Technical Consultation on Decentralization

FAO, ROME, 16-18 DECEMBER 1997

Designing and Scaling-Up Productive Natural Resource Management Programs: Decentralization and Institutions for Collective Action

Talib Esmail
Decentralization, Fiscal Systems
and Rural Development Programme
World Bank

Working Group 7: Decentralization and natural resource management (NRM) (productive and conservation projects)

THE WORLD BANK

Work in progress

(Draft for comment)

December 9, 1997

Designing And Scaling-Up Productive Natural Resource Management Programs: Decentralization And Institutions For Collective Action

By

Talib Esmail

Rural Development Department

The World Bank,

1818 H Street, NW.

Washington, DC 20433

Tel. 202 458 5436

email: tesmail@worldbank.org

{The author is on secondment to the World Bank from the Aga Khan Foundation. The views expressed here are those of the author and should not be attributed to either the World Bank, or Aga Khan Foundation}.

Table of Contents

Acknowledgments

This research was conducted as part of the Decentralization, Fiscal Systems and Rural Development research program. The program is funded by the Swiss Agency for Development and Cooperation, the Royal Ministry of Foreign Affairs of Norway, the Government of Austria and the World Bank.

I would especially like to thank Hans Binswanger for assenting to this secondment and for his excellent advice on the intellectual development of this paper. In addition, I would like to thank Veit Burger, Sabine Keinath, and Jeffrey G. Lewis for their challenging and insightful comments on earlier drafts.

I am grateful to Keith Virgo at WS Atkins Internation Ltd. and S.K. Datta from the European Commission funded Doon Valley project in India for providing me with very useful information about their program.

Finally, I greatly appreciate the support of the Aga Khan Foundation in pursuing this secondment.

Glossary of Abbreviations and Acronyms

AKRSP(I)	Aga Khan Rural Support Program (India)
AKRSP(P)	Aga Khan Rural Support Program (Pakistan)
ASPRO	Agua Y Solidaridad Para El Progreso - Water and Solidarity for Progress, Mexico
BAAC	Bank for Agriculture and Agricultural Cooperatives, Thailand
CAs	Community Associations
CPR	common pool resource
DRDA	District Rural Development Agency
DRIF	Demand Driven Rural Investment Fund
IGWDP	Indo-German Watershed Development Program, India
JFM	Joint Forest Management
LDF	Local Development Fund
LOC	Local Organizational Capacity
MDC	Municipal Development Council
MIS	management information system
MYPC	Multi-Year Planning Ceiling
NABARD	National Bank for Rural Development, India
NGO	non-governmental organization
NIA	National Irrigation Administration, Philippines
NPV	Net Present Value
NRDP	Northeast Rural Development Program, Brazil
NRM	natural resource management
NWDP	National Watershed Development Program, India
OECD	Organization for Economic Cooperation and Development
PIAs	Program Implementing Agencies
PNGT	Programme National De Gestion Des Terroirs - National Program for Land Management, Burkina Faso
PRA	participatory rural appraisal
PSC	Project Sanctioning Committee
SWDF	Sadguru Water and Development Foundation, India
TA	technical assistance
UNCDF	United Nations Capital Development Fund
Village panchayat	lowest level of elected government in India
WOTR	Watershed Organization Trust

Executive Summary

Introduction

The focus of this report is on NRM activities broadly defined as those that promote sustainable agricultural production through improvements in on-farm soil and water management, such as social forestry, micro-watershed management, irrigation water management, and soil conservation. These types of projects directly combine economic and environmental benefits, and entail decentralized actions including investment in socio-economic infrastructure (at the municipal and micro-catchment levels) through active beneficiary participation.

Sustainable management of natural resource systems requires:

(i) locally adapted resource-conserving technologies;

(ii) coordinated action by groups or communities at the local level; and,

(iii) supportive external government and NGO institutions working within an enabling policy environment and in partnership with resource users.

Most successes to date consist of small islands of accomplishment; scattered projects working with small numbers of communities. At the heart of these successes are community-based institutions consisting of resource users working together for individual benefit. The challenge lies in implementing programs that achieve sustainable results at a grassroots level through beneficiary participation, while at the same time, operating on a large enough scale to have an impact at the national level.

Practical guidance is provided for program planners on how to design community-based NRM programs that can be scaled-up. It is based on a review of programs that have achieved some degree of success in this sphere. Recommendations are put forward on policy preconditions, program strategies, structure of program implementing agencies, and appropriate financing mechanisms (see page xi).

NRM, Institutions For Collective Action, And Decentralization (Chapter 0, page 3)

Sustainable agricultural production resulting in improvements in household incomes would imply that the state does not have a role in promoting productive NRM programs. However, an in-depth analysis of the nature of NRM programs concludes that they provide joint products, wherein an activity gives rise to multiple outputs, some of which are private, purely public, and impurely public. Moreover, most NRM programs are also characterized by being subject to free-rider problems; specifically, when one person cannot be excluded from the benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others. An analysis of successful programs, on the other hand, demonstrates that institutions for collective action are essential for over-coming free-rider problems associated with managing resources with asymmetric costs and benefits. The state therefore has a role in promoting the evolution of such “public” institutions to increase optimal resource allocation and substitute for market failure.

Forming and strengthening local institutions is itself a strategy of decentralization to create local capacities for handling authority and responsibility. In addition, through an analysis of the essential characteristics of long-enduring institutions, it is also found that government decentralization of fiscal, political and administrative authority and control to local institutions and local government is an essential precondition in creating the enabling conditions for large-scale evolution of collective action.

Preconditions: Fostering An Enabling Environment For Effective NRM Programs (Chapter 0, page 14) And Socio-Psychological And Environmental Factors Contributing To The Supply Of Successful Institutions (Chapter 0, page 23)

Sustainable NRM and supply of local institutions for collective action requires more than decentralization of fiscal and administrative authority. It also requires fostering an enabling environment through:

- Sound macroeconomic policies.
- Investment in rural infrastructure.
- Policies governing property rights and legal status of local institutions

In addition, planners need to be aware that the propensity of individuals voluntarily to organize themselves into institutions is related to:

- Existing levels of local organizational capacity.
- Extent and rate of environmental degradation or impending crisis that is apparent to resource users.
- Perceived levels of resource tenure and physical security that affect the extent to which individuals discount future benefits.

Program Strategies For Catalyzing The Supply Of Local Institutions (Chapter 0, page 27)

Evidence indicates that the most effective program strategies are those that build Local Organizational Capacity (LOC) ***through*** the implementation of productivity (or well-being) enhancing subprojects. These are ***positive-sum*** in there orientation, i.e. creating new values for all participants through mobilization and utilization of resources that would otherwise be differently used. The following strategies strengthen LOC:

- “Entry point” subprojects that result in positive financial and/or economic returns act as strong incentives for collective action - this is the “carrot” for organization formation.
- Benefits that accrue quickly, locally, transparently, and as equitably as possible given resource constraints, add further impetus for continuing collective action - this keeps the “carrot” appetizing.
- Reducing delays between subproject identification and implementation to ensure benefits accrue quickly.

Catalytic agencies are required to organize individuals into institutions for collective action. The process of social organizing should include intensive face-to-face approaches with individuals over a period of time; information-sharing, awareness raising, building rapport, participatory micro-level planning, and so on. Participatory micro-level planning techniques are particularly useful in:

- Stimulating demand for NRM.
- Identifying appropriate entry-point activities.
- Resolving potential conflicts that might undermine the viability of natural resource management.

Asymmetric costs and benefits mean that adoption of NRM technologies and institution formation will require appropriate financial incentives and subsidies. The joint products nature of NRM goods means that the decision to use credit or matching-grants for subproject financing is not obvious. The probability of success of using individual or group loans is affected by wealth of target population, inequality of income distribution, gestation period before returns start accruing to individuals, discount rate of individuals, extent of social cohesion, and so on. If the probability of success of using credit is less than 80 percent, then matching grants are proposed. The share of matching-grant provided by the program is determined by the beneficiaries ability and willingness to contribute to a given subproject. This encapsulated in a formula that includes wealth, income inequality, demand, social cohesion, capital cost of subproject, financial profitability relative to economic returns, and so on. (see the section on 5.4 Structuring financial incentives for adoption of NRM technologies and institution formation., page 31, for more detail).

Paths To Scaling-Up Of Participatory Approaches (Chapter 0, page 41).

A number of tested approaches can be used in combination:

- Clustering social organizing inputs in “nodes” of 1,000 ha watersheds, or a handful of villages, produces an “impact zone” that can help to stimulate demand by acting as visual demonstrations of program benefits, and as training areas for new institutions.
- Farmer-to-farmer exchanges used in conjunction with the nodal approach are a cost-effective means of rapidly replicating the program and creating new nodes.
- Communications campaigns using culturally appropriate media are highly effective at raising awareness about the program objectives, incentives and potential benefits.
- Structuring the participatory process can improve program planning and coordination between service providers. It also assists in defining an exit strategy so that catalytic agencies reduce their involvement with institutions over time and move on to new geographical areas.
- Limiting the range of subproject interventions supported by the program focuses the participatory process on outcomes; makes the program less complex to administer because of standardization of subprojects, technical assistance, production of operational manuals, etc. It is also more transparent to beneficiaries.

- Standardizing matching grants for agro-ecological areas encourages transparency and reduces the time taken by catalytic agency to negotiate appropriate beneficiary contributions.
- Transferring responsibilities for implementation, procurement, and operation, to institutions rapidly builds internal capacity as individuals "learn by doing"; reduces the burden on catalytic agencies for day-to-day management enabling them to work with a larger number of communities; and, reduces the cost and time required for subproject implementation by 30 - 70 percent.
- Creating and capitalizing a maintenance fund during subproject implementation increases the probability of investments continuing to be maintained after construction. It is preferable to "contracts" between institutions and implementing agency.
- Mobilizing administrative and political support through Cabinet Resolutions at state and federal level are required to persuade sectoral line ministries to provide technical assistance, budgetary allocations, and acknowledge community rights over use of common pool resources. This reduces the time spent negotiating individual agreements with each ministry and department.

Program Management And Implementation (Chapter 0, page 52)

NGOs have limited potential (and are often unwilling) to scale-up their programs. The responsibility for implementation therefore requires public sector institutions. Two broad types of public sector agencies can be discerned:

> (i) Multidisciplinary agencies consisting of single unified authorities providing holistic inputs, including a cadre of social organizers, and technical personnel specialized in integrated management of natural resources;
>
> (ii) Single sector agencies specializing in motivating and catalyzing resource appropriators relying upon other agencies to provide technical inputs for the detailed design and implementation of subprojects.

Donor agencies usually rely upon the creation of multidisciplinary project implementation units with staff recruited from different line ministries. This is effective for the implementation of isolated projects but not sustainable in the long-run; governments rarely continue to support them after the end of the project period because they are not considered to be statutory public institutions.

A program approach that is based on a sector-wide strategy and policy framework offers more potential for long enduring systemic change. But this requires improved coordination and collaboration between line ministries. Good practice for promoting this include:

- Develop a policy framework spelling out the long-term vision and strategy for achieving program goals; and, respective roles, responsibilities, systems and procedures of different public sector agencies.
- Get Cabinet/Council of Ministers approval of policy framework.

- Create apex working and learning groups to ensure that the policy framework is implemented and coordination occurs at multiple layers.
- Review and restructure public sector agencies to identify quick wins in efficiency and responsiveness to clients and also develop a phased strategy for implementation of reforms.

In the absence of any proven model for the formation of local institutions for collective management of natural resources, program implementing agencies need to closely monitor their progress to adapt program approaches. In essence, three types of monitoring activities are required:

- Assessing efficacy of participatory processes and sustainability of the institutions;
- Monitoring and evaluating social, environmental, and economic impact;
- Tracking physical and financial performance.

Design Of Decentralized Financial Instruments For Subproject Financing (Chapter 0, page 61)

The financing instrument used by donor agencies must facilitate the following:

- Government ownership of the program.
- Strengthened government capacity to implement the program.
- Community authority and control over decision-making, implementation, procurement, operation and maintenance.
- Quick accrual of initial subproject benefits through local level approval and disbursal mechanisms.

Adapted versions of Demand Driven Rural Investment Funds (or Local Development Funds as used by UNCDF) are proposed in preference to a Social Fund because they vest the investment programming functions (the power to reject/select subprojects) in existing local government institutions rather than in specially created quasi-governmental, or non-governmental, agencies. They are also designed to introduce or improve decentralized, participatory planning procedures and to build the capacity of local governments and other local institutions to design and manage local projects. An example is provided in the main document on how complimentarity can be achieved between the catalytic implementing agency, local government and financial instrument (see page 62).

The essential attributes required of a decentralized financial instrument are:

- Democratic and representative local government bodies responsible for subproject approval to be accountable to resource appropriators and transparent in their operations (using culturally appropriate mechanisms of accountability rather than imposed western values).
- Geographic targeting is required because the common pool resource aspect of NRM necessitates participation of all resource appropriators in an institution for collective action to: (i) receive program inputs and benefits; and, (ii) avoid the problem of free-riders undermining the authority and control of the institution.

- Community procurement of goods and services as part of the strategy to build local organizational capacity and as a pathway for scaling-up.

Advance payments and verification of the use of funds to minimize delays of disbursal, facilitate local procurement of good and services, and ensure quick accrual of benefits.

Recommendations

- Scaling-up community-based NRM programs requires strengthening local organizational capacity.
- Joint products provided by NRM programs necessitate the involvement of external implementing agencies for awareness raising, catalyzing group formation, soliciting commitment from all appropriators, and identifying subproject interventions through participatory micro-level planning.
- Decentralization policies and programs can stimulate the voluntary evolution of local institutions for collective action.
- Program strategies used by agencies need to include incentives for group formation and strengthening, and also private incentives for adoption of new technologies.
- Scaling-up can be achieved by utilizing de-concentrated catalytic agencies working in nodal areas and employing effective communications campaigns.
- NRM programs cannot be viewed as isolated endeavors; they need to be part of the rural development agenda and systemic, enduring, change is required in the structure and operation of government agencies to make them more client responsive and effective.
- Piloting programs on a small scale to fine-tune program strategies, incentives, and also to build the capacities of implementing agencies is essential before attempting to scale-up.
- Monitoring and evaluation systems must be in place before piloting to learn from experiences and enable adaptive programming.
- Potential dangers of decentralization in terms of transparency, accountability, and capture of benefits by local elites, mean that monitoring of participatory processes and effectiveness of local institutions must be given greater priority than previously.

1. INTRODUCTION

In the developing countries, some 2.3 to 2.6 billion people are supported by agricultural systems based on modern technologies brought by the Green Revolution. After these types of agriculture, some 1.9 to 2.2 billion people are largely untouched by modern technology and are still reliant upon indigenous farming systems. They tend to be in poorer countries with little foreign exchange to buy external inputs. Despite the fact that indigenous systems of soil and water conservation are widespread, soil erosion continues to be a far-reaching problem. Agricultural land continues to lose productive soil, water and nutrients resources. This is, in part, because not all farmland is protected by conservation measures, but also because not all erosion arises from farmland; erosion arises also from degradation of forests, rangeland and other areas (Pretty, 1995 reviewing numerous sources of data).

There is growing body of evidence demonstrating that regenerative agriculture requires an integration of different approaches for the sustainable management of natural resource systems. Reducing the rate of environmental degradation therefore requires programs and policies that address the problem in a holistic mode. This includes using: (i) locally adapted resource-conserving technologies; (ii) coordinated action by groups or communities at the local level; and, (iii) supportive external government and/or NGO institutions working within an enabling policy environment and in partnership with resource users. So far, most of the successes have been achieved despite existing policy environments. It is partly for this reason that most of the success stories consist of small islands of accomplishment; scattered projects working with small numbers of communities.

The challenge for governments and donor agencies lies in learning from, and replicating, these islands of success so that whole regions and nations can be transformed. Scaling-up geographical coverage does not mean, however, that programs must just do things bigger and faster. On the contrary, as this paper will demonstrate, at the heart of sustainable management of natural resources, are community-based institutions consisting of resource users working together for individual benefit. Programs therefore need to achieve sustainable results at a grassroots level through beneficiary participation, while at the same time, operating on a large scale. The requirement for participation of beneficiaries in program decision-making is now the accepted mantra amongst most donor agencies. Unfortunately, rhetoric is not matched by reality. This is because there is insufficient knowledge and theory on how to foster effective and sustainable local level institutions for collective action or a regional scale.

This paper aims to provide practical guidance to program planners on how to design community-based NRM programs that can be scaled-up. Suggestions are provided on policy preconditions, program strategies, structure of program implementing agencies, and appropriate financing mechanisms. The paper is based on a review of community-based NRM programs that have achieved some degree of success in fostering effective local level institutions on a large scale. This paper focuses on design aspects specifically related to NRM activities that have productive attributes i.e. they have been shown to have positive cost-benefit ratios and result in increases in real incomes for beneficiaries. Within this category, the paper concentrates on those NRM activities that can be implemented at the level of a community (or village). It has been established

that programs that function at this level of planning have a greater potential to be scaled-up since they do not have to struggle (at least in their initial stages) with intra-community and regional externalities.

1.1 OUTLINE OF PAPER

The next chapter shows the relationship between NRM, collective action and decentralization. In the absence of a commonly agreed definition, the chapter starts by defining the term "natural resource management". It then proceeds to discuss the nature of goods delivered by NRM programs and provides a justification for public resources to be used for financing goods that result in both private, and social, benefits. The evidence for collective action to sustainably manage natural resources is then discussed. While analyzing the essential characteristics of long enduring local institutions for collective action, the paper posits that decentralization policies and programs are essential for the large-scale supply of such institutions. Chapter 0 briefly summarizes the essential macro-level policies and preconditions that are necessary in order to create the conditions for economically viable investments on private and common property. The following chapter discusses some generic socio-psychological and environmental factors influencing the propensity of resource appropriators to organize themselves for collective action. Chapter 0 provides an overview of the program strategies that can be used to stimulate the formation of local institutions and how these might be strengthened. Chapter 0 reviews the various avenues used by programs to facilitate scaling-up of geographical coverage and impact. Chapter 6 discuss the characteristics that external government agencies must have in order to catalyze the formation of local institutions and provide technical inputs. The final chapter provides an example of a tried and tested Bank lending instrument that can be adapted for financing small community-based NRM subprojects.

1.2 METHODOLOGY

This paper is based on a review of community-based NRM programs that have achieved some degree of success in scaling-up implementation to cover ample numbers of communities and villages. However, since there are few programs that have track records in actively attempting to form institutions for collective action, strict criteria based on scale of operations were not used to exclude programs from this investigation. In addition, programs that are not implementing community-based NRM were also studied. For example, the NRDP in Brazil and the Municipal Funds in Mexico, despite not being focused on productive NRM programs, were nevertheless investigated because of their innovative decentralized financing instruments that were used to fund community subprojects.

An analytical framework is used to compare the attributes of different programs (see Annex 1). The analytical framework is based upon a review of secondary data, completed questionnaires, and also field visits to some of the programs. Due to resource constraints only three Bank supported programs were visited during the course of this investigation: PNGT in Burkina Faso, NRDP in Brazil and Municipal Funds in Mexico. Many South Asian cases are appraised in this paper on account of this author's 10 year association with the Aga Khan Rural Support Programs in India and Pakistan.

2. NRM, INSTITUTIONS FOR COLLECTIVE ACTION, AND DECENTRALIZATION,

In the absence of a commonly agreed definition, this section begins by explaining what is generally meant by the term "natural resource management". Following this, an analysis of the nature of natural resource goods concludes that NRM programs provide joint products wherein an activity gives rise to multiple outputs, some of which are private, purely public, and impurely public. The complex nature of natural resource goods, therefore, does not assist in determining whether the State has responsibility for their provision. However, empirical evidence from successful projects demonstrates that institutions for collective action are essential for sustainable NRM because they are able to solve the commitment and free-rider problems. These institutions can be considered to be public (or collective) entities. It is argued that the state has a responsibility for reducing environmental degradation which is a function of market failure and therefore, by default, it has a responsibility to create the enabling conditions for the supply of NRM institutions. An analysis of long enduring institutions for collective action, found that they are characterized by having considerable local authority and control over design of governance rules, decision-making and financial matters. Consequently, it is concluded that the supply of effective institutions for collective action requires state adoption of decentralized political, fiscal and institutional systems of governance.

2.1 DEFINING NATURAL RESOURCE MANAGEMENT

Natural resource management (NRM) within the Bank refers to three basic types of lending operations: (i) those designed to promote sustainable agricultural, forestry and fisheries development and/or water resource use through environmentally sound resource management techniques; (ii) those intended to conserve or protect specific ecosystems and associated biodiversity, including the establishment or consolidation of national parks, wildlife reserves, etc.; (iii) those which seek to strengthen national and/or subnational institutional capacity for improved NRM as, for example, through the use of rural land cadastres, geographic information systems, and other natural resource and environmental planning tools. A recent review of the Bank's NRM portfolio notes that, in reality, many of the projects are "hybrids" in that they combine sustainable production, conservation and institution building objectives and components (World Bank, 1997a). Box 1 describes five types of NRM activities that fall within the first category of Bank lending operations.

The review of the Bank's NRM portfolio (World Bank, 1997a) found that projects designed to promote sustainable agricultural production through improvements in on-farm soil and water management, such as social forestry, micro-watershed management, irrigation water management and soil conservation, had a greater likelihood of success. This is because they have considerable advantages over projects that are primarily concerned with biodiversity, forest, rangeland, or fisheries resource management and conservation. In particular, the former types of projects have two significant characteristics not always shared by the latter. These characteristics are related to the externalities affecting resource management viability:

(a) The projects are “win-win” in that they directly combine economic and environmental benefits – i.e., on-farm technical improvements in NRM enhance or extend natural soil fertility and, hence, crop productivity, with a positive potential impact on beneficiary income, while at the same time reducing erosion, sedimentation and agricultural run-off. The externalities affecting economic viability are therefore primarily local.

(b) The projects necessarily entail decentralized actions (at the municipal and micro-catchment levels) and require active beneficiary participation. Seeking commitment of resource appropriators at this micro-level through institutions for collective action is more viable than attempting to take decisions at a regional level because potential conflicts are localized. Externalities at regional levels do exist, but they do not affect the viability of local decision-making through local institutions.

In contrast, projects involving forest, rangeland, and fisheries resource management require some restriction of access to natural resources. They also involve significant trade-offs and conflicts because the externalities affecting the viability of resource use are usually not only local, but also regional, national and international. Moreover, there is insufficient understanding of the underlying ecosystem services and constraints which makes project design, implementation, and potential success, even more difficult. Box 2 provides examples of institutional channels for decision-making by level and sector.

This paper seeks to identify design characteristics of those NRM programs that lend themselves to local action by resource appropriators; the regional and national externalities therefore do not significantly impinge on the viability of local resource management interventions. Examples of these types of NRM programs are micro-watershed management, social forestry, irrigation water management, and soil conservation. These NRM projects are dependent, at least partially, upon on-farm technical improvements that result in on-farm income benefits. Obviously, there are also some regional, national and international externalities such as commodity prices, or use of common property (e.g. groundwater or common land), that do affect the viability of sustainable resource management practices. In general, however, these types of resource management activities, through micro-level planning and local action, provide greater opportunities for “win-win” outcomes as described above.

