ACKNOWLEDGEMENTS

These proceedings summarize the discussions at a 5-day workshop held in Puerto Azul, Cavite, The Philippines. The workshop brought together a group of more than 50 government policymakers, staff from NGOs, leaders of resource user federations, and researchers from 18 countries. All have contributed their experiences, ideas, and energy to the overall workshop. It is this creative interaction that we have attempted to record in this volume.

The workshop was co-sponsored by the Food and Agriculture Development Centre (ZEL) of the German Foundation for International Development (DSE) and by the CGIAR System-wide Program for Collective Action and Property Rights (CAPRi), with funding from the German Federal Ministry for Economic Cooperation and Development (BMZ), the Governments of Norway, Italy, and the Ford Foundation. The International Centre for Living Aquatic Resource Management (ICLARM) hosted the workshop. More information about all three organizations is given on the inside cover of this volume.

Although many individuals worked very hard to make the workshop a success, several deserve special mention. From DSE, Jürgen Richter has seen this through from conceptualization to finalizing the publication. Carl Kohlbach headed the DSE team at the workshop. The facilitators Georg Bokeloh, Maria Gerster-Mentaya, Gundula Kreis, and Anna Schmidjell helped the working groups to elicit participants' ideas most effectively, while Gitta Heier provided valuable secretariat support. At IFPRI, Audrey Abernathy handled the invitations and responses from participants, and has formatted the papers in this volume.

As hosting organization, ICLARM put together a superb team that carried out all the details, from planning the topics and field trips to arranging the venue, travel, local transport, finances, and overall secretariat support. We wish to give special thanks to Mahfuz Ahmed, Bob Pomeroy, Brenda Katon, Emmanuel Genio, Chingkel Trinidad-Juan, Kuperan Viswanathan, Albert Salamanca, S. P. Sadiua, Maricel Magtalas, Lou Arenas, as well as Kata Abella of Thomas Cook. They brought together ICLARM's research on fisheries co-management in many countries, the first-hand experiences of devolution in many sectors in the Philippines, and efficient arrangements that let participants both learn and enjoy the setting.

As the workshop's able chairman, Percy Sajise used his wit and excellent summations to keep the discussions on track. Emmanuel Genio, Brenda Katon, Albert Salamanca and Thomas Panella assisted in rapporteuring by documenting the working groups discussions. The Program Committee for planning the workshop's papers and structure drew on the ideas of Robert Pomeroy, Pauline Peters, Chimere

Diaw, Mohammed Jabbar, Narpat Jodha, Michael Kirk, Tidiane Ngaido, and Douglas Vermillion of the CAPRi program. Numerous others also helped provide referrals to policymakers and other potential participants. Although not all were able to come, we hope that this volume will provide a basis for further discussions between researchers, policymakers, practitioners, and resource user groups.

Ruth Meinzen-Dick
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PART I. WORKSHOP SUMMARY

Anna Knox and Ruth Meinzen-Dick

INTRODUCTION

Many governments are adopting policies to devolve responsibility for natural resource management to local bodies. Devolution is fuelled by privatization trends, growing fiscal constraints at the state level, and a search for more sustainable resource management. Programs such as Joint Forest Management, Irrigation Management Transfer, or Fisheries Co-Management are all examples of this trend. Successful devolution, however, requires that effective institutions be in place at the local level and that the policy environment be supportive of local management. The particular make-up of these institutions and policies varies across resources and regions, although there are many common elements and lessons to be learned which cut across experience in devolving management of forests, rangelands, aquatic resources, and irrigation, in Africa, Asia, and Latin America.

Although the theoretical advantages of user management have been convincing and the impetus for devolution policies strong, the actual outcomes of devolution programs in various sectors and countries have been mixed. The stated objectives of such programs in terms of positive impact on resource productivity, equity among stakeholders, poverty alleviation, and organizational and environmental sustainability are often not met. Experience has shown that the emergence of strong local management cannot be automatically assumed.

Key questions that have emerged in the process of expanding local authority over natural resources range from property rights and arrangements for collective action and resource use, to supportive institutional and policy frameworks. Among these are:

- How do different property rights and collective action arrangements affect devolution?
- Do these arrangements lead to more equitable, sustainable, and productive use of natural resources?
- What institutional and policy frameworks contribute to a more enabling environment for devolution to be successful?

This report summarizes the discussions and conclusions that were reached during the Workshop on Property Rights, Collective Action and Devolution of

Natural Resource Management, convened June 21-25, 1999 in Puerto Azul, The Philippines. The workshop was sponsored by the System-wide Program on Collective Action and Property Rights (CAPRi) and the German Foundation for International Development (DSE). The International Center for Living Aquatic Resources (ICLARM) hosted the workshop and provided key support in bringing the event to fruition.

CAPRi proposed the workshop as a means to take stock of the various bodies of research surrounding one of the program's priority themes, 'structuring devolution' and draw together cross cutting lessons across what has primarily been sector-oriented approach to devolution issues. One of CAPRi's primary goals is to foster increased collaboration between policy makers, researchers and development practitioners. By co-sponsoring a workshop on devolving rights to natural resources to local communities, CAPRi sought to share and learn from the experiences of different resource sectors and regions, and fuel productive partnerships among different actors in the devolution process that will pave the way for successful implementation.

DSE is particularly supportive of workshops and trainings that ultimately contribute to improving the food security of the poorest one-fifth of the world's population who lack sufficient food to develop their full potential. Hence, this workshop, which sought innovative ways to address the livelihood needs of the poorest, fit in well with their priorities and made them an ideal partner in sponsoring the program.

ICLARM was asked to host the workshop for a number of reasons. The Center has undertaken substantial research on the interactions of property rights and collective action with fisheries and aquatic resources. Such studies have involved analysis of devolution and co-management arrangement. The decision to hold the workshop in the Philippines not only related to ICLARM's presence in the country, but particularly because the country has been a pioneer in promoting local management of natural resources through processes of devolution, decentralization and co-management. In addition to fisheries and coastal management, their efforts have also encompassed the forestry and irrigation sectors. Hosting the workshop in the Philippines provided participants a first hand look at the practical experience of implementing devolution processes and an opportunity to engage with the people leading these initiatives.

The workshop brought together policymakers, researchers and development practitioners with expertise in aquatic resources, rangelands, irrigation and forests. Participants also came from countries in Africa, Latin America and Asia (see Participants' List, Annex 2 at the end of this volume). Despite the diversity of sectors and countries represented, all are engaged in various degrees of devolution of

resource management. This mix proved successful in fostering a rich cross-fertilization of perspectives, experience and knowledge.

The overall goal of the international workshop was to contribute to more appropriate and successful devolution policies and programs by drawing on the insights of policymakers and researchers to identify the conditions for successful devolution, especially the role of property rights and collective action. In particular, workshop participants sought to identify:

1. factors that facilitate collective action for resource management by communities.
2. critical issues and problems that have emerged as devolution policies have been implemented, especially the role of property rights.
3. priorities for further research, based on information needs of policymakers.
4. policy recommendations that will facilitate effective, sustainable, and equitable devolution of natural resource management.

This summary of the workshop discussions begins by addressing the language of devolution in an effort to clarify concepts and terminology that enable a more productive discussion of the issues. This is followed by some of the key arguments made by the workshop participants for devolving rights to resources to local users. Policies and factors that have the potential to strengthen or constrain devolution are addressed at a broad level before looking specifically at how property rights and collective action institutions can shape devolution outcomes. Whereas some factors cut across resource sectors and regions, others are more specific to their contexts. In all cases, proponents of devolution of rights to resource users struggle to understand better what elements facilitate collective action and what factors hinder its creation and sustainability. Finally, a set of recommended frameworks formulated by the workshop participants highlight the potential for fostering a devolution process that leads to the simultaneous improvement of natural resource management and the livelihoods of the poor.

CONCEPTS AND TERMINOLOGY

A lot of complex terminology and meanings surround the subject of devolution of rights and authority. Whereas some use words like 'devolution' and 'decentralization' interchangeably, others prescribe distinct meanings to these two words. It is therefore useful to begin with a brief introduction to the language and definitions that were adopted during this workshop, as well as clarify the specific themes that this forum sought to address.

'Devolution' was used to indicate the transfer of responsibility and authority over natural resources from the state to non-governmental bodies, *particularly user groups*. 'Decentralization' on the other hand referred to authority and management

transfers to *lower levels of government* (e.g. the Philippines' Local Government Code of 1991 or India's Panchayati Raj). Another term which sometimes is confused with devolution and decentralization, but was not treated in this workshop is 'deconcentration'. This describes the reallocation of administrative duties from ministry or department headquarters to branch offices of the central government. In this case, there is no transfer of power and authority from the national level. By contrast, 'co-management' involves the sharing of power and responsibilities among multiple stakeholders, and most often includes government and local resource users.

The workshop dealt chiefly with issues pertaining to devolving authority and rights to community and resource user groups. However, issues of decentralization and co-management were also treated, particularly since resource characteristics and political circumstances often warrant such alternative models of authority transfer.

Property rights and collective action lie at the heart of the devolution process because of the legal and organizational implications of transferring authority over natural resources. However, the workshop highlighted differences in the ways these terms are used by social science researchers and by policymakers.

For many policymakers and lay audiences alike, property rights refers to ownership, and is usually thought of as private or state ownership. Researchers often use a broader definition. For example, Bromley defines a 'property right' as "*the capacity to call upon the collective to stand behind one's claim to a benefit stream*" (1991:15, emphasis in the original). Therefore, a right is not a physical entity, but rather an assurance of being able to derive benefits due to the legitimacy accorded by one's smaller or larger society. Implications of these differences are discussed in the papers by Meinzen-Dick and Knox, and Agrawal and Ostrom in this volume. Although the differences in concepts surfaced in several of the discussion groups, the workshop generally adopted the broader concepts of property rights.

Similarly for collective action, what often comes to mind for policymakers are formal organizations. For researchers, however, collective action includes many forms of "action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests (Marshall 1998)." It embraces levels of cooperation ranging from a one-time, informal act to that which is undertaken on a continuous basis by formal organizations that adopt shared rules.

Definitions of these and other terms used in the workshop and in this book are contained in a glossary that was distributed at the workshop (Annex 1 at the end of this volume). This glossary draws extensively from definitions provided by the social science literature.

DEVOLUTION: OPPORTUNITIES AND CONSTRAINTS

OPPORTUNITIES

Over last several years, there has been mounting support for development polices and projects that aim to transfer rights and responsibilities from central governments to more localized bodies, whether local government units, civil society organizations, or informally organized community groups. Both internal and external pressures have yielded a shift away from a more paternalistic view of centralized administrations as the primary authority on what is best for all levels of society. With respect to natural resource management, the last decade has brought increased international attention to environmental issues, fueled by high profile global conferences and international conventions advocating practices that will lead to a cleaner environment and combat resource degradation. Other pressure has been exerted from local communities and non-governmental organizations (NGOs) demanding greater political democracy, including people's rights to manage and reap benefits from the resources they depend on. Examples of this are the devolution policies that were spurred by civil strife in the Philippines and, to some extent, in Indonesia.

In other cases, the impetus for devolving rights and responsibilities is less philosophical, but rather motivated by fiscal constraints. This is particularly true for countries undertaking structural adjustment programs that mandate drastic cuts in government spending. Unable to effectively shoulder the demands of administering and enforcing the rights and responsibilities of the state, governments are looking to pass the responsibilities on to others. Fiscal crisis motivated much of the Philippine government's earlier efforts to invoke decentralization policies, although influences also emerged from the ranks of civil society.

In many instances, a dichotomy exists between rights that are upheld by statutory legislation and those that are actually in practice. While sometimes this contradiction is allowed to persist due to lack of legislative enforcement capacity or tacit sanctioning by a government that does not wish to invoke conflict, the potential always exists for disputes to erupt between competing bases of authority. Because of governments' dominant position of authority, tenure insecurity faces those whose claims are not upheld by the government. Devolving rights to resource users is therefore capable of bridging the gap between customary and statutory rights, heightening tenure security, and harmonizing relations between governments and local resource users.

CONSTRAINTS

As much as there are forces in favor of devolution, there are at least as many counter forces and obstacles that impede its application, which likely account for the fact that its practice is not more widespread. Perhaps most apparent is the lack of political will for governments to hand over power to either local government units or communities. Restructuring and downsizing the role of government agencies implies job losses both for agency employees and contracted personnel. Although agencies may undertake new roles and functions, the reorientation process is likely to be costly and necessitate a different skill mix. Particularly if states are facing fiscal cutbacks, devolution policies may bring about a vacuum in administrative and support functions by neglecting to allocate sufficient investment in developing capacities that respond to new needs.

However, lack of volition may not simply stem from bureaucratic self-interest. Without a track record of local people's capacity to manage resources, states are being asked to take a leap of faith in entrusting a fundamental source of national wealth to those whose management capacity has not been well-tested or documented. This reluctance may be exacerbated if superficial evidence links local communities to natural resource degradation. Closer examination may show that it is not so much a capacity issue, but rather that weak or absent rights have adversely shaped management incentives. Furthermore, governments (as well as other influential interests) may place higher priority on resource conservation than improving the welfare of the poor, and fail to appreciate the potential for mutual progress on both fronts through devolution. But regardless of how they rank different priorities on the political agenda, states do have a responsibility and are held accountable to the welfare of their people and that of their natural resources. Committed policymakers cannot be expected to take unnecessary risks that jeopardize the broader interests of the nation.

Several constraints to effective devolution can also emerge from the local level, many of which relate to property rights and collective action. Weak tenure security dampens user incentives to protect natural resources and invest in sustainable management technologies since they cannot be assured of garnering the benefits. Property rights that extend this assurance and are backed and enforced by legitimate authorities have the potential to favorably alter NRM behavior. Policies that assign responsibilities to local people to manage resources without transferring the associated rights stand to yield few, if any, improvements and are likely to result in feelings of frustration or apathy on the part of local populations. It should be stressed that secure tenure is not confined to titled private property (which can even weaken tenure security for some), but instead can include many bundles of rights

that provide people the necessary assurances in the context of their local environment (for examples, see Agrawal and Ostrom's paper in this volume). Tenure security can be derived from common property as well as private property.

Spatially extensive resources (e.g. rangelands, forests, fisheries, irrigation works) are often better managed by groups as compared to individuals or households, particularly when there are disadvantages to parceling a resource and input requirements are significant. Lack of institutions for collective action can stifle or retard the prospects for devolving authority to these landscape-level resources or technologies. If communities have not developed management rules or do not have experience in cooperating to manage large scale resources, the prospects for generating these processes are less promising than if such institutions are already in place or there is a recent history of collective action. Likewise, insufficient technical knowledge of ecological dynamics and resource husbandry may also hinder local management, although there is ample evidence that most communities possess a high degree of indigenous knowledge and skills in dealing with their local resources. When it comes to technologies like irrigation that require substantial investments, communities may be reluctant to undertake the necessary operations and management burdens, or the costs of rehabilitating structures previously neglected by the government agencies. The issue may be one of technical or financial or labor capacity. It may also stem from an ingrained expectation that resource management is the responsibility of the government and lack of confidence that rights and other benefits will accompany transfers of responsibilities.

PROPERTY RIGHTS, COLLECTIVE ACTION AND CO-MANAGEMENT

Throughout the agricultural research community and among policymakers whose countries rely fundamentally on agriculture, it is becoming increasingly apparent that technology improvement by itself is not sufficient to combat the pervasive poverty that afflicts the rural areas of many developing countries. And although structural adjustment policies have been prescribed in the hopes of freeing up prices and attracting new markets for developing country goods, widespread market failures have prompted highly uneven patterns of development and often discriminate against the poorest, especially those who live in biophysically and socio-economically less-favored areas. Failures of the market have often been addressed by creating larger roles for governments. However, shortcomings in many states' administrative capacity have both fostered local institutions that serve as substitutes and coping mechanisms (e.g. strategies that replace traditional insurance and credit facilities) and carved out opportunities for creative solutions that are administered more effectively and democratically at the local level. A sharp understanding of the existing ability and potentials of local institutions to address

poverty, as well as the impact of policies and political-economic systems are critical to identifying and developing opportunities to alleviate poverty, such as that which can be achieved by devolving rights to resources to those whose livelihoods directly depend on them.

Compared to industrialized nations, developing country governments have moderate to severe capacity constraints when it comes to administering governance. Much of these stem from shortages of financial resources which place restrictions on getting the quantity and quality of personnel needed, building essential soft and hard infrastructure, and developing systems to ensure administrative efficiency. Political factors that shape how funds are allocated and the presence of corruption can also hinder effective governance.

When it comes to governing forests, rangelands, watersheds, fisheries and irrigation technologies, local people and their institutions frequently have a distinct advantage over distant centralized management by the state. Their knowledge of the environment and resource characteristics is typically superior since they constantly interact with these resources and rely on them for survival. They therefore have a strong stake in continued resource availability and are in a better position to understand the ways to sustain resource production in a manner that is responsive to dynamic livelihood needs and environmental conditions. Furthermore, local people are already in place to undertake sustainable onsite management, monitor resource use and enforce rules designed to protect resources—provided there are incentives for them to do so. Consequently, local management has the potential to be cheaper and more efficient than management by distant government administrators.

Property rights and collective action institutions are fundamentally related to how natural resources are managed locally and the efficiency, environmental, and poverty outcomes that emerge from management practices. Property rights specify the different types of claims people have to resources by specifying what one can and cannot do and what benefits one is entitled to. They determine long-term incentives to invest in, sustain, and improve resources. Depending on their distribution, property rights shape patterns of equality and inequality with respect to resource access. And depending on who participates, collective action by multiple resource users may enable a more equitable distribution of resource benefits.

Although the large spatial scale of many natural resources and their accompanying technologies may call for group management on efficiency grounds, collective action also requires voluntary adherence to a common set of rules and coordinated contributions by its participants. The success of collective action will therefore depend on the whether the conditions are present to evoke and sustain it.

PROPERTY RIGHTS

For an effective devolution process to emerge, consideration will need to be given to what type of property rights create incentives for people to manage resources sustainably and productively, while at the same time ensuring access to those whose livelihoods depend on them. Managed common property institutions are often appropriate for landscape level resources and involve different combinations of property rights and collective action institutions depending on ecological and socioeconomic conditions. Because they restrict access to a limited group of users, managed common property arrangements better assure that the benefits of investments in resources are confined to the investors. This is particularly important when resources are scarce in relation to the population that relies on them. By contrast, unmanaged common property (or 'open access') unleashes incentives for users to capture maximum private benefits with minimum investment simply because there is no mapping of the two. Assuming neither the group nor the area covered by the resource units are too large, common property arrangements also allow members to monitor use among the group, thereby dissuading them from taking more or investing less than their agreed share. At the same time, to be effective, common property regimes must be able to exclude outsiders. Where economically or politically powerful outsiders attempt to use the resource, local user groups may need backing from local and/or central government to protect their rights, or penalize outsiders caught breaking the rules. On both the fisheries and forestry field trips, local managers identified this as a critical issue (see Workshop Field Visits in Part II of this volume).

Property rights to resources that are held in common also tend to accommodate many different users (e.g. women, men, pastoralists, agriculturalists, fishers, hunters, etc.), who exercise a variety of resource uses (e.g. animal grazing, irrigation, firewood, collecting tree products, preserving mangroves that augment fish production, etc.). Access and use rights may be simultaneous among different types of uses and users, or in cases where they conflict or the uses fail to coincide, they might be structured to overlap. This is possible even with private property that provides for secondary use rights. For example, many areas of sub-Saharan Africa have crop-livestock arrangements whereby livestock graze the residues on fallow cropland and deposit organic material that enriches soil for the next growing season. In other contexts, men hold primary use rights to agricultural land, but are obligated to provide wives and daughters secondary use rights to cultivate their own crops.

Although common property and overlapping private property arrangements do not guarantee equity and have been known to exclude those with less power and voice, the outcome of these systems is often greater equality that would be achieved under traditional private property regimes. Devolution efforts will therefore do well

to consider the equity and social security values of these arrangements, particularly in environments where viable market alternatives are limited or non-existent. Care should also be taken to examine the inequities in these arrangements and search for means to empower the less enfranchised and foster their inclusion.

The extent to which local people currently exercise rights to natural resources and the history of their control vary tremendously across regions, resources, and social groups. In some cases, local people have occupied an area for a long time and either currently or historically held extensive rights to the surrounding natural resources. This has not only been possible for sedentary populations, but also nomadic herders whose cyclical grazing patterns enable them to make claims to established resource clusters. Over the past two centuries, however, the formation of nations and centralized governments in Africa, Asia and Latin America have led states to impose controls over natural resources in the interest of preserving these stocks of wealth. Yet, where these controls have provided for exclusive state ownership and severely restricted use by local residents, the implications have been mostly expensive, ineffective, and contributed to resource degradation.

Both the history of people's rights to resources and the length of their occupation in an area fundamentally determine the nature of a devolution process. Are rights really being *devolved* from the state to local people, or is it that the state is *restituting* rights to users who have a recently history of resource ownership? Is this a case where the state profoundly intervened in taking rights away from people and restricting their use or one where the state's weak enforcement capacity translated to local users retaining *de facto* rights in spite of the laws on the books? If it is a case of restitution, institutions for local resource management may already be in place, or they may only need to be revived or modified to better meet equity and poverty alleviation goals.

In situations where local residents have little or no recent history in managing resources and creating and sustaining the necessary institutions to support their management, much more work will be needed to fill knowledge gaps, negotiate property rights and other management rules, and generate and sustain a process of collective action. This applies, for example, in some large-scale irrigation systems where the state has built the systems and delivered water to farmers.

COLLECTIVE ACTION

A number of other factors influence whether collective action will emerge and how resilient it is. Resource scarcity may evoke an inverse-U relationship: when the resource is abundant, there is little need for collective management. The need grows as resources become scarcer. But when resources are very scarce, intense

competition among users may overwhelm incentives to cooperate. Growing integration of rural communities with markets can have mixed effects. As the resource increases in value because of links to markets, this may lead to greater incentives to protect those resources to assure a continued stream of benefits, or it may create incentives to degrade them faster. Much will depend on the degree of tenure security offered by the prevailing property rights system. Markets can also provide people with alternative livelihood options (e.g. insurance) that enable them to forego collective action designed to meet these needs.

If people have experience with collective action in other spheres (e.g. advocacy and political organization, credit and savings groups), they are more likely to be successful in jointly managing natural resources. However, collective action for resource management is very often not a new phenomenon, although institutions and social capital arrangements may have been suppressed by state intervention. Reviving collective action to sustain devolution then requires rebuilding people's trust in government programs as well as integrating local values and norms in the process of reinstating institutions.

Collective decision-making mechanisms and the consequent distributional impacts of devolution are influenced by existing power distributions. Simply imposing majority rule does not ensure devolution is democratic since oftentimes those who lose out are those who can least afford to, namely the poor. Majority rule also tends to lead to alienation and mistrust by those whose interests are marginalized, thereby undermining the potential for collective action.

Other critical factors shaping collective action outcomes include the degree to which resources are central to people's livelihoods, group heterogeneity and wealth distribution, political rights to organize and manage resources locally, the level of investment needed to make resources productive, and the support of the state in facilitating collective action (projects that lack this backing are usually not sustainable).

In addition to these factors, many more such conditions for evoking and sustaining collective action have been put forth by various scholars. Several of these are outlined in the text box included in this chapter.

CO-MANAGEMENT

Devolution can take on various forms depending on their contexts. Resource characteristics, community cohesion, financial considerations, political dynamics and power distributions are major elements in determining the extent to which communities assume the lion's share of authority and responsibilities for resource

management versus engage in more even sharing arrangements with government agencies.

Governments that are reluctant to let go of a large degree of power or are dubious of local people's capacity to assume control over resource management may find a gradual process of rights transfer more palatable or reassuring. Under these circumstances, caution must be exercised to keep devolution of responsibilities proportional to rights, otherwise efforts may fail due to lack of incentives for local people to assume those duties. Systems need to be put in place to monitor community track records in managing resources or to monitor institutional restructuring of government agencies—as well as indicators that signal when to undertake the next level of rights transfer.

Other advantages of co-management are related to resource scale, coordination capacity and power. The large scale and transboundary nature of resources like river basins, rangelands and oceans limits the extent to which small user groups can manage them effectively as a single unit. Whereas local management of subsets of these resources may be quite effective, coordination of more macro management needs may be more effectively carried out by the state. When many stakeholders are involved, governments are better positioned to identify and coordinate various stakeholders in a negotiating forum. They wield significantly greater power in negotiations with international governments and commercial interests compared to community groups or even federations. Enforcement is a key area where governments can often be more effective than local communities due to their scale and power advantages or simply because people face social ramifications if they have to sanction their own community members. However, the difficulty often lies in the capacity of resource users to galvanize the support of government authorities in enforcing laws they are assigned to uphold, often because doing so does not correspond to their political interests.

Co-management often involves devolving power, decision-making, rights and responsibilities to lower levels of government as well as resource users. It is more likely to be an effective capacity building tool for resource users when government functions are well decentralized and principles of subsidiarity are upheld. Subsidiarity involves assigning authority and responsibilities to the lowest level that is capable of managing and implementing them effectively. Proximity to resources and their users usually makes local government units more effective administrators and managers of resources than those closer to the center, while the former are also in a better position to train and be responsive to local users.

Co-management is effective when it is based on a democratic process that permits local communities to become involved in designing policies, legislation and codes, plus monitor resource use. Like devolution, part of its success relies on an

extended negotiation process among resource stakeholders, clearly defining roles and responsibilities, assigning procedures, and adopting conflict resolution mechanisms.

FACTORS THAT ARE PARTICULAR TO RESOURCE SECTORS AND REGIONS

Thus far, this summary of the workshop discussion has focused on property rights and collective action issues that generally cut across resources and regions and can therefore be considered when structuring devolution in multiple contexts. Nevertheless, structuring working groups according to the resource expertise enabled the workshop participants to come up with a number of factors that distinguished resource sectors from one another and therefore shed light on implications for what types of property rights and collective action institutions and policies would be most conducive to effective devolution.

In addition to differences in the resources themselves, the workshop also highlighted differences in the degree of attention that devolution has received from policymakers and researchers in that sector. The workshop built upon research on devolution in each sector that has been conducted by CGIAR centers and others, which is summarized in the plenary papers in this volume.

Box: *Theoretical factors commonly cited as conditions for collective action and local organization*

The likelihood and success of collective action and local organization tends to be greater when:

- Resources are relatively small in size and resource boundaries are more clearly defined (Ostrom 1990; Wade 1988; Bardhan 1993).
- There is the capacity to exclude others from use of the resource (Oakerson 1992; Nugent 1993)
- The number of resource users is fewer (Ostrom 1990; Tang 1992; Wade 1988)
- There is homogeneity of user norms and interests (Lawry 1990; Bardhan 1993; Tang 1992; Johnson and Libecap 1982). At the same time, other authors have pointed out that member diversity can be important in lowering risks (Williams, 1997) and for injecting the necessary leadership and legitimacy into local organizations (Baland and Platteau 1996; Ostrom 1997)
- Rules, arrangements, and/or governance structures exist for defining membership and access, establishing and monitoring resource use, raising

and negotiating resource problems, decision-making, and sanctioning those who violate rules (Ostrom 1990; Wade 1988; Nugent 1993; Oakerson 1992)

(Source: Rasmussen and Meinzen-Dick 1995 and Knox and Hazell 1999)

In general, the likelihood of success increases the greater the degree the features of the resource, the users and the governance structures they apply enable minimization of the assurance problem (the possibility of free-ridership) and the smaller the financial, transaction, and opportunity costs of organizing and excluding others from the resource. Other aspects shaping collective action outcomes concern the legitimacy accorded to collective action organizations, the value attributed to the resource, and power relations within the group (Knox and Hazell 1999).

Of these, irrigation has generated hundreds of studies addressing various forms of farmer irrigation management over the past two decades. A number of international conferences and an International Network on Participatory Irrigation Management have highlighted issues surrounding irrigation management transfer and made policymakers aware of them. Thus, the irrigation group was able to develop the most detailed set of recommendations for research and policy (see the appendix at the end of this chapter). By contrast, research of this nature on rangelands is still in progress, and there have been far fewer international policy conferences on their devolution. There was therefore much groundwork to be covered in understanding the complexities of the resource base and institutions, such that participants found the discussions fruitful for establishing common understanding.

RANGELANDS

Rangelands are typically characterized by their capacity to support livestock and herder populations. Unlike pastures, they are spatially extensive, often arid and unable to support intensive agriculture, and subject to a high degree of climatic variation and drought. Large areas of sub-Saharan Africa, West Asia and North Africa (WANA) constitute rangelands, including the Sahel, large parts of the African Horn, the majority of Botswana and Namibia, as well as significant portions of Syria, Morocco, Algeria, Jordan, Egypt, Tunisia, Iran, Iraq, Mongolia and Afghanistan. Some of the dry or mountainous regions of India, China, Pakistan and Nepal support significant pastoral populations.

Particularly in sub-Saharan Africa and WANA, weather patterns consisting of erratic and short heavy rains followed by extended dry periods contribute to a non-equilibrium ecosystem where resource production is dynamic and unpredictable, and

often yields low returns. For this reason, mobility is a central characteristic of many herder populations. It allows them to graze their animals and exploit rangeland resources on an opportunistic basis that is consistent with irregular resource availability. Because of the marginal nature of land and resources, pressures from commercial interests trying to claim rangeland resources is rare. More often, competition arises from agricultural and agro-pastoral populations, either when land pressures drive farmers to migrate to less arable areas or when droughts force pastoralists into more humid agricultural regions.

High degrees of environmental variation also make it difficult for scientists, development practitioners and herders to agree on indicators of degradation and rangeland sustainability. What appears to be considerable deterioration in the resource base at a given point in time may recover when climatic conditions improve. To understand what constitutes cyclical versus lasting degradation, one needs to have a firm understanding of the resilience of the resource base in a particular regions and how much pressure it can withstand. Since herders possess tremendous insight and experience on these matters, efforts to assess rangeland degradation would do well to involve them in the identification and measurement of indicators.

Not only are rangeland ecologies dynamic and varied, but so are socioeconomic, political and cultural values. Pastoralists in Africa tend to be members of large, tribal-based groups. Strong social networks steeped in behavioral norms and kinship obligations are the basis for much collective action behavior, including management of rangeland resources. Many tribes in Africa are inherently hierarchical with significant degrees of asset and power inequalities. In some cases, the leadership of elites will serve to bolster cooperation, particularly since elites often look after the more disenfranchised members of their tribe in times of stress, instilling a sense of reciprocal obligation in the latter. Negative judgments about the inequity of these institutions have to be weighed carefully against their social security provisions.

Yet, despite this potential, the large scale and lack of infrastructure in most African rangelands, coupled with the spatial mobility of herders, contribute to high organization costs. Moreover, weak political power at the national level places herders at a disadvantage when it comes to devolving rights to them. In many Sahelian countries, there is little legislation when it comes to rangeland management, whereas mobility (including cross-boundary migration) exacerbates their political marginalization. This contrasts with the situation in Mongolia where herders make up the political majority, such that national policies tend to reflect their interests.

FISHERIES

Aquatic resources, including fisheries share several characteristics with rangelands in that both resources often are characterized by their high variability, species mobility, and non-equilibrium environments. Coastal management and ocean fishing in particular have many transboundary implications. The dynamic nature of these two resources and the tendency for widespread overlapping claims underscores the need to develop procedures for devolving authority, rather than simply assigning rights.

Unlike rangelands, however, many small-scale aquatic resource users face considerable competition from commercial fishers equipped with superior technologies. In some cases, tourist activities also present threats to aquatic environments. Given the enforcement challenges to small fishers presented by these more powerful interests, as well as the transboundary considerations, devolution of coastal and ocean resources has generally leaned toward a co-management model. Governments are likely to have comparative advantages in international negotiations and in enforcing policies and laws that restrict the activities of large scale fishers, while quota systems and other use restrictions need to extend beyond the local or even national level to be effective. Nevertheless, the participation of user groups and federations of small-scale fishers in these dialogues is essential to ensure their interests are upheld.

IRRIGATION

Irrigation stands out as being a combination of both a natural resource (water) and a physical technology. Although the sector is one of the most advanced when it comes to negotiating the transfer of rights and management to local users, its devolution is still sensitive and controversial. Large-scale canal irrigation systems typically embody a substantial level of government financial and manpower investment in both construction, maintenance, and water supply. There may be fiscal benefits associated with devolving rights to irrigation management, but it is also likely to be accompanied by the retrenchment of numerous administrators, extension workers and irrigation agency staff or contractors.

Like fisheries, governments may have comparative advantages in certain aspects of large-scale irrigation management, namely construction of the larger infrastructure as well as coordination and maintenance of the headworks. Unlike most other sectors, devolution of local irrigation management has by and large involved organization by formal groups, known as Water User Associations (WUAs). This derives from the need for formalized rules and procedures when it comes to assigning water allocations, contracting service delivery, and paying fees.

