed.	
3.3 New knowledge developed with promoted to development and research professionals.	From Dec 02 (Q3 Y2) , research Outputs published in scientific journals	
		Case studies can be identified that allow devlopment and take-up over a one year period.