Box 1. Different Types of NRM Activities for Sustainable Production

There are essentially five kinds of NRM activities that are designed to promote sustainable agriculture, forestry and water resource use:

- **Forest management**. This involves the utilization of tree and related plant and animal populations in ways that perpetuate the forest ecosystem. Forest products such as fuel and fodder are important inputs in agriculture and domestic non-farm economies. ***Social forestry*** is a term that has been introduced to distinguish a new approach to the management of trees which is different to the large-scale monocrop operations which consist of technically and commercially directed development. Social forestry includes those resources that are managed by rural people through their community local institutions. Trees are managed in association with other plants and animals, often in small or fragmented areas. Multiple uses not necessarily for market sales are emphasized, and management is done largely by the people living nearby and primarily for their benefit.
- **Irrigation water management.** This involves the acquisition and distribution of water for agriculture. This type of resource management has more direct links to production than do other NRM activities. However, it shares crucial characteristics with other NRM activities, such as the need to regulate access to common property.
- **Micro-watershed management**. This usually refers to a micro-catchment area (500 to 1500 ha) in a hilly area that captures rainfall. The aims of this type of management is to maintain water cycle through activities of forest, pasture and soil management.[1] Forest grazing of a watershed area can be utilized so long as these activities do not disturb the water cycle. Typically, micro-watershed management is complicated by the multiplicity of resources involved and also by other factors. Experience from AKRSP(I) shows that micro-watershed efforts are more likely to succeed if combined with other activities like supply of production inputs, development of transportation facilities, or provision of social services. When other activities are combined, it is often referred to as integrated micro-watershed management.
- **Soil conservation.** This is sometimes referred to as "cropland management" since it usually arises as a problem where crops, other than trees and grasses, continually extract soil nutrients and disturb the soil's structure. Soil conservation natural resource management has several characteristics of micro-watershed management. For example, the benefits of soil conservation are deferred and a portion of the benefits may accrue to others; changes in the resource condition are often hard to recognize unless the soil was already subject to severe gully erosion which can be controlled by gully plugs. However, unlike micro-watershed management which includes multiple resource management, soil conservation is primarily concerned with land as the primary resource and this is usually tangible and demarcatable. In situations of secure land tenure, responsibility for management of the soil lies with the owners of the land. Moreover, property rights for agricultural land are, in general, much better defined than for water, forests or rangeland. This makes their management less complex from an institutional perspective.
- **Rangeland management.** This is focused on grasses where rainfall and altitude constraints favor livestock raising and where crop production is only minor and low yielding. Often, the resource user-managers are mostly pastoralists who are a mobile population.

Source: adapted from Uphoff (1986).

[1] Improved management of common pool forest and pasture lands in the upper slopes increases production of biomass which is potentially useful in livestock production. It also reduces erosion and runoff, and increases the infiltration of water so that groundwater tables beneath agricultural land on the lower slopes rises. This allows more water to be lifted to counteract droughts within the season, reducing risk, increasing productivity of existing crops, and in some cases, permitting new crops to be grown (Farrington and Thiele, 1997).

Box 2. Examples of Institutional Levels for Decision-Making by Sector

Levels	Governmental/ Quasi-Governmental	Participatory/ Collective Action	Private/ Quasi-Private
International	Bilateral and multilateral donor agencies	Society for International Development	Multinational corporations; external NGOs
National ministries	Central government ministries; parastatal corporations	National co-operative federation	National corporations; national NGOs
Regional	Regional administrative bodies; regional development authorities	Regional co-operative federation; watershed consultative assembly	Regional companies; regional NGOs
District	District council; district administrative offices	District supply cooperative; soil conservation; educational forum	District firms; charitable organizations
Sub-district	Sub-district council; sub-district administrative offices	Sub-district marketing cooperative	Rural enterprises; private hospital
Locality	Division council; health clinic; secondary school; extension office	Wholesale cooperative society; forest protection association	Businesses in market town; service clubs
Community	Village council; post office; primary school; extension worker	Primary cooperative society; village dike patrol; parent teachers association (PTA)	Village shops; mosque; committee for village welfare
Group	Caste, panchayat; ward or neighborhood assembly	Tube well users' association; mothers' club; savings group	Microenterprises
Household	Citizen/voter/taxpayer/ partaker of services	Member	Customer/client/ beneficiary

Source: Uphoff (1992)

2.2 THE NATURE OF NATURAL RESOURCE GOODS

A theoretical analysis of the nature of natural resource goods is required in order to determine whether the responsibility for their provision is public or private. This is important because some

analysts suggest that if NRM interventions are on private land and provide private benefits, then the state has no role in their provision; it should be left to the private sector. On the other hand, theory on public goods states that if the NRM goods are public, then it is unlikely that there will be a market for them. It is therefore unlikely that a private supplier will provide those goods. The responsibility for their provision is therefore public and they need to be financed out of general taxation.

Natural resource systems and whether they are public or private responsibility is particularly complex because of the multidimensional nature of the resource. In order to understand the complexity, it is useful to distinguish between resource systems and the flow of resource units produced by the system. Examples of resource systems include groundwater basins, grazing areas, irrigation canals, forests, streams, lakes, etc. (these are often referred to as common pool resources - CPRs). Resource units, in contrast, are what individuals use from resource systems. They are typified by the tons of timber harvested from a forest, the cubic meters of water withdrawn from a groundwater basin or an irrigation canal, the tons of fodder consumed from a grazing area, and so on. As long as the average rate of withdrawal of resource units does not exceed the average rate of replenishment, the resource system can be considered to be sustained over time.

Without distinguishing between the resource system and the resource units, theory on public good provision has limited potential in explaining the nature of natural resource goods. For example, the cubic meters of water withdrawn from an irrigation canal and used on a farmers land is not available for use by another individual. The resource unit is therefore not subject to joint use and can be considered to be a private good. However, the water withdrawn from an irrigation canal by one farmer will limit the amount available to another farmer. The resource system, therefore, is subject to joint use and can be considered to be a public good. Furthermore, if improvements are made to the resource system (e.g. de-silting a canal or fixing the embankments) the resultant improvements in availability of water will be simultaneously available to all users of the system. Public goods theory is based upon the notion of nonsubtractive attributes of goods; public goods being those which are nonrival and nonexcludable. Private goods, on the other hand, are fully rival and excludable.[2] Ostrom (1990) and Ostrom and Gardner (1993) argue that it is the theory of private goods which is more applicable to the use of resource units while the use of a resource system is more related to the theory of public goods. Given current theories, it would appear that, at best, one can describe natural resource management programs as providing joint products,

---

[2] Cornes and Sandler (1986) provide a useful explanation of the terms of used. ***Nonrivalry of consumption and indivisibility of benefits***: a good is nonrival or indivisible when a unit of the good can be consumed by one individual without detracting, in the slightest, from the consumption opportunities still available to others from the same unit. e.g. a sunset or nuclear deterrents, pollution control devices, weather monitoring, information dissemination networks. ***Rivalry in consumption or perfect divisibility*** is present if an agent's consumption of a unit of good fully eliminates any benefits that others can obtain from that unit. e.g. food, clothing, fuel are rival in their benefits - once consumed they leave nothing for others. ***Excludability of benefits***: goods whose benefits can be withheld costlessly by the owner or provider. e.g. homes, automobiles, clothing. ***Nonexcludable***: benefits that are available to all once the good is provided. e.g. street lighting, fireworks displays, pollution control devices, strategic weapons

wherein an activity gives rise to multiple outputs, some of which are private, purely public, and impurely public. Unfortunately, this does not provide much clarity for justifying the role of the state in the provision of NRM goods.

Approaching the issue from the perspective of institutional economics offers greater clarity in defining the role of the state. Let us assume that natural resource degradation is characterized by having high social costs (i.e., private costs plus the economic costs associated with degradation of the resource base). These negative external effects of natural resource degradation imply a market failure and therefore a sub-optimal allocation of resources. From a theoretical point of view, market failure on its own is a sufficient requirement to justify state intervention. The objective of state intervention being to internalize the external costs (that is the degradation), in order to limit the production of the "public bad". The justification for state intervention can be strengthened if one analyzes programs which have successfully fostered sustainable management of natural resource systems. In these programs, it becomes apparent that the critical factor in their success is the formation of local level institutions for collective action (this is discussed in more detail in the next section). Institutions can be viewed as a club of resource users sharing common interests; they are not "goods" but "public-like entities" that provide the means by which joint products can be provided. Since the state should promote optimal allocation of resources, it should support such institutions. As will become apparent in this paper, the state cannot supply these institutions because that would undermine the quintessential features that make them successful. Instead, the state should promote institutions through creating an enabling environment for their evolution through decentralization policies and associated legislation; directly catalyzing their establishment through program interventions; providing financial support, and so on. Thus, the "public good" provided by the state is a reduced rate of resource degradation, and the institutions are only an input in the provision of this good.

2.3 THE NECESSITY FOR COLLECTIVE ACTION TO MANAGE NATURAL RESOURCES

Policy prescriptions for preventing the erosion of the natural resource base assume that people are locked into a remorseless tragedy wherein through rational individual choices they have negative impacts on a resource. The origins of these policies can be partially attributed to the models of human behavior that were evolved in response to Garret Hardin's seminal 1968 article in Science. This drew attention to the degradation of the environment when individuals use a scarce resource in common. His article coined the phrase "tragedy of the commons" to symbolize the problem which affects much of the world's resources. According to Ostrom (1990), the prisoner's dilemma game (and developments of it) have been widely used to explain the causes leading to the tragedy of the commons. The game is conceptualized as a non-cooperative game in which all players have complete information. Communication among the players is forbidden or impossible or irrelevant as long as it is not explicitly modeled as part of the game. In essence, this model postulates that individually rational strategies lead to collectively irrational outcomes thereby leading to the degradation of the commons. Contemporary to Hardin's article was another model put forward by Olson (1965) that sought to explain the logic of collective action. This stated that the possibility of a benefit for a group is NOT a sufficient requirement to generate collective action to achieve that benefit. The pessimism of both these models is due to the fact that at the core of each of them is the free-rider problem; whenever one person cannot be excluded from the

benefits that others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others. The problem is particularly severe in the case of NRM systems because of the complex nature of the goods. The result is that some people may provide while others free-ride, leading to a less than optimal level of provision of the collective benefit.

Policies seeking to address this paradox have either suggested that the State has to intervene to protect the common resources, or private rights need to be developed for some common-pool resources (CPRs). Empirical studies of the impact of these policies is leading to a growing acceptance that external authorities have limited potential to impose protection of natural systems and that private (or individual) actions only provide partial protection (Pretty, 1995). It is increasingly recognized that more coordinated responses and multiple solutions to the complexities of sustainable resource management are required.

The situation is not as gloomy as it might appear. Recent empirical evidence from analysis of long enduring institutions of collective action and also from experiences of non-governmental organizations (NGOs) which have successfully implemented community-based NRM programs is providing some scope for optimism. It is now indisputable that the promotion of sustainable natural resource systems is dependent upon involvement of stakeholders in the design, implementation, operation and maintenance of projects (Narayan, 1995; Pretty, 1995; World Bank, 1997a). Key to these community-based approaches has been the formation and strengthening of local organizational capacity (LOC) wherein resource users are organized into local institutions for collective action.[3] Sustainable management of natural resources depends not just on the skills and knowledge of individual users, but on action taken by local groups or communities as a whole.

Current theories on human organization, unfortunately, are unable to adequately describe how a group of individuals can organize themselves voluntarily to retain the residuals of their own efforts. Most of the recent discourse on institutions for collective action has focused on aspects related to their governance and sustainability. Few authors have addressed the issue of *supply* of new institutions. Bates (1988) argues that, even if the benefits from collective action are symmetric and all persons are made better off from the introduction of a new institution there would still be a failure of supply. This is because the institution is a public good and rational individuals (adhering to the prisoner's dilemma model) would seek to free-ride and secure its benefits for free. Therefore the incentive to free-ride would undermine the incentives to organize a solution to the collective dilemma. Empirically, however, it is known that some communities are able to overcome the incentive to free-ride and they do voluntarily establish new institutions.

---

[3] "Institutions" can be defined as sets of working rules that are used to determine who is eligible to make decisions in an arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions (Ostrom, 1986). Institutions constitute complexes of norms and behaviors that persist over time by serving collectively valued purposes. Institutions can be organizations or not, or vice versa; marriage is an institution not an organization. (Uphoff, 1992 and 1997). For the purposes of this study one can assert that, in general, organizations are formed first. When their activities become well-established and beneficial, the norms and behaviors become entrenched and they evolve into long-enduring institutions.

Bates's attributes this to communities having established a sense of trust and cooperative behavior, which he suggests are the mechanisms for solving the problem of supplying new institutions. Without explicitly stating it, Bates is creating the case for social organizing and community mobilization in order to establish trust and build social capital as a means of enabling communities to overcome the incentive to secure benefits for free and to form an institution for collective action.

Having established that the critical issue is one of supplying institutions, it is necessary to ask the question: what kind of institutions are we seeking to supply? The next section looks at long enduring institutions and their similarities.

2.4 SIMILARITIES BETWEEN SUCCESSFUL AND LONG ENDURING INSTITUTIONS

This study defines effective community-based institutions as those which enable individuals to achieve productive outcomes in situations where the temptations to free-ride are ever present. These local institutions must be long enduring and continue to function after external program interventions cease. This section presents the current knowledge on the essential elements that constitute a long enduring and sustainable institution for collective action. The elements are synthesized by investigating institutions involved in the management of CPRs, farmer organizations, and institutions formed for the implementation and management of rural infrastructure.

2.4.1 Eligibility for institution membership and the resource boundary must be clearly defined.

This is usually the first step in organizing for collective action. The eligibility criteria will depend upon the objectives of the institution or program which is seeking to catalyze collective action. Some programs such as the NRDP in Brazil encourage the formation of institutions that are targeted at poor households; large land-owners and rich individuals are excluded from membership. The Aga Khan Rural Support Programs (AKRSPs) in Pakistan and India, originally sought to encourage the formation of broad-based village institutions where all households would be members. However, they soon realized that women were not participating in the village institutions and consequently they adopted and strategy of fostering separate institutions for women in order to create a conducive environment in which women were able to develop their confidence levels and prioritize their own needs without external pressure from men or from cultural norms of behavior.

Ostrom (1990), Hobley and Shah (1997) and Farrington and Thiele (1997) note that individuals who have rights to withdraw resource units from a resource system must be clearly defined, as must the boundary of the CPR. Without defining the boundaries of the CPR and closing it to "outsiders", local users face the risk that any benefits they produce will be reaped by others who have not contributed to those efforts. If this were to occur the discount rates (see section 0, page 23) would be pushed higher and the institution would soon collapse because the incentive for collective action would become unfeasible. Membership of the institution may occasionally have to include "outsiders" or non-residents of a village if they have customary (rather than legal) rights over use of a CPR –e.g. semi-nomadic herdspeople may have customary rights over use of

common and private land despite not being resident in the area.[4] Empirically, it is known that management of a common resource by collective action is easier if the boundary of a given resource is closely related to the administrative boundary of a village or community (e.g. village boundaries should correspond closely with those of a micro-watershed).

2.4.2 Rules governing resource appropriation (use) must be locally adapted

The rules governing the use of resources have to be developed by the members in order to be appropriately adapted to the local conditions. The rules evolved by the resource users need to govern when the resource can be used; the technology that is most appropriate for managing the resource system and appropriating the resource units; and the quantity of resource units that the users are allowed to appropriate. Obviously, the rules need to reflect the specific attributes of the resource; standardized rules cannot be used. Experience demonstrates that rules designed by members of the institution are more likely to be enforceable.

Rules evolved by resource users themselves do vary according to local conditions. For example, AKRSP supported irrigation schemes in India and Pakistan had different rules for levying water fees; some charged an amount based upon the time taken to irrigate a field and others calculated the fees based upon the quantity of land to be irrigated. The rules were devised by the institution members based upon their local knowledge; the involvement of the catalytic external agency was merely to ensure that some kind of rules were in place prior to initiating construction. As will be discussed later in this paper, participatory planning methodologies are a useful means by which external agencies can intertwine local knowledge with external expertise. For example, they can advise resource users on rules which have been shown to be viable in other contexts.

2.4.3 Institutions must adhere to democratic principles

Institutions which are truly democratic are those which enable most individuals who are directly affected by the operational rules to participate in modifying those rules. Ostrom (1990) notes that institutions which adhere to this principle are better able to adapt rules to local circumstances because individuals interact with each other and the external environment. They are able to modify the operational rules over time and keep the institution relevant to the characteristics of their settings. Democratic institutions also facilitate impartial resolution of conflicts between members. The costs, however, must be kept low and the process of changing rules must be relatively simple.

---

[4] This was aptly demonstrated by an experience in AKRSP(India) which operates in Surendranagar district of Gujarat State. Originally, AKRSP(I) sought agreements from resource users to form village institutions for the protection and reforestation of communal grazing land adjacent to villages. Legally, the land belonged to the village *panchayat*. However, unbeknown to AKRSP(I), a caste of semi-nomadic people (*Rabari*) also had customary rights to graze communal land and also limited usufructary rights while seasonally migrating with their livestock. Despite not being residents of the village, their rights had evolved over hundreds of years. The *Rabari* defended these rights vehemently and occasionally even resorted to violence. The result was that the institutions formed for management of CPRs rarely endured because free-riders could not be excluded. Had there been a congruence between the externally perceived requirements of the need to protect the CPR and the local knowledge of who had appropriation rights, the intractable situation could have been mitigated before conflict erupted into violence.

As mentioned above, the rules governing resource appropriation need to be devised by members of the institution, on the other hand, there is a compulsive case for more external guidance on designing appropriate means of ensuring democratic participation. For example, in settings with resilient feudal structures, strong patron-client interdependencies and weak traditions of political freedom, it is more appropriate to have secret voting mechanisms rather than open voting arrangements. Moreover, agreements reached by so-called "consensus", although *en vogue*, are fraught with danger; individuals who appear to be reaching common consent may actually be consciously deferring to the demands (or perceived wishes) of the strongest patrons or elites. However, external modes of democratization cannot be imposed on a given populace. The ideal mechanism for ensuring democratic participation needs to evolve through an iterative process whereby external knowledge is allied with traditional social and cultural practices.

2.4.4 Institutions must have authority and control over financial resources

This includes transferring responsibility and authority to local level institutions for management and allocation of financial resources, procurement of local goods and services. This relates to element No. 2 regarding rules governing appropriation of resources; if the members of the institution decide on the level of user fees they must also be responsible for collection and management of those fees. Experience has shown that governments and programs (including NGOs) are most reluctant to decentralize authority over financial matters to local institutions because they lack trust in the community's capability to manage funds without excessive rent-seeking.

One of the indicators used by AKRSP(Pakistan) to assess the institutional maturity of village institutions was their efficiency and probity in handling of financial resources including a savings fund. Out of 120 indicators used for their study, this indicator was found to have a high correlation with institutional maturity and potential sustainability. A number of bank programs including the NRDP in Brazil and also Social Funds programs evaluated by Narayan and Ebbe (1997) have found similar results. Moreover, they have confirmed that the level of misappropriation under decentralized financial systems is no higher than under centralized control. In fact, the NRDP in Brazil found cost efficiency gains of 30% in comparison to centralized control when local procurement of goods and services was used for small infrastructure projects (World Bank, 1997b).

2.4.5 There must be local monitoring of resource use and graduated sanctions

Ostrom (1990) found that in long enduring institutions the monitors who actively audit CPR rules and appropriator behaviors were accountable to the resource users or are the resource users themselves. In the AKRSPs, the village institutions are responsible for devising rules governing appropriation and also responsible for ensuring that those rules are enforced. Sanctions are employed to penalize those individuals that do not conform to the rules which are collectively agreed. Monitoring and levying sanctions therefore are carried out by the participants themselves.

The sanctions employed are generally graduated to account for the severity of the offense. When sanctions are designed by the members of the institutions, experience shows that they are often graduated because the members know the personal circumstances of the infractors and the

potential harm that could be caused by excessive sanctions. Mechanisms for local monitoring include: institutions hiring local people to guard CPRs (e.g. Joint Forest Management in India); a portion of the fines are kept by the guard; and, infractors lose status and prestige.

To summarize, when institutions are designed according to the above principles, they are able to solve the commitment and free-rider problems in an interrelated manner. Resource users design their own rules which are implemented and monitored by themselves, using graduated sanctions that based on a definition of who has rights to withdraw resource units, and which reflect local conditions.

2.5 DECENTRALIZATION POLICIES AND LOCAL COLLECTIVE ACTION

Forming and strengthening local institutions is itself a strategy of decentralization to create local capacities for handling authority and responsibility (Uphoff, 1986). However, for local institutional development to proceed far and be replicated on a national scale, a degree of decentralization within the government structure itself is required.

Institutions for collective action, as already explained, are public-like entities whose benefits are limited to a specific subset of the population, members of a single community or appropriators of a specific resource system. It is generally recognized that for providing goods that benefit a subset of the population, decentralization of the public sector provides considerable advantages including pareto-efficient levels of output; typically, decentralized regimes are more responsive to citizen preferences resulting in increased allocative efficiencies (Oates, 1972; Rondinelli, 1981; Huther and Shah, 1996). This assertion is corroborated by the above analysis of long enduring institutions whose effectiveness in governing natural resource systems were greatly enhanced by having increased administrative, political and fiscal autonomy.[5] Decentralized policies, in effect, create the conditions whereby rights over governance of natural resources are "restored" to appropriators after the state has failed in its attempt to manage them through centralized systems.

The case for increased administrative and political decentralization is strengthened by the observation that long enduring institutions are characterized by those that allow resource users to devise their own rules governing the institutions. In contrast, highly centralized regimes attempt to rely on the same operational rules for all institutions. Under centralized regimes, local resource users would need to invest a considerable amount of time and resources in seeking a change to those rules or for a special case to be made for their locality. On the other hand, under a regime

[5] Rondinelli (1981) distinguishes between different categories of decentralization. De-concentration is the handing over of some administrative responsibility to local levels of central ministries; delegation is the transfer of power to organizations that are considered to be outside the regular central government bureaucracy; devolution is the transfer of central government power to subnational political entities; privatization is the transfer of power to the private sector. Parker (1995) provides a brief overview of the recent literature on decentralization and identifies three further dimensions: political, fiscal and institutional decentralization. It is convincingly argued that all three elements of decentralization are required for effective outcomes in rural development.

that allows substantial local autonomy to engage in constitutional and collective choices, resource users may be authorized to select their own rules so long as they follow certain procedures. The procedures may vary from informal mechanisms requiring consultation to formal mechanisms necessitating signed petitions, special elections, court proceedings, and so on.

Lutz and Caldecott (1996), in looking at decentralization and biodiversity conservation, found that decentralization improves conservation and management of natural resources. Empowered local institutions that were given authority and control over revenues and expenditure decisions also had more effective control over management of natural resources. There were however some inherent dangers in decentralizing resources and authority to local institutions. For example, local elites could capture resources and use the decentralization process to further their own short term private interests. Nevertheless, decentralization, coupled with appropriate safeguards, could yield substantial benefits for sustainable conservation of biodiversity.