Recognized associations may also have greater bargaining power when it comes to negotiating their interests compared to informal groups.

Many small-scale systems were built by groups of farmers and have remained under their authority unless taken over by the state (often in the context of external "assistance" projects to rehabilitate certain structures). Many of the early management transfers (e.g. of the communal irrigation systems in the Philippines) mostly involved restoring such systems to farmers' control. As in the case of rangelands, the critical question in these cases is whether the former management institutions are strong enough to take over again, or if they have been eroded enough that they need assistance of some form to take over the systems.

FORESTS AND TREES

Forests and trees supply poor people with a vast number of goods and services that vary with agroecological, social and economic conditions. Forests often accommodate an especially wide array of multiple uses and users who exercise overlapping, and sometimes competitive, claims. Complex relationships sometimes exist between trees and the land on which they are planted. In parts of Africa for example, local institutions recognize clearing forested land of trees as establishing a claim, while at the same time, planting trees is also viewed as instituting or confirming rights to land.

However, the imposition of restrictions on forest use by states has been linked to widespread degradation on the grounds that it robs people of incentives to manage them sustainably. A particularly rich set of case studies documents experiences in India with state efforts to restrict local forest use as well as to carry out shared management with local users (see Agrawal and Ostrom in this volume). Evidence from Uganda documents an increase in tree cover densities on private agricultural land against a decline on state-owned and common woodlands and bushlands between 1960 and 1995 (Place and Otsuka 2000). (No indication was given in the study as to whether common lands were managed or unmanaged.) Countries implementing devolution of forest resources will need to be cognizant of the intricate interactions of uses, users and local rights underlying them, and the extent to which local management institutions have been weakened by state control.

As with coastal resources, there are many instances where competition from commercial interests threatens local management of forests. International environmental groups can also be powerful stakeholders, many times advocating for heavy restrictions on forest use including that of local users. Where influential stakeholder interests clash with those of small scale users, devolution efforts will

need to consider the capacity of the latter to defend their claims as well as the incentives of government officials to uphold local resource users' rights.

POLICIES THAT HINDER DEVOLUTION

Although there is increasing support in many countries for devolution of natural resource management to local users, or in some cases decentralization to local government units, numerous policy constraints exist which can fracture the process by preventing devolution from taking off, impeding progress, or contributing to failures. Some of the most common policy failures are those that assign responsibilities for managing resources without allocating corresponding rights. Without rights to claim the benefits derived from their investment, resource users lack the necessary incentives to manage resources in a sustainable manner. Uncertainty about whether the government or others will lay claim to resources will rather induce people to quickly draw on the benefits of resources and degrade them.

Policies or systems of political patronage that favor the wealthy or elites (e.g. commercial or tourists interests) can weaken local institutions for resource management. Unable to compete with these interests or constantly finding themselves sacrificing their investments to the more powerful, small-scale users become frustrated and demoralized. At the same time, it is often small-scale users who are implicated as being the major sources of resource degradation, when it is actually commercial and large-scale resource users who contribute the most to degradation and negatively affect the resource management incentives of small-scale users.

The policies of international agencies and donors can also block the path to successful devolution. Studies of irrigation management transfer demonstrate that subsidies are typically needed to facilitate the initial devolution process to offset investment costs and lower the risks of participation and collective action. Yet subsidies are widely discouraged in the international aid community for fear they will introduce market distortions and create dependencies. Nevertheless, temporary subsidy structures that induce local investment rather than hinder it are practicable.

RECOMMENDED FRAMEWORKS FOR DEVOLVING NATURAL RESOURCE MANAGEMENT TO LOCAL USERS AND FOSTERING AN ENABLING ENVIRONMENT TO SUPPORT IT

Countries that opt to undertake a process of devolving rights to local resource users must be prepared to encounter and deal with many complex issues, make difficult choices, and live with certain tradeoffs. The process of defining rights is even more complex when we consider the array and multitude of uses and users,

levels and types of rights, bases for upholding claims, and interactions with other inputs and resource sectors. It is difficult to define whom the users and stakeholders are, and structure negotiating forums and conflict resolution mechanisms that are participatory and equitable. The conditions and incentives that contribute to successful collective action are not always present, and as the text box would indicate, often challenging to engender. Where incentives and mechanisms are lacking, they will require careful cultivation in ways that respect the priorities of the poor. Moreover, policy environments in developing countries have traditionally not favored local management.

Nevertheless, if carried out successfully, devolution of rights to local users promises many rewards such as poverty reduction, greater democracy and empowerment of marginalized segments of society, less costly and bureaucratic government administration, and fewer large-scale conflicts over resources. Policymakers who are convinced of the merits of devolution will need guidance on what types of policies have the potential to yield the best results. Whereas part of the answers to the questions of policymakers, extension workers and development practitioners implementing devolution will need to evolve from experience (including trial and error), research can play a key role in informing the process through developing well-grounded theoretical hypotheses and analyzing the experience of others.

The following section presents a number of the recommendations posed by the workshop participants. They are structured according to whether they are recommendations directed at researchers, development practitioners and extension workers seeking to strengthen local institutions, or policy makers—although in several cases they straddle more than one audience. Although most proposals are of a more general nature, participants also stressed that small differences in socioeconomic, political and ecological contexts can have large implications for what devolution policies and institutional elements will be appropriate. Significant consideration was therefore given to the diagnostic and negotiation phases of a devolution process, which enable the generation of unique solutions to unique situations.

RESEARCH AND DIAGNOSIS

Although devolution of rights to local users of natural resources is gaining greater acceptance and recognition in the international community, implementation has yet to become widespread in most countries that have opted to embark on this path. If substantial progress is to be made in transferring rights, research efforts on devolution will have to be stepped up. Otherwise, the risks of venturing into

unknown waters may limit government action, or lack of guidance contributes to implementation failures.

Adaptive frameworks

There is a profound need for adaptive frameworks that enable policymakers to identify opportunities and constraints to devolution, envision various devolution options and processes, and evaluate their benefits, costs and tradeoffs—considering various ecological, economic, sociological, political, and infrastructure conditions. Significant empirical justification should accompany theoretical arguments and models, along with an analysis of what has contributed to the performance of different devolution models and implementation practices. In particular, what impact have they had on poverty, asset distribution, women's livelihoods and that of other marginalized groups, natural resource production and sustainability, and economic growth? What are the necessary components for creating an enabling environment in support of devolution? Useful research that will add to the robustness of these frameworks includes empirical examinations of:

- what factors encourage, discourage, and otherwise shape the nature of collective action and organization for resource management,
- what types of property rights need to be considered and what procedures for allocating and upholding those rights can address devolution goals,
- what changes are needed in government roles and functions, public administrative structures, legislation, and human and technical capacity to enable devolution,
- what types of negotiating forums and conflict resolution mechanisms have proven effective and how do they link to judicial and legislative systems, and
- what types of incentives encourage policy makers and government agencies to support devolution and how can they be instituted?

Understanding incentives for sustainable resource management calls for research to assess the value of resource uses and services from local to global levels against the costs of their management. Such studies also need to take account of transaction costs, such as those that are inherent in collective action. If such costs overwhelm the benefits people derive from having rights to resources, devolution may flounder from lack of support from resource users rather than the state.

Diagnostic Action Research

If policy frameworks are to be truly adaptive and appropriate, they need to be grounded in local realities and respond to local needs. Moreover, devolution cannot simply take place at the national policy level, but requires coordination and complementarities among various levels, beginning with local communities and local government units. Diagnostic action research is a fundamental ingredient for successful devolution. If it is carried out using multidisciplinary and participatory methods, it enables the process to be appropriate, democratic and empowering.

Diagnoses should ideally begin with understanding the challenges rural communities face and what their priorities and objectives are. Does devolution present a potential solution to improving people's livelihoods? Are they likely to support and contribute to a process that involves transferring rights and responsibilities to them? What kind of information needs do local people have that will better enable them to make these decisions?

Carving out appropriate devolution mechanisms means assessing both institutional and environmental conditions, and seeking to understand the interaction between the two. Examining the stock of local knowledge on resource characteristics, interactions, uses, and management technologies—as well as the performance of property rights and collective action institutions will shed light on local people's capacity to manage resources successfully and what kind of support they might need.

Other important components to be assessed in a diagnosis include:

- Resource characteristics (including *scale, mobility, scarcity, centrality to livelihoods*), climatic conditions, and ecological interactions,
- Resource uses and property rights to resources: multiple uses and users of resources, types of rights—both statutory and locally practiced, who has rights to resources and how do they access them, what are the bases for legitimizing claims, how are rights negotiated, what sort of conflicts occur and what types of resolution mechanisms exist and how do they function?
- Collective action: the need for collective action to manage resources, community cohesiveness and social capital relationships, existing collective action institutions and organizations, collective action for natural resource management, the potential for successful collective action given resource and community characteristics and the policy environment, equality and representativeness of collective action forums, organizational formality and structure, organizational powers and functions, enforcement capacity of collective action.

- What sort of support do communities desire from the state if they are to be held accountable for resource management? This may include the state providing back-up enforcement (especially against outsiders), co-financing some investments, providing of financial services (e.g. credit), supplying information, education, extension or other human capacity development. Conversely, what is the capacity and willingness of the state to provide these services and support? What is the potential for structuring negotiating forums that bring together representatives of both local communities and the state? What are the likely outcomes of various arrangements between the state and local people?

Diagnostic action research can be an even more effective and attractive tool if innovations are developed on ways to lower the costs of implementing participatory and multi-stakeholder methodologies. More exploration is also needed on means for engaging policymakers in the research and diagnosis process, effective mechanisms for filtering research into the policymaking process, and low-cost monitoring and evaluation tools to track the implementation and performance of devolution.

INSTITUTION BUILDING AND STRENGTHENING

The process of strengthening or adapting institutions for resource management or even creating new ones builds on the action research phase and an understanding of people's circumstances, capacities, and aspirations. The more distant local people are from managing their natural resources, the more likely the process will be slow to take hold and require greater investment. Nevertheless, the promise of increased self-reliance and livelihood security that accompanies local control over natural resources should motivate widespread support for these investments.

Together, policymaker, practitioner and researcher participants outlined several recommendations for what they considered to be best practice in institution building and preparing the ground for successful devolution.

Methods

Similar to their application in research, participatory and multi-stakeholder methodologies greatly enhance the prospects of identifying appropriate and sustainable solutions that reflect the needs and desires of local resource users. In fact, the process of enhancing community-level rules and institutions to support devolution is hardly conceivable without the involvement of those who are to uphold those rules. In all cases, efforts will need to be undertaken by practitioners to amplify the voices of more marginalized societal groups and prevent local elites from taking over. Participatory techniques also promote the incorporation of local knowledge and skills into institutional growth. Although decision-making processes

are likely to be more time consuming, multi-stakeholder negotiations offer more enduring solutions.

Property rights

Property rights are significantly more likely to address the interests and needs of local people when they are not imposed from outside, but rather are based on existing rights institutions and reflect local values and norms. Many rural communities acknowledge rights in common to natural resources, particularly those that are spatially extensive and are relied on by many members to meet their livelihood needs. Therefore, devolving rights in common to natural resources, rather than to individuals, is often more in line with local people's values as well as promises to be a more effective tool to combat poverty.

The process of building strong property rights institutions involves negotiating and defining rights, their underlying procedures, and corresponding responsibilities (including labor and fees). Not only must rights to different resources be considered, but also the type of right. Does a particular right entitle one to have access to, alter, and/or make productive use of the resource? Is transfer or alienation of the resource permitted? Beyond rights to resources, there are also rights to technologies and infrastructure (e.g. irrigation works), membership rights to groups or organizations, and organizational rights that specify what an organization may do as a group. Consideration needs to be given to who has access to these rights, and who is excluded from them.

Negotiation over rights will also have to involve external stakeholders such as governments, service deliverers, neighboring communities, etc. However, governance and decision-making on local resource management should remain the domain of resource users. Care needs to be taken that responsibilities are well-supported by incentives and the promise of benefits from investment. Recognition should also be given to different forums for legitimizing claims. However, where different types of rights are contradictory and cause conflict, efforts may be needed to ensure they are reconciled. Even with extended and participatory negotiations, conflict may be a natural outcome of rights transfers (although devolution may reduce conflict as well). Sustaining good local resource management practice will therefore depend on ensuring local conflict resolution mechanisms have coherent rules and efficient processes, and are governed by authorities that carry legitimacy both with local communities and the formal justice system.

Collective action and organization

In addition to building on indigenous knowledge and local property rights systems, developing viable institutions for devolution relies on capturing the

successful dynamics embodied in existing collective action groups and organizations and learning from their weaknesses. Where local communities must interact extensively with external stakeholders, such as with large-scale irrigation systems, more formal organizations may be warranted. However, informal collective action may suffice where contractual arrangements are unnecessary and most management functions are carried out at the community level.

Whether to convince governments to transfer rights to local users, expand rights, or defend existing rights, advocacy and organizing beyond the community level can substantially enhance the political power of resource users. In some cases, resource users have aligned themselves with or formed civil society organizations. Regional and national federations representing the united interests of a large number of resource users are becoming more widespread (e.g. pastoralist federations in West and Central Africa (see Hassane case study in this volume), irrigated farmers' associations in India and Nepal, watershed associations in Nicaragua and fisheries coalitions in the Philippines). Large scale organizing both enables their voices to be heard and allows them make connections with those in power, thereby opening up the path for political feasibility of devolution. In addition to representing user group interests in policy forums, federations also have the potential to serve as conflict resolution forums between different communities and user groups, enable the cross-fertilization of knowledge and sharing of best practice among their members, and garner public support for localized resource management. Efforts to facilitate the formation of civil society organizations should find ways to make sure they function democratically and are not misused by their leadership, enhance leadership capacity and professionalism, as well as promote the inclusion of less powerful resource users.

Collective advocacy efforts can also be strengthened by engaging the support of local NGOs and donors in the devolution process. Often their involvement is useful in ensuring collective action forums and rights to resources are not taken over by local elites or more vocal interest groups. They can also play a role in bridging the gap between governments and civil society, identifying and assembling stakeholders, and facilitating the institutional development and devolution process. Because of their capacity to offer large sources of financial support, international donors and lenders are often effective at pressuring governments to pay heed to the priorities of civil society. Whereas donors and NGOs may be helpful to the efforts of local resource users in acquiring resource rights, they should not act as a substitute for grassroots capacity building that empowers local people to effectively advocate their own priorities.

Other capacity-building measures

Additional measures recommended by participants to strengthen the local institutional environment to support devolution were:

- extension and training to communities in resource governance,
- provision of external financial support to offset the initial investment costs of devolution. Government subsidies should be contingent on local contributions. Credit facilities are another option and may offer a more long-term mechanism for supporting the financial requirements of local resource management.
- structuring forums to foster information sharing among local communities, and between communities, researchers and policymakers—not only to improve decision-making outcomes, but also to build cohesion and relationships. Technical and management aspect of resources, production and income generation opportunities, and viable frameworks for structuring collective action and property rights systems are just some of the critical information needs that could be addressed by systematized, multi-level information delivery mechanisms.

POLICIES

A holistic approach to devolution is one that closely integrates policy making with institution building. Many aspects of these two processes overlap and need to be developed simultaneously. Even though some research should be undertaken in advance, monitoring and impact evaluation research are fundamental to ensure the devolution process is continuously refined and improved. Effective devolution will emerge from a confluence of research, institutional strengthening, and policymaking.

Policies to enable devolution will not progress far unless there is a willingness to devolve rights to resources. Even if legislators favor devolution and put the rules on the books, if government bureaucrats and administrators do not support them, implementation will be hampered. Recognition of the socioeconomic, cultural and ecological diversity of communities and regions is also essential, whereby people are viewed as a resource and not a nuisance or obstacle to resource preservation.

Property rights

The crux of devolution policy making is transferring property rights to resources to local users and strengthening tenure security—not always through ownership rights, but also devolving access, management, withdrawal and other types of rights. Devolving rights in common to resources that accommodate multiple users may help ensure a more equitable distribution of resource benefits. Specifically, policy makers

need to address allocating rights to women and other marginalized groups. In countries where rangelands and pastoralism support livelihoods, herders tend to be politically marginalized. Their rights may even be weakened by devolution policies that favor agriculturalists, unless conscious efforts are made to highlight their interests and strengthen pastoral organizations and networks.

Ecosystem Perspectives

It is important not to treat resources in isolation, but rather as overlapping and interactive. Rangelands are a typical case where outsiders often tend to consider only the livestock production system, when in fact these resources cater to multiple uses and people occupying rangelands have different levels of dependency on livestock. An integrative approach to devolution policy that recognizes ecosystem interlinkages and seeks to coordinate government treatment of different resource sectors will strengthen how policies are put into practice and reduce the potential for conflict and redundancy on the part of government policies and programs. Policies need to be compatible with the institutions governing resource management in terms of their specificity in response to resource attributes, including scale and ecological dynamics. For example, the case for devolution may be especially compelling when resources are dynamic and unpredictable because more flexible and adaptive management styles are necessary to sustain them. Such management skills come from the experience, knowledge and on-site capabilities of local users.

Reconciling rights and responsibilities

A key flaw underlying failed devolution attempts has been the practice of devolving responsibilities to resources without transferring the necessary rights to give users the authority and motivation to undertake the responsibilities. Policies that turns over resource protection duties to people, but restrict their ability to engage in sustainable production of those resources are destined to flounder and do nothing for improving people's incomes and livelihoods. By transferring rights that are consistent with local institutions and structuring policies that recognize local authorities and forums for staking and enforcing claims, policy makers can expect to generate stronger incentives for people to protect natural resources. At the national level, flexible policies that operate within a broader framework are better equipped to accommodate local realities and institutions. Compatibility (not duplication) between local rights and institutions and formal legal statutes is critical for devolution to function smoothly.

Other policy measures

Specific policies and actions that were advocated by the workshop participants to support devolution included:

- Recognition of people's rights to organize.
- Provision of financial services and facilities to communities (credit, savings, co-financing funds, etc.) to help finance local investment in natural resource management and foster economic diversification.
- Improvements in rural infrastructure that contributes to expanded market opportunities and increased profitability of agriculture and other rural income generating activities.
- Government investment in local management and rehabilitation, particularly in ecological 'hot spots', as well as creation of incentives for private investment.

Restructuring government roles and functions

Policy recommendations also extended to what actions were necessary for governments to undertake in order to be able to deal with the shocks and opportunities emerging from a shift in governance roles.

Transition periods may be smoothed by recruiting knowledgeable experts to advise government agencies on how to restructure their role from one of being owners and principal managers of resources to providers of technical guidance and information support to local users. Also, government bodies may need to take on enforcement functions. These functions need to be clearly defined and the appropriate manpower installed either through retraining existing government staff or recruiting new personnel. Applying principles of subsidiarity will assure that government functions and authority are decentralized to their lowest level of capacity, thereby enhancing responsiveness to local priorities. In some cases there may be a need for a three-way partnership between central government, local government, and user groups (e.g. for enforcement of marine protection areas.) More coordination of government efforts and agencies is needed to reduce overlap, wasting of government resources, contradictions in implementation, and creation of confusion and misunderstandings.

Changes in legislation and the allocation of governance functions also call for modifications to formal judicial systems so as to complement and support community-based justice and enforcement systems. Devolution does not only imply new laws, but also new jurisdictions of authority. Many cases that previously would have been heard and judged by higher courts are likely to fall into the jurisdiction of lower courts that are in a better position to uphold local legislation. Recognition of

community-based conflict resolution forums will enable people to handle disputes more efficiently while providing them with greater assurance that the decisions made by less formal authorities will be sanctioned by the formal system. Where grassroots conflict management devices are weak or non-existent, NGOs may be effective interim arbitrators and help facilitate their formation.

Governments will need to remain as key actors in negotiating transboundary issues and the legal frameworks surrounding transboundary resource allocation between countries. However, these negotiations need to consider local property rights systems and livelihood needs of the poor, as well as involve representative resource user organizations and federations where they exist.

Both the financial and the transaction costs incurred by these governance transitions calls for major investments so that implementation is not only feasible, but also effective. Major donors may be sources of funding to support transition periods and help offset the costs of retraining and redeploying workers. Careful analysis of infrastructure needs and policy instruments is likely to shed light on where transaction costs are incurred in the system and what actions can serve to minimize or eliminate them. Macroeconomic policies should also be reviewed to ensure they are consistent with devolution principles and goals of improving the livelihoods of the poor.

Transparency and accountability in policymakingy

How the policymaking process itself is executed also demands attention. It is not enough to call for participation. Transparent procedures need to be put in place that outline how credible representatives from civil society and local government will be identified, how multi-stakeholder negotiations will be composed, and how these dialogues will inform the policy process at all levels of government. The development of comparable impact assessment methods and measurable indicators that are linked to the accountability of different actors are instrumental to improving transparency and the overall performance of devolution.

EXAMPLES AND PRECAUTIONS

The appendix contains a comprehensive set of research and policy recommendations outlined by the working group on irrigation, that address negotiations between government representatives and resource user groups, infrastructure rehabilitation, operations and management, irrigation fees, and irrigation agency roles and responsibilities. This group stressed the importance of secure land rights accompanying rights to water as a key condition for collective action and successful devolution.

Hasty devolution (e.g. in response to fiscal crisis) carries a high risk of shoddy implementation imposed in a top-down fashion. A negotiated participatory process takes time in order to develop human, technical, institutional and administrative capacities. One cannot assume that there are local governing structures and capacities in place. The sudden disappearance of the state as an authority in resource management may leave a power vacuum. In these instances, NGOs often come to fill that vacuum, which may or may not benefit local communities. Injudicious governance transfers may also result in the loss of important natural resource champions in government who take stances favoring the environment against commercial and other interests who may have less regard for sustainable resource management. More thoughtful, planned approaches are able to retain these advocates by shoring up support from civil society organizations.

SEQUENCING

Sequencing is a key element of deliberately and carefully crafted devolution. It is not just important that research, institution building and policy measures are carried out. Their timing is also critical, since certain measures build on the capacity created by others, while other actions yield the most positive impact when they are carried out simultaneously.

The working group on rangelands developed the following sequential framework designed to guide policymakers, researcher and practitioners in structuring a coherent and effective path toward localized governance.

1. Undertake a participatory **diagnosis** to enable understanding of context and ensure collective action/organization and devolution is not being imposed on local communities. This includes the identification of collective action groups and organizations.
2. Promote **organization and advocacy** across user groups and up to a national level, including participation in international forums. A satisfactory means of communication within communities and between the community and the state is needed to broaden intra-community advocacy and cross-fertilization as well as involve the state in the organization process.
3. Redefine the **role of the state** as that which establishes legal and regulatory frameworks integrating user interests and applies subsidiarity principles.
4. Facilitate the development of **conflict resolution mechanisms** and ensure their integration from local to national levels.
5. Articulate **property rights** that complement local conditions and build on existing institutions.
6. Provide **state support** to enable the initiation and sustainability of the devolution process. This support, designed to facilitate local capacity to

undertake new functions and responsibilities, should be temporary and backed by local contributions as well as build in incentives for continued sustainable resource management.

Although this framework broadly tries to anticipate what groundwork will need to precede different steps (e.g. conflict resolution mechanisms are likely to be needed in arbitrating property rights), different processes may emerge depending on the outcomes of the diagnostic phase and what already exists on the ground. Often, it will not be a matter of creating institutions, but rather verifying, strengthening or adapting them. Implementation of devolution process within the government structure will depend a lot on the extent of subsidiarity and what levels are responsible and accountable for different functions. So called 'hot spots' where resource degradation has reached a critical level, conflict over resources is acute, or where there is potentially a high payoff to devolving rights may be deemed priority areas.

CONCLUSIONS

Many developing countries are working toward localized control over natural resource management, despite the challenges and disincentives for devolving control over valuable resources. Although many theories have predicted tragedies of mass resource degradation if resources are placed into the hands of local users, there is now ample empirical evidence that demonstrates not only users' capacity to perform better than the state, but also users' contributions to sustainable resource management.

Property rights and collective action institutions fundamentally shape the outcomes of resource governance. Efficiency benefits derive from collective management of large-scale resources like rangelands, forests, coastal zones and waterways. Group monitoring of resource use can also improve the environmental health of these resources. Nations that are concerned with poverty alleviation and enabling greater self reliance by the poor are more likely to devolve rights in common in an effort to both ensure multiple uses and users are provided access as well as support local livelihood security mechanisms. However, intensified competition to resources in many regions will warrant increased efforts to make sure that marginalized groups are not left out.

The quantity and allocation of rights that are devolved to local users will depend to a considerable extent on resource conditions, local capacity issues, and political realities. Local institutions may lack the capacity or the leverage to manage resources that are very large or cross over critical boundaries. Competition for resources from powerful private sector interests can overwhelm a community's capacity to enforce rules curtailing resource use. Within the group, cohesive social capital arrangements can also reduce incentives to sanction group members. In these cases, partnerships whereby governance is shared with different levels of government may constitute the most effective devolution models. Co-management can also be a means for government to test local management capacity before moving to more far-reaching reforms. Regardless of how comprehensive devolution is, central governments still retain a role in natural resource management via setting and administering policies and standards, upholding legal frameworks and backing local laws, undertaking monitoring and evaluation, and possibly providing a coordination and training role.

Many issues like the value of tenure security as an incentive for sustainable management, the merits of employing local institutions and local knowledge, and the benefits of collective action in achieving productivity, environmental and poverty objectives—cut across resources and regions in their importance to successful devolution. But there are also critical differences that must be accounted for to understand the best institutional options for managing them. Ecological uncertainty

encountered in arid rangelands, dynamic cross boundary resource movements in fisheries, natural resource-technology interlinkages in irrigation, and complex rights structures surrounding tree resources are just some of the myriad issues that differentiate these resource sectors. When the distinctive features of each resource are combined with the social and cultural diversity of regions, it is easy to understand that broad, adaptive frameworks are the most appropriate tools. The previous section outlined numerous recommendations gained from the experience of researchers, development practitioners, and policymakers who occupy natural resource management fields. Although these recommendations offer valuable guidelines for launching a viable devolution process, policymakers and development practitioners will learn the most about how to shape these frameworks by examining their own ecological, social, economic and political circumstances as well as giving voice to the various local interests concerned with natural resources, in particular the rural poor whose livelihoods directly depend on them.

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APPENDIX: RECOMMENDED POLICY RESEARCH AND ACTION FOR DEVOLVING IRRIGATION RIGHTS TO LOCAL WATER USER ASSOCIATIONS

Five types of rights were seen as essential for successful devolution: water rights, land rights, infrastructure rights, membership rights, and organizational rights. Approximate time frames for implementation are given in parentheses.

WATER RIGHTS

1. Identify users and uses at scheme and basin level, and project demand (0-2 years)

   Research

   - Identify multiple uses, users, and trends (projections)
   - Develop replicable methods for identification that specify minimum essential data on uses and users

   Policy

   - Select representatives from various stakeholders
   - Ensure that stakeholders are involved in planning
   - Provide legal literacy training where necessary to elevate understanding and fortify the bargaining power of users in negotiating rights

2. Basin-level water balance and analysis of the relationship between water resources and land use practices (2 years)

   Research

   - Conduct an analysis of basin level water balances and the relationship between tenure arrangements, land use practices and water resources to better match supply to changing demand levels (1-2 years, ongoing)
   - Develop spatial models to analyze these relationships and project trends in land use changes and the impacts on water resources

   Policy

   - Conduct water balances for basin development
   - Set allocation below basin's reliable water yield
   - Define policy and stakeholder objectives within the basin (1-2 years)

3. Define policy and stakeholder objectives within the basin (1-2 years)
   Policy
   - Various stakeholders involved in various meetings (temporary) to derive: 1) principles of allocation, 2) equity of distribution, 3) priorities of distribution, 4) guaranteed minimum levels of access.4.
   - Identify existing systems of water rights (1-2 years)

   Research
   - Identify and classify different arrangements of water rights and other resource tenure systems
   - Develop methods to identify and classify tenure systems

4. Analyze and discuss the gaps between policy and different tenure/rights systems (< 1 year)
   Research
   - Identify complements and contradictions between different rights systems
   - Develop replicable methods (practical planning tools) to facilitate this research process

5. Negotiate and allocate water rights (2 years +)
   Policy
   - Provide a forum for resolving differences
   - Establish operating principles for the forum
   - Provide legal rights with fixed terms for allocation

LAND RIGHTS

1. Identify land uses and tenure patterns (1-2 years)
   Research
   - Identify different types of land uses within the basin and irrigation scheme
   - Identify parcels within irrigation schemes for fee collection and membership

2. Differences between preferred and current cropping patterns (< 1 year)
   Research
   - Conduct an analysis to evaluate the impact of existing and preferred cropping patterns

Policy

- Reform quotas or other constraints on crop choice, particularly those that impede the capacity or incentives for Water Users' Associations (WUAs) to manage the irrigation system

3. Land conversion (1-2 years)

Research

- Evaluate the actual/potential impact of land conversion, land sales and removal of crop and other restrictions on the viability of irrigation systems and the capacity of farmers to finance irrigation

Policy

- Give rights to WUA to regulate the sale of land and water where needed
- Remove unnecessary restrictions that inhibit farmers' income generating capacity

4. Land tenure within the irrigation system (2 years+)

Policy

- Develop policies to clarify land tenure prior to devolution (conflict prevention)
- Resolve conflicts over land tenure within the irrigation system
- Design land tenure arrangements that encourage farmer investment within the WUA

INFRASTRUCTURE RIGHTS

1. System management (1-2 years)

Research

- Identify how operation and management practices are likely to change with devolution and what rights and responsibilities for use of irrigation infrastructure should be transferred
- Analyze existing management and relationships to rights and responsibilities

Policy

- Negotiate options for realignment of rights and responsibilities for devolution

- Assign rights and responsibilities between WUA and others to support management changes

Note: If irrigation infrastructure is fully or partly constructed, WUAs may not have rights to modify or repair the scheme. These rights need to be established. Management transfer is likely to change system needs, so negotiations are necessary for realigning rights.

MEMBERSHIP RIGHTS

1. Users within the irrigation system (1-2 years)
   Research
   - Identify multiple types of uses and users and their needs for the irrigation system
   - Develop methodologies to assess the different types of users/uses and their needs for the irrigation system

   Policy
   - Establish clear criteria for membership – to be negotiated among all users
   - Identify requirements to obtain and retain membership, consistent with devolution policy and interests of the WUA

Note: Identifying multiple uses and users and overlapping claims is highly complex. Communities need to structure organizations that can accommodate many types of users and manage this complexity.

ORGANIZATIONAL RIGHTS

1. Structure and operations (1-2 years)
   Research
   - Explore options for appropriate structures of WUA and other agencies

   Policy
   - WUAs to define services it will provide (WUAs to define powers and functions (deliberation process) Functions should complement services)
   - Ensure legal standing commensurate with rights and responsibilities of WUA
   - WUA members should be able to elect and recall leadership
   - Additional services of WUAs to be kept separate to ensure the viability of the core function

- Federating may important so that representatives are able to defend their members' water rights in national level negotiations (e.g in the face of competition from urban and industrial water uses), as well as to capture the interests of other less powerful water users (e.g. drinking water, pastoralism, fishing, etc.), which are often undervalued.

2. Enforcement
   Policy
   - Develop incentives and sanctions around rights and responsibilities granted to WUAs to enforce sanctions
   - Ensure WUAs have the means to enforce sanctions

3. Dispute resolution
   Policy
   - Develop process for resolving disputes within and beyond WUA: arbitration, penalties, rules/offenses, appeals processes, and a tribunal where necessary
   - Allocate authority to WUAs to arbitrate disputes within their boundaries, to the extent that they have the capacity

   Note: Informal WUAs may not be able to manage a complex system. For medium to large scale irrigation systems, federating may be necessary as a means to filter up the voices of farmers to the scheme level.

RECOMMENDATIONS: DIFFERENT STEPS

1. Conduct analysis on strengths/weaknesses of existing user organizations. Depending on the state of knowledge, this can be:
   - research on a sample of organizations,
   - diagnostic analysis,
   - self assessment.

2. Based on the results of the analysis, provide services and information as needed
   - community organization,
   - capacity building of users and/or agency staff,
   - providing information in resource availability,
   - technical matters,
   - organizational issues,
   - rights and responsibilities,

- appropriate mechanisms for conflict resolution.

3. Develop and conduct a consultation process through stakeholder workshops, learning laboratories, media campaigns. Content:
   - Negotiations on actions/responsibilities
   - Ensure decisionmaking is by user groups
   - Agreements on service delivery
   - Counterparting
   - Cost-sharing between user groups and external support
   - Recognition of labor contributions

4. Develop clear policies on the following:
   - Recognition and negotiation with user groups
   - Role and restructuring of irrigation agency
   - Irrigation fees: reasonable, affordable, negotiable, and transparent
   - Long-term plan for rehabilitation and preventative maintenance

5. Promote federations of water user groups
   - Catalysts/organizers: WUA leaders, NGOs, government
   - Assign clear roles in the scheme and at the governance level
   - Promote networking and lobbying functions
   - Purpose: conflict resolution among user groups and outsiders; contracting for services, other socio-economic activities, clarifying boundaries, defining water rights; inclusion of other water users and user groups

PART II. PLENARY SESSION PAPERS

COLLECTIVE ACTION, PROPERTY RIGHTS, AND DEVOLUTION OF NATURAL RESOURCE MANAGEMENT: A CONCEPTUAL FRAMEWORK

Ruth Meinzen-Dick and Anna Knox[1]

INTRODUCTION

The past decade has witnessed a major policy trend of devolving control over natural resources from government agencies to user groups. This type of devolution has not only cut across countries from Asia, Africa, and the Americas, but also across natural resource sectors, encompassing water (especially irrigation), forests, rangelands, fisheries, and wildlife.

The process of devolution of resource management involves programs that shift responsibility and authority from the state to non-governmental bodies—a "rolling back the boundaries of the state (Vedeld 1996)." Devolution programs go by a range of names. When control over resources is transferred more or less completely to local user groups, it is often referred to as Community-Based Resource Management (CBRM). In these cases, the government generally withdraws from a role, and either cuts or redeploys agency staff. When the state retains a large role in resource management, in conjunction with an expanded role for users, it may be referred to as joint management or co-management. However, these are often not clear-cut, with most cases involving some form of interaction between the state and user groups. Specific terms vary by sector and country. For example in irrigation, Irrigation Management Transfer generally refers to programs that go farther in divesting state agencies of their role, while Participatory Irrigation Management programs seek to increase user involvement, usually as a supplement to the state's role. Joint Forest Management and Fisheries Co-Management are other examples of programs that transfer

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responsibility for some management tasks to user groups, in conjunction with state agencies.[2]

Devolution is often part of a number of related policy reforms, in which central government agencies transfer rights and responsibilities to more localized institutions,[3] as illustrated in Figure 1.

Deconcentration, in which decision-making authority is transferred to lower-level units of a bureaucracy, or government line agency, represents the least fundamental change, because authority remains with the same type of institution, and accountability is ultimately still upward to the central government, which is sometimes taken to represent society at large (Agrawal and Ribot 1999).

Decentralization transfers both decision-making authority and payment responsibility to lower levels of government. Although still within the government, it provides a stronger role for local bodies, which are presumed to have greater accountability to the local populace, including both users of the resource and others who live in the area.

Devolution, which is the focus of our attention here, involves the transfer of rights and responsibilities to user groups at the local level. These organizations are accountable to their membership, usually those who depend on the resource, but do not represent others in the local community, nor society at large (Ribot 1999).

Privatization broadly refers to transfer from the public sector to private groups or individuals. This can include non-profit service organizations (grassroots or external NGOs) and for-profit firms (Uphoff 1998). While the private sector can be taken to include user groups, in this paper we limit the discussion of privatization to transfer to individuals or firms, who are accountable to their shareholders, and NGOs, who are accountable to their donors.

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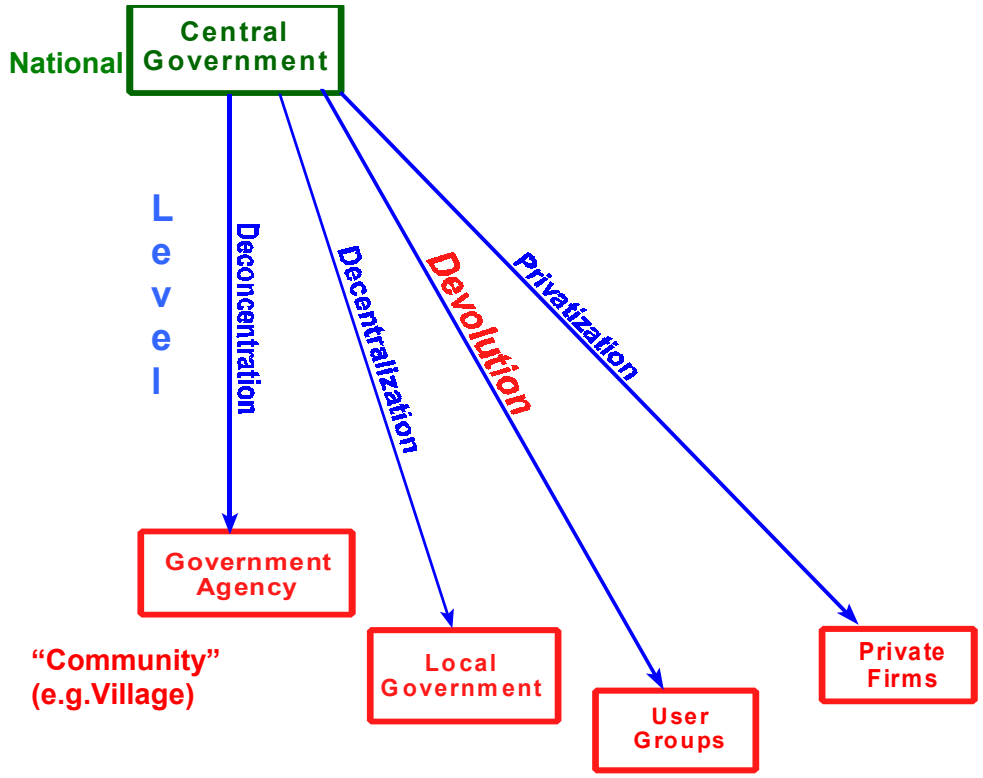
[2] For reviews of experience with Community-Based Resource Management, see Murombedzi 1998; Uphoff 1998; for Irrigation Management Transfer see Subramanian, Jagannathan, and Meinzen-Dick 1997; Vermillion 1996; for Fisheries Comanagement see Jentoft and McCay 1995; Pomeroy et al. 1999; Hanna 1998; for Joint Forest Management and similar approaches, see Ostrom 1999, as well as the papers in this volume.

[3] These different types of reforms are often referred to under the broad heading of decentralization or devolution. For discussions of such reforms, see Agrawal 1999; van Zyl, Kirsten, and Binswanger 1996; Carney and Farrington 1998; Ostrom, Schroeder, and Wynn 1993; Rondinelli, McCulloch, and Johnson 1989; and Vedeld 1996. For an analysis of the types of institution involved, see Ribot 1999; Uphoff 1998. While the same broad reforms are described in many sources, terminology used is not always consistent.

Figure 1: Devolution in the context of decentralization and other institutional reforms



Accountability	Central Government	Local Populace	Resource/ Service Users	Shareholders
Sector	G O V E R N M E N T		Collective	Private
Subsidiarity Type	——— Vertical ———		——— Horizontal ———	

Behind all these trends is the broad principle of *subsidiarity,* i.e. that decision making should be devolved to the lowest appropriate level. Within this, transfers of authority to lower levels of government (deconcentration and decentralization) represent vertical subsidiarity, while transfers to non-governmental institutions (user groups or private firms) represents a horizontal dimension of subsidiarity (Döring 1997).

Our concern in this paper is with the transfer of responsibility and control over natural resources from the state to user groups. However, the types of reforms illustrated in Figure 1 also draw attention to the fact that devolution does not take place in isolation. There are a number of institutional actors involved in natural resource management: government bureaucracies, local government bodies, and the private sector, as well as user groups. The structure of interactions between these is important.

The stated objectives and underlying reasons for devolution policies are at least as diverse as the program names. However, it is possible to identify a number of recurring themes:

The first is recognition of the limited effectiveness of the state in managing natural resources, especially at the local level. Government agencies have difficulty in monitoring the use of extensive forest or rangeland areas, or of constantly moving irrigation flows or mobile fish populations. The state may pass rules governing the use of resources, but if it cannot enforce them, the rules have little meaning. In contrast with the apparent deficiencies of agency management of resources, there have been numerous studies of common property management regimes effectively governing these same resources.[4] Some of these studies have even shown that colonial and post-colonial state involvement has undermined local institutions that were managing the resources. Socioeconomic research, including ethnographic studies and models, has found that local users can have an advantage over government agents for several reasons. First, local users often have intimate knowledge of the resource. This is especially important where the resource is highly variable over space and time. By living and working in the area, users may also have a comparative advantage over government agents in monitoring resource use and rule compliance. Furthermore, because their livelihoods depend on the resource, local users are often assumed to have the greatest incentives to maintain the resource base over time. With growing pressures to use resources more efficiently, equitably, and sustainably, optimism that communities or user groups may be able to manage the resources more effectively than government agencies forms the basis for many programs that attempt to create or recreate local common property management regimes (World Bank 1996).

Interest in devolution to user groups has coincided with greater emphasis on public participation and democratization, which seek the involvement of citizens affected by programs, for social goals of empowering local people as well as goals of improving program performance. Devolution policies are consistent with these trends because they transfer decision-making from government "outsiders" to users who are directly affected. Ideologies of privatization have similarly challenged the role of the state as owner and manager of resources.

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[4] For examples, see Baland and Platteau 1996; Bromley, ed. 1992; Ostrom 1990; and the extensive bibliography of common property resource management at http://www.indiana.edu/~iascp/.

Fiscal crises of governments and ensuing economic reform policies have given the greatest impetus to policies of devolution. The salaries alone for government staff to manage resources can add up to large amounts, even without travel and other budgets of state agencies. Continuing to provide this over large areas of irrigated land, forests, rangelands, inshore or coastal fisheries often becomes prohibitive as states face up to resource constraints. If this by itself does not push governments to devolve responsibility for resource management, donors who are approached to bail out a government in a debt crisis are likely to push for such reforms, either out of a belief that users can be more effective managers, a commitment to participation, democratization, or privatization, or fiscal responsibility.

Although the theoretical advantages of user management have been convincing and the impetus for devolution policies strong, the actual outcomes of devolution programs in various sectors and countries have been mixed. The stated objectives of such programs in terms of positive impact on resource productivity, equity among stakeholders, poverty alleviation, and organizational and environmental sustainability are often not met. Resources have not always been used more efficiently than under state management, nor have the benefits been distributed equitably. In some cases the resource base has been depleted. Experience has shown that the emergence of strong enough local management cannot be automatically assumed.[5]

This paper is intended as an overview of issues to set the stage for a more detailed examination of devolution in each sector, not as a comprehensive review of all aspects of devolution. We present a broad conceptual framework for identifying factors that contribute to (or hinder) effective devolution programs, with particular emphasis on the role of collective action and property rights. The first section after this introduction lays out what we mean by these two concepts, and how they relate to devolution of natural resource management. This is followed by a discussion of the roles, incentives, and capacities of resource user organizations as they relate to other government and private institutions. The concluding section draws implications for devolution policies.

THE ROLE OF COLLECTIVE ACTION AND PROPERTY RIGHTS

COLLECTIVE ACTION

Programs to devolve natural resource management are generally based on the assumption that users will take on the roles formerly assigned to the state. This requires some form of collective action to coordinate individuals' activities; to develop rules for

[5] In a recent study of major canal irrigation systems in India, Meinzen-Dick, Raju, and Gulati (2000) found informal collective action to maintain the canals in 19 of 48 sites; Pomeroy et al. (1999) found spontaneous development of organizations to manage fisheries in only 20 percent of sites in the Philippines (see also Vedeld 1996).

resource use; to monitor compliance with the rules and sanction violators; and to mobilize the necessary cash, labor, or material resources.

What do we mean by collective action? The Oxford Dictionary of Sociology defines collective action as: "action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests" (Marshall 1998). This implies a conscious working together, such as in investing in a resource or excluding "outsiders" from using it.

Our definition is intentionally broad, and includes both "primary groups" in which members know each other, as well as "secondary groups" with a larger size or more formal structure. Collective action which is sustained over time usually also includes rules and decision-making structures. In the case of natural resource management, this might include rules on using (or refraining from using) a resource, as well as processes for monitoring, sanctioning, and dispute resolution (Ostrom 1992). In primary groups and the actions of each individual are under (close) observation by the others and the major governance mechanisms are solidarity, reciprocity, and social pressure based on common norms and values. In secondary groups, decisions can no longer be taken only by group consensus, so there are representatives to act on behalf of the group. Note that collective action does not necessarily require an organization, although organizations may make collective action more effective or efficient for some tasks (Meinzen-Dick, Raju, and Gulati 2000).

Because of their spatial scale, most irrigation systems, forests, rangelands, and fisheries cannot be managed at the individual or household level (Knox McCulloch, Meinzen-Dick, and Hazell 1998). They require some form of coordinated regulation. This may be provided by state agencies (with greater or lesser efficacy). However, the withdrawal of the state leaves a management vacuum unless local collective action is available to manage the resources.[6,7]

A further reason that collective action is needed is that there are generally multiple uses, as well as multiple users, of these natural resources. Irrigation systems are used not only for field irrigation but also for domestic purposes, fishing, livestock, and home gardens (Bakker et al. 1999); forests are used for kindling, fodder, resins and other "minor forest products" as well as timber (Dewees and Scherr 1996); the same land may be used for crops, a few trees, and grazing by different groups or in different seasons

[6] The alternative, of carving up the resources into individual holdings that are privatized, is often not feasible for common pool resources such as discussed in this paper. Each unit of the resource has a great deal of internal variation (Thompson and Wilson 1994), and is interdependent with other units, making it difficult to provide all claimants and users with a viable piece of the resource. This poses serious problems for individualization policies, as demonstrated by externally-induced programs to divide up and privatize rangelands in Kenya and Botswana (Kirk 1998; Lane and Moorehead 1995; Peters 1994).

[7] In transforming economies, the withdrawal of the state from old collectives based on control and command leaves a particularly marked management vacuum unless voluntary collective action emerges (see Mearns 1996).

(Swallow et al. 1997). Many of these "secondary" uses have high economic value or are essential to the livelihood strategies of various types of households. Outside approaches that focus on resource management to maximize a single use are not likely to be as appropriate in these situations as rules that are locally developed through negotiation between different users (Steins and Edwards 1999). Local collective action can be instrumental in finding rules and allocation of the resource between different users in a way that is seen as equitable by the users themselves. There are therefore equity as well as productivity arguments for collective action in natural resource management.

Despite the importance of collective action for resource management, it cannot be assumed into existence. The very notion of a single, identifiable "community" for "community-based resource management" may be a fallacy where users are from diverse social backgrounds and economic position (Agrawal 1997). Although there are examples of strong collective action, it is not a universal institution. In many cases, "customary" resource management institutions have been undermined or replaced by state management or eroded by internal divisions or market forces, and will not automatically spring up again in the wake of the state's withdrawal.

A critical question, then, for devolution programs, is: under what conditions will collective action emerge and be strong enough to manage natural resources? Considerable research has been devoted to this topic.[8] While there are no universal, definitive answers, a number of factors can be identified as increasing the likelihood of collective resource management. These include characteristics of the resource or the group of users, such as:

- returns to the resource and importance of the resource for local people's livelihoods;
- users have a long time horizon and relatively low discount rate for future benefits;
- size of the management units is large enough that they cannot be captured by individuals, but not so large that they cannot be monitored by the group;
- a history of cooperation and networks among group members (often referred to as "social capital");
- local social structure in which divisions are not too serious or disruptive of cooperation (Vermillion 1996; Baland and Platteau 1998);
- local leadership with the confidence of the members, and that takes an interest in natural resources.

While these factors are useful in predicting whether or not cooperation will emerge, they are often not factors that are amenable to external influence. There is therefore a

[8] For examples, see Baland and Platteau 1996; Ostrom 1999; Tang 1992; Wade 1994.

question of what can be done to increase the likelihood of cooperation in the context of devolution programs. Two basic strategies involve employing institutional organizers as catalysts for collective action, and giving attention to the "enabling environment" (especially the legal framework for local organizations).

Institutional Organizers

Developing collective action is not easy. In many cases there are high transaction costs in organizing, and members must trust each other. Leaders play a crucial role because they bear a large share of these transaction costs, and can provide a catalytic role in getting others to cooperate. Where local leadership does not emerge spontaneously, trained community organizers can facilitate the process, by explaining the advantages of organizing, providing the initial leadership and identifying others in the community that can take over.

Recognizing the importance of collective action to take over resource management from the state, many devolution programs have devoted considerable attention to group formation. For example, early irrigation management transfer programs in the Philippines and Sri Lanka used institutional organizers (Bagadion and Korten 1991; Uphoff 1992). These staff were charged with presenting the idea of organizing to take over management of irrigation systems (or local sub-systems) to the farmers and assisting them through the process of forming an organization, selecting leaders, developing rules, and initiating the work on the system. However, they were not supposed to dictate on any of these issues, nor to do too much "on behalf of" the farmers. They were thus a supplement to, not a long-term substitute for, the local leadership. Although the Philippines have regularized such organizers into a department of the National Irrigation Administration, other countries have often tried to use regular irrigation department staff to organize farmers.

In some cases, government agencies have been charged with organizing user groups. However, conventional bureaucratic approaches and attitudes are often not conducive to encouraging sustained collective action among resource users. Another common approach is to work through NGOs to organize user groups. The government of India and several state governments have contracted with NGOs to organize user groups for watershed management or Joint Forest Management (Shah 1998). The emphasis has often been on organizations, with targets and progress monitored in terms of number that have registered, instead of what is done through the organizations. Collective action that takes place outside the formal organizations, either through customary institutions or spontaneous cooperation, often goes unrecognized (Meinzen-Dick, Raju, and Gulati 2000 for India).

Enabling Environment

In addition to direct interventions to organize people at the community level, there has been considerable attention to policies to create a suitable environment for the organizations. This has included revising legislation to create legal standing for the organizations, and providing model by-laws and agreements with the government agencies. But much of the emphasis has been on the organizations and regulations, and especially what is required of the user groups. Less attention has been given to the rights of the groups, which are perhaps the most critical factor in enabling the organizations to operate.

PROPERTY RIGHTS

Whereas collective action (or at least organizations) for resource management have been recognized as important in many devolution programs, the role of property rights have often not been given the same attention. Yet property rights play a central role in the management of natural resources, conveying authority and shaping the incentives for management. As a result, devolution programs that have not paid sufficient attention to property rights often confront them as a "second generation issue," blocking further progress until they are adequately addressed (Svendsen 1997).

Property rights can be defined as "*the capacity to call upon the collective to stand behind one's claim to a benefit stream* (Bromley 1991, emphasis in original)." Thus, property rights involve a relationship between the right holder, others, and an institution to back up the claim. Property rights over land and other natural resources are often broadly classified as public (held by the state), common (held by a community or group of users), and private (held by individuals or "legal individuals" such as companies).

Reasons for Addressing Property Rights

Why does it matter who holds the rights to natural resources? The arguments for attention to property rights can be summarized as: 1) property rights offer incentives for management; 2) property right give necessary authorization and control over the resource; and 3) property rights can reinforce collective action; and 4) assigning rights to the users demonstrates government commitment to devolution.

First, property rights provide confidence that the holder of the rights will reap the future benefits of investment and careful management, and bear the losses incurred by misuse of the resources. As a result, holding property rights provides a strong incentive for management. In terms of the conditions identified above for successful devolution, property rights lengthen users' time horizon by increasing their expectations that they will have access to the resource in the future. If the resource is seen as the government's, then users will not identify with it, and will expect the government to do all maintenance and investment. This includes not only major construction, repairs, or modifications to the resource base, but also guarding it against unauthorized use.

Many irrigation management transfer programs have recognized this, at some level. Users' neglect or sabotage of government-operated irrigation facilities is seen as a sign of their alienation. Devolution programs then often speak of trying to give users "a sense of ownership" so that they will take care of the infrastructure. But "a sense of ownership" is difficult to convey without real rights. Where governments have borne the cost of developing the infrastructure, there has been reluctance to transfer its ownership to user groups. A number of management transfer programs have included ceremonies to formally transfer ownership of the infrastructure up to a certain point from the government to user groups (often after they make a payment or in-kind contribution). However, the irrigation infrastructure alone without the water is a liability, rather than an asset. Yet governments have been more reluctant to transfer water rights than rights to infrastructure, for a variety of reasons, including loss of revenue and fear of contestation.

A broader reason for the reluctance of governments to transfer rights is that the state claims ownership of many natural resources on behalf of society at large or "the nation." Because natural resources are of vital importance to a country, and their management has important environmental and economic externalities for others (both in the country and internationally), legitimate questions are raised about why a particular group of users should be given property rights over those resources. However, assigning specific types of rights, e.g. use rights or long-term tenancy can mitigate such concerns.

Moreover, because the government often lacks the capacity to enforce state property rights or regulations on extensive resources such as rangelands, forests, marine fisheries, or irrigation, public property has, in effect become open access. Under this situation there is no management, and any who can exploit the resource do so, leading to overuse and resource depletion (for examples, see papers by Agrawal and Ostrom and by Pomeroy in this volume).

If the state cannot exert control over the use of a resource and turns to local communities or groups of users to do so, it is difficult or impossible for the latter to control usage if they do not have recognized management and exclusion rights over the resource, and backing from the state in the case of encroachment. The user group will be unlikely to be able to exclude a logging company or a commercial fishing trawler from extracting too much, if they do not have property rights. Even among the members of the group, if rights to the resource are held by the state or individuals, the group will have much more difficulty in setting and enforcing rules governing resource use than if common property rights are vested in some collective management entity. According to Murombedzi (1998), in much of sub-Saharan Africa, "the absence of a rights based context for community participation in natural resources management meant that local communities themselves did not develop the capacities necessary to fill in the vacuum left by the governments' lack of capacity."

Vesting control over resources, including the right to earn income from them, in the user group can also strengthen collective action by giving the organizations a source of revenue to cover their expenses. Collective action for resource management involves not only significant transaction costs, but also costs for maintaining infrastructure, planting trees or shrubs, and even patrolling to ensure rule compliance. If the organization is able to raise money by selling rights to certain trees, shares of water, or other usufructs, it is less dependent on membership fees and labor contributions (which are difficult to collect in early stages of organization, or if the level of fees are too high) or on subsidies from the government or external NGOs.[9] The issue of financial sustainability has been particularly problematic for irrigation organizations, which can incur substantial costs for maintenance, but can also be an issue for other types of organizations.

Finally, transferring property rights as part of devolution programs demonstrates a commitment on the part of the government to the devolution process. Such programs generally call for an increased commitment on the part of the resource users—of time, cash, and other resources. Calling for this increased participation seems unrealistic unless the government is also willing to commit to a new relationship with the resource and with the user groups. Transferring property rights transfers the rights to reap the benefits from the resource (or gives additional assurance to be able to reap future benefits). This aspect of the transfer of property not only helps offset the additional costs that users assume under devolution, but also demonstrates commitment on the part of the government.

A reasonable guideline for devolution programs is to ensure that user groups' rights are commensurate with their responsibilities in managing the resource. This implies that cases of "community-based resource management" (where users take over more of the management function) would have stronger user rights than cases of joint management, where the state retains an active role in managing the system. However, even in the case of joint or co-management, some official affirmation of the users' rights may be required to coalesce or strengthen local collective action, and to place users on a relatively more even footing with the agency staff. The intra-household and intra-community bargaining literature has shown that those with more assets (especially property rights) are treated better and are better able to negotiate than those without assets (Agarwal 1997; Haddad, Hoddinott, and Alderman 1997; Quisumbing 1994). This principle also applies to negotiations and interactions between the users and agencies in co-management situations: users with recognized rights are more likely to have a say in decision-making.

[9] Wade (1994) provides examples of how village communities in India auction rights to certain trees, fishing, and even liquor licenses to finance collective activities.

Enriching our Understanding of Property Rights

When we speak of property rights, we do not refer to the simple concept of "ownership" as defined by state law. The concept includes various types of bundles of rights, which can derive from state, customary, religious law, or other normative frameworks.

"Ownership" is often taken as having complete control and rights over a resource. If we consider only state-defined ownership of many natural resources, we often find that the state claims ownership and is unwilling to give that up, as mentioned above. But if we look at particular bundles of rights, it is easier to identify specific rights that can be or are already held by users, either individually or collectively.

Schlager and Ostrom (1992) disaggregate the bundles of property rights into:

- ***use*** rights, including *access* (to enter the resource domain, e.g. the right to cross a piece of land, go into a forest or canal) and *withdrawal* (to remove something, e.g. to take a pot of water, some kindling, fodder, or fish); and
- ***control*** rights, including *management* (to modify or transform the resource, e.g. by planting trees or shrubs, enlarging a canal, or restricting what can be harvested), *exclusion* (to determine who else may use the resource), and *alienation* (to transfer rights to others, either by inheritance, sale, or gift).[10]

In most cases, governments are most reluctant to cede alienation rights, even to user groups. At the other extreme, use rights may be acknowledged even for individuals. The critical set of rights, from the standpoint of devolution programs, are the control rights of management and exclusion. Unless these rights are held by user groups, the groups will not be able to carry out many of the responsibilities that the government or their members expect of them. For example, forest committees will not be able to maintain the biomass if it cannot regulate how much members as well as outsiders extract. Nor can they regenerate the forest if they do not have management rights, e.g. to plant trees and protect the seedlings. The committee cannot assure the members that they will benefit from participating if they cannot exclude outsiders from taking the forest products or regulate the conditions under which they can come in (e.g. by harvesting only certain trees, and/or paying compensation).

Seen in this way, some form of management and exclusion rights for user groups appears to be a fundamental condition for effective devolution programs. But this is not simple or uncontroversial. Both state agencies and non-local stakeholders may oppose the conferring or legitimization of control rights by user groups.

On the one side, the state may be unwilling to cede control rights to user groups because of concerns that the groups will not regulate or manage the resource as the state

[10] For discussion of these rights in the context of devolution programs, see Agrawal and Ostrom in this volume.

would like (Murombedzi 1998). In addition to mistrust of users, there are legitimate public trust issues, where the state has a continuing responsibility because the condition of the resource base affects more than just the direct users. At the micro level, a downstream irrigation system will be affected if an upstream one takes too much water. At the macro level, the world "community" at large takes an interest in issues of tree cover or biodiversity conservation, as represented through international treaties or environmental NGOs. Thus, if the group does not take care of the resources, the state wants to be able to step in and take over. This is exacerbated where agency staff does not have confidence in the users' technical knowledge or management abilities, or where the agency staff fears loss of control (and side payments, or rents, that they have been extracting by virtue of their formal control over resources).

On the other side, conferring management and exclusion rights on a user group restricts the use rights of individuals. This applies most clearly to those who are not included in the "user group," whether that is a joint forest management committee, water users' association, fishers' cooperative, or pastoralist tribe.[11] The problems with this are apparent in the "Principes d'Orientation du Code Rural" in Niger, which gives village authorities the rights to allocate land for cultivation and grazing. This potentially excludes transhumant pastoralists who are not part of the village, but have had customary rights to graze on certain rangelands and fallow fields (Niamir-Fuller 1999). The restrictions on use rights also apply to members of the group, who may face limits on how much they can use the resource. For example, decisions by a watershed management committee or joint forest management committee to close the forest except for two days a year limits the access and withdrawal rights of women or herders who were used to gathering kindling or fodder on a regular basis.

Besides disaggregating the bundles of rights, we need to recognize that not all property rights derive from the state, or belong to the government, to be "transferred" to the users. In many cases users have strong claims on the resource based on customary rights, usage over a long period of time, and/or substantial investment in developing the resource. Religious laws may set aside sacred groves or water sources that no one may tap, or designate only certain groups that are permitted to use a resource. Even local social norms allowing or prohibiting some people (e.g. women or certain castes) from using a resource may be relevant in defining property rights. Rather than seeing only a unitary set of laws governing property rights, legal pluralism points to the multiple, often overlapping, and even contradictory bases for claims on a resource (Benda-Beckmann, Benda-Beckmann, and Spiertz 1996).

[11] Even women of the households included in the user groups may find their use rights eroded if the group is male dominated, the interests of men and women differ, and women's interests are not well articulated within the management group. For examples, see Ahluwalia 1997; Bhaviskar 1998; Ribot 1999; Sarin 1995; Vedeld 1999.

Going back to the definition of property rights, we note that it is "the capacity to call upon the collective (Bromley 1991)" that is critical. This means that property rights are only as strong and legitimate as the institutions that stand behind them (Meinzen-Dick and Bruns 2000). If state institutions (e.g. government agencies, police, courts) have no capacity to enforce, then it matters little what is written in the statute books. Then customary or local law[12] is more relevant. Conversely, where customary management institutions have been weakened, customary rights may no longer be enforced or observed. In practice, neither state nor local laws are all-powerful in a given context, nor do they operate in isolation from each other. Rather, property rights are the outcome of a complex interplay between various types of legal frameworks.

If we broaden out our definitions of rights in this manner, we see that devolution programs are not necessarily a major transfer or "ceding" of rights from the state to users. In most cases users probably already feel they have some use and control rights to the resource. Where government agencies have not been very effective in monitoring and enforcing regulations, rights defined by local law are likely to be more relevant than the statutory rights. In many cases of natural resource management, user groups have strong claims to ownership of the resource. For example, in farmer-managed irrigation systems that were built by the farmers in Nepal or Bali, farmers not only claim ownership of the physical infrastructure, but also of the water rights. Villagers often claim ownership of forestland adjoining their village or areas or fishing rights, and pastoralist tribes have controlled large areas of rangelands. Over time, many governments have expanded their claim over those resources, either by stepping in to "improve" the resource (e.g. through rehabilitation or expansion of the irrigation infrastructure, reforesting certain areas, or introducing shrub plantations on the range), or simply by declaring a "nationalization" of the land, trees, fish, or water resources. In this context, devolution is not so much an issue of the state granting rights to users, but reaffirming their previous rights: not devolution, but restitution (see Ngaido and Kirk in this volume).

But though the state is not the sole source of legitimacy for property rights, it is still important for devolution programs to address the rights to resources. First, formal state recognition provides an "enabling framework" for user management (see Lindsay 1998). It strengthens the group's rights, particularly against outside challengers (e.g. logging or fishing companies, other pastoralists, or irrigators' groups). State recognition of users' rights increases tenure security, creating greater incentives for users to participate in management and invest in the resource. Furthermore, addressing rights helps to clarify expectations between the state and users. As mentioned above, for the government to explicitly acknowledge the rights of user groups creates the basis for a more egalitarian

[12] Local law refers to the dominant local interpretations of customary law, religious law, and other relevant normative and legal frameworks. See Benda-Beckmann, Benda-Beckmann, and Spiertz (1996)

relationship between the users and agency staff, which is an essential element for successful co-management regimes.

ROLES OF DIFFERENT INSTITUTIONS

Returning to Figure 1, we note that user groups do not operate in isolation. Government agencies, local government, and the private sector (businesses and NGOs) are also important actors on the institutional landscape. Co-management is not just a two-way partnership between "the government" and a local user group, but an arrangement in which a variety of government, collective, and private institutions may have a role to play.[13] In this section we look at some of the potential roles, incentives, and capacity issues for each in the context of devolution programs in natural resource management.

It is also useful to look at the relationships between these institutions in terms of decision-making, service provision, resource flows, and accountability. There are no clear prescriptions, but the first step is to consider who makes what types of decisions, what services each provides, who pays whom for the different services, and how and to whom each institution is accountable (Huppert and Urban 1998).

USER GROUPS

Roles

Devolution programs inherently involve a greater role for user groups in natural resource management. Increasing the *responsibility* of users for resource management is often one of the major motivations for governments to engage in such reforms. This might include responsibility for monitoring resource use (by group members and outsiders), enforcing rules, providing operation and maintenance services, and even making new investments in the resource base (e.g. by planting trees or shrubs, constructing new boreholes or irrigation facilities, or even building artificial reefs). However, not all of these activities need be done by the user groups themselves. Government agencies might still provide some technical services, training, rule-enforcement and dispute resolution. Other *service provision* such as maintenance or investment work might be contracted to private firms.

The critical form of participation of user groups is in *decision-making*. If devolution programs only seek to involve users in implementing regulations that are set by outsiders, the programs will not tap into the knowledge of users about their own resource situation. Moreover, people are more likely to abide by and enforce rules that they have had some say in setting. Thus, if devolution is to give users a role in

[13] For discussions of the potential roles and relationships of these different institutions see Carney and Farrington 1998; Uphoff 1998; Ostrom, Schroeder, and Wynn 1993.

governance of the resource, they must be able to set rules, determine sanctions, and make critical decisions about their organizations as well as the management of resources.

Whether user groups end up providing resource management services (and investment) themselves or obtaining the services from others, *resource mobilization* is required. The long-term viability of local organizations for resource management depends on whether they are able to raise enough money and/or labor and materials to carry out their tasks, or pay others to do so. This is discussed further under capacity of user groups.