The advantages of decentralization policies in creating the enabling conditions for the large-scale supply of institutions for collective action are borne out by the experiences of Brazil. The 1988 Constitution set the framework for a radical decentralization of fiscal, administrative and political authority to states, municipalities and communities. The Constitution also stated that all public funds for investments in communities had to be channeled through Community Associations who had fiscal authority over the use of those funds (see section 0, page 21). This single policy decision resulted in a phenomenal growth in the number of CAs which were formed and registered. While it is certainly true that the quality and effectiveness of the CAs varies considerably, decentralization in Brazil has enhanced the ability of local appropriators to engage in effective institutional design (see Esmail and McLean, 1997 forthcoming).

To briefly sum up. This chapter has demonstrated that the state has an implicit role to play in creating the conditions for the supply of local institutions. Decentralization policies offer considerable succor in this endeavor. As this paper proceeds, the necessity for decentralizing fiscal, political and administrative authority and control to local institutions and local government will become increasingly apparent.

3. PRECONDITIONS: FOSTERING AN ENABLING ENVIRONMENT FOR EFFECTIVE NRM PROGRAMS

Apart from government adoption of decentralization policies, an enabling macroeconomic environment is also required. Many natural resource management activities include the use of private and common resources (see the description of the distinction between resource systems and resource units in section 0). Sustainable natural resource management is inextricably linked to the productivity of agriculture. Cleaver and Donovan (1995) note that low productivity farming caused by policy distortions is leading to increased degradation of land, water, and forest resources. Empirical research spanning the last 40 years has identified some clear policy failures.

Fortunately, it has also identified potential policy interventions which can provide the necessary incentives for individuals to implement sustainable resource practices.[6] This chapter will demonstrate that, in addition to increasing the productivity of smallholder agriculture, there is also a requirement for policies that create an enabling environment for the voluntary supply of effective collective action institutions. It is beyond the scope of this paper to prescribe detailed policy instruments. Nevertheless, it is important to review the policies and preconditions which are known to be necessary for creating an enabling environment so that practitioners are aware of the need for policy integration. Table 1 summarizes the policy interventions. The following discussion explains their relationship to the adoption of sustainable natural resource management and the supply of effective institutions for collective action.

3.1 MACROECONOMIC ENVIRONMENT

Instability in an economy is generally destructive of the sorts of investments in resource management upon which sustainability depends (World Bank, 1997a). Instability can lead to high inflation rates which reduces smallholder profitability. It also reduces the incentives for investments in farm improvements because farmers are forced to use higher long-term discount rates. Krueger, Schiff, and Valdes' (1991) analysis of eighteen countries found that many macroeconomic policies act as indirect taxes on agriculture. For example, overvalued exchange rates, import duties and industrial protection, were three times the direct tax (e.g. export taxes) on agriculture. Efficiency gains inherent in reducing price distortions are therefore likely to lead to increased efficiency of resource use.

[6] Excellent reviews of the past failures in agricultural policies and the implications for future policy design are found in Binswanger, H (1996) *Patterns of Rural Development: Painful Lessons* and Binswanger and Deininger (1997) *Explaining Agricultural and Agrarian Policies in Development Countries.*

Table 1 Policy matrix - summary of policy instruments and their desired impact

Purpose	Policy instruments								
	Macro-economic stability	Reduce urban biases	Investment in rural infrastructure	Land policy for private holdings	Land policy for common property	Legal framework for local institutions	Political decentrali-zation	Administ-rative decentral-ization	Fiscal decentral-ization
Economic viability of NRM activities in private property	X	X	X	X					
Economic viability of NRM activities on common property	X	X	X		X				
Voluntary supply of institutions for collective action					X	X	X		
Enhanced local control and authority of institutions						X	X	X	X

3.2 REDUCE URBAN BIASES

Policies implemented in many developing countries have failed to recognize the importance of agriculture in rural growth. Haggblade and Hazell (1989) and Binswanger (1983) demonstrate that nonfarm growth and poverty reduction are strongly correlated with agricultural income. Employment intensive agricultural technologies focused on small and medium sized farms result in substantial increases in rural incomes because consumption demand for non-farm goods is created. Despite the predominance of rural poverty in many developing countries, urban biases in terms of industrial protection and agricultural taxation persist. Moreover, Lipton (1977) notes that they are many other forms of urban biases especially in regard to the provision of productive infrastructure and social services. Given that sustainable management of natural resources is partially dependent upon private investments on smallholdings, policy and investment biases which neglect rural areas encourage migration to urban areas. This encourages farmers to use higher discount rates because they have less confidence that investments made by them will be inherited by their children and grandchildren. Smallholder profitability is also affected by excessive agricultural taxes. Moreover, Krueger, Schiff, and Valdes (1991) found that resources provided to agriculture, through measures such as subsidized credit, infrastructure, research and extension, were not equal to the resources extracted. This is not an argument to increase the economic subsidies for agriculture. On the contrary, it has also been found that subsidies tend to be captured by large farms encouraging the persistence of inefficient, capital intensive, large farms (Binswanger, Deininger, and Feder (1993). In essence, the recommendation is to reduce agricultural taxes and economic subsidies which distort the market.

3.3 INVEST IN RURAL INFRASTRUCTURE AND COMMUNICATIONS

The extent of rural infrastructure will strongly influence the incentives that are required to make individuals invest in sustainable natural resource management. In particular, the presence of markets and the ease with they can be accessed will affect the profitability of farms. Without supportive rural infrastructure, greater incentives will need to be provided to encourage individual investment in sustainable natural resource management activities because the financial and economic returns will be lower. Consequently, there should be the same degree of progressivity for urban and rural sectors. That means that there should be proportionately similar state budgetary allocations for rural infrastructure (e.g. rural roads, electricity and water supply) as for the urban sector. These can be based on formulae relating population density and geographic area.

3.4 LAND POLICIES

Natural resource management activities such as soil and water conservation, irrigation development and watershed development are reliant upon both individual investments on private property and also collective investments on common pool resources. This section will first examine the issues regarding private property regimes before examining the policy issues concerning common property regimes.

3.4.1 Private property issues

In relation to private landholdings, Migot-Adholla and Bruce (1994) and Feder and Nishio (1997) found that investments in land improvement were correlated with the degree of "security of tenure" that farmers had over their land. "Security of tenure" is defined as the right of continuous unchallenged use of land; formal titles or certificates were found to be affirmations of the social guarantee, they did not create it. The studies found regional variability in the link between land registration and economic benefits associated with land improvements. In rural Africa, land registration was found to have little impact on productivity, land-attached investment or credit access. However, data from Latin America, Caribbean and Asia found that land-attached investments, productivity and economic benefits were correlated with land registration. Box 3 synthesizes the results from these studies.

Box 3: Policy Implications and Prerequisites for the Viability of Land Registration:

- "Security of tenure" is a multifaceted concept which is not easily operationalized;
- It is necessary to first ascertain whether existing tenure systems provide sufficient tenure security (one possible means of doing this is to assess the prevalence of land disputes);
- Traditional and customary land ownership may provide sufficient security to induce investments;
- "Demand" for land titling expressed by farmers may not be "genuine", and may actually be "preemptive" i.e. preventing the State from allocating land to someone else rather than a felt need for new operating rules;
- In areas of high population density and where land is scarce or unusually productive, registration has positive effects on improvements and therefore productivity;
- Security of tenure, by itself, does not result in increased land-attached investments or increased productivity;
- Rural infrastructure and access to markets overwhelm the impacts of titling;
- Well-functioning financial markets which can extend long-term credits when land is used as collateral are important prerequisites to investment;
- Quality of title, enforcement administration, and respect for law, help to strengthen the security of tenure provided by titles;
- Cost-effectiveness should be the major factor in designing a land registration system and must maximize net social benefits and improve sustainability;
- It needs to be recognized that land registration is not a one-off activity since transfers and successions also need to be registered. This will require long-term institutional strengthening of land registries and other appropriate government departments.

sources: Migot-Adholla and Bruce (1994) and Feder and Nishio (1997)

Experience of previous land titling programs suggest that land redistribution has been poorly executed. In Africa, cadastral surveys have been the main means by which urban elite and dominant ethnic groups have stripped pastoralists and other unintensive or seasonal users of rights to land. To overcome these and other problems, it is recommended that landholders (beneficiaries) are closely involved in the registration process. Furthermore, it is found that local institutions for collective action enhance landholder involvement and improve prospects for equitable outcomes.

In areas where landholdings are highly inequitable with concentrations of large capital intensive and inefficient farms, there is a case for using new market based land reform (MBLR) instruments for promoting equitable distribution. Innovative programs supported by the Bank in South Africa, and more recently in Brazil, show considerable promise. These are based on the observation that policy distortions (macroeconomic conditions, non-farm investment options, tax policies and agricultural policies) help to sustain inefficient large farms which could fruitfully be parceled out and sold off to small-farmers. Distortions mean that market land prices are unrealistically high and often exceed the capitalized value of farm profits. MBLR starts by reducing policy distortions with the net result that the market price of land decreases. A combination of grants and loans administered through local institutions are then used to assist poor smallholders and landless workers to finance the purchase of land on the market (Binswanger, 1991 and Heath and Binswanger, 1996).

3.4.2 Common property issues

Let us now turn to property rights governing common pool resources. Bromley and Cernea (1989) found that resource degradation in the developing countries was partially attributable to the break-down in indigenous common property regimes. A common property regime is similar to a private property regime in that individuals have rights and duties associated with ownership; it represents private ownership for a group or institution. In contrast, state property regimes are characterized by ownership and control resting with the state. It is argued that many resource degradation problems arose because powerful rulers and colonial administrators dissolved indigenous institutional arrangements governing the use and management of common property and transferred the rights to the state - in effect, nationalizing land.[7] As already mentioned in section 0, neither state property regimes, private property regimes nor open-access regimes have been successful at fostering sustainable management of natural resources. Policies therefore need to focus on preserving common property regimes where there exist and re-establishing them where they have been eroded.

Where indigenous institutions and their associated tenurial arrangements for common land persist (e.g. in some Amerindian populations in Latin America), Richards (1997) argues convincingly for policies to officially recognize those rights and legally demarcate indigenous territories. Still, there

[7] For example, in India common land in and around villages were managed sustainably until colonial administrators transferred the ownership to the forestry department. Given that village dwellers had lost their common property rights there had little incentive to sustainably manage the resource. Because the state did not have the resources or capacity to enforce exclusion, the resources quickly became over-used and degraded.

are many instances where traditional arrangements have been severely eroded or completely dissolved. In these situations, revitalizing common property regimes is much more difficult. Policies such as Joint Forest Management (JFM) in India have sought to foster partnerships between state and communities for the sustainable management of forests. However, JFM policies are intermediate options; ownership of land remains with the state and only the products are apportioned with the local communities in exchange for their compliance with protecting the forest. Where implemented, JFM policies have proved to be moderately successful. Nevertheless, despite their success, they have not been extended to other areas. This is partly because of political unwillingness to continue the partnerships which have accentuated the ineffectiveness of the forestry department. There is a case for more radical policies which transfer ownership back to local institutions that are collectively owned and managed. Box 4 presents some examples of failed policies and potential prerequisites for property rights governing common pool resources.

Box 4. Failed Policies and Prerequisites for Property Rights Governing Common Pool Resources

- Degradation of CPRs is related to the redefinition of customary or indigenous property rights over common property to private or state property rights (Bromley and Cernea, 1989, Richards, 1997).
- Indigenous systems of land use, institutional mechanisms, and common property regimes need to be identified and legally recognized;
- Non-market incentives (e.g. traditional customs and beliefs) may provide a stronger conservation incentive for some types of CPRs than market logic (see Richards, 1997);
- Policy distortions (e.g. forestry and agricultural tax breaks) result in land being viewed as a tax heaven and creating incentives for large capital intensive and inefficient farms on cleared common areas;
- Tenure legislation that classifies un-privatized land as “idle” encourages degradation of resource base by allowing appropriation by colonists, and only being eligible for tenure rights when cleared (see Binswanger, 1991).

3.4.3 Formal water markets

In most countries the state owns water resources. As in the case of land, state ownership of a common pool resource such as water results in cost inefficiencies in supply and use. For the state to set water prices in order to encourage rational use will be administratively difficult and could also be socially and politically disruptive. Some authors have therefore speculated that establishing tradable water rights for owners could create sufficient incentive to conserve water, minimize losses, and keep costs to a minimum. In addition. establishing tradable water rights could also create an opportunity for the state to levy taxes on water consumption and generate revenue. In

practice, however, water rights are difficult to define and measure. Moreover, as with land, it is apparent that local institutional arrangements are essential to manage allocation and distribution of water. Examples from Chile, Mexico and USA suggest that introducing tradable water rights is most effective in areas where water resources are scarce, where there are institutional mechanisms to implement trades, and where there is a political will to establish appropriate legislation. (see Thobani, 1997 and Shah, Zilberman and Chakravorty, 1993 for good overviews of the issues).

3.5 LEGAL FRAMEWORK FOR LOCAL LEVEL INSTITUTIONS

It is desirable to have a legal framework for local level institutions even for groups as diverse as forest management and women's small-scale enterprises (Uphoff, 1986). Legal status is often required in order to enable institutions to have autonomous authority and control over their own affairs. For example, institutions require a legal status to allow them to: enter into contractual agreements with providers of technical assistance; collect users fees and levy sanctions; own and manage property; manage village development funds for operation and maintenance of subprojects, and, directly access loans from financial institutions or act as guarantors for members to secure loans.

Formulating new legislation needs to take account of existing beneficial but uncodified practices, for example land tenure practices mentioned above. Moreover, the new legislation needs to allow sufficient room for maneuver to enable members to have authority and control over governance and operational rules of the institution (see section 0 which explains the characteristics of long enduring institutions). For example, in Thailand the government imposed a uniform system of local irrigator's associations, with standard bylaws, centrally sanctioned personnel, and so on. However, farmers had already evolved their own irrigation systems for generations through their own associations which were not uniform. This created a tension between government legislation and the indigenous practices resulting in noncompliance with the legislation. This example emphasizes the point that if legal frameworks are rigidly or complexly formulated they can be disabling rather than enabling.

Legislation also needs to take into account the requirement for simple and transparent procedures for registration. If the transaction costs are too high, less mature institutions will be excluded. In Brazil, the 1988 Constitutional reform required the formation of thousands of Community Associations as conduits for public investments at the community level. The process of registration was initially complex, requiring an announcement in the press and then registration at municipal level, and finally registration with de-concentrated federal government units. The system was proving to be a bottleneck to the evolution and registration of CAs and has subsequently been modified and simplified in a number of states.

It is evident that sustainable NRM and supply of local institutions for collective action requires more than decentralization of fiscal and administrative authority. Sound macroeconomic policies, investment in rural communications and policies governing property rights and legal status of local institutions are also required to foster an enabling environment. Although this chapter has been termed "preconditions", it is not necessary for all these policies to be enacted prior to

initiating an NRM program; they can be introduced concurrently. However, the sequencing and integration of policies is essential in order to leverage the greatest potential for sustainable NRM.

4.

SOCIO-PSYCHOLOGICAL AND ENVIRONMENTAL FACTORS CONTRIBUTING TO THE SUPPLY OF SUCCESSFUL INSTITUTIONS

The previous chapter has discussed the role of macro policies in creating an enabling environment for the formation of institutions for collective action and also the economic viability of adopting NRM technologies. This chapter, in contrast, identifies some generic factors that underlie the propensity of individuals to voluntarily organize themselves into institutions. It is important to recognize these factors when designing a community-based NRM program. The next chapter will begin to elaborate the program strategies for catalyzing the supply of local institutions that are based on the generic factors outlined here.[8]

4.1 INDIVIDUALS DISCOUNT FUTURE BENEFITS.

Individuals attribute less value to benefits that they expect to receive in the distant future, and more value to those benefits that they expect to receive in the immediate future. The rate of discounting is affected by the degree of vulnerability (both physical and economic) which individuals feel. Where individuals have a high level of security (including security of tenure of landholdings) they tend to expect their children and their grandchildren to reap benefits of current investments; in other words, their internal discount rates are low. Where individuals have a high degree of insecurity, they tend to discount future returns more heavily than immediate returns because survival is a priority.

These observations are corroborated by Ostrom (1990) in analyzing institutions for collective action, Feder and Nishio (1997) in discussing the benefits of land registration and titling, and Esmail (1994) in conceptualizing rural peoples' perceptions of poverty. Barbier and Bishop (1995) review empirical research that provides insights into the economic factors influencing a farmer's decision to conserve or deplete soil. Their analysis found that some of the factors relate to the value the farmer attaches to future, as opposed to present, income. This, in turn, may reflect the farmer's attitude to risk and uncertainty, as well as the level of household poverty and access to credit and off-farm income.

In general, NRM programs need to enhance the perceived levels of security so that discount rates are reduced and investments increased. The discount rate used by individuals in different environments also has important implications regarding the financial incentives that are required to encourage collective action and sustainable management of natural resource systems (these will be discussed further in section 0).

[8] Apart from reviewing the literature, this chapter draws upon personal experiences gained while working for indigenous NGOs in South Asia. The NGOs varied in terms of the type of programs which they were promoting. Some were promoting community-based water supply projects, others were involved in organizing landless people to access their right to land through a process of conscientization or provision of small-scale credit. The greatest experience, however, is drawn from a close working relationship that spanned nine years with the Aga Khan Rural Support Programs (AKRSP) in India and Pakistan.

4.2 LOCAL ORGANIZATIONAL CAPACITY (LOC).

Uphoff (1997) and Narayan and Ebbe (1997) define local organizational capacity as the ability of people to work together, trust one another, and organize to solve problems, mobilize resources, resolve conflicts, and network with others to achieve agreed-upon goals. LOC is related to shared norms, behavior, beliefs and values.[9] It is an expression of social capital which is a concept advanced by Putnam (1993) when explaining how differences in regional prosperity in Italy could be related to the existence of various forms of civic associations. Social capital is characterized by the networks of civic institutions and associated norms of trust and reciprocity that facilitate cooperation and coordination. Trust, however, varies from one society to another. The presence or absence of trust is itself dependent on cultural differences, past traditions and traditional institutions (Seabright, 1993 and Fukuyama, 1995).

There is a growing body of empirical evidence to demonstrate that the level of social capital can have positive impacts on household welfare and also on improved delivery of services and resources. Narayan and Pritchett (1997) found that social capital in Tanzania has a greater impact on household welfare (measured through consumption and expenditure surveys) than household's own physical assets, years of schooling, gender of household head, or the household's own membership groups. Numerous studies on coping mechanisms of the poor have also shown that social capital is an asset in coping with vulnerability (Chambers, 1989). One of the positive aspects of collectivization policies promoted in the Former Soviet Union is that, after the collapse of the Union in 1992/93, many communities were able to cope with the harsh period of adjustment because of existing high levels of social capital.[10] A number of other studies show the importance of social capital and the role of local organizational capacity in the delivery and management of sustainable services to the poor, creation and maintenance of physical infrastructure, management of natural resources, and provision of micro-savings and credit programs (see for example: Uphoff, 1986, 1996, 1997; Jodha, 1992 to name a few).

The propensity of a given society or community to voluntarily form an institution for collective action is therefore intrinsically linked to the level of indigenous LOC and social capital. The level of social capital, in some cases, reduces the importance of discount rates affecting participation in

---

[9] The opportunistic behavior of individuals (their tendency to free-ride on the actions of others) will be influenced by the norms and behaviors which are archetypal of their society. Interactions, beliefs and values of individuals in many rural societies are characterized by the continued strong influence of culture, religion and tradition. Different societies place disparate importance on acting in ways that they and others view as right and proper. For example, when an individual has internalized the importance of keeping a promise, the individual suffers shame and guilt when a personal promise is broken. Norms of behavior are the premise upon which a number of small-scale credit programs are built. For example, the Grameen Bank (and also the AKRSPs) use group responsibility and peer pressure based upon norms of behavior to ensure repayment of loans made to poor men and women (Khandker et al., 1995). Norms of behavior affect the way alternatives are perceived and weighed. In a setting where there are powerful shared norms against opportunistic behavior, each individual will be more wary of dangers of opportunism which, if discovered, may adversely affect their personal status within society.

[10] Based on interview material with Save the Children Fund (UK) and also personal experiences in Gorno-Badakhshan, Tajikistan.

collective action. For example, it has been observed on a number of occasions that individuals are more willing to forgo immediate returns in order to gain larger joint benefits when they observe others following the same strategy (Uphoff, 1994). On the other hand, even if discount rates are low, individuals may not participate in collective action if there is a high degree of mistrust between households. Higher level of mistrust (and associated low levels of reciprocity) are often found in societies which are heterogeneous. For example, in many villages in India, caste, class and ethnic divisions impede the voluntary formation of institutions for collective action. Even if institution formation is externally catalyzed, the institutions can suffer from factionalism which ultimately leads to their collapse. Uphoff (1986) found that the tasks of local institutions in natural resource management are greatly simplified when the users are homogenous. Conflicts over natural resource use are less likely when users see themselves as unified by kinship, occupation, or some other basis.

Local organizational capacity is undoubtedly an important determinant for voluntary formation of local institutions for collective action. Putnam's (1993) thesis would tend to suggest that LOC takes hundreds of years to reach a level sufficient for societal change. However, there are many examples of community-based programs which have managed to stimulate the formation of LOC during a much shorter time period of five to ten years. It should be recognized, therefore, that societies and communities have some base level of LOC. This capacity can be viewed as being "latent". It can be stimulated through program interventions that provide the necessary incentives and support. Section 0 will discuss program design aspects that have been shown to be effective at releasing latent capacity and building LOC.

4.3 ENVIRONMENTAL CHARACTERISTICS.

Populations living in areas where there are clear indicators of resource degradation are more willing to adopt new rules that will restrict their resource appropriation. This was observed by AKRSP(I) in western India. The willingness of individuals to organize for collective action was greatly enhanced during a drought period spanning three years in the late 1980s. During and following the drought, farmers began demanding AKRSP(I) services to construct groundwater recharge structures and micro-watershed management activities. The resource scarcity caused by the drought had resulted in many cases of individuals agreeing to collaborate in order to preserve their incomes and resources. For example, many livestock owners collectively hired trucks to transport cattle to feeding camps set up by government or to areas where fodder was still plentiful. Moreover, awareness about the extent of environmental degradation increased during the drought and it became painfully obvious that lack of water was a critical issue affecting the majority of the population. AKRSP(I), which had been struggling to organize individuals for community-based micro-watershed activities, began to notice increasing awareness amongst farmers and a greater propensity to self organize with the result that their program evolved to demand driven.

Populations living in marginal areas where productive land is scarce also have a greater propensity to self organize and adopt rules restricting appropriation. Usually, in order to settle marginal environments in the first place, populations will probably have had to work together in order to make the land productive. For example, AKRSP(P) operates in the mountainous region of

northern Pakistan. The available land for cultivation is limited to glacial fluvial outwashes, valley bottoms, and terraced hillsides and mountains. Rainfall is low and agriculture is primarily irrigated through glacial meltwater transported by canal to terraced arable land. The existing terraces and irrigation canals where built through collective action organized by the ruling *Mir* over the last few hundred years. Population growth rate over the last 20 years has increased the pressure on land resources. However, the high population density has also lowered the opportunity cost of labor and therefore made it feasible to bring additional marginal land under cultivation. AKRSP(P) found it relatively easy (in comparison to AKRSP-I) to catalyze the population to self organize for collective action. The income benefits of bringing additional land under irrigated agriculture and of promoting intensive agriculture was clearly apparent to the population. In addition, the population already had a tradition of collective action and higher LOC which was evolved through the colonization of a fragile environment.

The relationship between resource scarcity and local initiative is, unfortunately, not as straightforward as mentioned above. Ostrom (1990) notes that in areas where resource units vary wildly from season to season (e.g. in semi-arid areas dependent upon rainfed agriculture), it is particularly difficult for resource users to obtain accurate estimates of average yields and to make reasoned judgments about the meaning of low yields. This was also the case in Western India. It required a severe and prolonged drought to make the population aware of the extent of resource scarcity which was previously not considered as being so extreme. Hobley and Shah (1997), in studying forest management systems in Nepal and India, found that self-catalyzed institutions for collective active are also dependent upon: local leadership, consensus on action to be taken, ability to enforce restrictions and confirmation from government that local organizational units are empowered to take such action. Therefore, equating resource scarcity with local action is useful as a broad planning tool. However, many other factors also need to be considered.

5. ___

PROGRAM STRATEGIES FOR CATALYZING THE SUPPLY OF LOCAL INSTITUTIONS.

This chapter, considers approaches used by programs for catalyzing the formation of local institutions for the collective management of natural resources. This chapter starts by summarizing general truths about why people come together for collective action and how local organizational capacity can be strengthened. It then describes the use of participatory micro-planning to manage the effects of externalities and competition for scarce resources amongst appropriators. The chapter then discusses program strategies for providing incentives to motivate resource appropriators and maintaining the impetus for collective action.

5.1 USING POSITIVE-SUM APPROACHES TO STRENGTHENING LOCAL ORGANIZATIONAL CAPACITY (LOC)

All societies, no matter how heterogeneous, have some base level of LOC. Often, however, this may be differentiated according to religious, ethnic or gender groupings. For example, individuals who share common religious beliefs often come together on a regular basis for prayer. Religious festivals, marriages and other social events are occasions when individuals share responsibilities for organization and management of festivities. In rural India, although village societies are often deeply divided along caste lines, within each caste, there is usually a high degree of solidarity and shared attitudes, values and beliefs. In other words, there is a "latent" organizational and management capacity. The challenge for a natural resource management program is to catalyze this latent LOC, broaden it to include all resource users, and direct it towards individual and collective benefit.

There is now considerable empirical evidence to indicate that Local Organizational Capacity is most effectively strengthened ***through*** the implementation of a subproject which results in increases in productivity and well-being of the participants. Uphoff (1997) eloquently describes the reasons for this when he identifies two distinct purposes for which people at local levels can come together to act collectively to contribute to their own development:

(a) To improve their productivity and well-being by self-help measures. This would include clearing new fields, maintaining irrigation channels, preventing crop or livestock diseases, installing community water supplies, protecting against soil erosion, etc. This is more ***positive-sum*** in its orientation, i.e. creating new values for all participants through mobilization and utilization of resources that would otherwise be differently used.

(b) To advance their interests through advocacy. This would include making claims on government for more services or subsidies, seeking better (or no) enforcement of laws, proposing policies that would be more favorable, creating alliances to put more pressure on outside agencies, etc. This is ***zero-sum*** i.e. it is redistributive.

A number of programs have effectively used positive-sum approaches to building LOC. The AKRSPs in India and Pakistan, Indo-German Watershed Development Program (IGWDP), Doon Valley Integrated Watershed Management Project, Sadguru Water and Development Foundation (SWDF) the USAID funded program in Gal Oya (Sri Lanka), and the Northeast Rural

Development Program (NRDP), to name a few. Common to all these projects is that individuals are required to organize themselves into a group with the explicit purpose of prioritizing and implementing a subproject. The subproject investment is usually one which results in positive improvements in productivity or well-being of the participating individuals. For example, an irrigation channel, feeder road, check dam, forestry project, electricity, etc. In other words, the individuals are aware that the institution is being created for the explicit purpose of prioritizing and implementing a subproject which will ultimately result in positive-sum benefits for all those participating. This engenders a powerful incentive for individuals to overcome disagreements and organize themselves for collective benefit.

5.2 MOTIVATING COMMUNITIES USING APPROPRIATE "ENTRY POINT" ACTIVITIES.

Entry point activities are those subproject interventions that are first identified by villagers during the initial awareness raising carried out by the external implementing agency. Empirically, it is known that often it is easier to organize individuals around productive activities than around social activities (World Bank, 1987). In keeping with the strategy for building local organizational capacity, the entry point activities need to be positive-sum. Experience from a number of programs suggests that using entry points that are not specifically related to management of natural resources can also be effective in catalyzing the formation of a local institution. The assumption is that, once the local level institutional framework is in place, subsequent activities that are directly related to sustainable management of natural resources can be more effectively planned and implemented.

In AKRSP(Pakistan), Primary Productive Infrastructure (PPI) subprojects are effective entry point activities that act as a catalyst for the organization of villagers. It is made clear to villagers that only one subproject will have matching grants from the program. Ideally, it should therefore have positive financial and/or economic returns in order to increase incomes that can be used for funding other subprojects or purchasing services. In reality, the majority of PPI subprojects identified by village institutions were construction or rehabilitation of irrigation channels, feeder roads, or bridges. Similarly, in AKRSP(I) and Sadguru Water and Development Foundation (SWDF), entry point subprojects usually have positive financial and/or economic returns. Where physical and environmental resources were conducive, it was found that many of the first subproject interventions identified by villagers tended to be water related. For example, acquifer recharge structures, soil and water conservation, and check dams on streams with associated lift irrigation schemes. These were found to provide prompt returns to investment in an environment which is semi-arid with low rainfall. When water related subprojects were not physically or environmentally feasible, then social forestry, energy conservation activities and wasteland development were found to be prioritized. (see interim evaluations conducted by World Bank, 1987, 1990, 1996, and European Commission, 1995).

The Doon Valley Integrated Watershed Development project in India occasionally used non-productive entry point activities to catalyze group formation (Datta and Virgo, 1997). During the initial rapport with villagers, before the watershed planning process started, priority activities would emerge from the villagers. These entry point activities included training of the villagers in health care, establishing hand-pumps for drinking water and adult literacy education. These

activities were not envisaged as being part of the project budget during appraisal because they did not directly relate to the project goals of reducing environmental degradation through micro watershed management. Nevertheless, they served the purpose of providing immediate results to prioritized needs of the villagers thereby galvanizing the spirit of collective action. Other interventions such as schools and health centers were also identified by villagers during the rapport stage. However, these would have required a long-term commitment of funding on the part of the project and also coordination with various other government departments. Therefore they were not considered eligible as entry point activities as they substantially diverted from the project objectives. The Doon Valley project has demonstrated that non-productive entry point activities can also provide useful incentives for rapid group formation and demonstration of the benefits of collective action.

5.3 SUBPROJECT BENEFITS MUST ACCRUE QUICKLY AND LOCALLY.

Apart from using positive-sum approaches to strengthening LOC, empirically, it is also apparent that some of the most successful local management initiatives have occurred where there are immediate benefits obtainable by local groups. In cases where local people have had to wait for several years before benefits accrue, the interest has waned and collective management arrangements have ceased. Greater success has also been achieved where there are ready markets available for the products. This also increases the value added to the labor involved in protecting the resource (Hobley and Shah, 1997).

This has an implication for the type of subproject which is first implemented by a newly formed group. That is to say, it should be one where visible benefits accrue relatively quickly to the majority of the members of the group. One of the reasons why there are many examples of successful collective management of irrigation systems is that the benefits of irrigation are relatively immediate following completion of construction activities (see Uphoff, 1986, for examples). The benefits are also relatively evenly distributed if the collective management systems are functioning properly. Other types of NRM subproject interventions can also result in quick and equitable benefits for resource protectors. For example, in AKRSP(I), social forestry subprojects implemented on protected common land were found to yield immediate benefits in terms of the fodder produced. This was harvested and sold, or used to stall feed livestock. In a semi-arid environment with fodder scarcity, these benefits provided sufficient incentive to continue protection until the trees could be coppiced or timber harvested. Soil conservation works were also found to yield relatively quick benefits, especially in areas that were already suffering a high degree of soil erosion, for example, through gully erosion.

5.3.1 Local level approval mechanisms for subproject proposals

An implication of the requirement for quick accrual of benefits is that the delay between subproject identification and implementation must also be relatively brief. Once people are motivated to form an institution for collective action, the momentum needs to be maintained through to subproject completion. Long delays can allow local elites to sabotage the process of group formation. Moreover, there is an opportunity cost of participating in all collective action in terms of the time spent attending meetings, attending training sessions, and so on. If there are excessive delays in initiating implementation of a subproject, individuals will not be able to see a

return on the time they invest; they will seek to maximize the returns on their time by opting out of the meetings and utilizing their time in other productive actions.

One of the comparative advantages that NGO programs have is that they have relatively fast appraisal and approval mechanisms for subprojects. Government programs that have managed to achieve similar results have either relied upon small project teams which act in a similar and unbureaucratic manner as NGOs. Alternatively, they have evolved decentralized approval mechanisms that transfer authority and control for subproject approval to local bodies or institutions.

In the AKRSPs for example, the time lag between formation of a village institution, identification of a subproject, and initiation of implementation activities is about two months. In the case of the government run Doon Valley project, the time lag is three months. In contrast, the National Watershed Development Program (NWDP) in India has a time lag of six months and, in some cases, two years before implementation starts. This is despite the fact that decisions are taken at the level of District Rural Development Agencies. The delays in subproject approval are one of the main factors contributing to poor track record of the program in scaling-up geographical coverage and in forming robust local institutions.[11]

The Municipal Funds program in Mexico and the NRDP in Brazil both employ decentralized mechanisms for appraisal and approval of subprojects (see Esmail and Piriou-Sall, 1997 and Esmail and McLean, forthcoming). In essence, the mechanisms consist of Community Associations that prioritize subprojects. These are submitted to specially constituted Municipal Development Committees (MDCs) consisting of a broad range of stakeholders such as Municipal Legislative Assembly members, NGOs, churches, and government departments; representatives from CAs are also included. The MDCs review all subprojects put forward by CAs and prioritize them according to approval criteria specified by the program. In the case of Brazil, once the subproject is approved, funds are transferred directly from the State Technical units to the CA.[12]

---

[11] Despite the presence of decentralized mechanisms, the delays in subproject approval in the NWDP are due to other reasons. In particular, the individuals constituting the Approval Committee of the DRDA are primarily from government line departments. They are not used to appraising proposals received from villagers that rely upon participatory planning and mapping. These proposals are considered to be "unscientific" and are therefore sent to the relevant government department for a more detailed proposal to designed. (see Esmail, 1997 for further details on the implementation problems of the NWDP).

[12] Over the last five years, the NRDP in Brazil has evolved more decentralized mechanisms for subproject approval and funding. Three mechanisms along a continuum are currently used: (1) Prioritized subproject proposals are submitted directly from CAs to State Technical Units. The Technical units would appraise and approve the subprojects according to program criteria and release funds directly to the CAs; (2) A Municipal Development Council would prioritize subprojects from Community Associations and submit the list to the State Technical Units. A second round of appraisal occurs at this level including a verification visit to the community to determine if the subproject is viable and the beneficiaries are eligible; (3) The most decentralized mechanism is where the Municipal Development Council is allocated an annual budget by the State Technical Units. They prioritize, approve ad disburse funds directly to CAs based on pre-assigned criteria and taking into account other local factors. In theory, the latter mechanism is allocatively the most efficient because it allows MDCs to assess

Admittedly, the subprojects are primarily economic infrastructure (e.g. rural electricity and water supply) and community managed productive subprojects such as manioc mills, tractors and rice processing. Nevertheless, the mechanisms used are effective at reducing the time delay between subproject identification, approval and implementation. Furthermore, they increase allocative efficiencies by involving beneficiaries and other stakeholders in the approval process. Chapter 0 will discuss in more detail the structures and mechanisms used by these programs.

5.4 STRUCTURING FINANCIAL INCENTIVES FOR ADOPTION OF NRM TECHNOLOGIES AND INSTITUTION FORMATION.

Programs seeking to improve the management of natural resources face the dilemma of constructing appropriate financing arrangements and subsidies for micro-level subprojects. The macro-level policy environment, as discussed previously in this paper, will undoubtedly affect the type of financing arrangement. However, because of the complexity of natural resource management products and levels of poverty amongst resource appropriators, an enabling policy environment on its own may not be a sufficient incentive for the adoption of sustainable resource management technologies by individuals and communities. Programs will invariably have to incorporate appropriate financial inducements to encourage the adoption of improved resource management technologies and also stimulate the formation of institutions for collection action.

As a starting point it is beneficial to reiterate the arguments used in section 0 to justify the use of public funds for resource management investments that are, in principle, financially viable. The costs and benefits of a resource management activity, whether on private property, common property, or both, have implications for society as a whole and also for individual resource users. For example, agricultural production or deforestation may lead to siltation of reservoirs and rivers which represents a real cost to society. Individual resource users, however, are likely to consider only the costs and benefits that actually accrue to them from the decisions they make about how to use their resources. They would tend to value the costs and benefits without any attempt to adjust for external effects. This implies that, even though society may be interested in retarding the degradation of a resource, conservation measures will not be adopted by resource users unless the individual net benefits are greater than the costs.

Therefore, one would assume that, if an NRM investment has a positive Net Present Value (NPV), then that activity should be voluntarily adopted. However, there are numerous examples of cost-benefit analysis conducted for resource management technologies (calculated at the level of households and using prices actually faced by resource users), that show positive NPVs but which have resulted in limited voluntary adoption.[13] This is partly attributable to lack of liquidity; resource appropriators do not have access to credit for financing such investments. It is also related to the difficulty in calculating real discount rates affecting resource appropriators choice of

---

community priorities against actual need. (Esmail and McLean, 1997, provide a more detailed assessment of the NRDP mechanisms for promoting effective decentralized institutions).

[13] See, for example Lutz, Pagiola and Reiche (1994) for soil conservation; European Commission (1995) for micro-watershed management; and, Current, Lutz and Scherr (1995) for agroforestry.

actions which results in inaccurate cost-benefit assessments. Moreover, techniques for cost-benefit analysis are unable to capture the magnitude of decisions that resource users take into account which are associated with agroecological and economic characteristics of the environment in which they operate. For example, many decisions are constrained by tenure insecurity, liquidity problems, the need to meet consumption needs, access to credit, and so on. In addition, decisions are characterized by risk and uncertainty of climate, fluctuating market demand, etc. Moreover, the poor tend to be risk averse and therefore resistant to new technologies. In practice, data on most of these factors are imperfect, or not available. Consequently, subprojects with positive NPVs and/or Internal Rates of Return greater than the assumed discount rate may be over-estimating the private returns which could explain why they are not voluntarily adopted and financed by resource appropriators.

Measuring rates of return is further complicated because the costs and benefits associated with many resource management activities are asymmetric. A classic example of asymmetric incentives is that of an irrigation system with a head-end and a tail-end; farmers at the head-end theoretically receive more water than tailenders, unless appropriate collective management rules are defined for mutual benefit.[14] Lutz, Pagiola and Reiche (1994) provide an example of how incentives for soil conservation can vary considerably even within narrowly defined agroecological zones: farmers on different slopes experience different rates of erosion; they face different costs of conservation (the optimal spacing of terraces and diversion ditches being a function of slope); and, the net benefit accruing to an individual's action is a function of others adopting similar technologies (this is one rationalization for promoting collective action). Similar asymmetries can be found in other NRM activities such as watershed management, social forestry, rangeland management, and so on. The distribution of asymmetric costs and benefits therefore affects the choice of financial instruments and whether subsidies are required to induce resource appropriators to adopt new technologies.

Public programs seeking to stimulate the adoption of improved technologies and foster collective management of resources are required to design financial incentives in an environment of considerable uncertainty. In essence, two types of subproject financing devices are available: (1) small-scale credit which may be subsidized, or not; and (2) matching grants wherein beneficiaries contribute a portion of the cost of a subproject and the remaining is a grant (or one-off financial subsidy).

Obviously, if the nature of an NRM good is predominantly public, then individual loans would not be feasible. If it is not possible to clearly define the nature the good, then the following aspects need to be considered before deciding on whether individual loans may be feasible. The decision is not simply a matter of determining financial costs and benefits of representative subprojects. A

---

[14] Ostrom (1995) provides an excellent description of such an irrigation system wherein the incentives for collective management are asymmetric. Ostrom considers various scenarios affecting incentives for collective action: physical construction of the irrigation system (i.e. lined canals, or not); resources required for maintenance (i.e. amount of labor); and, rules governing appropriation. Under each scenario, headenders and tailender receive different benefits thereby explaining why some water users associations are effective, and others not.

wider range of factors that affect the viability of a credit option must be considered. The factors can be summarized as follows:

$$P = f(W^{+}, I^{-}, D^{+}, C^{-}, M^{-}, S^{+}, R^{\pm}, d^{-}, T^{-}, G^{-}, F^{+}, A^{-})$$

Wherein, the probability for the success of using credit (*P*) to finance subprojects is a function of: wealth of target population (*W*); inequality of income distribution (*I*); population density (*D*); climatic instability (*C*); market risk (*M*); social cohesion (*S*); real interest rate of loan (*R*); real discount rate of resource users (*d*); capital cost of technology (*T*); gestation period before returns start accruing to individuals (*G*); the financial profitability relative to the economic returns (*F*); and, costs of administering a rural credit program (*A*).

Probability of "success" of credit (*P*) refers to likelihood of resource users choosing to enter into a loan agreement and the probability of timely repayment. The wealth (*W*) of the target population (or poverty) will affect the ability of people to payback the loan; poorer beneficiaries are more averse to using loans and less likely to payback because of other consumption imperatives. If the inequality of income distribution (*I*) amongst the target population is high, loans will tend to be adopted by wealthier households while poorer households will be less inclined to participate; perverse incentives will be created for disadvantaged resource appropriators to free-ride on the actions of wealthier individuals. Greater population density (*D*) leads to intensification of cultivation systems, increased output from agriculture which, in turn, gives rise to increased non-agricultural activity (Boserup, 1965). Under high population densities, sources of household incomes are therefore more diversified and the risk attached to using loans is reduced because repayment is not wholly dependent on agricultural productivity. High climatic instability (*C*) (for example, in semi-arid drought prone, or, flood prone areas), reduces the disposition of individuals to use loans for resource investments whose productivity is contingent on climatic factors. Market risk (*M*) is faced by all resource appropriators; assured commercial viability of resource products encourages investment in improving resource productivity. Successful small-scale credit programs often rely upon peer pressure to ensure repayment; the greater the social cohesion (*S*) amongst individuals within a community, the higher the propensity for programs to draw upon such interactions to motivate repayment of loans. The real interest rate of the loan (*R*) takes into account the inflation rate prevalent in the economy; inflation reduces the real burden of interest payments to borrowers whilst reducing the real return to borrowers. The real discount rate of resource appropriators (*d*) includes factors associated with security of land tenure, property rights, physical and economic vulnerability; higher discount rates reduce the willingness of individuals to use loans for investments whose returns accrue in the future. The capital cost of technology used for resource management (*T*) and the gestation period before returns start accruing to individuals (*G*) both negatively affect the inclination of individuals to adopt loans; high capital cost investments (for example, irrigation and acquifer recharge structures) require individuals to obtain larger loans and, therefore, undertake higher risk. If returns are not tangible and visible in the short-term, individuals will be less likely to enter into loan agreements. High financial profitability relative to economic returns (*F*) of the subproject will favor credit adoption by individuals. The costs associated with managing a rural credit program (*A*) will be determined by the presence, or absence, of credible rural finance institutions. Costs are also determined by the type of institution administering the credit program and whether it is public, private, cooperative or NGO. Limited evidence indicates that average operating costs, as a percentage of total loans,

range between 4 percent for the BAAC in Thailand to 60 percent for the Zambuko Trust in Zimbabwe (Cuevas, 1997).

$$If\ P = 0.8\ \ then\ use\ a$$

If P is less than 0.8, then the probability of success for using a credit program to finance resource management subprojects in less than 80 percent. In this scenario, a significant proportion of appropriators will probably not adopt loans for resource management investments, resulting in high internal inefficiencies. Furthermore, there is a probability that a high proportion of borrowers would default on loan repayment. The outcome would be that the present value of costs associated with managing a credit program in this environment will be large compared to the actual amounts disbursed. In this case, it is preferential to use a program based on matching grants (a) for subproject financing, administered through local institutions for collective action.

The percentage (x) of the matching grant for subproject investments provided by the program to local institutions. It is a function of a number of factors:

$$x = f(W^{-}, I^{+}, d^{+}, ß^{-}, \mu^{+}, S^{-}, T^{+}, F^{-}), \quad where\ x = (a/z)\ 100$$

(z) represents the total subproject cost. (W) represents the wealth of target population. (I) represents the extent of income inequality; the requirement to involve all resource appropriators in the management activity means that poorer households will need sufficient financial incentive to participate. Resource users will not contribute finance or hard work unless their own discounted flows of future expected net benefits (d) is larger then their share of costs. If high demand (ß) exists for the resource technology, individuals should, theoretically, be willing to contribute more towards capital costs. For example, where resources have become highly degraded, appropriators may be more willing to contribute more in an effort to prevent further deterioration in their incomes. High intensity of existing labor inputs (μ) in productive activities limits the potential for individuals to contribute additional labor "in-kind" towards the costs of implementing a subproject; opportunity costs of labor are higher in areas of existing high labor intensity. Higher levels of social cohesion (S) enable institutions to broker arrangements whereby most resource appropriators participate in a subproject and maximize contributions Furthermore, high social cohesion can enable poorer households to negotiate with wealthier appropriators to provide lower contributions towards capital costs. If the capital cost (T) of a subproject is high, the percentage of contributions from beneficiaries as a proportion of the absolute capital cost will inevitably be lower. Individuals would be willing to contribute more if the subproject has a high financial profitability relative to economic returns (F).

In practice, calculating the probability of successful use of credit and also the percentage of matching grants is extremely difficult; we do not understand sufficiently the interplay of economic, environmental, and social factors that influence incentives for natural resource management (Barbier and Bishop, 1995). Moreover, data on most of the factors are not available, or their measurement is beset by controversy. Evidently, designing financial incentives is not a hard science. Programs therefore have to design incentives in the context of considerable uncertainty. Box 5 summarize some general advice to program designers. However, piloting programs to test

the effectiveness of the financial incentives is an obvious and critical requirement given the level of uncertainty.

Box 5. General Assumptions and Cautionary Advice Regarding the Use of Financial Subsidies

- If the economic returns to a subproject are higher than the financial returns, one can assume that some level of subsidy is justified; the social returns being greater than the private returns.
- If subsidies are used in contexts where the financial returns are equal to, or higher, than economic returns, there is a chance of creating market distortions.
- If the financial returns are high, but the profile of revenues is skewed so that returns do not accrue till some years after investment (e.g. forestry, coffee and rubber plantations), a subsidy used in the early years to encourage adoption can be justified.
- Over generous subsidies may create false positive demand (even where beneficiaries contribute in the form of labor or cash). This may jeopardize future maintenance of the investment by beneficiaries.
- Poorly structured subsidies may also create perverse incentives that contradict sustainable resource management goals. For example, in Costa Rica, reforestation credit encouraged farmers to deforest their land to become eligible for the subsidized credit (Lutz, Pagiola and Reiche, 1994).
- Structuring subsidies so that poor resource appropriators have reduced contributions (or do not contribute at all) may reduce their bargaining power to assert and defend rights to flow of benefits.
- Subsidies used without tied commitments for repayment, user fees, or maintenance, may create perverse incentives for greater rent seeking by beneficiaries (Ostrom, 1995).
- Subsidies based on percentage cost-sharing of subprojects creates an unknown liability for government. This can be avoided by basing these on per capita amounts, or fixing a ceiling for government contributions with excess being met by beneficiaries (see Garn, 1997).