Incentives

Although community-based natural resource management is generally a more cost effective solution than central government administration, devolution implies a shift in who bears the cost of NRM, from government agencies to user groups. As a result, participation in natural resource management through devolution programs almost inevitably increases the costs borne by resource users. The most striking examples may be from irrigation systems, which had been run by government agencies with heavy subsidies, where devolution is treated as a means of reducing the financial burden on the state (by shifting the responsibility, and hence the costs, to farmers). In such cases, direct user fees may increase from 200 to 700 percent or more, even if the users' associations are more efficient than the agencies in operating and maintaining the systems (Vermillion 1996). Other resources may not require as much infrastructure provision and maintenance costs, but still include the financial costs of acquiring inputs and marketing outputs, the opportunity costs of contributing labor or not converting land to agricultural production, the transaction costs of organizing for collective action, and the costs of participating in collective action activities and enforcing its underlying institutions. Even where the users have been de facto managers of the resource, formalizing arrangements between the users and the government is likely to increase the time and transaction costs the users must bear.

Whether or not local resource users will bear these costs of participating in natural resource management depends on whether they expect benefits that are enough to outweigh the costs. Benefits and costs include both tangible and intangible aspects as they are perceived and valued by the members themselves.

In terms of tangible benefits, the value of a resource for local consumption or sale is a key determinant of profitability. There is considerable debate on whether higher values for natural resources is more likely to expose them to the danger of degradation or protect them from it. On the one hand, high-value resources are worth managing and protecting, but they also create greater incentives for outsiders to come take the resources, or for members to break the rules and overharvest. Where devolution programs include clearly defined property rights, there may be stronger incentives to

participate and to protect or enhance the resource base, because individuals have more confidence that they will reap the benefits. Where collective action is strong, individuals are assured that if they abide by the rules, others will as well.

In some cases, participating in the organizations or investing in the resource may create or strengthen property rights, which can be an incentive in and of itself. For example, members of the forestry association on Mt. Makiling in the Philippines hope that, by forming an organization that is active in protecting the forest and even works to replant areas, they will show themselves as responsible stewards of the forest, so that their historical claim to some of the land will be recognized, to end efforts by the statutory "land-owner" (the University of the Philippines Los Banos) to prevent them from occupying forest land.

The costs of participation and tangible benefits have long been at the heart of the collective action debate, but there is now greater recognition of the less quantifiable rewards of participation from the individual's perspective. To the extent that people care how they are viewed by others, one can be motivated to participate by the approval they will get from others who are also inclined to participate. People may choose to participate in natural resource management because it offers an opportunity to socialize with others and form stronger relationships. Such networks contribute to greater livelihood security, especially in situations of poverty and risk, where mutual support among family, neighbors, and community become vital. For example, White and Runge (1995) found that in Haiti, even landless households would contribute labor to watershed management activities, in part to strengthen networks with landowners who might later offer employment or other help. There is growing recognition that such "social capital" may be one of the most important assets for households, and an important contributor to overall development.[14]

Finally, protecting the environment may also provide incentive for people to participate in resource management groups. While we should not assume that resource-dependent households will necessarily put environmental preservation ahead of household food or livelihood security, we should also not assume that they will deplete the resource base. Concern for the environment was cited as the main motivation behind women organizing to protect the Popenguine forest reserve in Senegal (Turnham 1999), and mentioned by the members of the Mt. Makiling forest users' association in the Philippines, as well.

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[14] Whereas social capital can serve to enhance the prospects for successful devolution, it may threaten it too. Enforcement of NRM institutions can be weak if there are community alliances in which some members are reluctant to penalize others. Among communities where members are relatively interdependent, sanctioning someone for breaking the rules may strain the relationship, making one unable to call on that neighbor in a time of need. In areas which are poverty-stricken and possess high environmental risks, the potential costs of alienating one's fellow community members may be considerable.

Capacity

It would be a mistake to romanticize participatory resource management approaches and assume that local user groups will necessarily be able to take on all roles and responsibilities assigned to them under devolution programs, even if they have sufficient incentives to try. A prominent assumption in the literature advocating community-based resource management is that sufficient local knowledge exists for managing resources sustainably. This may be true in communities where current generations have been actively managing their resources, but it is not always the case. In some cases, such as when communities are newer, there may not be a tradition of natural resource management or collective action. In other cases, pre-existing institutions have frequently broken down in places that have been subjected to government intervention in resource management or have undergone increasing market orientation and diminished reliance on natural resources for sustaining livelihoods. Migration can deprive an area of knowledgeable individuals, or bring in those who are unfamiliar with the resource base or have different time horizons. These trends not only imply a potential loss of widespread technical know-how, but can also mean that collective action institutions have weakened or disappeared.

All of these factors are seen in rangelands, which are often located in marginal areas with considerable variability in climate and resource availability over space and time. Impoverishment and crises years have induced people to migrate, and those who leave are often the most energetic members of the community. Not only is important knowledge lost, but the external source of remittances reduces the dependence on local collective action for all household livelihoods. On top of this, there have been conscious efforts by many states to erode tribal authority and nationalize their lands. In such a context, merely adopting devolution programs and assuming that customary institutions will come back to life with sufficient authority to protect and manage the resources is unlikely to succeed unless there are sufficient support services to rebuild the local institutional capacity.

Three critical aspects of capacity to consider are financing, skills, and linkages to other organizations, i.e. whether there are sufficient financial resources, human resources, and organizational resources. If local organizations are deficient in one or more of these areas, it does not mean that devolution programs cannot proceed, but that other institutions may be called upon to supplement the capacity of the local organizations, at least in the short term.

Financing of user groups is a fundamental requirement for their long-term sustainability. If the organizations cannot raise enough cash, labor, or in-kind contributions to fulfill their designated roles, they will not be viable. Subsidies or contributions from the government or NGOs may be helpful in setting up the organization (to reduce the costs of initial organizing), but heavy dependency on such

external sources will undermine the autonomy and decision-making ability of the user groups, and incentives to use the funds efficiently. Collecting contributions from members is often one of the most difficult tasks for collective action. However, as noted above, if the group holds property rights over certain assets (e.g. land, trees, shares of water, or even equipment), the income from use of those assets can contribute to financial sustainability of the organizations, and reduce the amount that needs to be collected from the members.

Critical skills for user groups include both technical skills in managing the resource as well as organizational skills for handling the organizations. Indigenous knowledge of the resource base is certainly important, but so also is knowledge of government regulations regarding its management, as well as technical or "scientific" information. Training and extension services are often critical in strengthening the capacity of user groups. Where devolution programs cut back the direct involvement of government agencies such as irrigation, forestry, or fisheries departments in managing the resources, staff can be reassigned to train resource users. This reduces the need to cut agency employees in the short term. However, extension services and training can also be contracted with NGOs or private companies.

Skills in dealing with government or market agencies may be as critical for success as knowledge of the resource base itself. Extension services may be needed not only to respond to the evolving technical needs of communities, but also to facilitate the development or strengthening of organizational skills. The larger the number of stakeholders and the greater the diversity of their interests in various resources, the more sophisticated both administrative and enforcement capacities need to be for devolution to work. Legitimacy and voluntary acceptance of rules and roles are fundamental elements of a successful devolution process. Where communities have become increasingly dependent on the state, local authority structures are likely to have been undermined or at least their legitimacy weakened. On the other hand, where customary institutions are strong, decision-making power is often concentrated along gender, class, ethnic, and religious lines. To prevent resources from being captured by a limited set of interest groups requires ensuring that more marginalized interest groups will have a voice in decision-making (both to promote equity and to increase the likelihood that all will abide by the rules). Devolution programs can strengthen the organizational capacity of user groups through use of institutional organizers (as discussed above) and training in such issues as legal literacy (awareness of regulations), accounting, or how to run a meeting. As with technical training, these support services to strengthen capacity may be provided by the government, NGOs, or private firms.

Setting rules achieves nothing unless they are observed, and when it comes to the enforcement necessary to sustain institutions, robust collective action is needed. In the case of common property, strong collective action and property rights institutions are mutually reinforcing. Joint monitoring and support for sanctions punishing violators

discourages 'free riding' or claiming more resources than one is entitled to. Likewise, joint rights to a resource implies a common interest in securing its benefits which is likely to be best achieved through a cooperative strategy. But enforcement may also be a problem if users are reluctant to expose or sanction violators with whom they have other social and economic ties.

Capacity for enforcement and conflict management are areas in which user organizations require assistance from government or NGOs. While many user groups are effective in monitoring, sanctioning rule-breaking, and managing conflict among their members, they rarely have the authority to penalize or settle disputes with non-members. Therefore, support is required for penalizing non-members. Where decentralization has put policing authority in the hands of local government, this is the relevant institution, but in other cases the involvement of the coast guard, forest or irrigation departments, or courts might be necessary for sanctioning. Handling inter-community conflict might also done be by those same institutions, or NGOs might act as arbitrators.

One way in which user organizations have strengthened their internal organizational capacity is for local groups to federate into higher-level organizations. Thus, village-level organizations may federate to cover an entire forest area or irrigation system, and these system-level organizations may even federate to the state or national level (as seen in the national federation of irrigation associations in the Philippines, forestry committees in Nepal, or pastoralists in Niger). Federations facilitate the sharing of information and examples, dispute resolution between local units, and collective bargaining with the government or other service suppliers. Federations can be especially important for resources like rangelands or large-scale irrigation systems that have very large spatial dimensions and where access to external resources is very important in crisis periods. As with local-level organizing, initial assistance from the government or an NGO may help with initial organizing, but the federations need to be supported by and accountable to their members.

GOVERNMENT AGENCIES

We are unlikely to find a country where the state does not have some control over its natural resources. However, the extent of control varies considerably among countries, depending on the resource and the beliefs and values upheld by the government. Even where control over resources are highly decentralized, governments often retain control over mineral resources and may own sizable tracts of land as protected areas.

Nevertheless, devolution of natural resource management to communities implies a change in the role for government agencies, from direct management of the resources to providing a regulatory framework and support services, such as those mentioned in the

previous section. Ultimately, many devolution programs state an objective of change from top-down "command and control" to client-oriented systems, which give resource users more control.

What are the incentives for agencies to change their roles in this direction? In many countries, there are pressures on the government to change because budgets continue to shrink and agencies are faced with mounting constraints to manage natural resources, if they were ever able to effectively do so in the first place. Multi- and bi-lateral aid agencies not only tend to have market reforms on their agendas, but also want to see demonstrated efforts by governments to improve environmental management. In addition, international environmental interests are gaining strength and credibility, which enable them to put increasing pressure on governments to halt degradation and destruction of natural resources. All of the international conventions in the course of the Rio Summit, especially the Convention to Combat Desertification, Agenda 21, and the Biodiversity Convention have given international legal standing to these concerns (Kirk 1998).

Such forces reshape the incentive structures faced by governments and state agencies in favor of shifting costly management responsibilities for natural resources toward local users. However, unless these incentives are also translated into incentives for the agency staff, the reforms may not be implemented as planned. As they give up their roles in managing resources, agency leaders and staff will most likely feel threatened unless new roles are developed which offer sufficient job security, salary and status (Vermillion 1996). This is especially the case if the state gives up ownership over natural resources along with those responsibilities. Revenues from exploiting resources or contracting with private industries to exploit and sell them are threatened. Furthermore, their reduced role can be interpreted as a loss of importance, which is likely to mean a cut in government funding and diminished power and status accorded to the heads of those agencies.

Restructuring government agencies to be financially autonomous is one means to create incentives for staff to work with resource users by making the agency dependent on financial flows from the users. A prime example of this approach was the reform of the Philippines' National Irrigation Administration to become financially autonomous, which (together with "bureaucratic reorientation" efforts to strengthen participatory approaches to irrigation) made the users the clients of the agency, with more leverage (see Korten and Siy 1988; Small and Carruthers 1991).

Co-management regimes which allocate different bundles of rights to local users and the state may ease the transition for agency staff, and even offer attractive new roles for all concerned. In addition to providing support services, the state can negotiate on behalf of non-local stakeholders and those who are not included in the user groups. Important roles also remain for government agencies to back up local enforcement capacity where it is weak by enforcing penalties when user groups catch illegal fishers

or loggers. Clear (written) agreements on co-management arrangements can be an important tool in laying down mutual understanding of the roles, responsibilities, and rights between the agencies and user groups. However, the distribution of rights and responsibilities between governments and local users needs to be worked out in a participatory manner.

Much of the literature advocating community-based resource management points to inadequate government capacity for direct management of the resources. A primary reason is the lack of information on local conditions and realities (physical, economic, and social) available to central government agencies, at least at a cost that is reasonable. But governments often find they have even less information and experience on how to effectively devolve authority and management of resources. Agencies staffed with technical personnel may not have the skills or orientation to work with resource users to encourage participatory organizational development. Specialists or NGOs may need to be brought in as community organizers. Agency staff may be better at technical training or monitoring and backstopping the resource users, but some reorientation may still be required to move away from top-down attitudes and mistrust of the users.

Institutional change in the agencies, as in the user groups, will not take place overnight, nor are there simple prescriptions or blueprints. The pace and direction of the changes will differ in each country and resource, depending on the history, culture, and structure of the organizations and the people they work with. Although duplication of successful models in other countries is not likely to be viable, studying the components of successes and failures is vital for understanding the broad dimensions of an effective devolution process and what questions need to be asked.

LOCAL GOVERNMENT

Because decentralization programs often occur side by side with devolution of natural resource management, "the government" includes not only bureaucratic arms of the central government, but also local government bodies. Co-management capacity can also be enhanced through creating more decentralized government structures. Empowering local government units with authority and responsibility narrows the information gap on what is most appropriate at the local level and is better suited to collaboration with resource users. Where local governments act in tandem with user groups, they provide useful backup, especially to enforce penalties for breaking the laws on resource management. In some cases, the user groups may be set up as separate organizations to meet the requirements of some program, but the user groups are effectively a part of the local government.[15] This seems most likely where there is either a strong local government, and/or a lack of factionalism within the community.

[15] For example, in India an irrigation or forest users' group may be either a sub-group of the village *panchayat* council, rather than having separate organization and leadership.

However, if local governments are being re-invigorated and given expanded powers at the same time that resource user groups are being set up, there may be overlap, confusion, and conflicts regarding the role of each. This is especially true where both claim rights over natural resources as a source of revenue for their activities. Competition between individuals or parties for power and patronage may set up rivalries between the leadership in power in the local government and the user groups. The extent of competition and collaboration between these institutions may also vary between communities and over time, depending on who is in power in each type of institution. The incentives for local government and user groups to cooperate with each other seem strongest where the "community" is more ethnically and economically homogeneous so that most of the local residents are users of the resource, and share a common interest in it.

As discussed above, user organizations often need backing from local government, especially for enforcement of penalties against non-members who break the laws governing resource use. At the same time, truly democratic local government can provide a voice for local residents who may be excluded from the resource management group. For example, if an irrigators' association composed of relatively wealthy male farmers is approached to tap their water source to supply a drinking water scheme for the village, the association members may refuse because they value their irrigation water more highly than domestic water supply for others. In such a case, the local government could negotiate on behalf of those who need a new domestic water supply. However, local governments may not always have the capacity to provide representation for the marginalized, or services for resource management. This is especially a concern in the early stages of decentralization programs, if local governments are stretched thin in providing other basic services such as health care, education, roads, etc. Thus, strengthening the capacity of local governments may make them more effective partners in the devolution of natural resource management.

PRIVATE SECTOR: BUSINESSES AND NGOS

At first glance it may seem strange to examine profit-oriented businesses and non-profit NGOs in the same category. Profit-seeking firms such as logging companies or commercial fishing trawlers have often been one of the greatest threats to community based resource management. On the other side, NGOs have often been seen as the "good guy" in organizing local communities for resource management. The commercial logic associated with businesses is very different from the mission-orientation and participatory approaches associated with NGOs.

Yet both types of private sector institutions are often involved in service provision to user groups in the context of devolution programs. Businesses tend to be contracted for input supply and doing construction, operation, and maintenance services, as well as some organizational services such as accounting or auditing. NGOs tend to be

contracted for organizing communities (though private consulting firms may do this, as well.) Both may be involved in support services such as training user groups.

Somewhat surprisingly, although NGOs are generally assumed to have greater contact with local people and a more participatory approach, business firms may be more accountable to the members of the user groups. This is because the commercial enterprises depend on payment from the user groups (or payment from the government for their services to the users) for their revenue. Thus, they need to provide a service to be paid. By contrast, NGOs are generally not paid by the users themselves, and are therefore less directly accountable to them. As in the case of financially autonomous government agencies, where users pay for services they become the clients and acquire more leverage in negotiations than where they are the "beneficiaries" of services financed by others.

The incentives and capacity of private sector organizations (and their staff) vary enormously from place to place, as well as organization to organization. Some NGOs are dedicated to environmental preservation, others to rural welfare, or a host of other goals. Other NGOs may be indistinguishable from private consulting firms, operating on contracts for particular activities. The number of NGOs has been growing rapidly in recent years, but they are still not available everywhere. Similarly, in some places there are many entrepreneurial service providers—in other places such firms are scarce or non-existent. In Nepal, leaders of a particularly effective irrigation organization have even become consultants to farmers in other irrigation schemes, helping them decide what type of organizational structure and activities will work.

The exact choice of organizations for user groups to work with will therefore be very site-specific. What is important to remember is the range of options. Users do not need to do all the work of managing resources themselves. Others can be contracted to provide tree nurseries, clean irrigation canals, audit the books, or even give legal advice.

Whatever the exact institutional arrangements, for devolution to truly engage resource users, the user organizations should be in a position to make important decisions, to select or negotiate with the other organizations that provide services, and hold them accountable. For the organization to truly control the resource (in the sense of being able to reap the benefits from it) greatly strengthens its bargaining power with members as well as with outsiders. Such governance by the users is necessary to make sure that the programs tap into local knowledge as an asset for better resource management. It also increases the likelihood that users will internalize and abide by the rules, if they feel they have a say in developing them.

CONCLUSIONS AND POLICY IMPLICATIONS

Entrusting management of natural resources to government agencies has proven to be expensive and ineffective. Many governments lack the resources to adequately manage natural resources over large areas. Financial crises as well as environmental degradation have driven governments to devolve natural management to user groups. Evidence of successful self-governance of natural resources by the users themselves has engendered considerable optimism that turning responsibility over to organized user groups will improve the efficiency, equity, and sustainability of the resource base while also reducing the financial burden on the state.

However, devolution programs have not always been successful in achieving all of these objectives. Considerably more attention is needed to the factors that make users willing and able to take on an expanded role, to use resources wisely, distribute the benefits equitably, and sustain the resource base for future generations. This paper has highlighted the role of effective collective action and property rights in devolution programs, and indicated some things that might be done to strengthen these institutions.

First, if the state is to devolve management of common pool resources such as rangelands, forests, fisheries, or irrigation to users, there needs to be some form of coordination among the users to carry out the management tasks. But one cannot automatically assume that an organization exists, or will spring to life of itself once a devolution policy is adopted. In many cases there are or have been effective self-governing institutions for resource management, but they are not found everywhere, and their legitimacy and capacity to manage the resource has often been eroded by government resource management.

There is a growing body of experience with participatory methods for identifying formal and informal local institutions for resource management, and how to organize and strengthen groups that can take over functions. Because of the enormous variability in the resource base, the socioeconomic conditions, and the history of cooperation, no single blueprint will be appropriate for all situations. Values, norms, and social structures eminently affect users' capacity for cooperation. A weak or absent tradition of cooperation, a breakdown in collective action institutions, or poor organizational capacity among users and other stakeholders necessitate institutional development if devolution of natural resource management is to be effective. This also applies when there is open access resource use or highly inegalitarian private property regimes which exclude those who depend on natural resources for their livelihood.

Rule structures cannot be modified overnight and require user participation in assessing the costs and benefits of various resource management strategies and in designing new alternatives. Legitimate institutions can only emerge from those who will have to live by their rules and cannot be imposed from the outside. Outsiders have roles ranging from facilitating the process of problem analysis and crafting solutions,

providing information on the rationale for adopting new institutions or modifying existing ones, offering a broader perspective of the potential benefits and costs of doing so, supplying technical knowledge, and assisting in strengthening organizational capacity. However, short-term participation on one front does not assure its long-term application to upholding new institutions and sustainable resource management practices. Incentives, within and beyond communities, need to be in place, which encourage people to participate in resource management and abide by the established rules. Just as building up a physical infrastructure for transportation or communication needs to be regarded as a long-term investment, so also building up an institutional infrastructure takes time and a commitment of resources, but can have high payoffs.

Devolution programs that transfer responsibilities for resource management to users must also transfer commensurate rights. Property rights are necessary for resource users to undertake many management tasks, and are one of the most important incentives that governments can offer users to induce them to bear the costs of natural resource management. Transferring rights to local groups can strengthen collective action, and set the stage for more collaborative (as opposed to hierarchical) interaction between user groups and government agencies).

Even with the most complete transfers of rights and responsibilities to users, there is still a critical role for state in enforcing regulations, punishing violators, and settling disputes between groups and outsiders. Responsive backup from the relevant government authority—whether an agency or local government—will build users' confidence in their organization and in the new co-management arrangements.

State agencies and user groups are not the only relevant institutional actors, who must assume all roles in natural resource management. Especially in the context of broader decentralization and privatization policies, local government, NGOs, and private companies can also play an important part in carrying out natural resource management functions. Local government can provide backup enforcement, and private firms and NGOs can provide many of the services required.

Whatever the final arrangements between user groups and government or private service providers, there is a need for initial negotiation between the different parties, and to develop a clear understanding of the roles, rights, and responsibilities of each party. Coordination mechanisms include not only information exchange, but also revenue flows (who pays for what) and mutual accountability mechanisms. Having a written agreement regarding these arrangements is useful but not sufficient. Even after the agreement is signed, there is an ongoing need for communication, sharing of information, and for building trust (Alsop 1999). Just as collective action must be built between individual resource users, so also collaborative arrangements need to be built between organizations involved in co-management of natural resources.

If the users are to do any better than the state, and if devolved resource management is to be sustainable in the long run, it is essential that the users be able to mobilize

sufficient resources. In many cases, devolution results in users paying considerably more (at least in cash) than they did under subsidized, state-run systems. Whether the users will be willing to pay the higher costs depends on their having sufficient tangible and intangible incentives. Rather than seeing these payments only as a burden on users, resource flows from user groups to other service providers can be a means of increasing the bargaining power of the user groups, and the accountability of other organizations to the users. Collective action can play a significant role in reducing costs through effective organization, and can provide each user with the confidence that if they contribute, others will as well. Property rights can provide users with the confidence that if they invest in the resource (or avoid overuse) today, they (and their heirs) will reap the benefits tomorrow. Furthermore, property rights over assets assigned to the user groups can provide a core of funding for resource management, thereby reducing the need to raise all funds from member contributions.

While much has been learned regarding community-based resource management and co-management approaches, much remains to be learned through research and action. There is certainly a role for action research and careful process documentation to learn what works—and does not work—in devolution projects. We especially need more documentation of the outcomes of devolution programs in terms of the efficiency of resource use, who gains and who loses, and the long-term financial as well as environmental sustainability of the resource management system. Nor is it enough to study "success stories" or pilot projects. We also need comparative studies that include "failures" as well as successes, if we are to identify critical factors. Finally, in addition to positive analyses and government perspectives on the processes and outcomes of programs, we also need to include the assessments of the resource users themselves, for in the long run, it is they who will determine whether devolution of natural resource management is viable.

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COLLECTIVE ACTION, PROPERTY RIGHTS, AND DEVOLUTION OF FOREST AND PROTECTED AREA MANAGEMENT

Arun Agrawal and Elinor Ostrom[1]

This paper aims to accomplish two tasks: One, it presents a framework to help analyze the devolution of the use, management, and governance of resources. It does so by bringing together several strands of work on institutional analysis and property rights, and building on theories of collective action. These writings are highly relevant to our understanding of governance and devolution, but their relationship to devolution and governance requires closer examination than it has previously received. Two, the paper provides empirical evidence from two cases on devolution of forest use from India and Nepal to illustrate and examine the offered framework. The devolution of forest use in Kumaon in India and efforts to involve local population in the management of protected areas in the Terai of Nepal form the two contrasting studies of the origins and implementation of devolution. Studying these contrasting cases enables us to examine the propositions we advance about the relationships between characteristics of devolutionary initiatives, the likelihood of an initiative being implemented successfully, and resource-related outcomes.

Devolution of resource management is part of a larger conversation about decentralization of authority away from central government offices and officials. Writings on decentralization and its effects have a long pedigree in development studies but they have gained a wider audience in the past two decades in comparison to the years immediately following the Second World War. Indeed, one can argue that this shift, in search for alternatives to the acknowledged failures of state-based solutions to problems of governance, has characterized writings related to development and resource management more generally (Agrawal 1999).

A review of writings on devolution reveals two significant lacunae. First, these studies often talk of decentralization/devolution as a gross concept that signifies changes in authority structures but do not further investigate the specific dynamics of devolution, or its relationship to institutions through which it occurs.[2] Advocating for

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[2] But see Ostrom, Schroeder, and Wynne (1993) for a careful examination of different institutional alternatives to organize the provision, production, and maintenance of development infrastructure.

decentralization or devolution as a general aim and ignoring specific details may be appropriate as a rhetorical strategy against the concentration of power. But such a lack of specificity does not provide sufficient guidance when it is necessary to create a policy-relevant plan to put devolution into practice. Existing theories of property rights, suitably enriched by an attention to powers and capacities, can play a constructive role in addressing this gap in writings on devolution. An understanding in terms of devolution of rights and capacities over a set of specific action domains at different levels of social aggregation helps us provide a more precise framework to understand devolution. The two studies of decentralization that we examine illustrate our argument.

A second gap in studies of devolution relates to the functional orientation of much of the literature. Scholars often try to show that devolution/decentralization is superior to centralized solutions by stressing the efficiency/ equity/ sustainability aspects of its outcomes. Thus, they defend and justify it on the basis of its effects. This rhetorical strategy emphasizes why devolution should be pursued, but provides little insight into the conditions under which proposals for devolution may actually be accomplished successfully. We suggest that insights from writings on collective action form a fertile source to address this void.

The two case studies we present exemplify different origins of the pressures for devolution, and different processes through which devolution is realized. In one case, Kumaon, devolution of authority was set in motion by demands voiced by local residents. In the other, Nepal, a form of devolution/decentralization was initiated as part of the design of an internationally funded project to involve local populations in the management of resources in the buffer zone of a network of protected areas. By paying attention to the politics that shape how devolutionary initiatives unfold, we gain a more useful understanding of the processes involved.

THE DISCOURSE OF DEVOLUTION

Two main phases exist in the post-Second World War development writings (Sivaramakrishnan and Agrawal 1998). The first phase was one of international Keynesianism and state-mediated capitalism.[3] In this phase, the central state was viewed as playing a pivotal role in planning and industrialization, especially in developing countries that were attempting to emulate the growth patterns of western nation-states. International institutions of development and aid focused on the central state as an important actor in transforming social relations, and most aid was channeled through the state. These earlier years witnessed a growth in the capacities, scope, and activities of the state as the *sine qua non* for economic and social development.

The second phase of development started during the late 1970s as more analysts began to recognize that the state was not necessarily the best agent to pursue

[3] Some would argue that this was also an era of crypto-imperialism (V. Ostrom 1988).

development as a universal good, or to deal with the problems of poverty, unemployment, and inflation. The decline of the state as the agent of development took place at the same time as the decline and fall of socialism as a political and economic system. Regimes of the Second World today stand dismantled. Those in the Third World face a set of prescriptions for development that simultaneously follow two courses. On the one hand, privatization, liberalization, export promotion, openness to international markets and capital, and downsizing of the central state are seen as the prerequisites of economic growth. On the other hand, recognizing the limits of these policy innovations to address issues of social equity, advocates of equitable development highlight the significance of communities.

It is somewhat ironic that contemporary prescriptions for development simultaneously highlight two alternatives that are frequently viewed as being against each other—the market and the community. To understand this apparent contradiction, it is important to understand that development has always been a multi-faceted goal, its aspects sometimes in tension. The simultaneous focus on the market and the community seeks the same kind of complementarity in development objectives that was expressed in the earlier slogan of "Growth with Equity." The main difference is that in the preceding period development theorists still believed that the state by itself could pursue this two-pronged objective. Today, development scholars have identified two very different modalities—markets and community—through which to accomplish the twin objectives of growth and equity. In the overall discourse about development, the co-existence of strategies that advocate the market and the community as possible agents of development can be seen as the attempt to pursue two conflicting objectives through different institutional instruments.

The new development paradigm that has emerged since the 1980s has found acceptance in a number of venues, including institutions in the United Nations system, and the World Bank (IADB 1991; World Bank 1991). Veltmeyer (1997) summarizes the main features of this paradigm as an emphasis on participation, decentralization of decision-making, and targeting of the poor with specific policies related to health, education, and micro-enterprise development, on the one hand, and structural reforms that provide an appropriate institutional framework to reduce state intrusions, on the other hand. This vision of development combines the roles of markets and communities as a substitute for the basic role that the central state had played in the years immediate following the Second World War. The retrenchment of the powers of the central state is supposed to occur through decentralization.

The idea of decentralization in development and resource management has caught and retained the attention of scholars, donors, and governments alike (Frey and Eichenberger 1999).

Research papers on the subject have regularly appeared in major development journals such as *World Development* and *Development and Change* for more than two

decades. Multilateral donors such as the World Bank and the United Nations Development Program find decentralization to be a worthwhile goal toward which to strive (Smoke 1993). Similarly important are the efforts of a large number of US and European private and state-supported development-aid organizations that have contributed to local institutional development through their funding strategies. Governments in many countries have also demonstrated at least a rhetorical commitment to establish decentralization programs of different types. Their words and efforts have generated variable results, leading to a range of terms that describe the complexity and patchiness of the processes. Deconcentration,[4] delegation,[5] devolution,[6] deregulation,[7] privatization,[8] and denationalization[9] are some of the more common terms that are used to refer to the forms in which decentralization occurs. Part of the reason why so many different terms are used to describe decentralization is precisely that decentralization can take place along many dimensions, towards multiple levels, and for several types of tasks. Of them all, devolution is typically seen to be signifying the most extensive form of decentralization. But rather than quibble over definition-related details, we propose to use insights from institutional analysis and property rights theory to analyze devolutionary initiatives. Such a framework for understanding devolution of natural resources, we suggest, can help us gain a more precise view of what devolution is about, how it might be initiated in diverse settings, and its likely impact—specifically in relation to forests.

[4] *Deconcentration* can be defined as "the shifting of workload from central government ministry headquarters to staff" located in offices outside of the national capital (Rondinelli et al. 1989). This is perhaps the most innocuous of the forms of decentralization, requiring the least changes in the forms of exercising power.

[5] *Delegation* differs from deconcentration in the actors to whom authority is transferred. According to Ostrom et al. (1993), delegation refers to transfers of authority to public corporations or special authorities outside the regular bureaucratic structure.

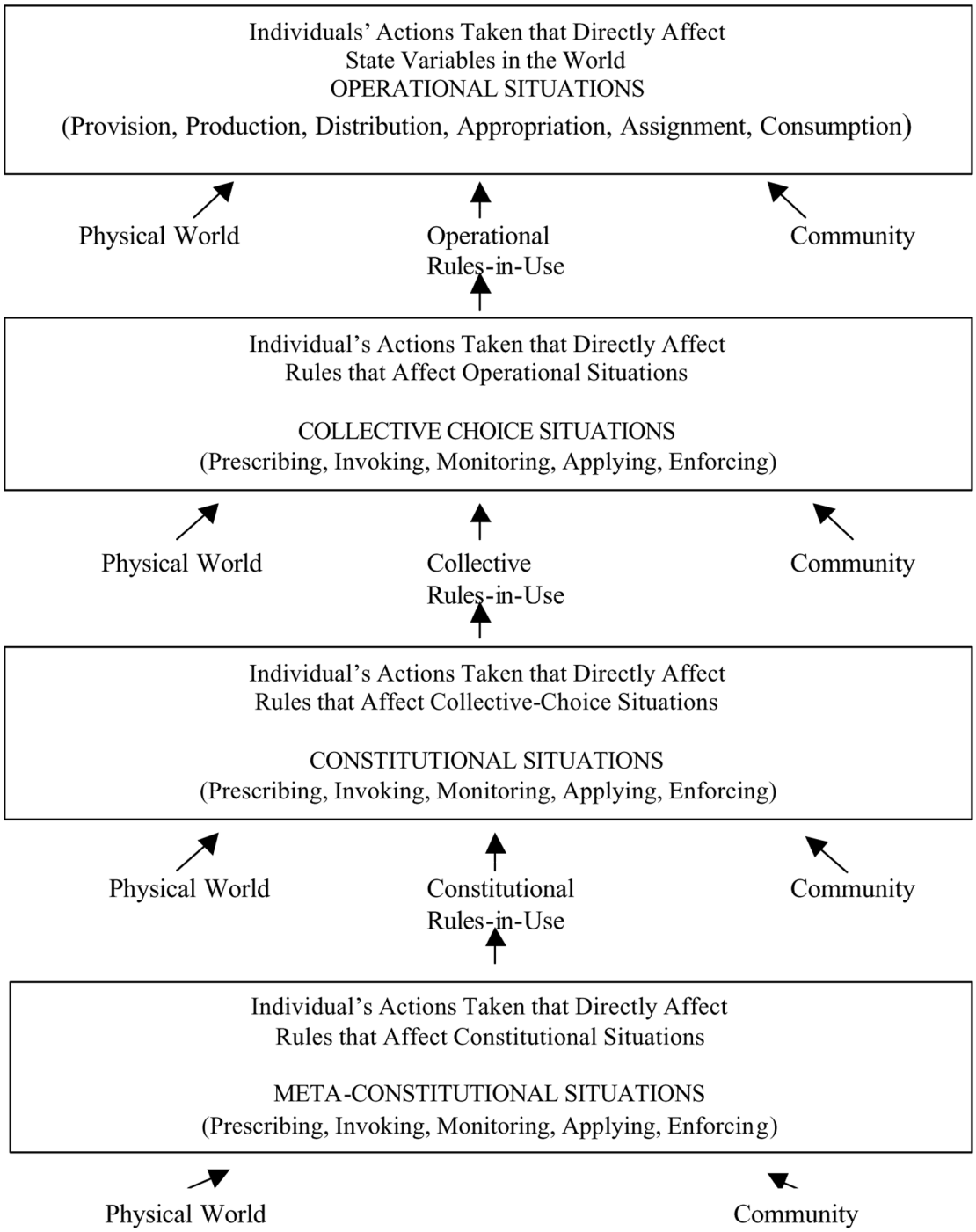
[6] *Devolution* is the most extensive form of decentralization. It is described as the increased empowerment of local organizations with no direct government affiliation (Maniates 1990).