5.5 USING CATALYTIC AGENTS TO FACILITATE THE FORMATION OF LOCAL INSTITUTIONS.

Setting in place enabling policies is not sufficient to result in the spontaneous and voluntary formation of institutions for collective management of natural resources. Despite the presence of base levels of local organizational capacity, experience from many programs demonstrates that the complex nature of natural resource management goods necessitates, at least in the initial stages,

external intervention to catalyze local institution formation. Often, there are long held conflicts within communities, or between communities, that must be resolved so that all resource users can willingly participate in the institution in order to avoid free-rider problems. Put simply, mediation by external agents seeks to shift discourse way from a concentration on the historical roots of conflict towards a forward-looking discourse on the potential of collective decision-making. In this way, external intervention can assist in engendering trust between individuals. Most programs have found the task of motivating individuals and communities particularly difficult during the early months (or years) of implementation. However, once some positive results have been achieved, and potential benefits of collective action demonstrated, the successes can be used to motivate other individuals and communities to resolve conflicts and demand goods and services from the program.

5.6 PARTICIPATORY PROCESS FOR FORMING LOCAL INSTITUTIONS.

Participatory approaches to organizing individuals (stakeholders) to influence and share control over development initiatives, and the decisions and resources which affect them, have their origins in the principles put forward by Paolo Freire (Freire, 1972). Through intensive face-to-face approaches with individuals over a period of time, a "critical consciousness" emerges amongst the individuals of the wider social, economic, political and environmental conditions facing rural communities. Individuals are further empowered through a process of building the capacity of stakeholder institutions; strengthening the financial and legal status of stakeholder institutions; hand-over and self-management by stakeholders.[15]

Narayan (1997) provides an excellent distinction between extension outreach mechanisms and empowerment outreach approaches (see box 6); eight features that differ along a continuum are identified. In essence, the different approaches are related to the ultimate purpose of outreach. Extension approaches are appropriate for information dissemination, creation of demand and use of service inputs. Empowerment approaches, on the other hand, are appropriate when organizing communities to form an institution, and building capacity for self-management. Empowerment is a process by which individuals ultimately gain control and authority over the resources they manage and also the far-reaching development process.

[15] There are many other types of participatory mechanisms. The World Bank (1994) report on participation in the Bank differentiates six mechanisms: information sharing, consultative mechanisms, joint assessments, shared decision-making, collaborative mechanisms and empowering mechanisms. These are listed in order from those in which stakeholders have least influence to those in which they have the greatest influence.

Box 6 Difference Between Extension and Empowerment Outreach Mechanisms		
Approach	**Extension Approach**	**Empowerment**
1. Purpose	Information dissemination, delivery of inputs, demand creation, advocacy	Local capacity building; strengthening existing groups to achieve self management.
2. Nature of Task	Supply of inputs, education	Coordinated action over a prolonged period of time.
3. Role of Field Agents	Channel of information and inputs	Facilitator, catalyst, organizer, liaise with technical agencies.
4. Control over Decisions	Control stays with agency	Parameters established by agency; decisions made and owned by community through process of negotiation.
5. Role of Information	Since information dissemination is a primary function, use of media, social marketing	Organizations of goal oriented groups takes precedence; technical information introduced as needed.
6. Accountability of Field Agent	To agency	To clients, community groups
7. Characteristics, skills of Field Agents	Technical specialist, information specialists, male or female	Community organizing, facilitating, with limited technical know-how, male or female, high on social acceptability
8. Outcomes	Use of inputs, increase demand of services, effectiveness, efficiency	Empowered groups managing services, they did not manage before; group cohesion cooperation, empowerment, effectiveness, efficiency

source: Narayan, 1997

With particular reference to natural resource management, the process of forming institutions inevitably requires the initial formation of groups and organizations. The process of evolution from a group to an institution takes time. Institutions are complexes of norms and behaviors that persist over time by serving collectively valued purposes. Organizations, on the other hand, are structures of recognized and accepted roles. Groups are more informal structures than

organizations but they share a common characteristic in that they are collections of individuals that share common interests, recognized roles, and responsibilities. Box 7 is a synthesis of a range of participatory approaches for the initial formation of groups or organizations. This only details the process until initiating implementation of an entry point subproject. Obviously, the evolution of an institution will require continued organizing and capacity building inputs.

5.7 PARTICIPATORY MICRO-LEVEL PLANNING TO MANAGE LOCAL COMPETITION FOR SCARCE RESOURCES

Empirical evidence from successful NRM programs indicates that there are greater potentials for success when competition between appropriators for scarce resources is managed at the micro-catchment level (World Bank, 1997a). For example, micro-watershed development programs seek to organize individuals in a catchment area of 500 to 1500 ha which often corresponds to the administrative boundary of a village or community. Within such a micro-catchment area, resource boundaries and their associated appropriators can be easily identified. Conflicts between appropriators are also easier to resolve because individuals have some influence over each other by virtue of the fact that they reside in the same village and therefore regularly interact. Furthermore, at this level of planning, it is possible to seek individual agreements on the management of common pool resources and facilitate the appropriate size of institutional mechanisms to manage and protect those resources. Common pool resource issues which extend over more than one village can usually be tackled more effectively after immediate priorities within villages have been addressed.

Micro-level planning of program interventions can be achieved through the use Participatory Rural Appraisal (PRA). This consists of a range of techniques evolved from a series of multi-disciplinary approaches to learning about local-level conditions and local peoples' perspectives, including Rapid Rural Appraisal and Agroecosystem Analysis (see McCracken and Narayan, 1997, for an overview of the techniques and also examples of their use). Through semi-structured interviewing and mapping exercises with individuals, households, focus groups, and community meetings, indigenous knowledge is amalgamated with the external knowledge of catalytic agencies. PRA techniques have been effectively used by AKRSP(I), Doon Valley project and PNGT to distinguish resource boundaries and appropriators, as well as identify options for subproject interventions. Particularly useful products of a PRA exercise are the production of maps and diagrams depicting detailed physical and social characteristics of communities such as location of acquifers, soil depth, erosion status, location of vulnerable households, etc. These are used to design specific subproject interventions. For example, the location of acquire recharge structures, contour bunds, appropriate tree species that meet local consumption needs and environmental goals, seedling spacing, and so on. In many countries, soil and land-use maps either do not exist, or are out of date and do not reflect the current status of physical resources. PRA techniques offer a low cost alternative to expensive physical surveys and also have the added advantage of incorporating indigenous knowledge about the local environment.

To sum up this chapter. A program seeking to catalyze the formation of local institutions for the collective management of natural resources needs to adopt a strategy based upon using positive

sum approaches to strengthening LOC. This requires that appropriate entry point subprojects are identified that address a priority need of resource appropriators and that are productive. It must also, as far as possible, provide equitable benefits in order to encourage the majority of appropriators to participate in the institution and avoid the temptation to free-ride on the actions of others. The benefits of subprojects need to start accruing relatively quickly to maintain participation of appropriators and demonstrate the productive value of collective action. This, in turn, requires decentralized approval mechanisms to minimize delays and build LOC. The complex nature NRM goods means that appropriate financial incentives and financing instruments are critical for the adoption of new technologies and the formation of collective action institutions. The type of financial incentive needs to take into account a vast array of factors. Catalytic agencies are required to organize individuals into institutions for collective action. Their use of participatory micro-level planning techniques can assist in identifying appropriate entry-point activities and resolve potential conflicts that might undermine the viability of natural resource management.

Box 7. Participatory Approaches to Catalyzing the Formation of Groups for Collective Action

The programs analyzed as part of this study used a variety participatory approaches to catalyzing individuals to form a group or organization. The following is a synthesis of the approaches used. The sequence is not cast in stone and some activities may be carried out concurrently.

- ***Selection of village***. External agency selection of village based on review of secondary data.
- ***Using traditional institutions***. Existing formal or informal institutions in village are used to acquire access and legitimacy for external agency's community organizers.
- ***Information-sharing and raising awareness.*** Community organizers initiate a semi-structured dialogue with individuals (and groups of individuals) to inform them about program goals, objectives, incentives offered, terms of participation (beneficiary contributions towards capital costs of the subproject, responsibilities for operation and maintenance, etc.), and potential benefits for beneficiaries.
- ***Micro-level planning.*** Participatory Rural Appraisal (PRA)-based techniques are used to identify resource system boundaries, resource users, individual land holdings, social and economic status of households, and options for entry point activities. This process seeks to weave together indigenous knowledge and wisdom from external learning and experiences.
- ***Strengthening rapport.*** Initial prioritization of entry point options by groups of individuals through negotiation with external agency.
- ***Prioritization of non-project activities.*** These are activities that often emerge as priorities but which are outside the scope of the project e.g. schools, health centers, etc. They are submitted to the appropriate government line department for inclusion in other programs.
- ***Institution formation.*** These can be small user groups or self-help groups based on common interest. Eligible members are defined, a Management Committee is democratically elected, constitutional rules for the institution agreed, mechanisms to resolve conflicts agreed, and the institution is legally registered (wherever possible).
- ***Final prioritization of entry point subproject.*** Members of institution prioritize from the options produced earlier and agree to make cash contributions towards capital cost prior to implementation, or in-kind contributions of labor during implementation. Rules governing resource use associated with subproject, user charges, monitoring arrangements, and creation of maintenance fund (with revenue generating mechanism) are finalized.
- ***Building management capacity of institution.*** Management Committee identifies and contracts appropriate technical assistance to design subproject; organize implementation arrangements, local procurement of goods, members work schedules, and supervision of implementation.
- ***Implementation initiated.*** Implementation of the prioritized subproject is initiated by the institution using members labor or hired externally.

Based on the experiences of Doon Valley project, the shortest length of time for the formation of a group for micro-watershed management (after initial contact) is two to three months. On average the community organizers interact with the villagers once a fortnight during this period (Datta and Virgo, 1997). Obviously, the evolution of a group to an institution will require continued organizing and capacity building inputs.

6. PATHS TO SCALING-UP OF PARTICIPATORY APPROACHES

There are numerous small examples of successful community based management of natural resources. Often, these have emanated from NGO efforts that have been based on participatory approaches and formation of local institutions. NGOs have tried to scale-up their impact through a number of modes: (i) working with government to spread NGO methods and change policy through lobbying and advocacy; (ii) expansion of NGOs' own approaches; (iii) strengthening the network of local membership organizations with which NGOs work. However, very few of these NGO approaches to replication have been successful in achieving regional impact (Edwards and Hulme, 1992). Farrington and Thiele (1997) in a review of three approaches to scaling-up participatory approaches conclude that public sector resources have to be brought in to permit scaling-up. They suggest that the most promising approach to scaling-up that NGOs can take, is to work with government and influence policy change.

This chapter draws upon experiences of programs which have increased their scale of operation to various degrees. Some are NGO programs that have expanded their operational coverage. For example, the AKRSPs in India and Pakistan and Sadguru Water and Development Foundation. Others, such as the Indo-German Watershed Development Program (IGWDP), scaled-up through networking of over 50 NGOs in 74 watersheds. The IGWDP only used NGOs to interact with villagers and catalyze the formation of local institutions. It relied upon government line departments for providing technical services associated with agriculture, soil and water conservation, and forestry. The remaining programs are implemented by state level government departments or agencies. These include the Doon Valley Integrated Watershed Development Project in India and the Agua Y Solidaridad Para el Progreso (Water and Solidarity for Progress - ASPRO) in Mexico. The National Watershed Development Program in India is a central government sponsored scheme implemented through de-concentrated federal administrative units (District Rural Development Agencies). In addition, programs that are not specifically NRM oriented but which have scaled-up geographical coverage have also been analyzed. In particular, the NRDP in Brazil which primarily implements economic infrastructure and community productive subprojects.

6.1 FACILITATE FORMATION OF ORGANIZATIONS BASED ON COMMON INTEREST

It is sometimes assumed that scaling-up can be faster if larger groups are promoted. Logic, on the other hand, implies that limiting the size of a group where consensual decision-making is required is more effective. The empirical evidence, however, is contradictory. Hobley and Shah (1997) found groups in Nepal with over 300 households no less effective than small groups with fewer than 100 households. In AKRSP (Pakistan) it was observed that some large village organizations, which had functioned effectively during the implementation phase of a subproject, subsequently fragmented over time to form smaller user groups (World Bank, 1996). With particular reference to micro-watershed activities, AKRSP (India) found efforts at forming large village organizations, that included all households, proved to be very slow and ultimately ineffective. An alternative strategy of forming smaller groups consisting of a few farmers with adjacent lands proved to be

faster and more effective in terms of micro-level planning and implementation.[16] Eventually, other farmers groups evolved and some federated into larger village-based organizations. These cases demonstrate that the interplay of various factors is more important than one single criterion such as size.

Current understanding would suggest that catalytic organizations should focus on facilitating groups of individuals that share a common interest to organize. This may include: users of a specific resource, ethnic groupings, gender specific organizations, or individuals with other common interests. Given diverse local factors, who should constitute a user group cannot be pre-determined. It needs to evolve out of a participatory process wherein all resource users are defined and their participation solicited whether through a single organization, or through multiple groupings. As mentioned previously, the proportion of user households participating is an important factor in the functioning of the group. A high degree of non-participation may indicate a potential for sabotage and free-riders. Once groups of individuals sharing common interests have formed, they should be encouraged to evolve strategic alliances amongst themselves.

6.2 CLUSTERING PROGRAM ACTIVITIES IN "NODES".

Social organizing activities of catalytic agencies are concentrated in "nodes" of 1,000 ha watersheds, or in a handful of villages. These provide a central demonstration area to which individuals from neighboring villages can come to see the impact and, hopefully, get motivated to adopt similar strategies. Empirically it has been shown that clustering program activities in nodes helps to stimulate demand amongst appropriators for program services. Nodes also act as training areas once new institutions are formed. The nodes are identified on the basis of favorable social and political conditions at the local level and the possibility of relatively quick and significant impacts. Intensive and concentrated awareness-raising and social organizing inputs are provided

[16] The strategy of forming small groups of farmers for the implementation of micro-watershed activities means that the traditional wisdom of starting activities at higher elevations and working down to lower elevations may have to be amended. For example, AKRSP(I) adopted an effective strategy of initiating implementation with whoever was willing and able to start, no matter where they were located within the micro-watershed (European Commission, 1995). The assumption was that economic returns to small on-farm soil and water conservation activities in a semi-arid environment with low rainfall were sufficient to make the investments viable. Once other farmers saw the increased yields due to increased soil moisture retention, they inevitably also formed small groups. In this piece-meal fashion, over the course of a few years, whole micro-watersheds were treated. In contrast, the IGWDP approach was more stringent on the technical aspects in the design and implementation of watershed programs which required the formation of larger village-level watershed committees. The technical aspects were: (i) the need to cover the full area from ridge to valley, including private land and common lands; any inclination by villages to treat the lower slopes first was resisted; (ii) priority was given to soil conservation and biomass development first, and then to water harvesting measures. Pressure from farmers to enhance irrigation sources by constructing check dams on streams was resisted because they were expensive and inequitable. The over-riding priority was to enhance percolation over the whole micro-watershed so that it acted as a large underground reservoir. This approach initially took 25 years to reach 16 villages. Since 1989, however, using demonstration watersheds to motivate new villages, the program has scaling-up to reach 74 watersheds. On average, it is estimated that it now takes six months to treat one micro-watershed of up to 1500 ha. (Lobo and Kochendorfer-Lucius, 1995; and Farrington and Lobo, 1997).

by the catalytic agency. If possible, community organizers live in the local area to interact on a regular basis with local residents. The net effect is that the program is able to demonstrate "visible" impacts to local communities in a comparatively short period of time.

By concentrating activities in a nodal area, the program is also able to passively draw upon traditional communication networks between local people and achieve an unnoticed village-to-village and farmer-to-farmer extension. The discernible impact leads to villages on the periphery of the node becoming aware of the potential benefits of collective action and they begin to voluntarily organize themselves and express demand for inputs from the program. By stimulating demand in this way, the program can, over time, reduce the costs of awareness-raising, motivation and, to some extent, social organizing inputs.

Clustering activities in a nodal area also enables early and more comprehensive testing of the environmental, social and economic impacts of the program. Scattering program implementation, on the other hand, would make it more difficult to test impact because positive synergies and negative interactions between local resource management activities would not be apparent. For example, in micro-watershed activities, upstream surface water interventions may result in less water downstream; or, the groundwater regime in the uplands may benefit communities in the lowlands. Both results may work against sustainable resource management by generating additional conflicts between resource appropriators. Given current knowledge, the environmental and social impacts of NRM programs are not known and predictable. Monitoring is therefore required in order to provide information and data on the various dynamics at work. By creating an "impact zone", it becomes feasible to monitor at an early stage of implementation, the interrelated impacts of the program. Corrective measures can then be taken in the areas already covered by the program. Adjustments to program design and strategy can also be made before replicating the program to other areas.

6.2.1 Promote farmer-to-farmer exchanges

Once a nodal area of impact has been achieved, farmer-to-farmer and village-to-village extension can be used to replicate the program approach by generating demand through demonstration. Individuals from villages in which the program does not operate can be brought to the nodal area to see for themselves the potential benefits of participating in the program and the processes involved. This much more effective than just using community organizers to explain the potential benefits. Experiences from agricultural extension programs confirm that farmers are more willing to believe other farmers than external agents. The time taken to motivate individuals and communities is therefore much less and the costs lower.

The AKRSP(I), SWDF and IGWDP all use versions of the nodal approach and farmer-to-farmer extension in their pathways to scaling-up geographical coverage. After high initial investments in social organizing, the programs were able to achieve a critical mass of villages where effective institutions had resulted in increases in the productivity and well-being of individuals through collective action. Once the critical mass had been achieved, individuals and groups began to approach the de-concentrated offices of the catalytic agency requesting program goods and services. In this way, the programs have evolved into responding to demand rather than having to stimulate it. The programs also hired vehicles to bring individuals from other villages to see the

experiences in the nodal area and to interact with the participants. While unable to provide comparative data on cost savings, all the programs admit that the time taken to raise awareness, motivate, and organize individuals has been reduced considerably.

6.3 MEDIA COMMUNICATIONS CAMPAIGN

A media communications campaign can be utilized to raise awareness about program objectives, incentives and potential benefits amongst rural populations. Campaigns need to be appropriately designed for the given social and cultural environment. It also needs to enable illiterate, poor, and women to understand and access the messages. The potentials are greater where populations are more literate and communications infrastructure are wide spread.

A communications campaign in the NRDP has been modestly effective in facilitating the scaling-up of the program. Through printed posters and leaflets widely distributed through rural municipalities, and a few radio and television broadcasts, information about the program was widely disseminated.[17] Numerous Community Associations claim to have been catalyzed by entrepreneurial individuals who learnt about the program from listening to the radio or seeing a poster. In addition, the general awareness amongst institutional members about the program incentives has contributed to increasing transparency and therefore reducing the potential for powerful individuals to capture benefits. In Western India, radio programs and paintings on walls have been used to encourage farmers to design low-cost and simple means to directly recharge their wells through capturing run-off from their fields. The "movement" has now reached epic proportions and most farmers are at least aware about the recharge techniques, even if they have not implemented them.

6.4 ADOPT A STRUCTURED PARTICIPATORY PROCESS

High degrees of participation in decision-making are easy enough to implement on a small scale, but it is difficult to reconcile these approaches with the requirement to permit wide-scale implementation. A number of NGOs that have a goal of empowering local communities also have a propensity to implement participatory approaches in an unstructured and open-ended process. The danger inherent in this approach is that, rather than strengthening local organizational capacity, individuals and institutions become dependent on the catalyzing agency for various functions and especially conflict resolution. Furthermore, because there is no clear criteria for withdrawal, the NGOs get mired in the minutiae of rural life and cannot expand to new areas. Adopting a structured participatory process is therefore required if wide-scale implementation is to be facilitated. Structuring the process assists in defining an exit strategy so that catalytic agencies can reduce their involvement with institutions over time and move on to new geographical areas.

---

[17] It is not clear whether poor and illiterate sections of society were adequately reached through the communications campaign; there was a bias towards printed material and many poor households do not have radios or televisions.

AKRSP(P) developed a highly structured participatory process consisting of three diagnostic dialogues carried out with villagers. The first dialogue consists of explaining the objectives and methods of the program and invites villagers to identify a subproject (PPI) that benefits at least 70 percent of the village population. The second dialogue explores the feasibility of the PPI under technical supervision provided by AKRSP(P); the products of the second dialogue are blueprints and cost estimates for a PPI. The third dialogue starts with discussion of the finalized scheme; terms of partnership between AKRSP(P) and the village institution; and, detailed implementation arrangements including enhancement of skills and contribution by villagers. If successful, this third dialogue ends with a village institution being formed and the first tranche of the program grant is presented to the institution. In practice the dialogues are a series of open-ended discussions that identify a viable entry point and develop the relationship between villagers and AKRSP(P). The structured dialogue was effective in enabling a rapid scaling-up of geographical coverage of the program (over 500 village institutions were formed in the first three years of implementation). However, dialogues worked well partly because the entry points were primarily small scale irrigation or economic infrastructure such as feeder roads and bridges. On-farm natural resource management practices were introduced through extension services only once village institutions were created using the incentive of the productive physical infrastructure subproject.

In AKRSP(I), the physical environment offered less opportunities for single highly productive entry point subprojects that provided broad benefit to the whole village population. Moreover, the program adopted a micro-watershed development approach that requires greater community organizing inputs, conflict resolution, and micro-level planning. Nevertheless, the program structured the participatory process by delineating phases in the formation of institutions to enable it to plan staff allocation more efficiently by increasing coordination between community organizers and technical service staff. For example, based on years of implementation experience, AKRSP(I) uses a similar delineation of phases as shown box 7 to plan the allocation of technical staff.

The PNGT in Burkina Faso, adopted the strategy of first carrying out village diagnostic and planning exercises on a large scale (using PRA techniques). As many as three hundred villages are included in the diagnostic in the space of six months. Following this phase, appropriate technical assistance for the design and implementation of prioritized subprojects are identified and they begin to interact with the villagers. The advantage of this phased approach is that planning and coordination between different government line departments is less complex. However, the delay between the initial contact with the villagers and initiation of subproject implementation is lengthy, often taking more than six months. As already explained in section 0, this approach does not build and maintain a momentum between the catalysis of collective action and accrual of benefits to those participating. There is therefore a greater potential for individuals to opt out of the institution and maximize their opportunity costs by free-riding on the actions of others.