[7] *Deregulation* involves the dismantling of price controls, quotas, and barriers to entry so that market forces determine savings, investment, and consumption decisions of economic actors (Dahal 1996).

[8] *Privatization* denotes transfers of responsibility for public functions to voluntary organizations or private enterprises (Rondinelli and Nellis 1986, cited in Ostrom et al. 1993).

[9] *Denationalization* refers to the selling to the public or to workers government-owned assets or enterprises meant for the production of goods or services (Dahal 1996).

Figure 1: Levels of analysis and outcomes



Source: E. Ostrom (1999a).

FRAMEWORK FOR THE ANALYSIS OF DEVOLUTION

Over the past several decades, colleagues associated with the Workshop in Political Theory and Policy Analysis at Indiana University have been developing and using a general meta- theoretical framework for analyzing institutional arrangements (see Kiser and E. Ostrom 1982; Oakerson 1992; Ostrom, Gardner, and Walker 1994; Ostrom 1999a). In addition to the power of this framework for the analysis of specific rule systems in the context of diverse types of biophysical environments and cultural endowments, a key distinction is made among levels of action and the rules that affect action situations (see Figure 1).

LEVELS OF ANALYSIS AND OUTCOMES

In the most basic *operational* level situations, individuals interact with one another in such a manner as to affect events in the world directly. The structure of the situation that individuals face is affected by attributes of a physical world, rules-in-use and practices, distribution of power, and attributes of the community of users and officials. When a group of women harvest firewood from a nearby forest or a local firm fells trees to be sawn into timber, the structure of incentives that participants face is at an operational level of analysis. Given these incentives and the objective and intrinsic preferences of participants, users interact and generate outcomes in the world. Depending on the structure of the situation and interactions among individuals, outcomes can vary dramatically. Forest products may be harvested sustainably. Overharvesting may occur. The forest may even be severely degraded or entirely disappear. Analysts assess outcomes using a variety of evaluative criteria including resource sustainability, economic efficiency, and equity. Individual participants seek a variety of objectives in operational-level situations including achieving higher levels of economic returns and power. The individuals involved evaluate the expected level of net benefits to be achieved and weigh these against the set of costs they will have to bear. These costs and benefits at an operational level are strongly affected by the bundle of property rights possessed by those involved. If the users of a forest do not have an assurance of their right to continue harvesting from a forest, they have no motivation to conserve resources for the future. What they conserve can just as well be harvested by someone else as by themselves.

The rules that are used to structure operational situations are established in one or more *collective choice* arenas. The participants in a collective choice situation may be the same participants who act in the operational situation. If the women of a community have the authority to determine who can use a local forest, when and where they can use it, what tools can be used, and how these rules will be enforced, they can participate in collective choice decisions related to determining the operational rules for their own (and potentially others:) use of that forest. They may not be the only collective choice

body relevant to a particular forest. A local, regional, or national government may also have authority to determine some of the operational rules for the same forest. A local group may, for example, determine operational rules related to all non-timber forest products, while a national agency has formal authority to determine rules related to timber products. In many cases, local groups have no authority at all to determine any of the operational rules that affect their day-to-day harvesting, planting, thinning, and other forest-related activities. In others, members of a user group or a village may have asserted *de facto* authority to make such rules or may even have been assigned *de jure* authority to do so. Determining the operational rules to be used in future interactions is a fundamental exercise of power in that it results in the allocation of rights and duties to various participants. Thus, authority at the collective choice level enables those who exercise it to establish, modify, or eliminate the bundles of operational level property rights exercised by specific groups of individuals.

The movement across these analytical levels may not be obvious to the participants, and is frequently not at all clear to outside observers. Discussions about operational rules may occur as members of an "executive committee" are walking to or harvesting from a forest and discussing whether they should close the forest for a specific length of time during the year. Or, these discussions may occur at someone's home. They may or may not then be discussed in a more formal setting where minutes are kept and rules are promulgated through announcement by a local messenger, a written form, or an oral report to all those affected. Although many collective choice decisions about operational rules do occur in formal settings, especially governmental rules and regulations that are determined in formal legislative, administrative or judicial settings, collective choice decisions are also often made in much more informal settings throughout the world.

Collective choice situations are themselves structured by rules determined at a *constitutional choice level.* The decision to allocate authority to the women who live in a community to make collective choices for the community about the operational rules affecting a particular local forest, is a constitutional decision whether or not it was made by the local village itself, made by a formal government, or as part of a project funded by an international donor. Constitutional choice decisions are not just those embedded in some musty document written long ago, but are made frequently by diverse groups, certainly much more frequently than is discussed in the contemporary policy literature.

The analytical distinction between operational level rules, and collective and constitutional choice arenas should not create the impression that these correspond to three actual levels of authority or rules in a political or legislative system. It is quite possible that in the real world, the same political body uses operational rules, creates them by deliberating at the collective choice level, and has powers in the constitutional choice arena as well. Or, there may be a number of levels of authority, corresponding perhaps to the village, district, provincial, and the national where specific rules are

created and powers are exercised. What is crucial to understand is that in relation to a particular resource, there are certain rules that affect its day-to-day use and consumption, others that structure the creation of operational level rules, and still others at a higher constitutional level that affect the making of collective choices.

In a highly centralized regime, almost all authority for making constitutional, collective choice, and operational-level rules is concentrated in a national government. Local officials and citizens are viewed as rule followers and not rule makers. In regimes that have undergone forms of deconcentration, the authority to make all three types of rules is still lodged in national government officials even though some of these may work in field offices and therefore know more about local circumstances. Forms of decentralization that go beyond deconcentration usually involve some sharing of responsibilities for making operational level rules. Decentralization policies can involve some sharing of authority to make rules at the collective choice or constitutional choice levels. Part of the confusion in understanding the decentralization literature is that these useful distinctions among levels of decision making are not made and thus, no explanation is conveyed about who can make decisions about what at what level of analysis. When we claim that devolution is the most far-reaching form of decentralization, we are in essence implying the sharing of authority regarding resources in relation to operational level rules, and in the collective and constitutional choice arenas. Sharing of authority itself signifies not just the responsibility, but also the financial and political wherewithal to legislate and enforce rules in relation to resources.

These distinctions among different levels of action situations are also useful when one wants to understand diverse kinds of property rights that influence how forests are to be used, harvested, managed, and sustained. Thus, let us briefly discuss various types of property rights that are involved in the use of any kind of resource system.

TYPES OF PROPERTY RIGHTS

A property right is an enforceable authority to undertake particular actions in a specific domain (Commons 1968). Property rights define the actions that one individual can take in relation to other individuals regarding some "thing." If one individual has a right, someone else has a commensurate duty to observe that right. Schlager and Ostrom (1992) identify five property rights that are most relevant for the use of common-pool resources, including access, withdrawal, management, exclusion, and alienation. These are defined as:

Access:	The right to enter a defined physical area and enjoy nonsubtractive benefits (e.g., hiking, canoeing, sitting in the sun).
Withdrawal:	The right to obtain resource units or products of a resource system (e.g., cutting fire wood or timber, harvesting mushrooms, diverting water).

Management: The right to regulate internal use patterns and transform the resource by making improvements (e.g., planting seedlings and thinning trees).

Exclusion: The right to determine who will have an access right, and how that right may be transferred.

Alienation: The right to sell or lease management and exclusion rights.

Private property is frequently defined as a well-defined right of alienation. Property-rights systems that do not contain the right of alienation are considered to be ill-defined by many analysts. Further, such systems are presumed to be inefficient since property-rights holders cannot trade their interest in an improved resource system for other resources, nor can someone who has a more efficient use of a resource system purchase a system in whole or in part (Demsetz 1967). On the other hand, it is assumed that property-rights systems that include the right to alienation will be transferred voluntarily through market exchanges from lower valued uses to their highest valued use. Larson and Bromley (1990) challenge this commonly held view and show that much more information must be known about the specific values of a large number of parameters before judgments can be made concerning the efficiency of a particular type of property right.

CLASSES OF PROPERTY-RIGHT HOLDERS AND OUTCOMES

Instead of focusing on one right, it is more useful to define five classes of property-rights holders as shown in Table 1. In this view, individuals or groups may hold well-defined property rights that include a combination of the rights defined above. This approach separates the question of whether a particular right is well-defined from the question of the effect of having a particular set of rights. "Authorized entrants" include most recreational users of public parks who may by allowed through purchase or some other means, an operational right to enter and enjoy the natural beauty of the park, but do not have a right to harvest forest products. Those who have both the right to enter and to harvest some forms of products are "authorized users." The presence or absence of constraints upon the timing, technology used, purpose of use, and quantity of resource units harvested are determined by operational rules devised by those holding the collective-choice rights (or authority) of management and exclusion. The operational rights of entry and use may be finely divided into quite specific "tenure niches" (Bruce 1995) that vary by season, by use, by technology, and by space. Tenure niches may overlap when one set of users owns the right to harvest fruits from trees, another set of users owns the right to the timber in these trees, and the trees may be located on land owned by still others (Bruce, Fortmann, and Nhira 1993). Operational rules may allow authorized users to transfer access and withdrawal rights either temporarily through a rental agreement, or permanently when these rights are assigned or sold to others (see Adasiak 1979, for a description of the rights of authorized users of the Alaskan salmon and herring fisheries).

step in enabling local users to have an effective voice in some aspects of managing resources sustainably (Schlager and Ostrom 1993). When local users are able to make their own rules concerning how to limit the timing, location, and technology of use, they are able to begin to learn how to devise rules that fit local circumstances (see Design Principles elucidated in Ostrom 1990). One of the major problems in trying to devise management rules for an entire country from a central governmental office is that the characteristics of diverse ecological systems vary so dramatically from one another in most countries with diverse ecological zones. The effectiveness of diverse management rules depends on a large number of variables such as: when the rainy season begins,

how long it is, the impact of different types of harvesting equipment on the local system, the mix of species that grow in a forest and how they depend on one another, how individual villages are located in relationship to a forest, how easy it is to monitor each other's activities, how the growth patterns of highly valued forest products respond to different silvicultural practices, and the prices of various input factors and of various forest products in nearby as well as distant markets.

The importance of having local knowledge about these kinds of variables has been ignored in much of the forest policy devised for developing countries. Since users were perceived as the source of the problems of overuse and degradation, it was presumed that central authorities could apply scientific knowledge to manage these resources successfully over time by devising uniform policies regarding all forests in a country. Unfortunately, scientific information may not be effectively used without the local knowledge about specific resource attributes that can then help to identify which scientific findings are relevant to a particular location or problem. Further, when national officials are underpaid and understaffed, trying to develop different and effective management plans for a large number of local forests are highly unlikely to be undertaken. Thus, in many cases, the devotion to having a centrally designed, scientifically informed forest policy has meant in reality that many forests have been entirely open access and degraded over time because local users do not have more than de facto user rights with no rights to devise rules limiting use or requiring monitoring and other input resources.

"Proprietors" hold the same rights as claimants with the addition of the right to determine who may access and harvest from a resource. Most of the property systems that are called "common-property" regimes involve participants who are proprietors and have four of the above rights, but do not possess the right to sell their management and exclusion rights even though they most frequently have the right to bequeath it to members of their family (see Berkes 1989; Bromley et al. 1992; K. Martin 1979; McCay and Acheson 1987).

Empirical studies have found that some proprietors have sufficient rights to make decisions that promote long-term investment and harvesting from a resource. Place and Hazell (1993) conducted surveys in Ghana, Kenya, and Rwanda to ascertain if indigenous land-right systems were a constraint on agricultural productivity. They found that having the rights of a proprietor as contrasted to an owner in these settings did not affect investment decisions and productivity. Other studies conducted in Africa (Migot-Adholla et al. 1991; Bruce and Migot-Adholla 1994) also found little difference in productivity, investment levels, or access to credit. In densely settled regions, however, proprietorship over agricultural land may not be sufficient (Feder et al. 1988; Feder and Feeny 1991). In a series of studies of inshore fisheries, self-organized irrigation systems, forest user groups, and groundwater institutions, proprietors tended to develop strict boundary rules to exclude non-contributors; established authority rules

to allocate withdrawal rights; devised methods for monitoring conformance, and used graduated sanctions against those who do not conform to these rules (Agrawal 1994; Blomquist 1992; Schlager 1994; Tang 1994; Lam 1998).

Thus, we would expect that decentralization/devolution programs that actually empowered local users to be proprietors—even without the right to sell these rights to others—would be creating sufficient incentives on the part of local users that one could expect improved outcomes over time. Because of the right to exclude others, those who jointly hold proprietorship rights are able not only to make rules to manage a resource but to keep others who are not willing to contribute to the costs of management from receiving the benefits. A crucial problem to be solved, however, is how local users can gain some confidence that such rights will not be taken away. This is a major problem in countries where all non-agricultural land has been nationalized in the last century so that local users have lost property rights to use local forests through a sweeping legislative act (Arnold and Campbell 1986).

"Owners" possess the right of alienation "the right to transfer a good in any way the owner wishes that does not harm the physical attributes or uses of other owners" in addition to the bundle of rights held by a proprietor. An individual, a private corporation, a government, or a communal group may possess full ownership rights to any kind of good including a common-pool resource (Montias 1976; Dahl and Lindblom 1963). The rights of owners, however, are never absolute. Even private owners have responsibilities not to generate particular kinds of harms for others (Demsetz 1967). Some policy recommendations for complete devolution recommend that local users be given full ownership rights, but this would be the strongest form of devolution since then local users could do anything they wanted with the forested land they owned including selling all timber or selling the land itself.

What should be obvious by now is that the world of property rights is far more complex than simply government, private and common property. These terms better reflect the status and organization of the holder of a particular right than the bundle of property rights held. All of the above bundles of rights (entry, harvesting, management, exclusion, and alienation) held by a single individual or by groups organized in diverse manners. Some communal fishing systems grant their members all five of the above rights, including the right of alienation (Miller 1989). Members in these communal fishing systems have full ownership rights. Similarly, farmer-managed irrigation systems in Nepal, the Philippines, and Spain have established transferable shares to the systems. Access, withdrawal, voting, and maintenance responsibilities are allocated by the amount of shares owned (E. Martin and Yoder 1983a,b,c; E. Martin 1986; Siy 1982; Maass and Anderson 1986).

Many devolutionary proposals assign no more than the operational-level right of being authorized users to those whom the program is supposed to benefit, while all other significant operational and collective choice rights continue to be held by government

officials. Sometimes these officials work in a local office instead of in the nation's capital, but they do not themselves have a long-term interest in sustaining the resource. Obtaining at least some rights to the continued use of a resource may encourage local users to perceive long-term interests in a local resource, but such limited property rights do not establish strong incentives to manage such resources sustainably. Without the operational level right to manage a resource, local users cannot consider various ways of growing and planting seedlings, thinning non-commercial trees for use as firewood, and restricting the grazing of cattle in a forest. Without the collective-choice right to exclude others, a local user can still fear that any effort made to limit harvesting will benefit others who also assert a future right to harvest. And, even with these rights, the absence of constitutional choice rights may mean that existing rights of local users can be taken away by distant powerholders without consultation. Finally, even with all these rights, not all groups will self-organize themselves to manage local forests in a sustainable manner because the question of self-organization is not just a matter of rights, but also of political dynamics. The question of self-organization and politics brings us to the second important lacuna in the literature on devolution: lack of attention to the politics that imbues all efforts to devolve power and authority.

THE POLITICS OF DECENTRALIZATION

Since most proposals for devolution involve the transfer of at least some rights from officials at a central governmental office to field officers, or in some cases, to local users, this involves a shift in the power of some over the actions of others. In all its variants, decentralization is about a renegotiation of the institutions and social arrangements through which power is exercised in different forms. It is concerned with the distribution of power, resources, and administrative capacities through different territorial units of a government or local groups. Therefore, the most important element in understanding devolution and whether it is likely to occur is attention to the politics that surrounds it. However, existing arguments about devolution elaborate upon a large number of reasons why it should occur, but pay less attention to whether and when it might occur.

At its most basic, devolution aims to achieve one of the central aspirations of just political governance—democratization, or the desire that humans should have a say in their own affairs. In this sense, devolution is a strategy of governance prompted by external or domestic pressures to facilitate transfers of power closer to those who are most affected by the exercise of power. If the experience of development and conservation has made one fact abundantly clear it is that centralized solutions to environment and development related problems have not worked. At the same time, social movements and a range of organizational actors with an interest in development issues, among them grassroots and international NGOs, have shown that approaches that

take people=s aspirations more seriously can sometimes enjoy at least modest, local success (Evans 1992; Mawhood 1983; Wunsch and Olowu 1990).

When devolution is seen as a strategy that makes the achievement of various social aspirations more efficient (Clark 1995), the argument usually hinges on more effective use of information and skills. By shifting decision-making powers at an operational or collective choice level closer to those who are influenced by these decisions, it is hoped, information asymmetries can be reduced so as to produce more efficient decisions: better information will lead to better decisions. Greater efficiency in decision-making and implementation of projects can alleviate budgetary pressures on central governments, and therefore they may see decentralization as a useful strategy as well. Such hopes can sometimes be unfounded, especially in circumstances where only partial devolution has taken place and essential elements in the power to make decisions have been retained by central level actors.

Administrative factors in favor of devolution include the belief that it increases effectiveness of coordination and flexibility among agencies, and that it can increase popular participation in development planning and implementation. Greater participation is also a prerequisite for popular democracy. Another political reason that might impel devolution is that it can enable reductions in regional or ethnic inequalities. The listed arguments for decentralization have often been voiced by state actors themselves. Analysts who use a more structural perspective highlight other, more latent, and less often acknowledged reasons. These include more political variables without being actor or strategy centered and which take states as monolithic formations. Some other analysts focus on how states can use decentralization to gain legitimacy (Mawhood 1983; Rakodi 1986). Although decentralization structures are publicly proclaimed as a means of promoting communication from the bottom upward, local bodies connected to the top are used typically to facilitate the flow of information and ideas downward. This may be one of the reasons why local administrative structures combine elected representatives with officials appointed by the central government, diluting the impact of ideas emerging from local populations.

The above understanding of devolution hinges on a crucial underlying assumption: the interests of local agents, whether they be arms of the state or other actors, necessarily diverge from those of the central state. This portrayal of the state as having a horizontal cleavage that divides state actors into hierarchically arrayed entities with opposed interests is a useful move. It recognizes that there may be internal divisions within the state. It also suggests that it is important to attend to the differences in the motivations, objectives, and strategies of the different parts of a state. If this view of why decentralization occurs attends to one set of cleavages within the state, it ignores another.

As a number of commentators have pointed out, the relationship between central and local governments can be an ambiguous one where local governments can be both

agents of and obstacles to central government (Goodwin et al. 1996; Rhodes 1988). If the relationship between local and central states is complementary rather than competitive, it is unhelpful to assume that central authorities are interested only in controlling local officials, and localities in wresting power from center (Booth 1995). Such an assumption leads into an important logical difficulty. It raises the problem of explaining why a more powerful actor (the central state) would willingly give up power to a weaker actor (local agencies), but then brushes this important question aside.

The arguments adduced in favor of the hypothesis that central political actors willingly give up power to those at the local level run into three kinds of difficulties. One, they confuse the normative with the positive. That is to say, many of the cited reasons are claims about the efficiency of devolution: participation and decentralization can improve information flow, and make decision-making more efficient. But it is not clear why such advantages would motivate central state actors to give up power. Two, the difficulties in finding empirical evidence in favor of devolution prompt many scholars to provide reasons about why devolution fails. But these explanations are usually *ad hoc*. It is common thus to find work that argues on the one hand that decentralization is more efficient, and goes on to suggest that central actors did not decentralize because of a political desire to hold on to power. Finally, existing arguments in favor of devolution have only limited power to differentiate between success and failure of devolutionary programs. Thus, many analysts advocate devolution on the basis of its greater efficiency or because it leads to meaningful democratic participation. But seldom do they indicate the conditions under which devolution would not produce these outcomes and might therefore fail. Nor do accounts that cite lack of political will as the reason for failure say much about when exactly one might expect not to find sufficient levels of political will that would prevent devolutionary success. It becomes difficult, therefore, to understand which factors are operating in which instances with what force.

In view of existing debates about the adoption of devolutionary policies and their failure, the question that needs more insistent attention is why central political actors should be willing to give up control over some forms of collective choices or operational choices to local actors and institutions in some instances but not in others. The follow up question would be how it might be possible to ensure that after being initiated, devolution continues. What we need is a more persuasive political-economic explanation that can differentiate, without resorting to post facto justifications, between those instances where decentralization takes place and those where it doesn't.

To pursue this explanation we need to understand governments as a set of actors who have different and perhaps conflicting objectives as they pursue a diversity of goals including gaining power. But the relevant axes along which political actors struggle for greater power are not just horizontal—between local and state level actors, but also vertical—among ministries, departments, and parties at the center, each with branches

and offices at lower levels. Once the center itself is seen as divided, decentralization can be hypothesized to take place when actors at the central level compete for power among themselves and find in the process of decentralization a mechanism to enhance their access to resources and power in comparison to other political actors at the central level. The exact form of decentralization is likely to vary depending, among other factors, on the number of actors involved, the extent to which they perceive their interests being met by directing power and resources to the local level, the demands from local level for control over resources and whether these demands find supporters at the central level, the degree to which central level departments and ministries control their line offices at lower levels, whether the political system is unitary or federal, and whether there are provincial administrative centers that mediate between the center, and districts and villages. In a unitary political system, for example, a central ministry that has offices at the district or other lower levels might pursue policies to divert resources toward the local level if it can use its offices at the local level to gain control over the way in which these resources are subsequently expended. In a federal system, central political actors might wish to direct resources toward the lowest levels of administration in an effort to undermine the importance of regional/provincial level political actors, especially if a different political party is in power at the provincial level.

Such a conceptualization of devolution allows the beginnings of a more political answer to, Awhy should powerful political actors at the level of a central authority willingly devolve authority, power, and resources to less powerful political actors at regional or local levels?@ It is not that a more powerful political actor is willingly giving up power. Rather, political actors at the central level use devolution as one of the means to gain a greater share of available resources. We should expect to see devolution of power and decision-making responsibilities when some central political actor(s) or a coalition of such actors find(s) that devolution makes it possible to pursue their own goals more effectively. Without a powerful political actor pursuing devolution, (and such a political actor is most likely to be a central level ministry, department, or political party, but in some instances could also be regional/provincial actor(s) or international donors), and using such policies to successfully secure higher access to resources, it is unlikely that meaningful devolution can occur. Local actors by themselves seldom have the requisite resources or capacities to push for devolution.

If the initiation of devolutionary policies is a highly political affair, so is their maintenance. Once again, the support of some central state political actor may be essential, but for long-term success it is as important to examine how local level politics connects with devolution, and the extent to which the political power of a privileged few at the local level can be neutralized by pursuing devolution. Not only must local actors become mobilized to participate in devolution, and thereby give it real meaning, their organization into larger level federated organizations capable of maintaining pressure on governments to prevent the undermining of devolution is also necessary.

Of course, a political framing of devolutionary policies cannot ignore the fact that without appropriate use of information, and effective production and provision of services and public goods of various sorts, devolution is unlikely to be a success. One may say that politics drives whether devolution will be initiated and implemented, but if devolution is to be successful, it will need to secure the participation of beneficiaries and move information to the appropriate levels of decision-making. The trick for advocates of devolution, therefore, is to align the private interests of powerful decision-makers who are responsible for making collective choices about forestry policies with the attempt to facilitate self-organization so that local residents are involved in operational level activities and collective and constitutional decision-making.

Since the question of when groups will self-organize to effectively manage their own forests is a very large question in and of itself, we do not address it within the context of this paper. We do address this problem in a paper entitled ASelf-Governance and Forest Resources@ (Ostrom 1999b), which presents a set of theoretical propositions concerning the conditions that are most conducive to successful self-organization. The paper addresses the variety of condition that affect whether users will actually create new rules to manage their resources more effectively. A specific set of propositions in the paper makes it clear that not all groups in all settings will self-organize. Instead of thinking that devolving responsibility to govern and manage forest resources to local users is a panacea, it is better to assume that under the right circumstances local users can manage their forests more sustainably than if they relied on government officials to devise effective rules, implement them, and monitor their performance.

To conclude this section, we have talked about two important questions. One, why would devolution occur at all? Our answer to this question is that one can only expect it to occur when an effective Acoalition@ of central level actors sees itself benefiting from the change. Our second question is: What conditions surrounding devolution and its longer-term implementation are most likely to lead to its success at the local level? Here, our answer is that the reform needs to assign the local users significant property rights and that the users themselves need to be involved in the design of rules. The processes whereby reforms are initiated are also important, and devolutionary initiatives are more likely to be successful where there is at least some collective action by local residents to secure property rights over resources. It is not necessary that local users win full alienation rights as is sometimes recommended. Even if local populations, through institutional changes, possess the bundles associated with Claimant or with Proprietorship it is likely that they will begin to face incentives that will encourage them to take long-term benefits (as well as short term costs) into account when making decisions.

THE FOREST COUNCILS OF KUMAON AND THE PARKS AND PEOPLE PROJECT IN NEPAL

Devolution of control and management of forest resources around the world takes a number of forms in relation to the framework we have described. For the most part it occurs under the general rubric of community-based conservation. Current attempts to generate collective action that would lead to self-organization of local groups mark a shift from earlier policies of forest conservation that sought exclusionist control through a forest department. These earlier policies were based on principles of scientific forestry that limited activities of local users in forests, whether these activities related to fodder and firewood collection, grazing, or use of fire to promote fodder production. Scientific forestry tried to maximize forest revenues for the state, typically by focusing on a single product, timber.

At one end of the continuum of devolution in relation to forests, we can distinguish those circumstances where national governments, in response to a variety of political forces, relax their control sufficiently to allow local users institutional rights corresponding to those of the proprietor. At another end are initiatives that permit users greater rights of access and use (authorized entrant and user), but few claimant or proprietorial rights. In the middle would be a host of other situations in which local residents may be allowed some managerial or decision-making rights, or rights to determine whether others can access or use forests.

The following two case studies illustrate the two end points of the continuum of devolution. In Kumaon, India, villagers have won the rights over forests that conform with those of the proprietor. This was the result of a long period of struggle by villagers at the turn of the previous century. In Nepal=s Terai, buffer zone residents of four national parks are involved in a management program, the Parks and People Program. This program seeks to reduce their dependence of park resources, especially fodder and firewood that they collect from within park boundaries.

The two case studies together illustrate the elements that we have highlighted in our framework of devolution. They also provide some indication of when devolution is likely to be more successful. The study of the forest councils of Kumaon shows that a widespread social movement in Kumaon fed into departmental rivalries between the Forest and the Revenue Departments of the British colonial state. The demands of social movement actors resonated with the interests of the Revenue Department. The resulting devolutionary policies allowed villagers significant latitude in designing collective choice and operational rules. Over time, however, the ability of villagers to exercise rights over forests has changed in response to legislative changes introduced by the government of Uttar Pradesh (the state in which Kumaon is located). The results of these changes have also found reflection in the use and management of forests.

In Nepal, the Parks and People Program (PPP) is an outcome of the collaboration between the United Nations Development Program and the Department of National

Parks and Wildlife Conservation in His Majesty's Government of Nepal. Initiated in 1994, it can be seen as the outcome of negotiations between actors at the central level to implement an increasingly widely held belief in conservation circles: if protected area management is to be successful, local residents must be involved in management of resources. The PPP seeks to create user groups of residents in the buffer zones of the protected areas. Members of user groups participate in a number of programs designed to change their patterns of use of forests in the protected areas, increase their income and skill levels, and manage forests in the buffer zone. However, a limited understanding of participation and of the relationship between poverty and forest use has led to strict constraints on the nature of devolution in the PPP and the possibilities of success in managing forests in the buffer zone. A comparative analysis of the Parks and People Program with the forest councils of Kumaon in light of the framework proposed in this paper reinforces our arguments about the conditions necessary for devolution to take place and bear a successful impact on forest management.

DEVOLUTION AND FORESTS IN KUMAON

The landscape of devolution of forest management in Kumaon can be traced back to the beginning of this century when the activities of the British colonial state sparked off the processes that led to the formation of village-level forest councils in the region. Between 1911 and 1917, the British transferred more than 3,000 sq. miles of forests to the Imperial Forest Department (KFGC 1921) in greater Kumaon (which included the districts of Garhwal). Of this land, nearly 1,000 sq. miles were located in the three present day districts of Kumaon: Nainital, Almora, and Pithoragarh. The colonial state had made a number of inroads between 1815 and 1910 to curtail progressively the area of forests under the control of local communities and use forests to extract timber for revenue. But its latest incursions raised the special ire of the villagers. Their grievances were particularly acute because of the elaborate new rules that specified strict restrictions on lopping and grazing rights, restricted use of non-timber forest products, prohibited the extension of cultivation, enhanced the labor extracted from the villagers, and increased the number of forest guards.

The new laws goaded villagers into widespread protest. The best efforts of government officials failed to convince the villagers that the forests belonged to the government. The officers who had designed the new land settlement had hoped that the residents of the hills "would gradually become accustomed to the rules as gazetted and that control may be tightened as years go on"(KFGC 1921). But hill dwellers dashed these sanguine hopes.

The incessant, often violent, protests forced the government to appoint the Kumaon Forest Grievances Committee to look into the local Adisaffection.@ Comprising

government officials and local political leaders,[10] the Committee examined more than 5,000 witnesses from all parts of Kumaon. It used the resulting evidence to make two major recommendations 1) de-reserve the larger part of the newly created Reserved Forests between 1911 and 1917, and 2) lay the foundations for creating community forests that would be managed under a broad set of rules framed by the government, but for which villagers themselves would craft the specific rules for everyday use to fit local conditions. The government took both these recommendations seriously. At first, it reclassified Reserved Forests that had been taken over by the Forest Department between 1911 and 1917 into Class I and Class II forests. Class I Reserved Forests were all transferred to the revenue department and, in time, could come to be controlled by villagers by following a specific procedure as described in the 1931 Forest Panchayat Rules. Class II Reserved Forests were retained under the control of the Forest Department.

The government also passed the Forest Council Rules of 1931. These rules permitted village residents to create forest councils and bring under their own control forest lands that had been transferred to the Revenue Department as Class I Reserved Forests and Civil Forests. This step can be seen, in some cases, as the formalization of institutions called *Lattha Panchayats* that had influenced the use of many forests in the Kumaon Hills before 1910.[11] Where these informal local institutions had existed, they had been critical in influencing how villagers used forests. Institutional limits on harvesting from the forest were enforced without much help from the state, by villagers themselves. The Forest Council Rules have been modified twice since their formation, once in 1971, and more comprehensively in 1976. The provisions of the Rules are currently under consideration for revision.

The division of forests into two categories—Class I/Civil Forests under the control of the Revenue Department and Class II Forests under the control of the Forest Department--should be interpreted to signify the outcome of two processes. The first is the departmental rivalry that was sparked into being by the creation of the Imperial Forest Department in 1878, and by the passing of a huge swathe of territory under its control in the name of the protection of forests.[12] The increasing control of the Forest Department on vast stretches of land, and the revenues it generated by auctioning timber

[10] Initially, the Committee had three members: The District Commissioner of Kumaon, the Member of the Legislative Council from Garhwal, and a Conservator from the Forest Service. An additional member, the chairman of the Municipal Board from Almora, was also appointed as a representative of the region (KFGC 1921).

[11] There is some evidence that these institutions continue to exist in some hill villages (Somanathan 1991). *Lattha* means "stick" and the name refers to the power the local community holds over members.

[12] The history of this struggle in Kumaon is yet to be written, but an examination of such conflicts in neighboring Himachal Pradesh (Saberwal 1997) and in the more distant Bengal (Sivaramakrishnan 1996) is available.

from the lands under its control rivaled and outgrew the revenues from land. The transfer of all the Class I forests to the Revenue Department was the outcome of a bureaucratic struggle that was in part resolved against the interests of the Forest Department. It was only partially a victory for the Revenue Department because the Forest Department still kept the more densely wooded tracts under its own purview as Class II Reserved Forests. The protests by villagers for greater access to and use of their forests were related to the attempts by the Forest Department to take over a huge area of forests. These protests fed into the interactions between the Revenue and the Forest Departments, and helped the case for the transferal of a significant proportion of territory back to the Revenue Department. The control the villagers would exercise over their community forests in the coming decades would be mediated by the officials and rules of the Revenue Department.

The second aspect of the redefinition of land rights is that over time a significant proportion of the forested land in Kumaon has came to be managed by villagers, but in ways closely resembling what state officials would have wanted. The passing of managerial control into the hands of village residents has had a number of related effects. Many of the types of regulations that the colonial state had wanted to enforce are now crafted and implemented by villagers. This new way of administering forest regulations is not only far more effective, but has also simultaneously been responsible for far lower expenses on forest protection than would be incurred were the Forest Department responsible for the enforcement of forest laws in all Kumaon forests.

Nearly 3,000 forest councils today formally manage and control about a quarter of the forests in the three districts of Kumaon: Nainital, Almora, and Pithoragarh. The broad parameters that define the formal management practices of the forest councils are laid out in the Forest Council Rules of 1931, as amended in 1976. These Rules form the state-defined limits to local autonomy. Villagers cannot clear fell the forest, they cannot impose fines beyond a specified amount, they can raise revenues only through certain limited sources, and they must take recourse to established legal procedures to resolve conflicts. Where conflicts over interpretation and application of rules spill over into formal channels of dispute resolution underwritten by the Indian state (district and provincial level revenue/judicial authorities), serious losses become unavoidable. For example, if parties to a dispute take their quarrel to district or state courts, the case may drag on for decades without being resolved.

But collectively the Rules constitute more a framework for the management of forests rather than a defining straitjacket. Rural residents, through their elected forest councils, possess substantial powers to create concrete restrictions to prevent certain types of forest use and facilitate others. Villagers vote to elect between 5 and 9 council members and the council leader. The council in many of the villages meets frequently, its members discuss, craft, and modify specific rules that will govern withdrawal of forest products, and creates monitoring and sanctioning mechanisms in an effort to

enforce the rules it has crafted as well as the Forest Council Rules framed by the government. The council selects guards, fines rule breakers, manages finances, and maintains a record of its meetings, accounts, and local rule infractions. In many of the cases, the guard selected by the council is paid by contributions from the village households. The council has other sources of income as well, and usually deploys its net earnings toward public activities such as construction of school buildings, religious celebrations, or purchase of collectively used utensils. There is thus substantial leeway that councils enjoy in defining how they will manage local forests.

The Forest Council Rules also provide for support to the councils from the revenue and the forest departments to facilitate rule enforcement and the maintenance of vegetation in the forests. Over the past sixty years the relationship that has evolved between village uses and the forest and the revenue departments has been one in which villagers and their councils have increasingly come to depend on government departments for activities related to the management of their forests. This, in one sense, can also be seen as a consequence of the lack of any sustained collective action on the part of villagers to protect their right to govern local forests.

The formation of the forest councils requires the presence of government officials from the Revenue Department, and the formal transfer of land management rights to the village council. The forest over which rights and capacities to manage are to be transferred is mapped and registered with the patwari, the village level revenue department official. Elections to the forest council are held under the supervision of the forest council inspector. The council is expected to meet regularly, keep records of meetings and maintain accounts. The forest council inspector, who is under the control of the office of the District Magistrate, is empowered to inspect all records maintained by the councils under his control.

Whereas the revenue department officials underwrite the enforcement of rules, the forest department coordinates the commercial harvest of forest products from community forests and provides technical assistance to develop them. Foresters responsible for the Civil and Soyam forests (which are under the control of the Revenue Department) and those working in the Soil Conservation Wings of the forest department have undertaken some plantation on forest council land. Further, before the council can sell any of its timber or resin, it must seek approval from the relevant authorities in the forest department. Like the interactions with the revenue department officials, these can take a long time because of other duties which receive greater priority. A request to cut even a few trees from the council forest can take up to two years before it is finally processed in the forest department and the Revenue Department offices.

The above description of the devolution of rights to forest management in Kumaon shows that the rural residents of Kumaon not only have the rights to access and use local forests, but they can also exercise claimant and proprietor rights. Studies of forest councils' effectiveness in protecting forests show the significance of attention they

devote to managerial responsibilities related to exclusion, monitoring, and enforcement. A survey of 279 councils in 1993 showed that the factor that most significantly explained the ability of villagers to protect forests was whether and for how many months in a year they hired a guard. Councils that employed a guard year round had forests whose condition was most likely to be assessed as Agood@ (Agrawal and Yadama 1997).

The forest councils thus can be seen as locally situated partners in the management of forests, subordinate to the employees of the forest and the revenue department, but with substantial control over local management. Their asymmetric relations with government officials cast the officials into the role of arbiters in case of disputes between villagers and forest council office holders. Forest users can also question the authority of the councils implicitly by not limiting their harvests of forest resources. They also do so more explicitly by contesting the fines imposed by the councils. In each of these situations, the councils need to invoke the cooperation of government officials, simultaneously demonstrating their links to the state, their weaker position in this managerial relationship, and their relative autonomy in everyday management.

THE PARKS AND PEOPLE PROJECT IN NEPALESE TERAI

Devolution of forest rights in Nepal=s Terai, especially in the buffer zone of the national parks is a somewhat different story. Nepal is often seen as among the leaders in developing countries in setting conservation goals and priorities, and creating programs and legislation (Heinen and Kattel 1992). The origins of protection can be traced back to efforts made by the monarchy to protect small patches of the forest in the Terai. These efforts were primarily aimed at protecting large mammals such as wild rhinoceros from poachers and preventing villager encroachment. But serious preservation efforts began from 1973 when His Majesty=s Government/Nepal (HMG/N) passed the National Parks and Wildlife Conservation Act and established the Royal Chitwan National Park in central Terai as Nepal=s first protected area (Basnet 1992).

From that beginning, Nepal has created an extensive network of national parks, wildlife areas, hunting reserves, and conservation areas that cover nearly 15% of the country=s total area. Not only are the parks and wildlife reserves significant for the protection of biodiversity, they also have an economic significance since they encourage tourism and provide products such as grass, fodder, and fuelwood to communities along their boundaries. These two different arenas of their significance, environmental and economic, create some tensions. On the one hand, managers of protected areas seek to preserve biodiversity, and protection *from* humans is seen to be necessary for preserving it. On the other hand, given the indifferent record of coercive exclusionary tactics in preserving wildlife and biodiversity, the involvement of local populations around protected areas is now seen as crucial in protection.

The Department of National Parks and Wildlife Conservation came into being in 1980, with authority to administer the protected areas system in Nepal. It is part of the Ministry of Forestry, along with the Department of Forestry. The Royal Nepal Army and the Ministry of Tourism are other important institutional actors whose activities influence the management of the protected areas. The presence of several agencies, who coordinate with each other only to a limited extent, and who have differing objectives, also creates obstacles to effective protected areas management. Efforts to find the best management strategy are further complicated by the fact that recent legislative proposals and amendments have sought to alter the initial objectives of management and involve local users and communities more closely in protecting biodiversity and wildlife.

Government legislation continues to be the dominant means to practice protected areas management, but through the creation of buffer zones and the involvement of user groups in the settlements located close to or within protected area boundaries. Buffer zones are widely regarded as one of the most suitable strategies to resolve existing and potential conflicts caused by firewood, fodder, and grazing pressures. An area of controlled land use, a buffer zone, as the name suggests, Aseparates a protected area from direct human or other pressures and provides valued benefits to neighboring rural communities@ (Nepal and Weber 1994; Ishwaran and Erdelen 1990).

The legal definition of buffer zones is areas Aset aside around a national park or reserve ... for granting opportunities to local people to use forest products on a regular basis@ (HMG/UNDP 1994). The 1993 amendment to the National Parks and Wildlife Conservation Act empowered the government to declare areas surrounding a park or a wildlife reserve as buffer zone. The warden of a protected area can constitute user groups to coordinate the management of fallen trees, firewood, fodder, and other grasses. Of the income earned in a national park, reserve, or conservation area, 30% to 50% can be used for community development in consultation with local agencies and communities.

The Parks and People Program identified the main problem in the management of Nepal=s protected areas to be conflicts between people and park management authorities that were rooted in local poverty and consequent subsistence practices. Because protected areas in the Terai have open boundaries and no effective barriers, wildlife within parks has easy access to cultivated fields, and domestic animals access to grazing within park boundaries. At the same time, the formation of the protected areas reduced the grazing land and forest products that villagers could earlier access and use. The two main areas of conflict that heightened tensions between the local populations and the officials supposed to protect resources related thus to poaching and encroachment on park resources by the people, and crop damage and human casualties by park animals.

To address these conflicts, the PPP aims at three objectives. One, it attempts to develop alternatives to the use of park resources for neighboring households; two, it seeks to devise compensation mechanisms for local communities in exchange for their

exclusion from resources upon which they relied prior to the formation of the protected area in question; and three, it tries to create incentives for local populations to change their actions in relation to the protected areas. Development of the buffer zones is a key component in the PPP strategy. Community user groups, created by park officials in collaboration with the PPP office personnel, play a significant role in the overall strategy.

The total area of the buffer zone of the five National Parks and Wildlife Reserves in Nepal=s Terai is nearly 2,000 sq kms with a population of more than 600,000 people. The Five National Parks and Wildlife Reserves that PPP included in its first stage of implementation are: The Royal Suklaphanta Wildlife Reserve, the Royal Kosi Tappu Wildlife Reserve, the Royal Bardia National Park, and the Royal Chitwan National Park, and the Parsa Wildlife Reserve. In the buffer zones of these protected areas, PPP officials have created approximately 400 community user groups that are analogous to the forest councils of Kumaon. These local institutional actors are the units through which forest-related devolutionary initiatives in the buffer zones unfold. However, to date, the devolution that has taken place is quite limited.

The activities of the PPP officials take place through two sets of programs. The Buffer Zone Support Unit (BSU) aims at management of activities in the buffer zone. This unit is headed by the Buffer Zone Development Officer. The Park Management Unit (PMU) coordinates enforcement and protection activities within the protected area. The Chief Warden of the Park has the overall responsibility for both these units and is assisted by the Buffer Zone Development Officer.

The forest-related activities of the user groups in each buffer zone are coordinated by a Forest Advisory Committee. This Committee comprises the Chief Warden of the protected area, the district forest officer, and representatives from the Department of National Parks, from the PPP, and from the enforcement units stationed in the protected areas. This Committee is responsible for advising on the type of uses that local residents can make of buffer zone forests and afforestation programs within the buffer zone. Its recommendations are subject to approval by the Central Program Management Committee. In some of the buffer zones, the Forest Advisory Committee has helped in the creation of community forests from which local residents can harvest fodder and firewood.

The main areas in which devolution has occurred as a result of the Parks and People Program is entry into and use of park resources. For specified times during the year, zone residents are permitted to enter the protected area and harvest products such as thatch grass, graze animals, and collect firewood. Typically, the period for which they can harvest thatch grass, used for roofing, varies between ten and fifteen days in a year. Rules related to harvesting of firewood and grazing of animals are even more strict. Most of these rules continue to be crafted by protected area officials, without the involvement of local residents. Nor are local populations involved in the enforcement

of the rules. In this sense, the main change in the status of the buffer zone residents as a result of the implementation of the PPP has been to make them into authorized entrants and users.

The nature of devolution in Nepal=s Terai is quite different from that in Kumaon. Whereas villagers in Kumaon can claim the status of proprietorship over forests, Nepali villagers can only claim to have somewhat attenuated use and access rights in the forest in the protected areas.[13] The primary activities that the PPP has implemented in the buffer zone through the user groups aim at improving the incomes of members. These income-related programs are based on the provision of productive assets, and are carried out in the hope that with higher asset ownership, local residents can increase their incomes and use forest products from the park to a lesser extent. However, these activities have done little to change the existing incentive structure of buffer zone residents.

Unlike the situation in Kumaon, where real decision-making powers about forests devolved on the village-level forest councils, Nepali Terai residents continue to have a similar relationship with their forest resources and state officials. The results of a survey in four of the protected areas in the Terai indicate that there are no appreciable differences in the extent of dependence of households on forest resources in the protected areas whether the households are members of the user groups initiated by the PPP. Forests on the boundaries of the parks show visible signs of use by local residents. Further, those households that have a higher level of asset ownership use park resources to a greater extent (Agrawal et al. 1999). The findings of our empirical study match the theoretical expectation that only some types of devolutionary initiatives are likely to have an impact on forest use and conditions. More specifically, unless devolution leads to local users having at least the rights to manage resources and make decisions about resource use and the exclusion of others from the use of resources, the effects of devolution in other arenas are likely to be limited.

CONCLUSION

A large literature on devolution has defined it in a variety of ways. This paper advances the theoretical understanding of devolution by providing a framework through which insights from writings on property rights and collective action can be related to deepen the understanding of devolution. We suggest that devolution of forest management and control always implies the transference of some types of rights to

[13] We should note here that in two of the protected area buffer zones (Chitwan and Bardia), villagers have some access to community forests created by the Forest Department in Nepal. In these community forests, which are a result of a different initiative of HMG/N, villagers do have rights to operate in the collective choice arenas in designing use and access rules, and also some of the management rules for these forests. In Suklaphanta as well, there is a small plot of forest that is treated as a community forest, but it is so small that at present it does not supply any of the needs of local residents.

resources away from central governments, toward more locally-based organizations. Depending on precisely which types of rights over forests are gained by local populations, devolutionary initiatives can be classified into types. Particular types of devolution are likely to have quite specific chances of succeeding.

But the chances of success of devolutionary initiatives are also related to the role played by collective action. Thus, it matters whether local institutions self-organize, or whether they are mainly the result of administrative fiat. Further, the chances of success of devolution also depend on the relationship between central actors who pursue devolutionary change and the interests of local actors. It is primarily when the interests and activities of actors at different levels of a political system match that we should anticipate successful devolutionary reforms. In contrast to much existing work on devolution, thus, we bring political reasoning center stage to analyze devolution.

The two case studies we provide illustrate these insights from the theoretical discussion. In Kumaon, we find that the British colonial state undertook devolutionary policies only after villages protested vociferously against its attempts to take over forests. The protests of the villagers strengthened the hands of the Revenue Department in its efforts to gain control over greater territories. As a result of these politics, the forests managed by the local communities in Kumaon are under the overall control of the Revenue rather than the Forest Department. The strength of collective action by the villagers also ensured that the devolution of control over forests gained them real decision-making authority in collective and constitutional choice arenas. Although these powers are exercised within the ambit of the Forest Council Rules passed by the state government of Uttar Pradesh, village level forest councils are able to shape the contours of local forest use to a significant degree. The performance of the forest councils in safeguarding their forests depends to a great extent on how much attention they devote to monitoring and enforcement of rules they have created.

In Nepal=s Terai, the Parks and People Program, funded by the United Nations Development Program, has led to a different devolutionary initiative. Residents of the buffer zones of the protected areas in the Terai have gained rights to enter and use protected area forests. But they have no other rights of management, exclusion, or enforcement. How forests will be used, distribution of forest products, and ownership of forests rests entirely with HMG/N. Nor have villagers undertaken concerted collective action either to demand additional rights, or to self-organize into locally-based institutions. The Parks and People Program, it will be fair to say, is mainly a result of negotiations and decisions within the top echelons of the Nepali Government. In consequence, few incentives of users at the local level have changed in response to this devolutionary initiatives. Nor do we find much change in their activities related to park forests.

Successful devolutionary initiatives on forests, we can infer, should be accompanied by changes in property rights over resources that gain local users rights

and capacities to make operational rules. Additionally, such initiatives should allow users to make some collective and constitutional choices. Further, the likelihood of success is enhanced by promoting the conditions that generate self-organization among local groups.

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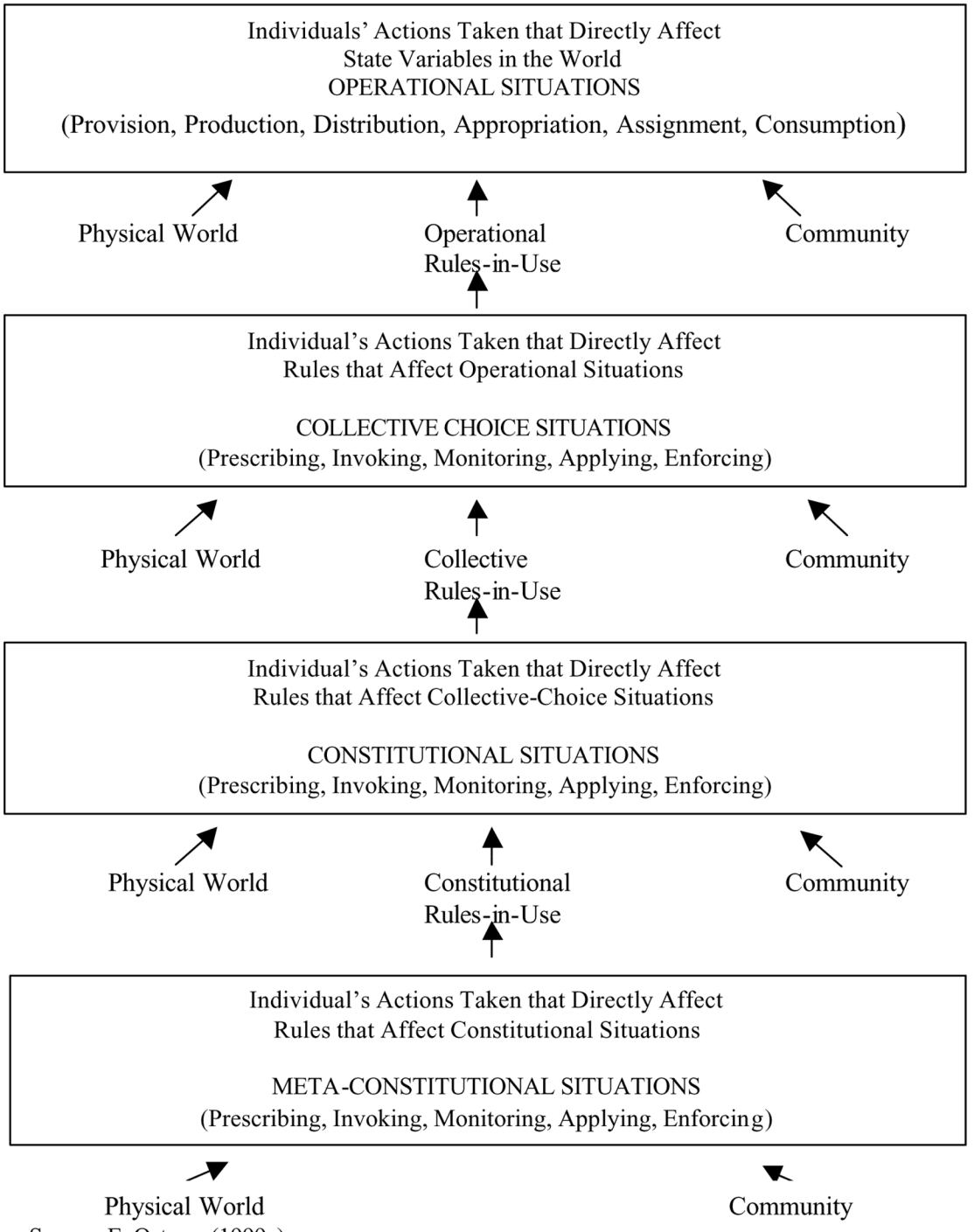

Source: E. Ostrom (1999a).

DEVOLUTION AND FISHERIES CO-MANAGEMENT

Robert S. Pomeroy[1]

INTRODUCTION

Global-scale changes in the supply, demand, value, management and uses of fisheries resources could threaten progress towards sustainable food security in many parts of the developing world, but they could also stimulate improved management and use of the resources. In many developing countries, population pressure and limited alternative employment opportunities, together with the inability and reluctance of governments to take the necessary conservation and management decisions, have resulted in severely overfished coastal and inland resources and increased threats to the livelihoods of fishers.

A decrease in global fish production in the early 1990s brought about by overfishing and environmental degradation (pollution, habitat loss, coastal development) generated calls for improved management strategies and sustainable use of aquatic resource systems. Decision-makers and resource managers are searching for better ways of managing all fisheries, including the small-scale fisheries.

Despite intense fishing pressure and a decline in productivity, small-scale fisheries in the inland, estuarine and near-shore areas still play an important role in local food security in developing countries. They provide food, income and employment. In most societies, small-scale fishers are particularly hit by the problem of shrinking resource base as they have low social status, low incomes, poor living conditions and little political influence. They frequently compete for resource access with larger-scale fishers and other sectors of the economy. It is important to remember that small-scale fisheries are embedded in larger aquatic resource, social, economic and political systems and many of the solutions to improving standard of living lie outside the fisheries sector. The resources on which these people depend are still largely natural fish populations.

It is estimated that at least 50 million people in developing countries are directly involved in the harvesting, processing and marketing of fish and other aquatic products and worldwide fish production provides some 150 million people with employment. Approximately 1 billion people rely on fish as a major source of their food, income and/or livelihood (ICLARM 1999). The combined effects of increasing population growth and stabilization of fish supplies has led to a decline in the per capita availability of fish supplies for human consumption, while prices have continued to rise due to a widening gap between supply and demand. Capture fish production has not been able to keep pace with the demand for fish. Production of fish by capture fisheries reached its upper limits in 1989 and began a decline thereafter.

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The United Nations Food and Agriculture Organization estimates that almost 70 percent of fish stocks for which data are available are fully exploited, overfished, or otherwise in urgent need of management (Garcia and Newton 1994). The world fishing fleet reflects an overcapacity of about 30-40 percent. Looming shortfalls have been compensated, though not adequately, by better than expected increases in aquaculture production, which now contributes roughly 20 percent of the total world production of fish.

Approximately 70 percent of the world production of food fish is now caught or produced in developing countries. It these countries the average per caput consumption of fish (9 kg) is about one-third of that in developed countries (27 kg), developed countries being net importers of food fish. Approximately 40 percent of the world's fish production is traded internationally (ICLARM 1999). Increasing international trade in fishery products is raising questions about the supply of food fish for poorer people in developing countries.

It has been predicted that natural stocks will likely be below current levels in the year 2020 or at best maintain their present levels. To prevent further depletion of fisheries resources, improved management is needed. Many current management arrangements have failed to coordinate and restrain the many users of fisheries resources. They have not kept pace with the technological ability to exploit the resource or with the driving incentives to exploit—economic returns, population growth, food, and employment. Management systems have focused on fisheries development and resource management, but have failed to address the issues of economic efficiency, equity and user conflict (Williams 1996). Increasing competition for and conflict over scarce resources will further stress fisheries management systems.

In the last decade approaches for management and governance of fisheries resources have undergone a significant transition. There has been a shift from traditional production and stock- and species-based management toward conservation and ecosystem based management. Privatization, rights-based management, community-based management and co-management are in some cases replacing open-access and centralized government management systems. It is increasingly recognized that resources can be better managed when fishers and other stakeholders are directly involved in management of the resources and use rights are allocated—either individually or collectively. Devolution of management authority and responsibility is bringing about shifts in local power elites and structures. These new approaches will require changes in the administrative levels of management and new laws and policies.

The purpose of this paper is to discuss the critical role of devolution in the strategy of fisheries co-management. Following this introductory section, the paper discusses the search and need for better fisheries management methods. An alternative management approach, fisheries co-management, will then be defined and analyzed in detail in section three. Two crucial issues in the discussion of co-management arrangements are property rights and collective action. Section four presents some

examples of co-management from Asia and the Caribbean. The establishment of conditions for co-management by governments will be discussed in the fifth section. Section six focuses on decentralization and co-management. The final section of the paper summarizes the opportunities and problems inherent in a program of devolution and co-management.

THE SEARCH FOR BETTER MANAGEMENT METHODS

Historically in most developing countries under colonial rule governance of coastal and marine resources was transferred from communities to local and national government bodies (Pomeroy 1995). In most colonies, centralized management agencies were established. They controlled the level of exploitation, modernized fishing methods, and ensured exports back to the colonial country. The centralized approach to management, which began centuries ago in some countries, continued under the neo-colonial regimes of newly independent nations as they consolidate power.

In the last 50 years shifting philosophies have affected the fisheries development process. The period after World War II was one of reconstruction of the world's fishing fleets. The 1960s witnessed the expansion of fishing activities with the opening up of new fishing grounds, new technologies and long-range fleets. During the 1970s, the expansion continued, but at the same time the recognition of resource depletion and the need for equity entered the debate. In the early 1980s, the United Nations Conference on the Law of the Sea extended the exclusive economic zones (EEZ) of coastal countries. This expansion entailed a redistribution of access to ocean resources and of use-rights. Throughout the 1980s and early 1990s, there was growing concern globally about resource overexploitation and environmental degradation, threats to biodiversity, and a call for sustainable development. In the 1990s several international initiatives including the UN Conference on Environment and Development, the International Convention of Biological Diversity, and the Code of Conduct for Responsible Fisheries challenged countries to encompass sustainable utilization of fisheries resources (Garcia 1994). One central element of these initiatives is the enhancement of users participation, going beyond of mere consultation and top-down information provision to participatory decision-making and interactive management.

Initially among Western-trained fisheries managers, the management of fisheries resources had long been based on the conventional wisdom that it is possible to manage fisheries successfully if three facts are kept in mind: (1) when left on their own fishers will overexploit stocks; (2) stocks are extremely unpredictable; and (3) to avoid disaster, managers must have effective hegemony over fishers (Berkes 1994). The centralized management approach has been dominated by the assumption that any fishery is characterized by open access features and intense pressure on the resource will eventually lead to overexploitation and the eventual dissipation of resource rents. This situation has been described as the "tragedy of the commons". This centralized approach overlooks traditional and customary knowledge and management systems in the belief that the state is the best guardian of society's interests. As a consequence tight government controls regulate fisheries. Over time these controls have become both complicated and costly.

In many instances, the national government has overestimated its ability to manage centrally fisheries resources. When existing community-level institutional arrangements for coastal fisheries management are undermined, as in the process of centralization or nationalization, the usual common-property resource management regimes have been replaced, in many cases, by open access regimes.

Given the often disappointing results of centralized natural resource management, this approach has been consequently criticized and has been considered as a primary cause for the overexploitation of fisheries resources, although in reality the fishers should share the blame with the mangers and scientists. Professionals have replaced the resource users as resource managers. The fishers have done little to monitor and enforce themselves. The centralized management approach involves little effective consultation with the resource users and is often not suited to developing countries with limited financial means and expertise to manage fisheries resources in widely dispersed fishing grounds.

In the last decade, following concern for fisheries overexploitation and environmental degradation, there have been changes in the objectives and policies of fishery management systems. The objectives have shifted from maximizing annual catches and employment, sustaining stocks and short-term interests, to maximizing long-term welfare, sustaining ecosystems and addressing both short- and long-term interests. Policy changes have shifted from open and free access, sectoral fishery policy, command and control instruments, and top-down and risk prone approaches to limited entry, user rights and user fees, coastal zone intersectoral policy, macro-economic instruments, and participatory and precautionary approaches (Garcia 1994).

Especially command and control systems (the use of various harvest control regulations) are considered by many as outdated and inadequate to tackle the increasing problems of fisheries. In response to the failures of centralized fisheries management approaches, researchers policymakers, as well as fisher communities themselves are developing a variety of alternative approaches to fill the management gap.

These approaches are meant to deal with the perverse economic incentive system which arises largely from environmental as well as economic externalities, the last often ascribed to ill-defined property rights (Munro, Bingham, and Pikitch 1998). These strategies range from community-based management and co-management, meant to address the lack of participation and reduce conflicts that were the legacy of centralized management, to rights-based management and limited or controlled access techniques, which are meant to reduce excess competition, stimulate investment and provide incentives for greater economic efficiency. The first two approaches focus on the establishment of common property regimes, while the latter approaches, rather than focusing on allocating fishing areas to users, grant right of access, but not ownership, by the state, to a share of total allowable catch.

It is interesting to note that while for fisheries resources, government controls have been tightening in the recent past, in the case of other natural resources management had

been moving faster in the direction of devolution, deregulation, decentralization and co-management (Berkes 1994). This slowness in moving in new directions may be due in part to the complexity of natural and human ecosystems which exist in marine and coastal environments.

Fisheries management experts increasingly recognize that the underlying causes of fisheries resource overexploitation and environmental degradation relate to the social, economic, and institutional as well as political sphere. From an economic perspective, the causes of overfishing are generally found in the absence of well-defined property rights or other institutions that might provide exclusive control over harvesting, giving the user a long-term time horizon and providing incentives for sustainable use and conservation.

Over time fisheries managers and researchers also began to recognize that a fishery cannot be effectively managed without the cooperation of fishers and other stakeholders to make laws and regulations work. In most countries, the fishery sector is regulated by a great number of laws, rules and norms, many of which are quite specific and well intentioned. However, the effective capacity of many fisheries agencies to monitor what goes on in widely scattered, often isolated fishing grounds is distinctly limited. Without denying that the traditional community-based systems of fisheries management can sometimes be inequitable as well as ineffective, state interventions that have chosen to ignore them have seldom fared better. The promotion of nationalization and privatization as routine policy solutions has not solved the problem of resource overexploitation and, in many instances, has deprived large portions of the population of their livelihood (Bromley and Cernea 1989). Under these conditions, the devolution of fisheries management and allocation decisions to the local fisher and community level may be more effective than the management efforts which distant, understaffed and underfunded national government fisheries agencies can provide.

The conventional wisdom that fisheries resources which are held as communal property are subject to eventual overexploitation and degradation and that centralized management authority is needed to manage resources is challenged by a number of empirical studies (Pinkerton 1989; Jentoft 1989). Recent investigations on community-based fisheries management systems have shown that when left to their own devices, communities of fishers, under certain conditions, may use fisheries resources sustainably, efficiently and equitably (Pinkerton 1989; Pomeroy 1995).

Fishers, the real day-to-day managers, must be equal and active participants in resource management. An open dialogue must be maintained between all the stakeholders in resource management. Property rights to the resource must be assigned directly to its stakeholders—the coastal communities and resource users. A new management philosophy is warranted in which the fisher can once again become an active member of the resource management team, balancing rights and responsibilities, and working in a cooperative (rather than antagonistic) mode with the government.

In our view the primary concern of fisheries management, therefore, should address the relationship of fisheries resources to human welfare; and the conservation of the resources for use by future generations. That is, the main focus of fisheries management

should be people, not fish, per se. Policy interventions, if they are to bring about lasting solutions, must address these concerns.