6.5 LIMIT RANGE OF SUBPROJECT INTERVENTIONS SUPPORTED BY THE PROGRAM

Limiting the range of subprojects supported by the program helps to focus the participatory dialogue on outcomes; makes the program less complex to administer because of standardization of subprojects, technical assistance, production of operational manuals. It is also more transparent

to beneficiaries. Some programs (e.g. the NRDP) have sought to achieve a "demand orientation" by producing a short "negative" list of subprojects that will not be funded by the program; anything prioritized by communities that falls outside of the negative list is therefore eligible for funding. Given the complex nature of goods supplied by NRM programs (see section 0), if the individuals are left to prioritize subprojects without a participatory planning process and with unrestricted choice, it is most likely that NRM subprojects will not be selected. The challenge therefore, lies in reconciling the management need to limit the range of subprojects with the necessity to adopt an appropriate entry point activity to stimulate collective action that ultimately leads to sustainable NRM.

AKRSP(P) restricts the entry point subprojects to those that have positive economic returns for at least 70 percent of the village population. In reality this means that the range of subprojects that fit these criteria are limited to a handful of options. Horizontal integration (i.e. adding of components) occurs after the village institution is formed and the entry point subproject is completed. AKRSP(I) restricts its interventions to a loosely defined set of activities such as water resources development, watershed development, afforestration and wastelands development, agricultural extension and energy conservation. The entry point activity, however, is usually infrastructural and relatively more capital intensive such as acquifer recharge structures. In general, these are required to have internal rates of return of between 15 and 20 percent (taking into account total cost of subproject) in order to be eligible for matching funding by the program. Although each activity is locally adapted by the inclusion of indigenous knowledge, restricting the range of subprojects has meant that operational manuals have been produced which provide design and cost features. Furthermore, the limited range of subprojects has been more transparent. As both programs have increased their scale of operation, new beneficiaries already have a higher awareness about the goods and services available from the program.

6.6 STANDARDIZE MATCHING GRANTS FOR EACH AGRO-ECOLOGICAL ZONE

If matching grants are to be used (see section 0), logically, standardizing the grants for each type of subproject in each agro-ecological zone encourages transparency. It also lessons the time involved in negotiating an appropriate level of contribution from beneficiaries. Standardization enables individuals on the periphery of nodal interventions to predict the incentives, goods, services, and terms of partnership on offer by the program. Individuals are therefore better informed to decide whether the terms of partnership are sufficient for them to voluntarily organize themselves and form an institution to leverage program benefits. Obviously, adopting such a strategy will mean that the level of matching grant will be decided by the lowest common denominator (i.e. the poorest resource users). This raises an ethical issue of whether better off resource users should benefit to the same degree as poor resource users.

AKRSP(I) initially sought to raise as much matching contributions from beneficiaries as was possible. The hypothesis was that the higher the contribution from beneficiaries, the greater the ownership they would have of the subproject. This resulted in a variety of matching grant arrangements in different villages. Transparency was low and many villagers believed that the differences were as a result of rent seeking by AKRSP(I) employees (a common phenomenon in government programs). Moreover, the hypothesis of increased ownership is not proven. PNGT

currently has a similar approach. There is resistance on the part of the catalyzing agency to introduce standardized matching contributions. They feel that, in the interests of equity, communities with higher incomes should contribute more than poorer communities. In contrast, programs which operate on a larger scale (e.g. NRDP, AKRSP(P), SWDF, and NWDP) have standardized levels of beneficiary contribution for different types of subproject.

6.7 TRANSFER OF AUTHORITY AND CONTROL TO INSTITUTIONS

The aim is to rapidly transfer responsibility for implementation to village institutions so that they can build internal capacity to independently raise user fees, operate, and maintain the subproject. Empirically, it is known that "learning by doing" is the fastest way for individuals to gain management experience and therefore collectively enhance the competence of the institution. Moreover, unless responsibility for day-to-day implementation arrangements are handled by institutions, the supervisory burden on the catalytic organization will soon become overwhelming and reduce its capacity to begin working with new communities.

6.7.1 Transfer responsibilities for implementation and operation

Common to all the programs that have achieved some successes in scaling-up geographical coverage is that, to various degrees, implementation responsibilities have been transferred to village institutions. Of the programs studied, the NRDP in Brazil is the most reformist. Individuals are expected to voluntary organize themselves into Community Associations (CAs). These then have a high degree of autonomy and control over their actions. CAs are required to prioritize subprojects; source and contract technical assistance where required for design and implementation; organize subproject work schedules to fit with members other work commitments; and, supervise external technical assistance; and, ensure that each member contributes the required amount of cash and/or labor. State Technical Units verify that the charges of the contracted technical assistance agency are consistent with the task. This is based upon experiences gained over five years of implementation. The Technical Units also conduct ex-post verifications to ensure that the subprojects have been adequately completed. Where CAs have not completed the works adequately, or funds have been misused, they are excluded from applying for funding of subsequent subprojects. This approach has considerable advantages for scaling-up a program, but does not adequately ensure that decision-making and benefits are equitable.

Programs which implement natural resource management activities, tend to adopt a phased transfer of responsibilities and authority to institutions. Through the use of PRA techniques, village institutions prioritize subproject investments in negotiation with the catalytic agency. Often, technical assistance for design of subprojects is provided by the catalytic agency. However, in the case of the PNGT in Burkina Faso, once the prioritization of subprojects has been agreed, depending on the type of subproject, the catalytic agency draws in appropriate government line ministries to provide technical assistance for design. All the NRM programs studied as part of this research encourage institutions to organize their own work schedules for implementation. Some catalytic agencies provide periodic supervision of implementation depending on the technical complexity of the subproject. For example, the construction of a check dam on a stream requires constant technical advice and a site engineer or supervisor is usually necessary. Through a phased transfer of responsibilities, the catalytic agency is able to better encourage all resource users to be

involved in decision-making regarding implementation and operation and therefore reduce the potential for free-riders remaining outside of the institution.

6.7.2 Transfer fiscal authority and control to institutions

Responsibilities for procurement, making payments to contractors and laborers, and raising revenues should ultimately be managed by the institution. This reduces the management burden on catalyzing agencies, enabling them to interact with a larger number of villages. Implementation of a subproject is also expedited because less time is spent waiting for the catalyzing agency to make purchases or payments on behalf of the institution. It also serves to build the confidence of institutions and improve their managerial capacity. An additional benefit is that local procurement substantially reduces the costs of implementation (see section 0, page 12).

In the NRDP and AKRSP(P), all responsibilities for procurement, payment to laborers, and making payments for technical assistance are managed by the institutions from the start of subproject implementation. Funds are released to institutions by the catalytic agencies in tranches based on receipts of expenditure. Evaluation of these programs have found that, despite a history of high rent seeking in both environments, the decentralization of fiscal authority and control has been effective; rates of misappropriation of funds are relatively low (see World Bank, 1996 and World Bank, 1997b). In contrast, AKRSP(I) uses a phased approach to decentralizing authority and control of fiscal resources. Initially, all payments are managed by AKRSP(I). During this period, training is provided on book-keeping and other accounting practices to build managerial capacity. By the middle of the implementation phase, partial authority is transferred to the institution. This means that institutions take decisions on use of funds, but actual payments require two signatures from the executive members of the institution and one from the catalyzing agent. Ultimately, full control is handed over to the institution after subproject completion. Given the experiences in Brazil and Pakistan, one could argue that the AKRSP(I) approach is too paternalistic and that rural communities do have latent capacity to manage fiscal resources with probity. However, decentralizing fiscal resources is particularly sensitive, especially where donors demand a high degree of accountability for their funds. Piloting the NRDP and AKRSP(P) approaches could serve to test the appropriateness of decentralizing fiscal resources in the local context.

6.7.3 Creating a maintenance fund

Creation of maintenance funds (or revolving funds) managed by the local institution increases the probability that subproject investments will continue to be maintained after completion. The fund can be accumulated through compulsory saving of a small portion of wages which are paid for members labor during construction. Alternatively, it can be accumulated through revenue generating mechanisms such as user fees or institution membership fees. This helps to make the fund a “live” issue rather than a situation whereby, once accumulated, the fund is forgotten about until needed.

AKRSP(P) relies on traditional systems for maintaining common assets; at the time of subproject approval the village institution enters into a “contract” to maintain the investment. Traditional systems are reliant upon obligations of all beneficiaries to provide labor, or an agreed payment in

lieu, whenever required. It was found that over 90 percent of institutions were maintaining their subprojects adequately (World Bank, 1996). In contrast, AKRSP(I) found that formalized maintenance funds managed by the village institutions were preferable to contracts between institutions and external catalytic agencies. Experience indicated that contracts were often ignored when there is an external shock (e.g. environmental crisis such as a drought or flood); income is usually scarce and people have more urgent survival priorities. Furthermore, if a maintenance fund is not established, the cost of rehabilitating a damaged subproject (especially rock gully plugs, concrete check dams, etc.) may be too high to be met from annual incomes of beneficiary households. A fund which accumulates in the prosperous years through user fees would overcome the problem. In cash-starved economies, however, this may be difficult because people resent immobilizing resources when they are facing consumption needs. Consequently, wherever possible, such a fund should be deposited on an interest-earning bank account so as to provide a supplementary incentive.

6.8 MOBILIZING ADMINISTRATIVE AND POLITICAL SUPPORT

Empirical evidence highlights the importance of soliciting early support from government to enable wide-scale implementation of the program. Cabinet Resolutions at state and federal levels are required to persuade sectoral line ministries to provide technical assistance, budgetary allocations, and acknowledge community rights over use of common pool resources. Although most bilateral and multilateral funded programs have implicit clearance from federal and/or state governments, this is often not followed through with resolutions at Cabinet level to facilitate coordination and collaboration from sectoral ministries. Furthermore, with programs that are implemented over five to ten years, regular public relations pressure needs to be maintained on Cabinet to assure its continued support for program goals.

Farrington and Thiele (1997) briefly discuss the experience of the IGWDP. Initially, the program focused on obtaining political support of Members of Legislative Assembly of the Government of Maharashtra (India) through inviting them to see a rehabilitated pilot watershed. Subsequently, it drew on this support to obtain a cabinet resolution and various Departmental orders to enable community institutions to evolve partnerships with the Department of Forestry for the management of common land. Political and administrative support from the state government enabled the program approach to rapidly scale-up to cover 74 watersheds and also replicated to the rest of Maharashtra state. The Doon Valley project obtained similar resolutions from state and federal government. Furthermore, it maintained public relations pressure on decision-makers through regular newsletters, brochures, press releases, and personal interaction (Datta and Virgo, 1997).

6.9 TRADE-OFFS IN SCALING-UP PROGRAM IMPLEMENTATION

There are numerous trade-offs that need to be considered when scaling-up a participatory program for the management of natural resource. These essentially relate to internal and external efficiencies versus the pace of scaling up. They can be summarized as follows:

6.9.1 Quality and representativeness of the participation process.

Adopting a structured participatory process increases the chances that vulnerable or inarticulate resource users such as women, landless, and poor households, may be excluded from the decision-making process. If all resource users are not included in the decision-making regarding the formation of an institution and the management of natural resources, there is a likelihood that they will not abide by the rules and seek to free-ride on the actions of others. Furthermore, if specific groups, particularly women, are not recognized and included in the decision-making processes, their local knowledge as resource users will be overlooked and therefore weaken the effectiveness of NRM interventions.

In AKRSP(P) it was found that in the rush to form village institutions, groups with common interests were not clearly defined. Subsequently, the institutions fragmented into more homogenous groups which then required their own subproject. The identification of homogenous groups, inclusivity, and representativeness of the participation process can be enhanced by the use of participatory rural appraisal techniques for micro-level planning (something not done by AKRSP-Pakistan). It can also be improved by ensuring that the catalyzing agency makes specific efforts to identify and target known vulnerable groups (such as women and landless) who are also resource appropriators.

6.9.2 Effectiveness and sustainability of the institutions.

Specifically, this relates to transparency within the institution, governance rules, managerial capacity, and rules governing resource appropriation. Rapid formation of many institutions inevitably means that the catalyzing agency can not devote much time to helping each institution develop its capacity. Without sufficient strengthening of individuals capacity and ensuring democratic rules are enforced, there is a potential for the institutions to be subverted by powerful or influential individuals. Ultimately, the sustainability of the institution and its effectiveness at managing resource systems will be compromised. Current experience suggests that proficient use of participatory processes to strengthen LOC improves the probability of effective institutions being formed.

6.9.3 Linkage activities.

The complexities associated with implementing a program on a large scale inevitably requires restricting the range of subproject interventions supported by the program. Allied activities such as credit, agricultural input supply, etc., that contribute to effective and profitable utilization of resources may have to be left out of the program package thereby reducing the potential for positive synergies. However, it could be argued that program intervention in these areas would only create market distortions and therefore are best left to the private sector. Some natural resource management activities such as integrated micro-watershed management, require multi-sectoral activities such as forestry, water resources development, soil conservation, etc., in order to achieve maximum impact. In the rush to expand coverage, there is an inclination on the part of program agencies to simply implement those activities that are the easiest to get resource appropriators to agree upon. For example, water resource development can result in just the construction of check dams or acquifer recharge structures. This will not result in adequate

synergies between activities and the broader environmental goals will not be accomplished. Moreover, benefits from such activities are, in general, less equitable than implementing soil conservation works across the whole micro-catchment. One possible means of avoiding this is to specify essential components in the program budget and ensure, through physical and financial tracking, that they are not ignored by the catalyzing agency.

6.9.4 Second generation issues.

One-time investments in community organizing and formation of institutions for collective management of natural resources does not necessarily result in the institutions taking on other activities. For example, AKRSP(P) conducted an assessment of the maturity of the village institutions formed over 10 years. One criteria was the number of second generation subprojects that were identified and financed through the members own initiatives. It was found that, although institutions were operating and maintaining the initial subprojects, very few had evolved to initiate new subprojects. With hindsight, it was probably forlorn to expect institutions formed during a rapidly scaled-up program to take on broader planning functions and, in effect, substitute for local government. For institutions to evolve all-inclusive planning and implementation functions would require further investments in community organizing and strengthening of LOC.

7.

PROGRAM MANAGEMENT AND IMPLEMENTATION

Successful community-based management of natural resources is dependent upon the formation of local institutions for collective action. Effective program implementation agencies are critical for the participatory process of institution formation by resource appropriators. Some useful lessons for design of program implementation agencies can be learned from NGOs who have a proven ability to catalyze the formation of local institutions for collective action. However, as Farrington and Thiele (1997) note, implementing participatory community-based programs on a regional or national scale will ultimately require the involvement of public sector institutions; NGOs on their own have limited potential (and unwillingness) to scale-up their programs.

The necessity for public sector involvement raises a number of complex issues. It is a well known fact that public sector institutions in developing countries perform poorly; they are not client responsive and are inefficient at delivering services. This chapter endeavors to identify organizational structures and implementation arrangements that have worked, whether in the non-governmental sector or in the public sector. It starts by identifying two broad types of implementation agencies, each with different characteristics and capabilities; both types of agency can improve their effectiveness and efficiency by creating de-concentrated field units (see box 8). Poor coordination and collaboration between public agencies is a decisive factor that has led to the failure of numerous government programs. This chapter reviews the few islands of successful coordination in an attempt to identify some generic remedies. Finally, it is recommended that close and meticulous supervision of program progress and impact is essential for implementing community-based NRM programs.

Based on the limited sample of programs analyzed as part of this research, two types of catalytic implementing agencies can be discerned: (i) multidisciplinary agencies, and (ii) single sector agencies drawing on multiple agencies for technical assistance.

7.1 MULTIDISCIPLINARY PROGRAM IMPLEMENTING AGENCIES.

Multidisciplinary agencies are those that consist of single unified authorities providing holistic inputs to local communities for the collective management of natural resources. This includes a cadre of social organizers to catalyze the formation of institutions for collective action; and, technical personnel specialized in integrated management of natural resources to assist social organizers in micro-level planning, subproject design and implementation. The social organizers work in tandem with the technical personnel and interact with resource appropriators as a multidisciplinary team. In this way, social organizers are able to assure that the local knowledge of rural peoples are blended with the exogenous knowledge of university trained technicians and engineers. Multidisciplinary teams are able to meet most of the resource management needs of appropriators without the requirement for coordinating and drawing in assistance from other agencies. This dramatically reduces the coordination problems associated with trying to bring different agencies to provide technical inputs to bear in communities that may be prioritizing different entry point activities. By providing efficient and fast delivery of services, they are also able to maintain the momentum between the initial catalysis of institutions for collective action and the implementation of entry point subprojects.

Archetypal examples of solitary multidisciplinary implementing agencies are NGOs such as the AKRSPs and SWDF. Both agencies have social organizing staff, as well as specialized engineers, surveyors, agricultural and livestock extension agents, gender specialists, water resource experts, and so on. There are also a number of government agencies that have sought to mimic the organizational structure of NGOs. For example, the Doon Valley project team consists of staff seconded from various sectoral line Departments for the specific purpose of implementing the project. The disadvantage of this approach is that the team is only active for the duration of project implementation. Once the project is completed, the team will return to their various Departments taking their experience with them; no institutional capacity will remain in government to expand the program to new geographic areas. ASPRO (Mexico), in contrast, is a specialized State government agency created for the purpose of implemented community based micro-watershed development program. It is considered to be a statutory agency of the State government of Oaxaca and therefore has a more secure and predictable source of financing. ASPRO, however, is not a true multidisciplinary agency; it does not have specially trained social organizers. Instead, it relies upon engineers that have had some training in mobilizing and organizing resource appropriators.

Korten and Siy (1988) in reviewing the experience of the Philippine National Irrigation Administration (NIA), found that it was not sufficient to train technicians and engineers to develop social organizing skills. The NIA resorted to recruiting specially trained community organizers with social science degrees to organize farmers into irrigation associations. Many of these community organizers were women who were able to interact with women resource appropriators who had special requirements that were distinct from those of men. Initially, the community organizers reported to division leaders that were senior engineers. Eventually, the NIA developed a separate division for community organizing and women were promoted to senior levels. However, because of budgetary restrictions on employing new permanent government staff, many of the community organizers were employed on a contractual or temporary basis. There are many criticisms of the NIA, nevertheless, it is a good example of a government bureaucracy that was transformed and became reasonably successful at organizing farmers and turning over operational and maintenance responsibilities to irrigation associations.

7.2 SINGLE SECTOR PROGRAM IMPLEMENTING AGENCIES DRAWING ON MULTIPLE AGENCIES FOR TECHNICAL ASSISTANCE

Single sector program implementing agencies are those that specialize in motivating and catalyzing resource appropriators to form institutions for collective action. They may conduct exploratory participatory micro-level planning exercises as part of their catalyzing function resulting in identification of entry point options. Nonetheless, they rely upon other agencies to provide technical inputs for the detailed design and implementation of subprojects. On occasion, the disjuncture between social organizing and technical inputs means that identified entry point subprojects may be deemed to be unfeasible after technical appraisal. Substantial delays can result because entry point activities have to be reassessed by local institutions. Moreover, because of the separation of technical inputs and social organizing, it is much more difficult to blend external technical expertise with indigenous knowledge. On the other hand, the advantage of this type of approach is that the social organizing inputs can be rapidly scaled-up; a large number of villages

can be motivated to form institutions for collective action in a relatively short period of time. The problem of coordinating inputs from different line ministries is the critical issue in this type of implementation system; different line ministries with dissimilar agenda, work plans, and budgets, may have scant incentives to coordinate and collaborate. This can result in substantial delays between institution formation and initiation of entry point implementation.

These type of implementation agencies are not necessarily restricted to government. In the IGWDP, NGOs are contracted to organize resource appropriators; technical inputs are provided through state government Departments. The NGOs are supported and trained by a Watershed Organization Trust (WOTR) that has personnel with skills in awareness creation, social mobilization, and the planning, implementation and monitoring of watershed development subprojects; technical design of subproject interventions, however, requires state Department personnel. Despite the requirement for coordination between NGOs and government departments, the program works effectively and has scaled-up to cover 74 watersheds in the space of 5 years (Farrington and Lobo, 1997). In the case of PNGT in Burkina Faso, the core team of the program consists of personnel seconded from social welfare and extension ministries, or those who have been specifically trained in social organizing techniques. PNGT also contracts NGOs with specific skills in PRA to work with rural communities and catalyze the formation of local institutions. The PNGT secretariat is officially under the Ministry of Agriculture. Most of the subproject entry points are related to land management and require technical inputs from the agriculture and extension department. The coordination problems are reduced because all service agencies fall under one ministry.

Most donor funded programs have relied upon the creation of multidisciplinary project implementation units with staff recruited from different line ministries. This has been relatively effective for the implementation of isolated projects. However, once donor funding ceases, governments rarely continue to support them because they are not considered to be part of the statutory public institutions (World Bank, 1995). A program approach offers more potential for promoting long enduring systemic change. This is achieved by developing a coordinated strategy for reform of public sector institutions and developing the capacity of pubic institutions to implement community-based natural resource management programs. (See box 9 for an explanation of the differences between project and program approaches). Obviously, a far reaching and radical restructuring of government line ministries for agriculture, forestry, irrigation, etc., to form one multidisciplinary ministry for NRM is politically unrealistic and, perhaps, not even desirable. Therefore, the critical question is how to improve coordination and collaboration between these ministries. The following discussion will attempt to highlight some good practice options.

Box 8. Towards Efficient Program Implementation: Adopt a De-concentrated Organizational Structure

Catalyzing the formation of local institutions for collective action requires program personnel to have prolonged and regular interaction with resource appropriators. NGO programs have demonstrated that the most efficient and effective organizational structure for this type of interaction is one that is de-concentrated with personnel located as close to the target beneficiaries as practically feasible. The most obvious benefit of this structure is that it minimizes the time and costs of traveling from offices to villages, and encourages resource appropriators to voluntarily interact with program staff in field offices to request services and inputs.

Another lesson to learn from NGO experiences is that de-concentrated units must have a considerable degree of decision-making authority without the need to constantly request clearances from further up the organizational hierarchy. This makes it possible for them to plan their work more efficiently, respond to specialized local needs, and gives them the freedom to contract other agencies in order meet targets.

The level of de-concentration, however, needs to take into account that it is often difficult to recruit qualified personnel for de-concentrated units; arduous living conditions and lack of facilities for married couples with children mean that staff turnover is usually high. Moreover, many societies restrict the ability of single women to apply for such positions. This reduces the potential for making the program employees gender unbiased.

The AKRSP(Pakistan) provides an example of a de-concentrated organizational structure. It operates in a mountainous area the size of Switzerland covering approximately 3,000 villages. This makes communications very difficult and expensive. Initially AKRSP(P) had staff located in three Regional offices who would regularly travel to rural communities. There were also social organizing staff who were often drawn from the communities and continued living in their villages. They were therefore able to interact more frequently with villagers. Technical staff such as engineers and agricultural extension agents tended to have more formal educational qualifications than social organizers, and were therefore more inclined to be based in Regional headquarters where living conditions were less arduous. Subsequently, AKRSP(P) reorganized and sought to integrate and decentralize technical personnel. Field Management Units (FMUs) were established consisting of a core team of five people; FMUs have staff with skills in social organizing, programs for women, natural resource management, and economic infrastructure development. These FMUs report to Directors located in Regional offices. Nevertheless, they have considerable autonomy in approving subprojects identified by local institutions and in experimenting with new approaches. The structure is effective, but there is a severe problem in recruiting staff who are willing to be based in the FMUs; staff turnover is high and it is also very difficult to find women to fill vacant positions.