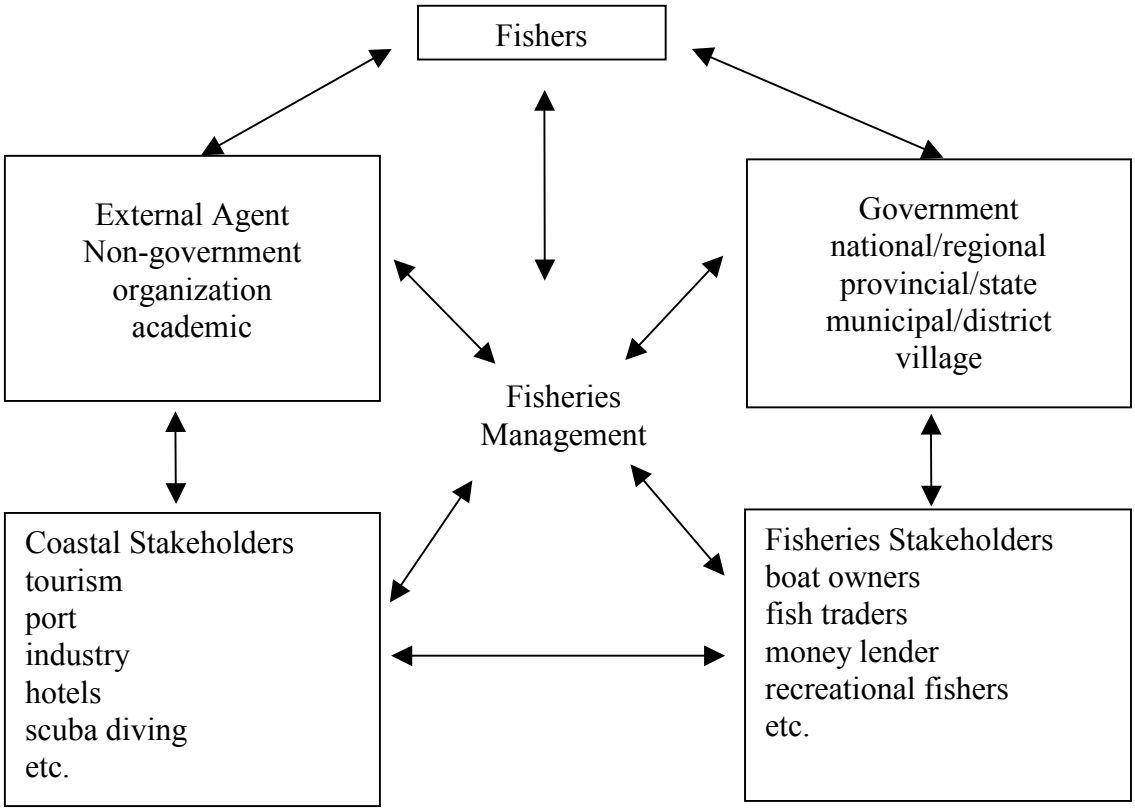
FISHERIES CO-MANAGEMENT

Fisheries co-management can be defined as a partnership arrangement in which government, the community of local resource users (fishers), external agents (non-governmental organizations, academic and research institutions), and other fisheries and coastal resource stakeholders (boat owners, fish traders, money lenders, tourism establishments, etc.) share the responsibility and authority for decision making over the management of a fishery (Figure 1).

In contrast to the often ineffective historical record of centralized fisheries management, co-management is intended to be a more dynamic partnership using the capacities and interests of the local fishers and community, complemented by the ability of the state to provide enabling legislation, enforcement and other assistance (Jentoft 1989; Pinkerton 1989; Berkes, George and Preston 1991; Berkes 1994). Such "co-management" includes shared governance structures between stakeholders in the resource and institutions of local collective governance of common property.

Co-management covers various partnership arrangements and degrees of power sharing and integration of local (informal, traditional, customary) and centralized government management systems. There is a hierarchy of co-management arrangements (Figure 2) from those in which the fishers are consulted by the government before regulations are introduced to those in which the fishers design, implement and enforce laws and regulations with advice from the government (Sen and Raakjaer-Nielsen 1996). Co-management entails a conscious and official distribution of responsibility, and the formal vesting of some authority. The stakeholders develop an agreement which specifies their respective rules, responsibilities and rights in

Figure 1: Fisheries co-management is a partnership

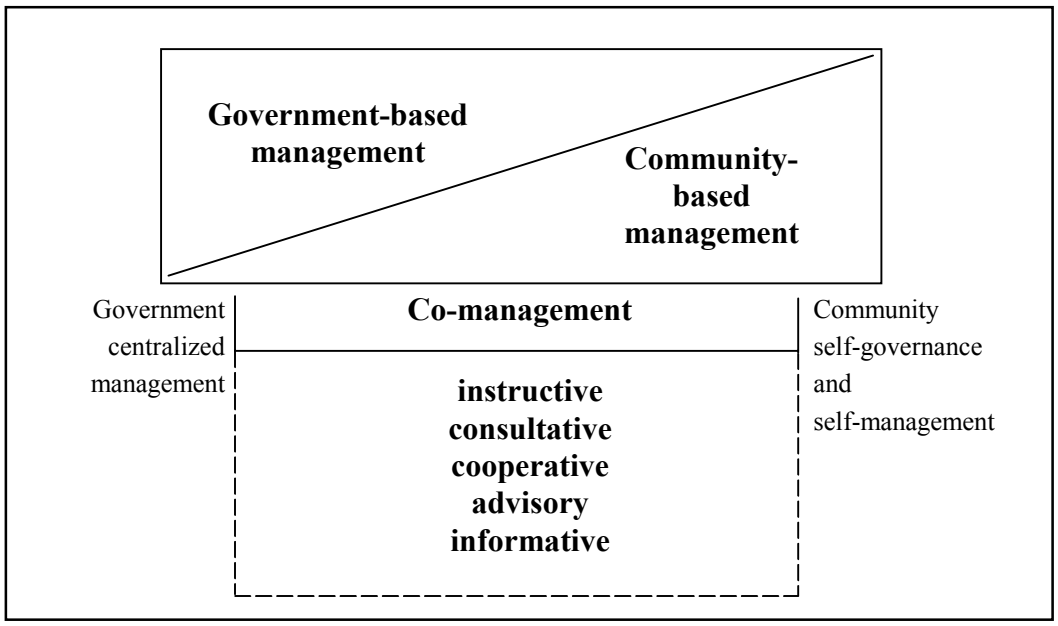


management. The amount of responsibility and/or authority held by the state or devolved to local institutions will differ depending upon country and site-specific conditions. Determining what kind and how much responsibility and/or authority should be allocated to the local levels is a political decision.

Needs and demands within the small-scale fisheries sector also differ across regions and no single management solution can be appropriate for all cases. Thus co-management should be seen as a process of resource management, adjusting and maturing to changing conditions over time and involving aspects of decentralization, social empowerment, power sharing and democratization. Co-management is not a regulatory technique but a flexible management strategy in which a forum or structure for action on participation, rule making, conflict management, power sharing, leadership, dialogue, decision-making, knowledge generation and sharing, learning, and development among resource users, stakeholders and government is provided and maintained. Partnerships are pursued, strengthened and redefined at different times during the co-management process depending on the existing policy and legal environment, the political support of government for community-based actions and initiatives, and the capacities of community organizations to become government partners. The co-management process may include the formation or recognition of

formal and/or informal organizations of resource users and stakeholders. This is one of the reasons why the establishment and successful operation of fisheries co-management can be a complex, costly and multiyear effort (Rivera 1997; Pomeroy et al. 1999).

Figure 2. A hierarchy of co-management arrangements (after Berkes 1994)



Co-management involves various degrees of delegation of management responsibility and authority between the local-level (resource user, stakeholder, community) and the state-level (national, provincial, municipal, village government). Co-management is a middle course between state-level concerns in fisheries management for efficiency and equity, and local-level concerns for self-governance, self-regulation and active participation. Co-management can serve as a mechanism for both fisheries management and for community and economic development by promoting participation of fishers and the community in actively solving problems and addressing needs and in social development.

A central part of co-management is a formal agreement between two or more parties. The agreement typically describes the objective to be achieved by the co-management arrangement, the parties to the agreement, and defines the rights, authorities and responsibilities of all the parties. The agreements should be flexible to adjust to changing needs and maturity of the arrangements.

In some cases, co-management may be simply a formal recognition of informal and customary community-based system of fisheries management which already exists. The theme of co-management is that self-involvement in the management of the

resource will lead to a stronger commitment to comply with the management strategy and sustainable resource use.

Co-management also provides for local collective governance of common property. Capture fisheries resources are common pool resources. As a class, they have two characteristics: (a) the difficulty of exclusion, that is control of access to the resource; and (b) subtractability, that is, extraction of the resource by one user detracts from the availability to others. Solutions to the commons problem necessarily involve some form of access control and some form of institutional design (rules) to regulate use and to minimize the problem of subtractability. With the allocation of property rights both the costs and benefits of any management action will be borne by the same individual or group, providing incentives to conserve. If it is not possible to vest property rights to capture fisheries resources on an individual basis, it is possible to establish common property regimes and to vest property rights in a specific group of people on a collective basis.

The four property rights regimes (Bromley 1992): state property, communal property, private property and open access, are ideal, analytical types; they do not exist in the real world. Rather, resources tend to be held in overlapping combinations of these four regimes. Co-management is a governance arrangement between pure state property and pure communal property regimes. Strictly speaking, pure communal property systems are always embedded in state institutional systems. It should be noted, however, that while state law can reinforce or strengthen communal property, it might not always do so. Community-based resource management (CBRM) is a central element of co-management. The advantages of CBRM systems have been well-documented in various parts of the world. The better known of these initiatives have been in irrigation and social forestry but similar approaches are being applied in upland agriculture and wildlife. Community-based fisheries management (CBFM) tends to be more difficult due to the complexity of fisheries and aquatic resource systems, the social and cultural structures of fishing communities, and the independent nature of fishers.

While there are many similarities between the concepts of co-management and CBRM, there are differences in the focus of each strategy. These differences center on the level of participation of government and the stage in which the government becomes involved in the process. CBRM is people-centered and community-focused, while co-management focuses more on a partnership arrangement between government, resource users, and the local community. There is also a difference in the way the process of resource management is organized, with co-management having a broader scope and scale than CBRM. Co-management includes a major and active role for the government. Government serves a number of important functions including provision of supporting policies and legislation such as decentralization of management power and authority, the fostering of participation and dialogue, legitimization of community rights, initiatives and interventions, enforcement, addressing problems beyond the scope of the community, coordination at various levels, and financial and technical assistance, among others. Government provides legitimacy and accountability to CBRM through

co-management. Government must establish commensurate rights and conditions and devolve some of their own powers for both co-management and CBRM to be effective resource management strategies. Only government can legally establish and defend user rights and security of tenure at the community level. Co-management often addresses issues beyond the community level, at regional and national levels, and of multiple stakeholders, and allows these issues to be brought more effectively into the domain of the community. CBRM practitioners sometimes view government in an external role which is only brought into the project at a later stage or as needed. This often leads to misunderstandings and lack of full support from the government. Co-management strategies involve government agencies and resource managers as well as the community and stakeholders from the very beginning. This way, trust among participants is more likely to arise. Based on the above discussion on co-management and CBRM and on the literature on co-management, it is possible to develop two categories of co-management: (1) community-centered co-management and (2) stakeholder-centered co-management.

When CBRM is considered an integral part of co-management, it can be called community-centered co-management. Community-based co-management includes both the characteristics of CBRM and co-management, i.e., people-centered, community-oriented, resource-based, and partnership-based. Thus community-centered co-management has the community as its focus, but recognizes that to sustain such action, a horizontal and vertical link is necessary. Successful co-management and meaningful partnerships can only occur when the community is empowered and organized. This category of co-management will be more complex, costly and time-consuming to implement than just CBRM due to the need to develop partnerships early in the process and to maintain them over time. Examples of community-centered co-management can be seen in countries all over the world including Asia (Pomeroy and Pido 1995; Pomeroy 1995), Africa (Normann et al. 1998), and the Caribbean (Brown and Pomeroy 1999). Community-centered co-management seems to be more common in developing countries due to the need for overall community and economic development and social empowerment and not just resource management.

A variation of community-centered co-management can be called traditional or customary co-management. Traditional or customary community-based management systems are or were utilized to mange coastal fisheries in various countries around the world. Existing examples in Asia and the Pacific have been documented over a wide discontinuous geographical range (Ruddle 1994). Many of these systems play a valuable role in fisheries management and have a future usefulness both locally and nationally. Ruddle (1994) points out that,

In many locations, legal issues are among the principal constraints on the viability or future usefulness of traditional marine management systems. Thus, if the

contemporary usefulness of such systems has been formally recognized by government, they will require support by appropriate amendments to national laws, and lower order governments, such as provinces/states, with the explicit and easily understood recognition of customary law and community-based management rights as local corporate entities, accompanied by procedures for establishing the recognition of these rights.

Traditional or customary co-management is a formal government recognition of the informal system. Co-management can serve as a mechanism to legally recognize and protect these traditional and customary systems and to specify authority and responsibility between the community and government. Thus, traditional or customary co-management is a formal and legal recognition by government of these local systems and a definition of shared powers and authority.

Stakeholder-centered co-management can best be characterized as government-industry partnership through involvement of user groups in making resource management decisions. The focus of this category of co-management is representation of fishers and other stakeholders through various organizational arrangements in management. Unlike community-centered co-management, there is little or no attention given to broader issues of community development and social empowerment of fishers. Examples of stakeholder-centered co-management can be seen in many developed countries in Europe and North America (Jentoft and McCay 1995; Nielsen and Vedsmand 1995; Hanna 1995; McCay and Jentoft 1996). Stakeholder-centered co-management seems to be more common in developed countries where the emphasis is to get the resource users participating in the resource management process.

The potential advantages of co-management include efficiency and equity. Co-management can be more economical in terms of administration and enforcement than centralized systems. It involves self-management where the fishers take responsibility for a number of managerial functions. It allows the community to develop a management strategy which meets its own particular needs and conditions and is more legitimate in their eyes. Fishers or local communities are able to devise and administer regulatory instruments that are more appropriate to local conditions than externally imposed regulations. This form of self-management provides the fishers with a sense of ownership over the resource it gives them a powerful incentive not to heavily discount future returns from the fishery resource and thus to view the resource as a long term asset. Fishers are given an incentive to respect and support the rules because they complement cultural values, are self-imposed, and because they are seen as individually and mutually beneficial. Since the community is involved in the formulation and implementation of management measures, a higher degree of acceptability and compliance can be expected. Co-management makes maximum use of indigenous knowledge and expertise to provide information on the resource base and to complement scientific information for management. Its strategies can minimize social conflict and maintain or improve social cohesion in the community.

Co-management may not be suitable for every fishing community. Many communities may not be willing to or capable of taking on the responsibility of co-management. A long history of dependency on government may take years to reverse. Leadership may not be available within the community to initiate or sustain the co-management efforts. For many individuals and communities, the incentive(s)—economic, social and/or political—to engage in co-management may not be present. The risk involved in changing fisheries management strategies may be too high for some communities and fishers. The costs for individuals to participate in co-management strategies (time, money) may outweigh the expected benefits. Sufficient political will may not exist among the local resource stakeholders or in the government to actually manage the fisheries in a responsible and sustainable manner. Actions by user groups outside the immediate community may undermine or destroy the management activities undertaken by the community. Particular resource characteristics, such as fish migratory patterns, may not make it possible for the community to manage the resource. There is no guarantee that a local community will organize itself into an effective governing institution.

The delegation of significant authority to manage the fisheries may be one of the most difficult tasks in establishing co-management systems. While governments may be willing to call for more community involvement, they must also establish commensurate rights and authorities and devolve some of their own powers. The issue of devolution will be addressed in detail in a subsequent section of the paper.

PROPERTY RIGHTS IN FISHERIES CO-MANAGEMENT

At the root of co-management is the issue of property rights. As mentioned earlier, co-management addresses institutions of local governance of common property. Property rights play a central role in the management of fisheries resources. Property rights provide authority and shape the incentives for resource users to invest in management and conserve the resource. Before examining the role of property rights in current co-management and community-based management arrangements, it is important to understand the role of property rights in traditional community-based fisheries management systems. These systems have mechanisms of collective decision-making, conflict management and regulation, and specify fishing rights and tenurial relationships of small-scale fishers to the resource (Ruddle 1994). While many of these systems have been weakened or disappeared due partly to institutional restructuring under colonial administrations, technological modernization, the rise of the nation-state, incursion from outsiders into the community, socio-economic stratification and concentration of power and wealth within coastal communities, a number have survived due to their ability to deal with allocation problems, to control access, and to enforce rules and sanctions.

Traditional management systems in the Asia-Pacific region are based on property rights and associated regimes which reflect local culture, economic conditions, and structures of power and social organization. Many of these systems seem not to be based primarily on conservation of the resource, although that is one objective, but on relationships between property and social organizations in the community. As Ruddle (1994) states, "In these traditional community-based systems of marine resource management an individual's sea rights depend on his or her social status within a corporate community, which ranges from villages through clans, sub-clans, and lineage, to the family. Resource territories and user groups are defined." Under these systems marine resources do not have the characteristics of open access, and coastal marine areas have property status comparable to that of common property regimes in which access to a territory is limited to a defined group.

The systems vary by area but resource control and management is usually vested in traditional authorities, such as secular leaders, religious leaders or specialists, which vary according to social organization. Rights to exploit fisheries are given to members of the fishing community as members of a social group. These rights may be exclusive, primary (entitled via inheritance), or secondary (more restrictive than primary). They may be granted to outsiders, may be transferable, and may be further classified into rights of occupation and use (Ruddle 1994).

Operational rules are specified to govern the systems, identify fishing areas, and define internal and external access. There are also rules to govern fishing behavior, gear usage and allocation issues, and conservation. Routine decision-making, the implementation and enforcement of decisions, monitoring of the fishery, and sanctions are undertaken by members of the local community. Four types of sanctions may be used including social, economic, supernatural, and physical punishment (Ruddle 1994).

The literature on fisheries in the Caribbean is replete with accounts of traditional systems predating colonialism. The characteristics of these systems include exclusive use rights (Berkes and Shaw 1986), boundary demarcations (O'Marde 1994), and self-regulatory mechanisms (Finlay 1993, 1995), conflict management mechanisms, rules governing resource allocation, and elements of equity (Wilkins 1983; Mitchell and Gold 1982).

The majority of coastal fisheries in developing countries are in effect de facto open access. While laws and regulations are on the books, the ability to enforce these laws and regulations is practically non-existent due to the fact that fisheries department and enforcement agencies do not have sufficient resources. In addition, the political will is often not in place to enforce these laws and regulations due to the influence of power elites. While in general the coastal fisheries resources can be considered to be open access, in some cases property rights exist. In many cases licenses are provided for the placement of fixed fishing gears such as fish corrals and of fish aggregating devices. This essentially privatizes an area for the individual owner of the fishing gear. Licenses are also provided to aquaculturists for the culture of various marine organisms as

seagrass on lines on the sea bottom, fish cages in the water column, clams on intertidal bottoms, and oysters on stakes in the intertidal zone.

Some relatively sedentary fish species can be managed by controlling parts of the water bottom and column. For these species, regulations restricting fishing opportunities resemble property rights used on adjacent terrestrial areas. The term 'territorial use rights in fisheries' (TURFs) describes this old and useful approach (Christy 1982).

The most elaborate modern system of property rights as a tool for managing marine fish populations evolved in Japan (Lim et al. 1995). While the historical roots for these programs go back to feudal times, a large and sophisticated bureaucracy evolved after the Second World War in order to manage the resources. The Japanese system places the stamp of national law on allocation decisions made at the local level, usually by a fishers' cooperative. While there have been many attempts to do so, the Japanese system is not easily transferred to other cultures.

Traditional community-based fisheries management systems make extensive use of customary property rights. For example, beach seine fishers in the Eastern Caribbean, especially in the islands of Grenada, St. Vincent and the Grenadines, St. Lucia and Dominica, have communal property rights systems for allocating fishing areas amongst themselves. Such systems of community-based management are strikingly similar among the islands. These self-regulating, sea-use management systems in most cases involve territorial use rights in fisheries (TURFs). The TURF may be defined as a system in which the community of beach seine users allocate the fishing opportunity at designated fishing sites on a time specific basis. The TURF system may be characterized as: site-specific in that the fishing opportunity is usable only at specific sites; gear-specific in that a single type of gear, either threaded or monofilament seine is allowed to operate in the TURF; time-specific in that either specific real time or specific time limiting conditions for use of the fishing opportunity are provided for; but species nonspecific in that no limit is placed on the type of fish species that may be harvested. Territoriality is largely recognized by the resource using communities, through a number of unwritten conventions, mores, norms and rules for allocating space, developed over time in situ (Brown and Pomeroy 1999).

These informal systems of resource use and management have evolved over the decades and demonstrate wide acceptance, legitimacy and effectiveness within individual communities. They clearly describe a package of community-based property rights, which are shaped by a number of factors, including physical conditions of the fishing zone (especially those maintaining territoriality), the nature of the target fish stock with its availability, abundance and species diversity, appropriate technology in terms of simplicity and optimal size, and socioeconomic and cultural dimensions of the community.

A concern among several researchers is that the revitalization of community-based management and co-management systems will undermine traditional, customary and informal systems of fisheries management which exist in a community. Often, new management systems are developed and implemented on "top" of these traditional, customary and informal systems without recognition of their existence and they are lost or their function is diminished. Project staff implementing new management systems will need to be educated on how to recognize and understand the operation of these systems so that they can be integrated in project plans and proposed management strategies. Many traditional systems are threatened by modernization, political decisions and integration into market economies. No tradition has ever been static, and change can occur without tradition being lost. Credible and well-functioning systems are resilient and can be integrated with a new system or strengthened through a co-management arrangement. A case in point is the sasi system in the Maluku Islands of eastern Indonesia. Based on traditional law, the adat regulations, sasi rules regulate the use of natural resources, both terrestrial and marine. Marine resources under sasi laut are subject to rules concerning the opening and closing of the fishery, fishing techniques, access rights, and division of the harvest. Acknowledgment and enforcement of the regulations is undertaken by local traditional leaders. The sasi system has disappeared in many areas, but in others it continues to be a functioning, equitable and efficient management strategy. There is action being taken to rebuild this institution in the form of co-management by formally legitimizing the system and devolving management authority to the local traditional leaders. Government would provide enforcement support when needed. The current political and economic problems in Indonesia have stalled this activity but interest still exists (Harkes 1999).

The specification, legitimization and enforcement of property rights have been one of the critical conditions for success of co-management and community-based management projects. A review of community-based management projects in the Philippines found that when user rights are specified and secure, there is a change in the behavior and attitude of the fisher towards conservation and a much greater chance that the material intervention of the project will be maintained. In addition, the review showed that government support through legislation, funding and enforcement is crucial to sustaining the intervention. In most cases, local property right institutions require active collaboration with government to enforce user rights (Pomeroy et al. 1996). In the Philippines, for example, early efforts in establishing marine reserves as part of the community-based management effort failed due in large part to the difficulties in obtaining government approval for local ordinances to establish and operate the reserves. Without the ordinance, the organized fishers were not able to legally defend their rights over the reserve from outsiders. At the time, all local ordinances had to be approved by the Secretary of Agriculture in Manila. It was not until the passage of the Local Government Code of 1991 that local ordinances could be approved at the municipal level. The Local Government Code allowed for more active collaboration of local governments with fisher organizations to enforce local user rights.

A concern in the establishment of common property regimes is how to decide who has the access right. It is often easy to identify the full-time fishers, but there are often large numbers of part-time or seasonal fishers who have traditionally had access to the fishery to supplement their income and food. Upland farmers, for example, may fish on a seasonal basis to feed their family. These are legitimate users and need to be included in the management process. In the case of inland water bodies in Bangladesh, for example, these part-time fishers were excluded from the management process. This caused a problem within the community. A compromise was reached where part-time fishers were given access to the water body to fish for family use only.

In the next sections several specific examples from Asia and the Caribbean will be used to illustrate the importance of property rights.

THE SOUFRIERE MARINE MANAGEMENT AREA PROJECT, ST. LUCIA

Economic expansion and diversification on a national scale generated a spillover effect in a sub-region of St. Lucia, whose simple economy was hitherto based particularly on artisan fishing. The Soufriere coastal region in the southwest of the country is situated on a narrow submarine reef, which is considered as one of the most diverse and productive coral reefs in the country.

The problem of multi-user conflict over sea space arose when the tourism and related transportation and recreational industries sought a footing in the area, which earlier had been the exclusive domain of mainly beach seine and trap fishers. The local fishers considered the area as communal property over which they had exclusive territorial rights. The intrusion of outsiders was therefore enough to galvanize them to organize and defend their communal territorial rights.

As a result of the intensification of the pressure on the resource, evidence of habitat and resource degradation was emerging. The government's first response in 1986 was to declare some areas as Fishing Priority Areas and Marine Reserves, but this failed to settle the issue. The next attempt, in 1992, was to embark on a complex, extensive and intensive mix of public awareness building and consultation processes, involving all the stakeholders, in a bid to seek solutions to the problem; solutions to which all participants would have contributed and could therefore identify with. The leading organizers of this participatory search for solutions were the Fisheries Department, the Caribbean Natural Resources Institute (CANARI), an NGO, and the Soufriere Regional Development Foundation. Preliminary agreement reached in 1993 among all the stakeholders was a system of space allocation and zoning, including redefined fishery priority areas, marine reserves, multiple use areas, recreational areas, and areas for specific tourism-related activities. This has resulted in the return to the fishing community of the exclusive use rights to the resources, albeit over a smaller area than previously.

The final agreement of this participatory planning and negotiation process was reached in 1995 with the establishment of a general management body, the Soufriere Development Foundation. This body is made up of representatives from all major stakeholders and makes decisions about rules in the area. The legal backing for this co-management arrangement comes from the St. Lucia Fisheries Act which allows for the establishment of local fisheries management areas, under an organized body, considered to represent the interests of the fishers (Brown and Pomeroy 1999).

INLAND OPEN-WATER FISHERIES MANAGEMENT IN BANGLADESH

In pre-colonial Bangladesh, fisheries were managed by the local community as common property with complex systems of tenure. Following colonization, the British pressed for maximizing state revenues and gave zamindars (feudal lords) proprietary rights of use, management, and exclusion over water bodies within their estates. A nominal tax was collected from fishers in exchange for use rights (Ahmed et al. 1997).

In 1950 the zamindar system was eliminated and the government, through the Ministry of Lands (MOL), acquired authority and proprietary rights over the water bodies. The MOL managed the water bodies by leasing fishing rights for 1-3 years to the highest bidder, a private or corporate entity, who thereby acquired exclusive rights to determine fishing access to the water body. The leaseholders usually allow as many fishers and collect as much rent as possible during the tenure of their lease. Through this system, traditional fishers lost significant use rights. Hindu fishers lost access to the water bodies since Bengali Muslim fishers have better access to local power brokers.

In an attempt to deal with this inequitable situation, the New Fisheries Management Policy (NFMP) was initiated in 1986. Through a system, administered by the Department of Fisheries (DOF), of annual gear-specific licensing, access and withdrawal rights, water bodies were reserved for the poor "genuine" fishers who depend on full-time fishing for their livelihood . Licensees were expected to obey and enforce rules and regulations. Gear-specific licensing was intended to ease the pressure on fisheries by regulating harvest. Limiting use rights to genuine fishers was meant to ensure that they got a greater share of fishing income (Ahmed et al. 1997).

Following the NFMP, a number of programs and projects were initiated by the Department of Fisheries, the National Fishermen Association and several NGOs to manage the fisheries. Over 1000 water bodies are now managed through a range of co-management arrangements. One example is the Oxbow Lakes Project II, which was executed by the DOF and the NGO Bangladesh Rural Advancement Committee (BRAC) in five districts around Jessore. An oxbow lake (baor) is an old cut-off river bend, usually in the shape of a horseshoe or ox-bow. Users are organized in Lake Management Groups (LMG) and manage the resource themselves. Each LMG consists of a Lake Fishing Team (LFT) and a Fish Farming Group (FFG). The fishers use rights of the baors are leased by the DOF to the LMG of each baor. The LFT and the FFG share the baor lease fee, pro rata to the area occupied by ponds and open water. Fishers

are provided easy access to credit. Since there was no tradition of collective action among fishers organizing efforts and capability-building efforts were undertaken by the project staff.

The LFT fishers receive an equity share of the day's catch, thereby ensuring active participation of all LFT members. Only licensed fishers are allowed to fish in the baor and poaching has been effectively reduced because all villages around the baor are represented in the LFT and FFG. Rules are established by the LMG through a participatory process in monthly general meetings. No leader is allowed to have a successive term (Middencorp et al. 1996).

By providing long-term security of tenure to the resource, equity of access to the baor improved, and fish yields and incomes increased steadily. By giving the people who actually fish a stake in the fish yield, they will invest time and money in maximizing the yield over the long-term.

MANGROVE REHABILITATION AND COASTAL RESOURCE MANAGEMENT PROJECT IN COGTONG BAY, BOHOL, PHILIPPINES.

Cogtong Bay is located in the eastern coast of Bohol in the central region of the Philippines. Mangroves fringe the coastline. The degradation of the Bay began in the 1960s when large areas were clear-cut to make room for fishponds. In the 1970s, commercial mangrove harvesting was initiated. By the mid-1970s, the fishers around the bay began to experience declining fish catch. The open access nature of the resource and lack of vigilant law enforcement fostered illegal fishing practices. The situation was aggravated by the fragmentation of resource management functions among national government agencies and unclear jurisdiction over coastal resources management. The shift from subsistence village economies to market-driven economies for certain coastal products opened new linkages to outside markets which intensified resource use.

Recognizing the importance of the fishery, and at the insistence of local fishers, the Municipal Councils of the two municipalities bordering Cogtong Bay began to increase efforts to conserve the fishery resources. A marine park was established in 1978 where only subsistence fishers were allowed to fish with selected gear. In the 1980s, both Councils passed further legislation that restricted illegal fishing methods. However, the Bay had already become a haven for illegal fishers and mangrove harvesters. On their own the Municipal Councils could not fully deter violators.

In 1989, a major project was initiated to promote sustainable coastal resource management. A local NGO, working in partnership with the Department of Environment and Natural Resources (DENR), and with funding from USAID, adopted a co-management approach to address the problem of resource degradation and poverty in coastal villages surrounding the Bay. The co-management strategy recognized that the coastal residents are the day-to-day managers of the coastal resources. The project sought to transform the resource users into both resource users and managers. The

project had four components: (1) community organizing, (2) mangrove rehabilitation, (3) coastal management, and (4) mariculture. Central to project implementation was the provision of secure mangrove tenurial rights to local fishers. Working with the DENR, the individual fishers were issued 25-year certificates of stewardship contracts (CSC) to manage and use the mangrove in designated areas. Within the boundaries of the CSC, the mangrove stewards can restrict access and withdrawal. CSC holders have the right to peacefully possess and cultivate the land and enjoy the fruits. They are entitled to harvest the mangroves, provided they replant the trees. Non-CSC holders are not allowed to cut mangrove trees in the CSC-covered areas. As a result of security of tenure, the holders of the CSC are now reforesting the mangrove areas and protecting them from illegal cutters, long after the project was completed in 1991. Mangrove cover has increased and consequently also fish yields (Katon et al. 1998).

THE MARINE CONSERVATION PROJECT OF SAN SALVADOR, MASINLOC, ZAMBALES, PHILIPPINES.

San Salvador Island community resides in a 380-hectare village that forms part of Masinloc municipality in the province of Zambales, Philippines. It is located on the western coast of Luzon, about 250 km from Metro Manila. Until the late 1960s, the prevalence of abundant marine resources, socioeconomic homogeneity of village residents, and a subsistence village economy enabled the residents to live together with minimal resource use conflicts. In the 1970s, the scenario began to change due to three major events: 1) influx of migrants from the central Philippines who brought with them destructive fishing methods; 2) integration of the village economy into the international market for aquarium fish; and 3) pronounced shift to destructive fishing operations such as blast fishing, aquarium fish collection using sodium cyanide, and use of fine mesh nets that indiscriminately caught large and small fish alike. Together, these events led to the progressive devastation of San Salvador's fishing grounds.

The effects of fishery depletion and destruction of coral reefs began to be felt in the 1980s. Open access to the resource, rapid decline in fish stocks, and existence of unscrupulous village residents contributed to worsening resource conditions. The highly centralized national government of the Philippines at that time was too distant to control the situation, while the San Salvador fishers themselves were too fragmented to embark on any collective action to avert resource degradation. Village fishers reported that their average fish catch per unit effort dwindled from 20 kilos in the 1960s to 1-3 kilos in 1988. Many reef fishes, such as groupers, snappers and damselfish, became scarce. A pre-project coral reef assessment in 1988 indicated an average of 23 percent living coral cover for the entire island (Christie et al. 1994).

External change agents were instrumental in improving resource management measures. A local NGO initiated a community-based management project which included the establishment of a marine sanctuary that featured a biological intervention (i.e., marine sanctuary and reserve) and a governance intervention (i.e., establishment of

rights and rules for fisheries management). In addition, it encouraged the formation and strengthening of local groups responsible for marine resource management and income-generating projects. Central to the achievement of the project's goal was the community organizing process. Despite the absence of a tradition of collective action in fisheries management and the existence of heterogeneous village residents, the project succeeded in mobilizing the residents to take collective action on resource management problems.

In 1989, the core group members spearheaded a campaign to support the 127-hectare marine sanctuary and reserve of San Salvador. Together with external agents, they also drafted a local ordinance that banned fishing within the sanctuary and allowed only non-destructive fishing methods in the marine reserve. Only hook and line, bamboo traps, gill nets (3 cm or larger), spear fishing without compressor, and traditional gleaning were allowed in the reserve. In response, the Masinloc Municipal Council passed an ordinance in July 1989 that helped provide legitimacy to the San Salvador marine sanctuary and reserve at the local level. The passage of the Local Government Code in 1991 allowed for a formal legitimization of the sanctuary in 1992. The core group members were active in monitoring illegal fishing activities and in guarding the sanctuary with the assistance of village fishers. The participation of other resource users was seen in their attendance at village consultations, endorsement of appropriate measures and local ordinances, adherence to legitimate rules, and adoption of non-destructive fishing technologies, among others.