7.3 PROMOTING CHANGE AND COORDINATION BETWEEN PUBLIC LINE AGENCIES

The success of single sector implementing agencies that are reliant upon coordinating inputs from various line ministries, requires: (1) a policy framework supportive of a participatory, community-based natural resource management program involving the formation of local institutions for collective action; (2) Cabinet level approval of the policy framework with associated budget implications; (3) apex working groups consisting of key stakeholders to provide on-going learning and also promote coordination between implementing agencies; and finally, (4) a review of public sector implementing agencies with strategies for making them more responsive to resource appropriators. These are discussed in more detail below:

7.3.1 Policy framework

Scaling-up cannot take place without a long-term vision of what constitutes permanent improvement in the conditions of the intended beneficiaries and the institutional changes that are required. The enabling decentralization and macro-level preconditions need to be spelled out clearly in a policy framework. This sets the context and provides the long-term vision and strategy for achieving the program goals. In addition, a policy framework should specify the roles, responsibilities, systems and procedures for coordinated implementation of a program by different public agencies.

The transformation of the NIA in Philippines was characterized by such a policy framework. Although limited to only one government owned agency, some lessons are replicable. The policy framework spelled out the clear role of farmers in the design, operation and maintenance of a irrigation systems. This required a legal policy to give recognition to the irrigators' associations, thereby enabling farmers to design their own rules for the appropriation of irrigation resources, levy fees and organize maintenance. The framework also focused on developing appropriate organizational systems, capacities and norms for the NIA (Korten and Siy, 1989).

The NWDP in India is a centrally sponsored scheme. It required a policy framework to divert financial resources away from four existing centrally sponsored employment generation and drought prone area schemes to the NWDP. The framework was backed up by program guidelines explaining the roles, responsibilities of federal and state agencies, as well as Program Implementing Agencies (PIAs) that were used to catalyze the formation of watershed associations. Unfortunately, the program has had considerable problems in implementation because it was assumed that the policy framework was sufficient to promote effective coordination and implementation; no working groups, steering committees, or strategies for the reform of public agencies were included.

7.3.2 Support from Cabinet /Council of Ministers

Based on the small sample of programs in this paper, it is apparent that policy frameworks and working groups will have restrained influence unless they are backed-up by Cabinet level support.[18]

Cabinet can assist in assuring departmental employees of their long-term security and provide incentives for coordination and collaboration. For example, a key move in facilitating the supportive action of state government Departments in the IGWDP was when the Ministers overseeing the Departments successfully promoted a Cabinet Resolution in 1992 in support of the program (Farrington and Lobo, 1997). The Cabinet Resolution was followed by various

[18] Manning (1997) in reviewing experience in public sector reform programs and putting forward a framework for analyzing the public sector, noted that most reform programs have little to say about the role of Cabinet and Councils of Ministers in promoting sustainable and systemic change. He is currently developing a research program to analyze their functions and also training programs to strengthen Cabinet capacity to assess options and manage risk.

Departmental orders specifying the roles of the different line agencies, systems and procedures for implementation. Similarly, the Doon Valley project required a Cabinet Resolution in order to allow staff to be seconded from sectoral line ministries to form a multidisciplinary project team.

7.3.3 Apex working/learning groups.

Working groups are inter-institutional and multidisciplinary bodies located at federal, state or district levels. They have been used by some programs to ensure that policy frameworks are implemented and that coordination occurs at multiple levels in the public sector. Their role is primarily to develop organizational systems and procedures, adapt program design and nurture coordination between line agencies.

The apex working group used by the NIA provides a partial, but imperfect, model for other programs. The process of change was enhanced by having a central level working group chaired by the Director of the NIA. Other disciplines such as social scientists, agricultural engineers, management specialists from within and outside of the agency were also represented. Government agencies did not appoint representatives to the working group, instead, representatives were identified based on their interest in the issues of farmers organizations. This was acceptable to the government agencies because the working group did not have decision-making authority; it was purely advisory (Korten and Siy, 1989). The limitations of this model are that it was only geared towards the change of one agency - the NIA. Moreover, the working group did not make any real impact in improving coordination between line agencies. This is partly because the public agency representatives were ex-officio with no official sanction for their participation in the working group.

The IGWDP uses two fora to promote adaptive learning and coordination: (1) a Watershed Organization Trust (WOTR) which is a private agency. It trains NGOs and also conducts research on community-based watershed development issues and improving program implementation mechanisms and methods; it also acts as a resource center for NGOs. (2) a Project Sanctioning Committee (PSC) includes representatives from the financing institution (NABARD), participating NGOs, the Program Coordinator, three state government representatives, a representative of the federal Ministry of Agriculture, and special invitees as required. This body approves subproject proposals from community-based watershed institutions. It also provides support to the program coordinator whose responsibility it is to foster coordination between state government Departments for technical assistance in forestry, agriculture and livestock extension, and water resources development (Farrington and Lobo, 1997).

7.3.4 Restructuring implementing agencies for client orientation

Promoting participatory approaches to local institution formation requires public sector implementing agencies to change their organizational structure and culture to become more responsive to beneficiary needs. This is extremely difficult to do in practice; a whole discipline focused on public sector reform has been established to develop strategies for improving client

responsiveness and service delivery but, so far, with limited success outside of OECD countries.[19] Nevertheless, from the few successful examples, it is possible to identify key outputs of a public sector review exercise. The review process should make recommendations that specify:

- the type and quantity of outputs expected from the agencies;
- the incentives for each agency and their personnel (including pay and conditions);
- performance indicators on which to assess successful change;
- the type and quantity of inputs required to transform the agencies and how these are to be used;
- which activities of the agencies should cease and when;
- the required finance, capital, number of staff and the skills that they should have;
- the mechanisms, systems, procedures and budgeting arrangements required for coordination and collaboration between the agencies;
- capacity building programs including training, study tours, technical assistance, etc., to facilitate reorientation and changes in working culture.

The review should identify quick wins in efficiency and responsiveness to clients and seek to implement these as a starting point. A phased strategy should be put forward to implement the changes identified based on the above review. Budget allocations for at least three years help to provide a degree of resource predictability for agency managers and makes it possible for them to implement the changes in a coherent and phased manner.

7.4 MONITORING AND EVALUATION FOR LEARNING AND ADAPTIVE PROGRAMMING

In the absence of any proven model for the formation of local institutions for collective management of natural resources, program implementing agencies need to closely monitor their progress to adapt program approaches. Often, physical and financial progress is monitored because release of funds is usually tied to a report on expenditures. In practice, however, very few implementing agencies place a high priority on monitoring and evaluation of participatory processes, effectiveness of local institutions and economic impact; these are often seen as donor

[19] There are few examples of successful reforms of the public sector outside of OECD countries. This is partly because there is no accepted and clear understanding of how public sector institutions and organizations work and what were the underlying reasons for the few successes that do exist. In effect the public sector remains a black box which is periodically kicked by donors in the hope that something will shift and it will somehow start working.

requirements rather than management tools to improve performance.[20] In essence, three types of monitoring activities are required:

- **Assessing efficacy of participatory processes and sustainability of the institutions**. There are few tried and tested tools currently in use by programs. Research is required to develop tools which can provide quick and pragmatic information to enable program management to constantly adapt implementation strategy. AKRSP(I) uses detailed case studies to monitor the effectiveness of the participatory processes. Their system is based on cost effective participatory and beneficiary assessment techniques. Similar systems can be evolved by other programs to provide more statistically relevant information about the impact of participatory processes and their relationship to the type of local institution that evolves.

- **Monitoring and evaluating social and economic impact.** This is usually geared towards providing a justification to donors for program funding. However, informative impact studies can also be used to indicate which components of the program are having greatest impact, and which components need to be adapted or ceased. An informative impact assessment would need to include an assessment of institutional maturity, economic and social impact using statistically representative surveys. Techniques and methodologies for this type of monitoring and evaluation are relatively well known; their implementation by programs, however, is less common.

- **Tracking physical and financial performance.** This is usually used to justify the release of the next tranche of funds. Management information systems for tracking of physical and financial progress (including cash flow projections) provide for efficient coordination between the source of funds (government or donor agency) and program implementing agency. Used to its full potential, a MIS can also provide information on program progress by region to enable management to target research, personnel, and inputs, in areas where the program is not performing as anticipated.

Institutionalizing monitoring and evaluation systems is not an impossibility. It does, however, require a commitment from management and appropriate resources to be set aside for hiring staff, contracting third party institutions to carry-out field research, and developing methodologies. Efficient monitoring of program performance, if combined with working groups and other recommendations cited in this chapter, can improve the capacity for institutional learning, adaptive programming and successful outcomes.

---

[20] Practically all the programs studied in this research were only monitoring physical and financial progress of subprojects. Only the AKRSPs had some baseline information and were regularly monitoring the participatory processes and social, institutional and economic impact of their programs. These programs have been operating for over 15 years and they are also dependent on five year donor funding cycles; they therefore have a vested interest in ensuring that donors have sufficient information to gauge the impact of their funds so that subsequent phases of funding can be approved. The poor record of many programs on monitoring and evaluation is also corroborated by World Bank (1997c) in reviewing Social Fund programs.

Box 9. Adopt a "Program" Approach in Preference to a "Project" Approach.

Project-by-project, and donor-by-donor approaches have sharply reduced government ownership of projects thereby reducing their long-run sustainability. Moreover, projects tend to be small islands of success in a sea of government failure. A coherent, systematic and sustainable change in the ability of the public sector to address the issue of degrading natural resources requires the adoption of a "program" approach. In contrast to a project approach, this is one which is sector-wide in scope. A sector can be defined as a coherent set of activities that need to be looked at together to make a meaningful assessment of the policy requirements, institutional requirements, and also the expenditure requirements, both current and capital. Natural resource management can be considered to be one sector incorporating the "disciplines" of social organizing, forestry, agriculture, water resources, livestock, and so on.

A program approach is therefore one that is based on a sector-wide strategy and policy framework. All donor agencies need to agree to implement the same sector strategy and have one set of procedures, rules and reporting requirements. Government is actively engaged in the sector strategy and takes on responsibility for implementation using existing local capacity. Where this capacity is weak or non-existent, local staff are recruited and trained in preference to appointing external and expatriate staff. In this way, government is encouraged to own the program and is assisted to build local capacity to improve performance.

Experience from 10 Bank supported programs indicate that a sector improvement program approach can be effective in terms of improved service delivery and large-scale impact. Preparing such programs is expensive and relatively slow, especially for the first one in a given country; subsequent programs become cheaper as they build upon previous sector work. In the long-run, it is expected that program costs will be more cost-effective than piece-meal project costs (World Bank, 1995). So far, however, there are no examples of sector improvement programs that encompass all the natural resource disciplines.

8. ___

DESIGN OF DECENTRALIZED FINANCIAL INSTRUMENTS FOR SUBPROJECT FINANCING

The previous chapters have demonstrated that strategies for catalyzing the formation of local institutions for collective management of natural resources must include a number of factors. In particular, they need to build local organizational capacity through using catalytic implementing agencies to facilitate group formation, elicit and manage demand for productive NRM subprojects. The implementing agencies must also provide technical assistance for design of subproject interventions, especially in a context where private contractors such as NGOs and consultancy firms are either unavailable, or lack capacity.

The financing instrument used by donor agencies must facilitate the following:

- government ownership of the program;
- strengthened government capacity to implement the program; and,
- community authority and control over decision-making, implementation, procurement, operation and maintenance; and,
- quick accrual of subproject benefits through local level approval and disbursal mechanisms.

This chapter will discuss the design of appropriate donor financing instruments that are suited for these tasks. The underlying assumption is that there should be a complimentarity between the financial facility, the capacity building function of the implementing agency, and program strategies to strengthen local organizational capacity.

8.1 SOCIAL AND DEMAND DRIVEN RURAL INVESTMENT FUNDS.

In essence, there are two types of financing instruments currently available within the Bank that are sufficiently versatile for achieving the above mentioned goals: Social Funds and Demand Driven Rural Investments Funds (DRIFs). Conceptually, both instruments are very similar (Wiens and Guadagni, 1997; World Bank, 1997c). In practice, however, there is considerable variation in their design aspects.

According to a recent portfolio review of Social Fund programs (World Bank, 1997c), Social Funds are quasi-financial intermediaries that channel resources, according to predetermined eligibility criteria, to small-scale subprojects that are proposed, designed, and implemented by public or private agencies, or by the community groups themselves.[21] Unlike conventional Bank projects, individual subprojects are not determined at the time the Social Fund is established; only

[21] Originally designed for emergency assistance, objectives for Social Fund projects have evolved towards community development for sustainable service delivery to the poor (World Bank, 1997c).

the criteria for subproject eligibility are laid down up-front. Social Fund agencies posses two unique features:

(i) they are vested with investment programming powers i.e. the powers to select/reject subproject proposals that they solicit from public organizations, private organizations, and/or community groups based on predetermined criteria rather than themselves identifying designing and implementing subprojects; and

(ii) they enjoy a special status in terms of their independent legal persona, control over the subproject approval process, and/or exemptions from prevailing public sector rules and regulations relating to issues such as civil service salary schedules, procurement, and/or disbursement.

Demand Driven Rural Investment Funds are similar to Social Funds, except they do not create special project units with special status but, instead, vest the investment programming functions (the power to reject/select subprojects) in existing local government institutions. Local government is responsible for soliciting and financing subproject proposals from community groups and other private and/or public organizations rather than itself identifying, designing, and implementing the subprojects (World Bank, 1997). An additional difference is that DRIFs are primarily rural focused and have been used to fund productive infrastructure investments and, to a limited extent, natural resource management activities (Wiens and Guadagni, 1997).

Local Development Funds (LDFs) as used by UNCDF, are similar to DRIFs in that they channel small-scale capital grants to lower levels of government for the financing of rural development and poverty alleviation. They are also designed to introduce or improve decentralized, participatory planning procedures and to build the capacity of local governments and other local institutions to design and manage local projects (Romeo, 1996).

The portfolio review of Social Funds (World Bank, 1997c) found some evidence that Social Funds are able to construct infrastructure at a lower cost than public agencies with cost savings reaching up to over 50 percent in specific areas. Moreover, there is some evidence that Social Funds construct infrastructure within a lesser time (30 to 70 percent less) compared with public agencies. It is these two characteristics, in particular, that make them attractive for funding community-based NRM subprojects.

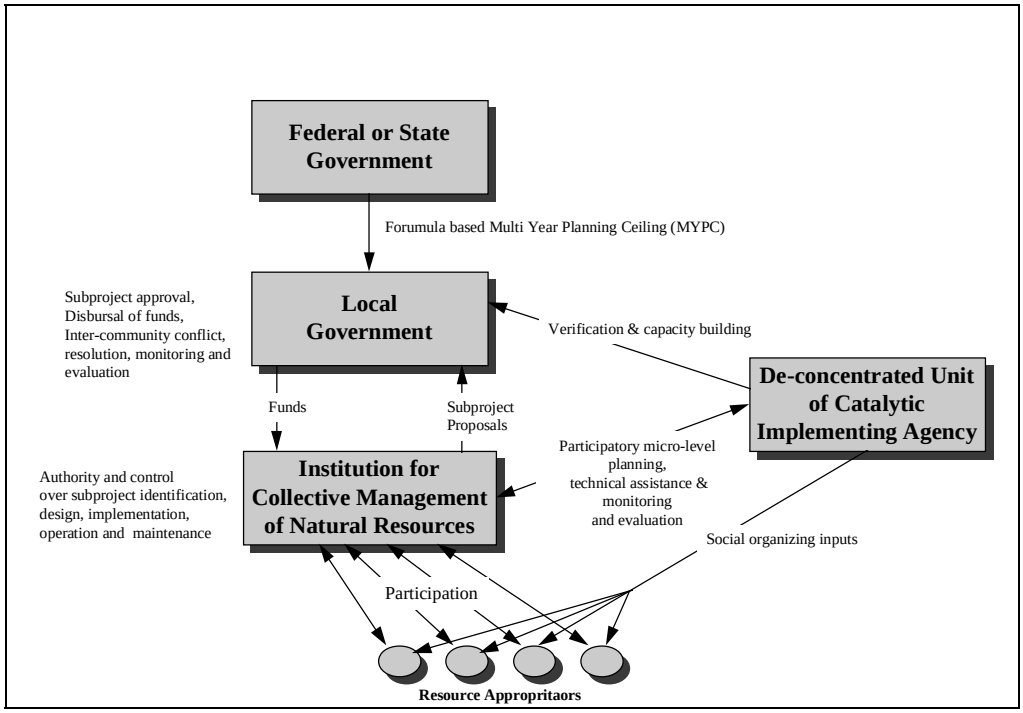
8.2 COMPLIMENTARITY BETWEEN IMPLEMENTING AGENCY, LOCAL GOVERNMENT AND FINANCIAL INSTRUMENT

As mentioned in section 0, the joint goods nature of natural resource management interventions means that conventional DRIF design, with its reliance upon local government for soliciting subproject proposal from communities, may not be the most appropriate mechanism. The complexity of eliciting demand and the requirement for specialized technical assistance is usually beyond the capacity of many local authorities. Therefore, a catalytic implementing agency is required to work directly with resource appropriators. Nevertheless, the financial instrument used by a community-based NRM program should not by-pass and ignore the presence of local government. Local authorities have a responsibility (and are ideally located), for managing the

inter-community conflicts between resource appropriators that are often associated with common pool resources. Ultimately, local governments should also be empowered to develop multi-year planning capabilities for providing services and capital investments. However, before local government can assume their responsibilities in this arena, they first need to develop competence to recognize the underlying causes of resource degradation; mediate and resolve conflicts between communities; and, develop planning capabilities for the provision of public goods, infrastructure and services. DRIFs and LDFs, if properly adapted, can facilitate the evolution of local government capacity to undertake these functions (see Narayan and Ebbe, 1997 for an excellent description of the essential features for the design of Social Funds).

Box 10 illustrates the possible roles, responsibilities and relations between the various institutional actors in a community-based natural resource management program. In this arrangement, local government is assigned a Multi-Year Planning Ceiling (MYPC) through an intergovernmental fiscal transfer from federal or state government based on a transparent formula. [22]

Box 10: Roles and Responsibilities of Institutional actors



[22] The selection of an appropriate level of local government is guided by the need for area and population covered to be small enough to facilitate direct popular participation and interaction between local authorities and communities and the need to be viable planning units. It is also determined by whether local government already exists and if these are to be strengthened and empowered through decentralization legislation.

The MYPC is a fixed amount of resources earmarked for NRM, assigned to local government, and allocated for a given community.[23] MYPCs have been used by UNCDF as part of Local Development Funds. It was found that they can act as an incentive for community participation because of the need for collective decision-making to prioritize the use of limited funds as well as the need to complement these funds with additional local resources (Romeo, 1996). This is partially corroborated by Shah (1994) in reviewing intergovernmental fiscal relations in developing and transition economies. Shah found that increased fiscal autonomy for lower levels of government can help to mobilize more revenue from local sources and decentralized decision-making encourages local participation in development.

The implementation process is as follows. The implementing agency catalyzes the formation of a local institution of resource appropriators. It conducts a participatory micro-level planning exercise with the institutions and assists them in producing a list of prioritized subprojects. These are submitted to local government by the local institution. Local government has responsibility for reviewing and approving subproject proposals against agreed eligibility criteria. Once proposals are approved, the funds are released by local government to the institution who takes on responsibility and has authority and control over all aspects of the implementation of the subproject. The local institution has the option to contract technical assistance from private contractors such as NGOs or other actors (if they exist), in preference to the implementing agency.

8.3 ESSENTIAL ATTRIBUTES REQUIRED OF A DECENTRALIZED FINANCIAL INSTRUMENT.

In order for the above implementation and financing arrangement to be effective, the decentralized financial facility must incorporate the following essential attributes.

8.3.1 Representative local government bodies responsible for subproject approval

Democratic decentralization of government is a relatively recent phenomenon is many developing countries. There is not a tradition of political participation in countries that are experimenting with democratic decentralization. Moreover, many governments, whether centralized or decentralized, are not accountable to their constituencies (Manor, 1997). In this context, decentralizing fiscal autonomy to local government may not yield the expected benefits in terms of resource allocation efficiency and participation (Oates, 1972; Shah, 1994). The challenge in adopting a decentralized fiscal instrument is to ensure that the local government body responsible for subproject approval and fund management is accountable to the resource appropriators and is transparent in its operations.

The NRDP in Brazil has managed to establish local government bodies that are relatively democratic and representative in an environment that was characterized by high levels of rent

[23] The amount of MYPC should be determined by a transparent formula that is simple enough to be constructed based on existing, or readily obtainable, disaggregated data (Romeo, 1996). Ideally, it should take into consideration the size of population (per capita index), local levels of infrastructure and services, and a composite index of the extent of natural resource degradation.

seeking by government bureaucrats, politicians and local elites. The NRDP uses specially formulated Municipal Development Councils (MDCs) to manage a MYPC allocation; prioritize subprojects received from Community Associations; and, disburse funds to these associations for subproject implementation. The approach has been evaluated and found to be effective, accountable and transparent in regard to the management of funds allocated to the MDCs (World Bank, 1997).[24]

The MDCs are usually chaired by the Mayor of the municipality. This is not a requirement of the program, but in practice, most members of the MDC view the Mayors participation as crucial to leveraging additional municipal funds to compliment those of the NRDP. The Community Associations elect representatives to the MDC. Broader civil society representatives such as NGOs, churches, civil associations are also executive members of the MDC. Through a process of evolution, the program now insists that at least 80 percent of the voting membership of the MDC must be representatives from Community Associations and civil society. In addition, de-concentrated units of federal and state departments are also present on the MDC, but without voting rights. Finally, a representative of the implementing agency (State Technical Unit) is also a non-executive member of the MDC and ensures that the selection of subprojects is in accordance with the guidelines and criteria laid down by the program.

Evolving a local government body that is democratic, transparent, representative and accountable, will take considerable time and resources. Adopting the strategies outlined in this paper, including a media campaign, the capacity of local government and of local institutions will be strengthened. Nevertheless, close monitoring of the participatory processes at the community and local government level is required to ensure that the resources are not captured by influential local elites. Furthermore, training inputs will be required to enable local government to develop the technical and administrative capacities to respond to needs of resource appropriators and take on planning responsibilities. In the initial stages, close involvement of the de-concentrated units of the implementing agency and specifying MYPCs for each community and earmarked for NRM will assist in ensuring program goals are met and leakages are minimized.

8.3.2 Geographical targeting

Management of common pool resources is critical for the sustainable and effective management of natural resources. This would require all resource appropriators to participate in an institution for collective action and receive program inputs and benefits to avoid the problem of free-riders undermining the authority and control of the institution. The most efficient means of targeting all resource appropriators in an area is to adopt a geographic targeting mechanism as opposed to one based on wealth or some other criterion. If the target geographic area is suffering from extensive

[24] Despite a positive evaluation of most aspects of the program, it is not clear whether the MDCs are truly representative of all the potential beneficiaries of the program. In particular, there is some question about the extent of participation by poor and vulnerable groups in the Community Associations which initially prioritizes subprojects. Moreover, the process of prioritization of subprojects by MDCs is, in practice, unclear and not transparent; the influence of the Mayor and other local elites in subproject identification and prioritization can be considerable in some areas (See Esmail and McLean, 1997 forthcoming).

degradation of natural resources, then all appropriators are equally affected and deserve access to program benefits. However, if the geographic area also includes a high degree of inequity, for example, in terms of size of land holdings, then there is an important trade-off in adopting this approach to targeting; wealthier resource appropriators would receive the same benefits as poorer appropriators. Obviously, some local level targeting can be incorporated, for example, institutions consisting of poorer resource appropriators may decide to exclude large farmers from receiving program benefits, or they may require wealthier households to contribute a greater proportion of the capital cost. In any case, decisions of this nature must be taken through democratic participatory processes involving all resource appropriators; they are best placed to understand the local political consequences of such actions and adopt appropriate rules to dissuade some appropriators from free-riding on the actions of others.

8.3.3 Community procurement of goods and services

The Bank's guidelines regarding community procurement of goods and services have recently been revised (Gopal and Marc, 1994). The overall goal in revising the guidelines has been to empower local groups to manage financial resources and procure quality goods and services in the most cost-effective way (Narayan and Ebbe, 1997). In over one-third of Social Fund projects, community groups have authority to hire, procure materials and/or supervise contractors. It is this aspect of the Social Funds that has contributed to the remarkable increases in cost and time efficiencies in subproject construction over conventional forms of procurement (World Bank, 1997c).

Conventional competitive bidding procedures required the participant to have some degree of institutional and financial support, and knowledge of commercial bidding. Gopal and Marc (1994) found that these methods excluded participation of community groups because they lacked support, administrative capacity, and were unfamiliar with commercial practices. Guidelines have since been revised and adaptations of local competitive bidding have been developed to encourage local contractors and community groups to bid for small projects. In addition, variations of local shopping procedures are also used based on soliciting two or more quotes from local suppliers.

Increased flexibility in procurement of goods and services requires additional mechanisms to ensure accountability and transparency in the use of funds. Box 11 lists some common practices now used by Social Funds to increase accountability and transparency.

Box 11. Mechanisms Employed by Programs to Encourage Accountability

Unit Costs. Establishing standard prices for the completion of various types of subprojects. These prices are updated on a regular basis by using a technical auditor.

Focus on Outputs. Disbursal of funds against a physical verification that the structure has been built. This can only be used where: (i) there is a physical output that can be described in physical terms; (ii) the cost of construction is fairly uniform; and, (iii) the existence of the output can actually be checked. In many projects using this approach, the quality of construction has been an issue. However, quality can be assured through use of technical assistance paid for by the program.

Standard Contracts. Standardized contracts can be used: (i) between the program and local institution; (ii) between the local government body and the local institution; and, (iii) between the local institution and suppliers of materials and/or services. This takes into consideration that many local government bodies and local institutions may lack the capacity to develop appropriate contracts suited to the legal framework of the country or the Bank.

Standard Designs for Subprojects. This is particular appropriate for small or simple infrastructure. It reduces the need for each community to reinvent the wheel. The designs should be developed during a pilot phase and take into account local knowledge of men and women. Locations of the structures should still be decided by each institution as part of a participatory micro-level planning exercise.

Implementation manual. All Social Fund projects provide the implementing agency with a Manual of Instructions. This usually contains project execution guidelines; sample bidding documents; procedures; responsibilities; subproject selection criteria; etc. This should be developed during the pilot phase and refined during implementation based on monitoring and evaluation of program progress and impact.

Beneficiary Contribution. Beneficiary contributions can increase the community commitment to the subproject and may ensure greater accountability through peer pressure. Contributions can be in a number of ways. Usually it is either in the form of cash, materials, or in-kind voluntary labor. Additional and innovative forms of contribution need to be explored. In particular, production forgone through the adoption of resource conserving technologies, or land taken out of production due to the construction of a conservation structure. The percentage of beneficiary contribution needs to take into account a number of factors - see section 0 for more details.

Blacklisting of contractors/NGOs. Based on program experience, contractors and NGOs that are found to be fraudulent or inefficient need to blacklisted and this information shared with local government and local institutions.

Sanctioning local institutions/local government. Institutions and local authorities found to have misappropriated funds can be sanctioned by having their MYPC reduced or removed. This can stimulate peer pressure for accountability and also act as a demonstration for others.

Management Information Systems and Monitoring. Well designed and implemented MIS and monitoring systems can provide up to date information on the physical and financial progress of the program and its impact. The numbers can act as a check on whether funds are being judiciously used. In addition, beneficiary assessments, and the use of random audits of local institutions and local government can assist in mobilizing peer pressure to minimize misappropriation of funds.

Source: adapted from Gopal and Marc, 1994

8.3.4 Advance payments and verification of the use of funds

Advance payments to local government and local institutions is essential to minimize delays of disbursal, facilitate local procurement of good and services, and ensure quick accrual of benefits. Often, legal agreements between the funding agency (central or state government) and local government or institution are required in order to permit release of funds (Gopal and Marc, 1994; Narayan and Ebbe, 1997). In addition, this requires local institutions to open Bank accounts for the handling of funds. Social Fund projects have developed a range of mechanisms and procedures for advance payment and verification of the judicious use of funds.

In the NRDP, all subproject proposals are assessed by the State Technical Units. Staff physically visit the communities and verify that the subproject is technically feasible and that all the beneficiaries are indeed eligible to receive benefits. After approval of a subproject proposal by the MDC, funds are released to the Community Association in two or three tranches depending on the cost of the subproject. Release of additional tranches are contingent upon Community Associations providing receipts of expenditure incurred and/or physical verification that construction has commenced. Given that the maximum cost of a subproject is US$40,000, the liability for embezzled funds is therefore confined.[25]

8.4 DEMAND ORIENTATION OR ELICITING DEMAND?

World Bank (1997c) and Narayan and Ebbe (1997) define demand orientation as when projects offer clients a range of options from which to choose (e.g. options in goods and services, technology, and service levels); provide impartial information to assist clients in making informed decisions; and require evidence of commitment and interest through cash or in-kind contributions from beneficiaries. There is an implicit assumption that programs need to be become more demand orientated in order to increase the likelihood for community ownership of the investments and ensure their sustainable operation and maintenance.

Unfortunately, in programs seeking to promote sustainable management of natural resources, demand orientation is not straight-forward. As already mentioned, resource appropriators will not necessarily identify natural resource management activities as a priority, even if they have complete information about the extent of degradation and the costs and benefits of intervention. The fundamental issue preventing demand from being expressed by resource appropriators is related to the common pool dimension of most resource management activities and the associated problem of asymmetric costs and benefits and free-riders. Empirically, it can be seen that all of the programs that have managed to effectively promote community-based natural resource

[25] In some States, for example Maranhao, initially some executive members of Community Associations absconded with the first tranche of funds released to them. Subsequently, the Technical Units paid contractors directly and only released a small proportion of the subproject cost to the CAs to cover incidental expenses. Once a CA had developed a track record in efficient handling of funds, funds are released directly to them and they were given authority to make all necessary payments.

management have had to invest considerable resources in participatory planning exercises and social organizing to elicit demand for NRM interventions. Moreover, all programs have restricted the choice of subprojects to those that are specifically natural resource management related. Admittedly, some programs have used entry-point activities not related to NRM but, instead, addressing a priority concern of the majority of resource appropriators (for example, productive infrastructure such as a road, or drinking water). Nevertheless, usually, only one non-NRM entry point is allowed; all subsequent subprojects must address resource management issues.

Therefore, the demand orientation of a community-based NRM program cannot be ensured through providing a wide choice of subproject options to clients. Instead, it needs to rely upon awareness raising amongst appropriators and local government about environmental degradation and how it can be addressed while also providing individual productive benefits. It also needs to based upon effective participatory planning processes to stimulate demand. As mentioned in section 0, page 42, a phased approach to implementation using nodes, can contribute to creating effective demand; resource appropriators will then be able to approach the implementing agencies and demand participation in the program.

9.

CONCLUSION

The principle challenge in designing and scaling-up community-based NRM programs is the requirement for strengthening local organizational capacity. A recurring theme throughout this paper is that the supply of local institutions for collective action can be greatly facilitated by the adoption of decentralization policies and programs. However, institutions for collective management of natural resources will not automatically evolve through enactment of policies that decentralize resources and authority to local government and enable resource appropriators to design their own institutional rules. The joint products provided by NRM programs will inevitably necessitate the involvement of external implementing agencies for awareness raising, catalyzing group formation, soliciting commitment from all appropriators, and identifying subproject interventions through participatory micro-level planning.

Program strategies used by agencies will need to include incentives for group formation and strengthening, and also private incentives for adoption of new technologies. Tried and tested pathways to scaling-up programs are, unfortunately, still relatively ambiguous. It is known, however, that de-concentrated catalytic agencies working in nodal areas and using effective communications campaigns are an efficacious launch pad for scaling-up. Donors and governments must recognize that NRM programs cannot be viewed as isolated endeavors; systemic and enduring change is required in the structure of government agencies and the manner in which they conduct business. This will require a reform of public agencies to make them more client responsive and effective.

A final important point to note is that, given the immense contextual variables affecting program success, piloting programs on a small scale before attempting scaling-up is essential. The pilot can be used to fine-tune program strategies, incentives, and also to build the capacities of implementing agencies. Moreover, programs need to be adaptive and constantly learning from experiences. Therefore, starting implementation without a monitoring and evaluation system in place is inane and a waste of scarce resources. Monitoring of participatory processes and effectiveness of local institutions must be given much greater priority than previously.

10.

ANNEX 1

11.

REFERENCES

Barbier, E. B., and J. T. Bishop. 1995. "Economic Values and Incentives Affecting Soil and Water Conservation in Developing Countries". *Journal of Soil and water Conservation*, March-April, pp. 133-137.

Bates, R.H. 1988. "Contra Contractualism: Some Reflections on the New Institutionalism". *Politics and Society*, vol. 16, pp. 387-401.

Binswanger, H. P., and K. Deininger. 1997. *Explaining Agricultural and Agrarian Policies in Developing Countries.* Policy Research Working Paper No. 1765. Washington, D.C.: World Bank.

Binswanger, H.P. 1983. "Agricultural Growth and Rural Nonfarm Activities". *Finance and Development*, June 1983, pp. 38-40.

Binswanger, H.P. 1991. "Brazilian Policies that Encourage Deforestation in the Amazon". *World Development*, Vol. 19, No. 7, pp. 821-829.

Binswanger, H.P. 1996. "Patterns of Rural Development: painful Lessons"., in van Zyl, J., J. Kirsten, and H. P. Binswanger., *Agricultural Land Reform in South Africa : Policies, Markets and Mechanisms.* Cape Town: Oxford University Press.

Binswanger, H.P., Deininger, K., and Feder, G. 1993. *Power, Distortions, Revolt and Reform in Agricultural Land Relations.*, Policy Research Working paper No. 1163, Washington, D.C.: World Bank.

Boserup, E. 1965. *Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure*. New York: Aldine Publishing Co.

Bromley, D.W., and M.M. Cernea. 1989. *The Management of Common Property Natural Resources: Some Conceptual and Operational Fallacies*. World Bank Discussion Papers No. 57. Washington, D.C.

Bruce, J.W., and S.E. Migot-Adholla (eds.). 1994. *Searching for land Tenure Security in Africa*. Dubuque, Iowa: Kendall/Hunt Publishing Company.

Chambers, R. 1989. "Editorial Introduction: Vulnerability, Coping, and Policy". *IDS Bulletin*, vol. 20, no. 2, pp.1-7.

Cleaver, K.M., and W.G. Donovan. 1995. *Agriculture, Poverty, and Policy Reform in Sub-Saharan Africa*. World Bank Discussion Papers, Africa Technical Department Series No. 280. Washington, D.C.

Cornes, R., and T. Sandler. 1986. *The Theory of Externalities, Public Goods, and Club Goods*. Cambridge, MA: Cambridge University Press.

Current, D., E. Lutz, and S. J. Scherr. 1995. “The Costs and Benefits of Agroforestry to Farmers”. *The World Bank Research Observer*, vol. 10, no. 2 (August), pp. 151-80.

Datta, S.K., and K.J. Virgo. 1997. “Towards Sustainable Watershed Development Through People’s Participation: Lessons from the Lesser Himalaya of Uttar Pradesh, India”. Mimeograph available from K. Virgo, Ws Atkins, Cambridge. CB3 0NA, UK.

Edwards M., and D. Hulme (eds.). 1992. *Making a Difference : NGOs and Development in a Changing World*. London: Earthscan Publications.

Esmail, T. 1994. *Reaching the Poor? The Identification and Assessment of Rural Poverty by a Non-Governmental Organization in Gujarat, India*. Ph.D Thesis: University of London.

Esmail, T., and K. McLean. 1997 (forthcoming). “Promoting Effective Institutions for Decentralized Rural Development: the Case of Demand-Driven Rural Investment Fund in Northeast Brazil”. Draft report prepared for the *Decentralization, Fiscal Systems and Rural Development Research Program of the Rural Development Department*. World Bank, Washington, D.C.

Esmail, T., and S. Piriou-Sall. 1997. “Decentralization and the Promotion of Productive projects: Case Studies of Community-Based Natural Resource Management and Income-generating Projects in Oaxaca and Hidalgo, Mexico.” Draft report prepared for the *Decentralization, Fiscal Systems and Rural Development Research Program of the Rural Development Department*. World Bank, Washington, D.C.

European Commission. 1995. “Community management of Natural Resources, Gujarat, India.” Joint Monitoring Mission 1995 in collaboration with Aga Khan Foundation, U.K.

Farrington, J., and C. Lobo. 1997. “Scaling Up Participatory Watershed Development in India: Lessons from the Indo-German Watershed Development Programme.” *Natural Resources Perspectives*, No. 17, February. London: Overseas Development Institute.

Farrington, J., and G. Thiele. 1997 (forthcoming). “Innovative Approaches to Technology Generation and Dissemination for Low-Income Farmers”. in Lutz, E., Binswanger, H.P., and A. McCalla., *Agriculture, Development, and the Environment: Policy, Institutional, and Technical Perspectives*. Washington, D.C.: World Bank.

Feder, G., and A. Nishio. 1997. “The benefits of Land Registration and Titling: Economic and Social Perspectives.” Paper presented at the Rural Week, April 3, 1997. World Bank, Washington, D.C.

Friere, P. 1970. *Pedagogy of the Oppressed*. New York: Herder and Herder.

Fukuyama, F. 1995. “Social Capital and the Global Economy”. *Foreign Affairs*, Vol. 74, No. 5, pp. 89-103.

Garn, H. A. 1997. “Lessons from Large-Scale Rural Water and sanitation Projects: Transition and Innovation”. Draft report prepared for the *Decentralization, Fiscal Systems and Rural Development Research Program of the Rural Development Department*. World Bank, Washington, D.C.

Gopal, G., and A. Marc. 1994. *Study of Procurement and Disbursement Issues in Projects with Community Participation.* African Technical Department. Technical Note No. 17, World Bank. Washington, D.C.

Haggblade, S., and P. Hazell. 1989. “Agricultural Technology and Farm-Nonfarm Growth Linkages”. *Agricultural Economics*, Vol. 3, pp. 345-364.

Heath, J., and H. P. Binswanger. 1996. “Natural Resource Degradation Effects of Poverty and Population Growth and Largely Policy-Induced: the Case of Columbia”. *Environment and Development Economics*, Vol. 1, pp. 65-83.

Hobley, M., and K. Shah. 1996. “What Makes a Local Organization Robust? Evidence from India and Nepal”. *Natural Resources Perspectives*, No. 11, July. London: Overseas Development Institute.

Huther, J., and A. Shah. 1996. “A Simple measure of Good Governance and its Application to the Debate on the Appropriate level of Fiscal Decentralization”. Draft report prepared as part of the *Decentralization, Fiscal Systems and Rural Development Research Program of the Rural Development Department.* World Bank, Washington, D.C.

Jodha, N.S. 1992. *Common Property Resources: A Missing Dimension of Development Strategies*. World Bank Discussion Papers No. 169. Washington, D.C.

Khandker, S.R., Khalily, B., and Z. Khan. 1995. *Grameen Bank: Performance and Sustainability*. World Bank Discussion Paper No. 306. Washington, D.C.

Korten, F. F., and Siy, R. Y (eds.). 1989. *Transforming a Bureaucracy: the Experience of The Philippine National Irrigation Administration*. West Hartford, Conn.: Kumarian Press.

Krueger, A., M. Schiff, and A. Valdes. 1991. *Political Economy of Agricultural Pricing Policy*. Baltimore: Johns Hopkins University Press.

Lipton, M. 1977. *Why Poor People Stay Poor: A Study of Urban Bias in World Development.* Cambridge: Harvard University Press.

Lobo, C., and G. Kochendorfer-Lucius. 1995. *The Rain Decided to help Us: Participatory Watershed Management in the State of Maharashtra, India.* EDI Learning Resources Series. World Bank, Washington, D.C.

Lutz, E., and J. Caldecott. 1996. *Decentralization and Biodiversity Conservation*. A World Bank Symposium. Washington, D.C.

Lutz, E., S. Pagiola, and C. Reiche (eds.). 1994. *Economic and Institutional Analyses of Soil Conservation Projects in Central America and the Caribbean*. World Bank Environment Paper No. 8. Washington, D.C.

Manning, N. 1997. "Public Sector reform: Practical Implications from Recent Experience". Presentation slides for a seminar, March 27, 1997, World Bank, Washington, D.C.

Manor, J. 1997. "The Political Economy of Decentralization". Draft report prepared for the *Decentralization, Fiscal Systems and Rural Development Research Program of the Rural Development Department*. World Bank, Washington, D.C.

McCracken, J., and D. Narayan. 1997. "Participatory Rural Appraisal Module III." in McCracken, J., and D. Narayan (compilers), *Participatory Tools and Techniques: A Resource Kit for Participation and Social Assessment*. Social Policy Division, Environment Department. Washington, D.C.: World Bank.

Narayan, D. 1995. *The Contribution of People's Participation: Evidence from 121 Rural Water Supply Projects*. Environmentally Sustainable Development Occasional Paper Series No. 1. World Bank, Washington D.C.

Narayan, D. 1997 (forthcoming). "Participatory Rural Development" in Lutz, E., Binswanger, H.P., and A. McCalla., *Agriculture, Development, and the Environment: Policy, Institutional, and Technical Perspectives*. Washington, D.C.: World Bank.

Narayan, D., and K. Ebbe. 1997. *Design of Social Funds: Participation, Demand Orientation, and Local Organizational Capacity*. World Bank Discussion Paper No. 375. Washington, D.C.

Narayan, D., and L. Pritchett. 1997. *Cents and Sociability: Household Income and Social Capital in Rural Tanzania*. Policy Research Working Paper No. 1796. World bank, Washington, D.C.

Oates, W.E. 1972. *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.

Olson, M. 1965. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, U.K.: Cambridge University Press

Ostrom, E. 1995. "Incentives, Rules of the Game, and Development." in Bruno, M., and B. Pleskovic (eds.), *Annual World Bank Conference on Development Economics 1995*. Washington, D.C.: The World Bank.

Ostrom, E., and R. Gardner. 1993. "Coping with Asymmetries in the Commons: Self-Governing Irrigation Systems Can Work". *Journal of Economic Perspectives*, vol. 7, no. 4, pp. 93-112.

Parker, A.N. 1995. *Decentralization: The Way Forward for Rural Development?*. Policy Research Working Paper No. 1475. World Bank, Washington, D.C.

Preety, J.N. 1995. *Regenerating Agriculture: Policies and Practice for Sustainability and Self-Reliance*. London, U.K.: Earthscan.

Putnum, R.D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, New Jersey.: Princeton University Press

Richards, M. 1997. Tragedy of the Commons for Community-Based Forest Management in Latin America. *Natural Resource Perspectives*, No. 22, September. London: Overseas Development Institute.

Romeo, L. 1996. *Local Development Funds: promoting Decentralized Planning and Financing of Rural Development*. Policy Series Working Paper. New York: United Nations Capital Development Fund.

Rondinelli, D. 1981. "Government Decentralization in Comparative Perspective: Theory and Practice in Developing Countries"., *International Review of Administrative Science*, Vol. 47.

Seabright, P. 1993. "Managing Local Commons: Theoretical Issues in Incentive Design". *Journal of Economic Perspectives*, vol. 7, no. 4, pp. 113-134.

Shah, A. 1994. *The Reform of Intergovernmental Fiscal Relations in Developing and Emerging Market Economies*. Policy and Research Series No. 23. World Bank. Washington, D.C.

Shah, F., D. Zilberman, and U. Chakravorty. 1993. "Water Rights Doctrines and Technology Adoption"., in Hoff, K., A. Braverman, and J. E. Stiglitz (eds.), *The Economics of Rural Organization: Theory, Practice, and Policy*. Washington, D.C.: World Bank.

Thobani, M. 1997. "Formal Water Markets: Why, When, and How to Introduce Tradable Water Rights." *The World Bank Research Observer*, vol. 12, no. 2 (August), pp. 161-79.

Uphoff, N. (ed.). 1994. *Puzzles of Productivity in Public Organizations*. San Francisco, CA: Institute for Contemporary Studies Press

Uphoff, N. 1986. *Local Institutional Development: An Analytical Sourcebook with Cases*. West Hartford, Conn.: Kumarian Press.

Uphoff, N. 1992. "Local Institutions and Participation for Sustainable Development" *Gatekeeper Series* No. 31. London: International Institute for Environment and Development.

Uphoff, N. 1997. "Local Organizational Capacity? What Is It? How To Measure It?" in *Indicators and Methods to Measure Participation, Demand Orientation, and local Organizational Capacity in Community Driven Projects*. Proceedings of a workshop sponsored by Social and resettlement Division, Environment Department, The World Bank, Washington, D.C.

Wiens, T., and M. Guadagni. 1997. "Designing Rules for Demand-Driven Rural Investment Funds: The Latin American Experience". Draft report prepared as part of the *Decentralization,*

Fiscal Systems and Rural Development Research Program of the Rural Development Department. World Bank, Washington, D.C.

World Bank. 1987. *The Aga Khan Rural Support Program in Pakistan: An Interim Evaluation*. Operations Evaluation Department. World Bank, Washington, D.C.

World Bank. 1990. *The Aga Khan Rural Support Program in Pakistan: A Second Interim Evaluation*. Operations Evaluation Department. World Bank, Washington, D.C.

World Bank. 1994. *The World Bank and Participation*. Operations Policy Department, World Bank, Washington, D.C.

World Bank. 1995. *The Broad Sector Approach to Investment Lending: Sector Investment Programs*. World Bank Discussion Papers No. 302: Washington, D.C.

World Bank. 1997. *The Aga Khan Rural Support Program in Pakistan: A Third Evaluation.* Operations Evaluation Department. World Bank, Washington, D.C.

World Bank. 1997a. "Portfolio Improvement Program: Natural Resource Management Portfolio Review." *Environment Department*, Washington, D.C.

World Bank. 1997b. *Northeast Rural Poverty Alleviation Program: Rural Poverty Alleviation Project - Maranhao.* Staff Appraisal Report. World Bank, Washington, D.C.

World Bank. 1997c. "Portfolio Improvement Program: Review of the Social Funds Portfolio". Working Group for the Social Funds Portfolio Review, World Bank, Washington, D.C.