While these activities were not conceived as a co-management project, the Masinloc municipal government, which has political jurisdiction over San Salvador, was drawn into the picture in several ways: 1) passage of enabling legislation (Municipal Ordinance 30-89) in July 1989, which provided a legal basis for sanctuary management and for apprehending rule violators; 2) mediation of conflicts between village-based resource users as well as between local and outside resource users; 3) provision of a motorized boat, hand-held radios, and fuel for patrolling the coastal waters in response to the request of San Salvador residents; 4) formal creation of a patrol team in 1993 to enforce fishery laws, known as the Bantay Dagat; and 5) provision of a political environment that allowed the pursuit of community-based initiatives. The NGO turned over the project in 1993 to the village-based fishers' organization it helped establish, known as the Samahang Pangkaunlaran ng San Salvador (SPSS).

Co-management became increasingly visible in the post-project phase. The Village Council and the Municipal Council have taken a more active role in sustaining project initiatives by providing funds, personnel and strengthened enabling legislation for resource management. Led by the Masinloc municipal government, law enforcement is now a collective responsibility of the government-deployed Bantay Dagat, fishers' organization, and the village police.

Comparing biological changes over time, the overall condition of living coral cover improved from an average of 23 percent for the whole island in 1988 to 57 percent in

1998. Moreover, fish species richness improved from 126 species belonging to 19 families in 1988 to 138 species belonging to 28 families in 1998 (Katon et al. 1997).

CO-MANAGEMENT AND COLLECTIVE ACTION

Property rights address resource ownership and management. They define the required mechanisms and the structures to optimize resource use and conservation, along with the means and procedures for enforcement. Without state-legitimated property rights, resource users will find difficulty in enforcing their claim over the resource against outsiders. The San Salvador experience shows that local initiatives require active collaboration with the government in enforcing user rights. When property rights are clearly specified, legitimate, and enforced, as with the marine reserve and sanctuary, there is a much greater chance that the intervention will be maintained.

One fundamental debate in co-management is whether resource users can be entrusted to manage their resources (Berkes 1989). Unless governments and decision-makers who implement government policies can be convinced of the desire and the ability of users to manage themselves, not much progress can be made in co-management. It is often pointed out that government resource managers are reluctant to share authority. However, it would be a mistake to interpret this solely as a self-serving motive to hang onto political power. Many managers have well-considered reasons to be skeptical about local-level management. To convince managers that local-level management is possible, part of the responsibility falls on the resource users themselves. The ability for self-management, in turn, partially depends on the ability of the local community to control the resources in question.

Managers' reasons for skepticism include the lack of appropriate knowledge on the part of the fishers, and the ability of fishers to organize themselves to manage for long-term sustainability. Each of these points opens up its own debate. Even in countries with high standards of education, it is true that fishers tend to have lower levels of education than the general population. But the relevant knowledge held by fishers in many areas of the world may be extremely detailed and relevant for resource management (Johannes 1981; Freeman et al. 1991; Berkes et al. 1995). Indeed, it is the complementarity between such local knowledge and scientific knowledge that makes co-management stronger than either community-based management or centralized management.

Experience from the Philippines, the country with the greatest number of fisheries community-based management and co-management projects in the world, has shown that fishers have difficulty in organizing themselves for collective action. Among other things, theory of collective action states that when a group of individuals is highly dependent on a resource and when the availability of that resource is uncertain or limited, especially if the resource problem is repeatedly experienced, the group will develop collective institutional arrangements to deal with the problem. In reviewing the Philippine projects, it was found that fishers often recognize that a problem exists, they

will discuss the situation among themselves, and they will discuss possible solutions to the problem, but very few groups of fishers will take action to either formally organize themselves or to develop institutional arrangements (rights and rules). Our review found that in less than 20 percent of the cases did the fishers take action on their own initiative to organize and develop institutional arrangements (Pomeroy et al. 1999). Leadership seems to be the limiting factor for fishers to take collective action. Either no individual is willing to step forward to lead, there is no one in the community with enough credibility among the fishers to lead, or divisions within the community or group of resource users will not allow for a leader to emerge. If enough initiative exists among the fishers they may approach a supportive politician and ask for assistance or they may contact an external change agent, such as a non-governmental organization (NGO), academic or research institution, to assist in community organizing and development of institutional arrangements.

A second factor required by fishers to take collective action is that an incentive, whether economic, social and/or political, must be present, recognized and agreed upon by the fishers. The incentive must exist at both the individual and group levels. There must be an inherent strategic benefit and advantage to engage in the new arrangement. The incentive cannot be imposed from outside but must be internally generated. A review of projects in the Philippines found that project failure occurred most frequently when fishers did not perceive the same incentive for change as did the project implementers. Positive cultural attitudes toward efficacy of collective action were consistently related to perceptions of positive change resulting from the project (Pomeroy et al. 1996). Information and education has proven to be an important intervention in assisting fishers to take collective action and cannot be divorced from the organizing work. Fisher-to-fisher transfer of knowledge and experience, from fishers who have benefited from collective action to those contemplating collective action, is a useful education method.

Since fisheries resource systems do not come in one size, neither should their governance arrangements. The appropriate scale for organizing fishers for collective action seems to be somewhere between the individual household level and the whole village level. The term “community”"-based management is most often used, but the question of what is the “community” to be organized is central to collective action. Among NGO practitioners and researchers in Asia, the term community, for organizing purposes, is defined as any group of resource users with common interests. In the Philippines, while projects are often implemented at the spatial scale of a village, organizing efforts are undertaken with a sub-group of the village. This may be a group of fishers using a similar fishing gear, a group that fishes in the same area, or all the fishers in the village. An organizing effort is usually undertaken with a minimum size of five fishers but no more than 50 fishers. Administration becomes difficult in larger groups. There may be multiple groups in a village or nested institutions which protect

the interests of the larger community while allowing for flexible management arrangements for the smaller groups. These may be further organized into a federation. In the inland open waters of Bangladesh, Lake Fishing Teams are organized based on the number of fishers who generally operate from one boat. Each team is represented on a Lake Management Group which makes overall decisions about lake management.

Fishers' ability to organize for collective action has a number of prerequisites, essentially involving the question of local institutions, defined here as the set of rules actually used (rules-in-use) by a group of individuals to organize their activities (Ostrom 1990; North 1990). Not all groups of fishers have appropriate local institutions; in such cases, any co-management initiative will necessarily start with institution-building. But institution-building is a long-term and costly process. Community organizing can take from three to five years before a self-sufficient organization is in place, on the basis of cases in the Philippines (Carlos and Pomeroy 1996), and five to ten years on the basis of a case in St. Lucia, West Indies (Smith and Berkes 1993). In the coastal fishery of Alanya on the Mediterranean coast of Turkey, locally designed rules for resource allocation and conflict reduction, by means of rotating and taking turns at fishing sites, developed over a period of ten to fifteen years in the absence of government support or any other external intervention for institution-building (Berkes 1986).

Such experiences indicate that there often is a readiness and willingness on behalf of some groups of resource users to take responsibility for management. Thus, a key question for co-management is what management functions are best handled at the local or communal level, as opposed to the national government level. Pinkerton (1989) identified seven resource management functions that may be enhanced by the joint action of users and government resource managers at the local level: (1) data gathering, (2) logistical decisions such as who can harvest and when, (3) allocation decisions, (4) protection of resource from environmental damage, (5) enforcement of regulations, (6) enhancement of long-term planning, and (7) more inclusive decision-making. No single formula exists to implement a co-management arrangement to cover these functions. The answer depends on country-specific and site-specific conditions, and is ultimately a political decision.

The benefits sought by all actors in co-management are more appropriate, more efficient, and more equitable management. These benefits become concrete when considered in association with the following processes and goals: (1) co-management for community-based economic and social development, (2) co-management to decentralize resource management decisions, and (3) co-management as a mechanism for reducing conflict through a process of participatory democracy. Resource users have the benefit of participating in management decisions that affect their welfare; government has the benefit of reduced challenge to its authority (Pinkerton 1989; Jentoft 1989).

THE ESTABLISHMENT OF CONDITIONS FOR CO-MANAGEMENT

Increasingly, government policies and programs stress the need for greater resource user participation and the development of local organizations to handle some aspect of resource management. In the area of fisheries, this trend is international in scope and can be observed in a number of countries in the Americas, Europe and Asia (Jentoft and McCay 1995; Pomeroy 1995; Sen and Raakjaer-Nielsen 1996). A review of the international experience shows that policies favoring co-management are a necessary but not sufficient condition for successful co-management. There are only two well-documented cases of long-standing marine fishery co-management arrangements that work, in Norway (Jentoft 1985, 1989) and in Japan (Ruddle 1987; Lim et al. 1995), and both of them have a legal basis. This suggests that it may be insufficient for governments simply to call for more community involvement and fisher participation; they must also establish commensurate legal rights and authorities and devolve some of their powers. The delegation of authority and power sharing to manage the fisheries may be one of the most difficult tasks in establishing co-management. Government must not only foster conditions for fisher participation but sustain it.

As a first step, government must recognize local institutions as legitimate actors in the governance of fisheries resources. At a minimum, government must not challenge fishers' rights to hold meetings to discuss problems and solutions and to develop organizations and institutional arrangements (rights and rules) for management. Fishers must feel safe to openly meet at their own initiative and discuss problems and solutions in public forums. They must not feel threatened if they criticize existing government policies and management methods. As a second step, fishers must be given access to government and government officials to express their concerns and ideas. Fishers should feel that government officials will listen to them. As a third step, fishers should be given the right to develop their own organizations and to form networks and coalitions for cooperation and coordination. Too often there has been the formation of government-sponsored organizations which are officially recognized but ineffective since they do not represent the fishers, but these may be the only type of organization a government may allow. Fishers must be free to develop organizations on their own initiative that meet their needs.

Fishers often develop their own rules for management in addition to those created by government. For example, fishers may establish rules defining who has access to a fishing ground and what fishing gear can be used. The fishers may be able to enforce the rules as long as there is at least a minimal recognition of the legitimacy of these rules by the government. This can be formal, as through a municipal ordinance, or informal, as through police patrols to back-stop the local enforcement arrangements. If government does not recognize the legitimacy of the rules, then it will be difficult for the fishers to maintain the rules in the long run (Ostrom 1994). Thus, the role of government in establishing conditions for co-management is the creation of legitimacy

and accountability for the local organization and institutional arrangements. The government, through legislative and policy instruments, defines power sharing and decision-making arrangements. Only government can legally establish and defend user rights and security of tenure. One means of establishing these conditions is through decentralization.

DECENTRALIZATION AND CO-MANAGEMENT

Decentralization refers to the systematic and rational dispersal of power, authority and responsibility from the central government to lower or local level institutions—to states or provinces in the case of federal countries, for example, and then further down to regional and local governments, or even to community associations. The approach of decentralization is for the center to delegate some measure of its power to the lower levels or smaller units in the government system. Increasing local autonomy is a focal point in the decentralization process. Generally, power and authority are transferred or withdrawn by laws enacted in the center.

In many countries, government programs and projects stress the development of local organizations and autonomy to handle some aspect of fisheries management. Seldom, however, is adequate attention given to the establishment of administrative and policy structures that define the legal status, rights and authorities essential for the effective performance of local organizations. Many attempts at decentralization have not delivered a real sharing of resource management power.

Initiatives in community-based resource management in Asia, for example, have been popular throughout most of this century under different names. However, as Korten (1986) explains, none of these approaches to stimulating local initiatives provided a fundamental challenge to the idea that the government does development for the people, who are expected to respond with grateful acceptance of whatever guidance and assistance government chooses to offer. None challenged the nature of the government's role or the appropriateness of the structures and procedures through which government conducts its business. None confronted basic issues of local social structures and resource control.

If new fisheries co-management initiatives are to be successful, these basic issues of government policy to establish supportive legislation, rights and authority structures must be recognized. The devolution of fishery management authority from the central government to local level governments and organizations is an issue that is not easily resolved. Legislation and policy for co-management are embedded in a broader network of laws, policies and administrative procedures, at both national and local government levels. Consequently they will be difficult to change. Government administrative and institutional structures, and fisheries laws and policies will, in most cases, require restructuring to support these initiatives.

In some cases, it may be more feasible and desirable to draw up completely new legislation, rather than to modify existing acts. A case in point is the establishment of

Mafia Island Marine Park in Tanzania. The idea of a marine protected area developed in the course of an environmental assessment process regarding petroleum exploration. Local fishers were involved in the assessment process to provide information on resources. Initially, a reserve was set up to protect fishery resources; by 1991 it had evolved into a locally managed marine park. But it became obvious soon that the needs of the local people could not be met under the existing fisheries legislation. New legislation was developed with support from international conservation organizations and the FAO, and the Tanzania Marine Parks and Reserves Act came into being in 1994. This act provided for the formal inclusion of village council representatives on the technical committee for the Mafia Island Marine Park for co-management and for the sharing of benefits (Ngoile, IUCN, personal communication).

As the Tanzania case illustrates, the actual form of co-management will depend upon the type of government and the political will for decentralization. In general, co-management is consistent with the aims of democratization and empowerment. In the first place, the goals of co-management include the greater participation of fishers in the fisheries management process, more self-reliance of local level institutions, and a more responsive decision-making process. The ultimate goal of decentralization is greater participation and efficiency by getting people at lower levels more involved in the decision-making processes and procedures that affect them. One assumption of decentralization is that the deployment of power and resources to the community will enhance community and economic development. Thus, the promise of decentralization is greater democratization and development of local communities. In this assumption, an important concern is the significance of intervening variables such as leadership, skills of fishers, resources, and capabilities of local institutions.

In detailing the specifics of the decentralization strategy, questions of implementation become crucial points of debate. What powers and functions, for instance, can be properly entrusted to local institutions and which institutions—local government or user group? What are those that should be left to the central government? How is the sharing of resources to be administered? What should be the role of non-government organizations and people's organizations (an organized group of individuals with similar interests)? What is the proper and appropriate mix of government and private sector participation? Will decentralization occur only for the fisheries bureaucracy, or will it be a government-wide initiative? This collection of issues impinges on decentralization strategies and drives the political debate associated with decentralization.

DISCUSSION

International experience suggests that fisheries co-management does not come about automatically but requires some impetus. Most commonly, it is the recognition of a resource management problem that triggers co-management. Problem recognition

may be related to resource deterioration (as in the case of the Philippines and the Tanzanian marine protected area), conflicts between stakeholders (e.g. Norway's Lofoten cod fishery and Philippines coastal fisheries), conflicts between management agencies and local fishers (e.g. Canada's Atlantic coast fishery), and governance problems in general (e.g. Philippines, the United States Fishery Conservation and Management Act, and northern aboriginal land claims in Canada). In this regard, the experience with fisheries co-management is similar to the international experience with the co-management of protected areas (McNeely 1995; Borrini-Feyerabend 1996), forests (Lynch and Talbott 1995), wildlife (Martin 1986), and other resources.

In each case, governments have turned to co-management as a means of responding to a management crisis, and sometimes to a management opportunity, as in the case of resource rehabilitation projects and perhaps also in some land claims agreements. Decentralization is a pre-condition that can enable co-management. Various types of decentralization can be used by governments to establish conditions conducive to co-management. The strategies of co-management not only respond to management crises, they also offer the promise of increased democratization, and empowerment and development of regional and local communities. The goals of both co-management and decentralization are the mobilization and strengthening of people's participation in government and more equitable distribution of power and resources to local-level groups of people and communities (de Guzman 1991).

The form and process of decentralization and co-management can be seen as a focus for user participation in management. Decentralization in a governmental context may proceed in the logical sequence of: (1) organizational and physical deconcentration; (2) administrative delegation; (3) political devolution; and (4) popular privatization (Gasper 1991). These modes of decentralization may occur separately or in a cumulative package. Thus, decentralization can be seen as a continuum ranging from deconcentration to privatization where increasingly more power and authority is delegated to local-level. Similarly co-management can also be viewed as a continuum based on the role(s) played by government and resource users (Berkes 1994; Pomeroy and Williams 1994; Sen and Raakjaer-Nielsen 1996). In both decentralization and co-management, the central government acts to delegate power and authority to local-level institutions.

The form of decentralization will depend, like the form of co-management, on country-specific conditions. There is no one "best" form of decentralization to support co-management, as there is no one "best" form of co-management. Decentralization can occur as a broad administrative mandate of which fisheries is included, as in the case of the Philippines, or it may occur for specific management functions, as is the case in Japan and Tanzania. Both co-management and decentralization should be viewed as an evolving process that adjusts and matures over time.

The co-management process, however, is laced with potential roadblocks and pitfalls. Politicians and government agency administrators may be reluctant to relinquish their authority or portions of it. Local power and authority may fall into the

hands of leaders and groups who are not committed to its basic values and goals. An important concern for the success of both decentralization and co-management are variables such as leadership, skills, resources, and capabilities of local-level organizations and institutions. When government and user groups work together and reinforce each other the results can be improved management. However, the decentralization process can also represent shifts in leadership and power bases at the community level which can lead to social, political and economic fragmentation in the community and further resource overexploitation and degradation.

The process of developing a co-management system will likely involve the restructuring of national laws and policies, as well as national fisheries agencies and bureaucracies. Existing national laws and policies usually do not include specific reference to such functions of co-management as the security of local-level tenure and property rights over coastal resources, people's participation, and the recognition and incorporation of local traditional/informal/folk management systems. New laws and policies may need to be developed and/or existing laws and policies amended or reinterpreted to authorize and legitimize these functions of co-management. Both the Philippines and Thailand, for example, are undertaking such a process (Pomeroy 1995). New laws and policies may need to be reviewed to identify compatibility with laws and policies in other sectors and with overall administrative procedures. National fisheries agencies and bureaucracies may require restructuring to take on the new responsibilities and functions required by co-management and decentralization. Issues of coordination, communication and role definition must be addressed. Government agencies must be shielded from short-term political pressures to change or dilute goals of the power-sharing arrangements under co-management.

The role of the government in co-management is to provide enabling legislation to authorize and legitimize the right to organize and to make and enforce institutional arrangements at the local level. In the case of protected marine area co-management in Tanzania, for example, a series of enabling legislation was passed in the 1970s and the 1980s in support of decentralization. Although it is generally thought that the Tanzanian experiment in self-reliance and local democracy did not live up to its potential (Chambers 1985), this legislation nevertheless enabled districts and villages to manage their own affairs, and served as the basis of new legislation for marine parks and co-management.

In addition to its role in providing enabling legislation, the government may act to address problems and issues beyond the scope of local arrangements, and to provide assistance and services (administrative, technical and financial) to support the sustainability of the local organizations and institutional arrangements. More specifically, the role of government includes overseeing local arrangements and dealing with abuses of local authority, conflict management, appeal mechanisms, backstopping local monitoring and enforcement mechanisms, and applying regulatory standards.

Government may also serve a coordinating role by maintaining a forum or formal administrative structure where the various parties can interact. Within a co-management system, government and fishers jointly develop an agreement on the objectives of co-management including the aims, the form, and the means. A clear understanding of the long-term goals of power-sharing is established in which the differing interests and needs of government and fishers are reconciled.

The decision on what fisheries management functions should be undertaken at what level is best handled jointly by local-level organizations and government, whether national or local, and the outcome will be location specific. The decision will be based on the capabilities of local-level organizations to handle certain management functions and the level of user participation. Some fisheries management functions may be beyond the capabilities or scope of the resource users and should be handled by the government. For example, while data collection may be conducted by the resource users, high-level data analysis will require equipment and expertise that is most often available from the government. The government should retain responsibility for the provision of an overall policy framework for conservation and management. Multi-jurisdictional and multi-user coordination in management may best be handled by an institution which is external to the community. Similarly, management of resources on a large-scale ecosystem basis may best be managed by an external institution. For example enforcement and adjudication of violators of local regulations, once identified by the resource users, may best be handled by the government though the police or military. The government can act as an arbitrator of last resort in the management of conflict and guarantee equality of advocacy in disputes.

It may be more appropriate to phase-in management functions over time as local-level organizations gain more experience and capability, rather than give them a defined set of functions. The phasing in will also depend on the form of both co-management and decentralization, but adaptive management or 'learning-by-doing' in the evolution of co-management, and feedback learning in general, is likely to be critically important (Lee 1993).

Ultimately, whatever form of decentralization arrangement for co-management is chosen, the process is political, involving mobilization of interests and struggle for power. Co-management will not work everywhere in a country. However, co-management should be viewed as an alternative to the centralized management system which in many cases has shown not to work effectively. Governments may want to consider developing a general policy within the existing legal and policy framework of the country which allows for the existence of co-management in areas and communities which are capable of taking on the responsibility and authority for management. Laws and policies may then be developed under a framework of decentralization which legitimizes and authorizes co-management. During the whole process careful attention needs to be paid to what is happening on the "ground". Experience shows that interests at both the national and lower levels will work against decentralization of authority when it means a decrease in their own power. There is no blueprint formula for either

co-management or decentralization. Each country will need to develop a strategy based on its own needs and conditions. Several decades of experience in different countries provide some directions for developing a co-management strategy based on decentralization. Decentralization and devolution of power are a necessary, but not sufficient condition for co-management to occur. Through decentralization, government must establish conditions for the specification, legitimization and enforcement of property rights and fishers' rights to organize and develop rules for management. This has been found to be crucial for the success of co-management throughout the world.

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COLLECTIVE ACTION, PROPERTY RIGHTS, AND DEVOLUTION OF RANGELAND MANAGEMENT: SELECTED EXAMPLES FROM AFRICA AND ASIA

Tidiane Ngaido and Michael Kirk[1]

SUMMARY

Empowerment of rangeland users is the major slogan of rangeland devolution policies. The new paradigm shift in the management of common rangeland resources, which are the livelihood base of pastoralists and, in particular, of poor rural households in developing countries, aims at devising a new resource management system conducive to efficient, equitable and sustainable management.

Presently, many states are reformulating their land and resource management policies and devolving decision-making power to local communities and organizations. However, this devolution process comes at a time where these countries are also facing environmental degradation, which endangers the natural production base, and dire shortages of funds to sustain development efforts of rangeland resources.

This raises many concerns regarding whether states in developing countries and countries in transition are really convinced that local institutions are efficient resource management structures or that mainly acute financial constraints are pushing them to relinquish their formerly appropriated stewardship roles. In the former case states are striving to find efficient and sustainable solutions and partner organizations for the management of rangeland resources. In such cases, states are real partners of the devolution process and would be willing to use participatory approaches and develop enabling frameworks that would empower local communities. In the latter case, however, the devolution process may consist of transferring the management burden to these communities without a clear assessment of the situation, in particular of their existing capacities and competencies, and a framework that enables local institutions to fill the vacuum and reclaim their traditional roles and rights. Under both circumstances the challenge is whether local institutions have the strength and the capacity to take over roles that are being reassigned to them.

In this paper, we are exploring the different instruments used by the states to enhance the capacity of local institutions and communities to manage rangeland resources and sustain pastoralists' livelihood strategies. The devolution process is complex and requires a clear understanding of the implications of each devolution

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instrument. We contend in the paper that the objective of the devolution is to strengthen pastoral societies livelihood strategies, improve the efficiency of rangeland management and ensure the overall community welfare.

INTRODUCTION

The role of communities and local institutions in the management of common rangeland resources has been largely disregarded in policy formulation until recently, following the failure of many technical interventions in rangelands (Sidahmed 1991; Ngaido et al. 1998). Many researchers argue that range development projects failed because of top-down technical approaches from remote centralized administrations (Sidahmed 1991; Oram 1995; World Bank 1995) and the exclusion of pastoral institutions in the management of their resources. The recognition of the inadequacy of government institutions to promote sustainable resource management practices provides an argument in favor of greater participation of local communities in the management of common property resources (Lawry 1990; McLain 1992; Vedeld 1992 1996; Engberg-Pedersen 1995; Mearns 1996b, Meinzen-Dick et al. 1996). Furthermore, the multiplication and severity of conflicts between different users requires a new management approach where rights and liabilities of users are well defined (Rochette 1993).

This new paradigm shift aims at devising a new resource management system conducive to efficient, equitable and sustainable management of common rangeland resources, which are the livelihood base of pastoralists and, in particular, of poor rural households in developing countries. Presently, many states are reformulating their land and resource management policies and devolving more decision-making power to local communities and organizations. However, this devolution process comes at a time where these countries are also facing environmental degradation, which endangers the natural production base, and dire shortages of funds to sustain development efforts of rangeland resources.

The reasons for this policy shift are numerous, but our concerns are whether states in developing countries and countries in transition are really convinced that local institutions are efficient resource management structures (Perrier 1995; Vedeld 1992; Lawry 1990; Mearns 1996a) or that acute financial constraints are pushing them to relinquish the stewardship roles that the state had formerly appropriated. In the former case states are striving to find efficient and sustainable solutions and partner organizations for the management of rangeland resources. In such cases, states are real partners of the devolution process and would be willing to use participatory approaches and develop enabling frameworks that would empower local communities. In the latter case, however, the devolution process may consist of transferring the management burden to these communities without a clear assessment of the situation, in particular of

their existing capacities and competencies, and a framework that enables local institutions to fill the vacuum and reclaim their traditional roles and rights.

The present study defines rangelands beyond the "single resource", which has guided environmental and ecological approaches as well as pastoral policies (Behnke et al. 1993; Scoones 1995). Rangelands are part of a complex production system. In order to understand the implications of rangeland management policies it is important to use a holistic view of rangelands as a point of departure. Rangeland users' strategies should be investigated not only with reference to locally controlled resources but also with respect to external resources. Rangelands include all key resources and infrastructure (water, pastures, grazing corridors, etc.) that are critical for pastoral production, as well as institutions that manage access and use of these resources. This definition includes both the physical and human dimensions of rangelands and it also accounts for the proposition of Ostrom (1992) and Cousins (1996) that rangeland institutions are always "nested" within larger structures.

The paper is organized around seven sections: The first part presents the devolution debate. The second describes the different instruments used to implement and support devolution programs. Part three looks at different devolution pathways. The next section considers the question of restitution and part five looks more closely at privatization of rangeland resources. Part six identifies important gaps of the devolution program with regard to pastoral livelihood strategies. The last section presents the conclusions of the study.

THE DEVOLUTION DEBATE

From different perspectives, proposals are made for increased decentralization of government authority and devolution of control over resources, with local user groups to be given legal authority and tenure rights so that they can assume the responsibilities relinquished by the government (Vedeld 1992). Devolution can be defined as the shift of responsibility and authority for resource management from the state to non-governmental bodies, which includes traditional institutions, the private sector and other organizations of civil society, such as herders' associations or village committees (Meinzen-Dick and Knox 1999; Scoones 1995). Devolution, in most cases, is a process that corrects the excessive concentration of decision-making, authority and power on resources in the hands of the (central) state. In most African countries centralization occurred either during colonization or during the first decades of independence (Kirk 1998). The process of devolution of resource management is, in many countries, linked to decentralization programs, which aim at improving the performance of government institutions by giving more authority to lower-level institutions and civil society.

The devolution debate, therefore, is also a debate on the difference between (good) governance and (good) government. Governance is defined as the "exercise of legitimate authority in transacting affairs, and is broadly understood to refer to the

maintenance of social order through endogenously evolved sets of rules or authority structures, or some combination of locally evolved and externally imposed rules sets" (Mearns 1996b). Government, by contrast, is the exercise of influence and control, through law and coercion, over a political community, constituted into a state within a defined territory. With regard to rangelands, government refers to the *de jure* rules and regulations set out in the statutory law and land policy of the state, whereas the broader concept of governance refers to the sum of rules that apply *de facto*, as customary regulations including enforcement mechanisms or authority systems legitimized by rangeland users themselves or access options to external resources (Mearns 1996b). In case of weak administrative capacities or a lack of legal framework at lower government levels, governance on rangelands becomes mainly a question of endogenously evolved set of rules in the tradition of Hayek's concept of 'spontaneous order' (Kirk 1999).

The plea for devolution is grounded on three main arguments: 1) the limited effectiveness of government institutions in managing natural resources, in particular at the local level; 2) the ability of local institutions to develop well adapted rules and regulations that enable them to effectively manage natural resources (Vedeld 1992; Perrier 1995; Scoones 1995; Sylla 1995); and 3) the cost-effectiveness of devolution due to a reduction in transaction costs associated with the management of common resources. However, these arguments are generally based on the comparison between inefficient government institutions and idealized local institutions. These contrasting snapshots are generally misleading.

Most devolution programs are based on the assumption that user groups and local communities will easily take on roles that were formerly assigned to the state (Ngaido 1996; Meinzen-Dick and Knox 1999). In reality many years of state manipulation, the breakdown of many local institutions and the erosion of local authorities' socioeconomic capital may constrain the choice of appropriate devolution policies. If it is true that local institutions have evolved to accommodate new demands and new constraints (Ngaido 1997a), then, in order to develop an appropriate devolution framework and enhance its effectiveness, the starting point should be the actual status of such institutions, with all their strengths and weaknesses.

Furthermore, the devolution process must also be considered as a time-consuming and costly institutional change because devolution does not take place in an empty space. Evidence from land reforms and re-formulated land policies has shown that opposing interest groups can not only attenuate original objectives, but also delay or impede their implementation at different levels (Binswanger et al. 1995; Kirk, Löffler, and Zimmermann 1998). The re-allocation of decision-making to local users or communities is also accompanied with an adjustment of the inter-community and inter-user relationships. These implications will be discussed in the pathway section that assesses the consequences of different devolution instruments.

Generally, the state retains an important role in resource development, in conjunction with an expanded role for users in management issues (Meinzen-Dick and Knox 1999). Naïve and simplistic approaches give the impression that complete transfer of responsibilities to local users is desirable and feasible and governmental institutions should withdraw from any active role. Experiences in South Africa (Rhode 1998), and Senegal, (Shanmugaratnam et al. 1992; Sylla 1995) where the devolution process is quite advanced show that this is not the case. The adoption of a pure Community Based Natural Resource Management approach in which the state hands over all responsibilities and either cuts or re-deploys agency staff is not very probable. This is all the more true as there is a long history of state suspicion of mobile herders for separatism and defection from the nation state (Kirk 1999).

Lawry (1990) underlines the necessity to create a balance between the role of the state and the rights to be devolved to individual users and communities. This balance is a critical element in the devolution process because it has many implications for efficiency, equity, and sustainability. Scoones (1995:30) argues that "rather than the state attempting to provide legal frameworks down to the local level, the state would offer a broad framework and require local groups to negotiate access rights and resource management agreements among themselves, while maintaining certain responsibilities for adjudication and arbitration." Both Lawry (1990) and Scoones (1995) stress the need for flexible and broad enabling legal frameworks, based on the idea of subsidiarity that will not impose new rules but offers principles and guidelines that would promote the use of local rules and practices for the management of resources.

Finally, devolution programs support the perception that induced forms of institutional change based on external impulses necessarily lead to an increase in efficiency in range management and welfare of pastoral groups. This assertion relies on the economic theory of institutional change, in particular its efficiency view, which postulates that institutional change is an evolutionary process that seeks to minimize the transaction costs and enhance the collective benefit of society (Hanisch and Schlüter 1999). However, traditional mechanisms, which include indigenous knowledge and resource-use practices (in particular, risk-coping strategies of pastoralists through opportunistic grazing behavior and mobility) may not always be flexible enough to cope with a rapidly changing socioeconomic and natural environment. Moreover, if devolution on rangelands leads to an increasing influence of a powerful and affluent segment of livestock keepers and skilled urban absentee herdowners (Mearns 1996b; Swallow 1994), an overall increase in efficiency and welfare may be accompanied by an unequal distribution of productive assets and the emergence of new poverty groups.

INSTRUMENTS FOR DEVOLUTION

The devolution debate has centered on how to (1) correct environmental externalities and institutional inefficiencies of resource-use, (2) promote sustainable

management of common rangeland resources, and (3) transform local communities and institutions into stewards of their natural resource base. Land reform, institutional innovations and new forms of pastoral organizations have been the major strategies and policy instruments employed in developing countries to achieve these objectives. The real question, however, is how to identify the institutional reform needs for building the capacity of local institutions and communities and how to implement appropriate tenure and institutional reforms. The attempts, so far, have concentrated on legal interventions.

Legal reforms, which in the past have been used as instruments by the central state to dispossess local communities' rights over rangeland resources, are often perceived as a panacea for empowering local communities and correcting resource misuses. The results from such interventions have not been conclusive, because changing existing laws does not necessarily induce local institutions to take over their re-assigned roles and responsibilities. The main issue in rangelands is no longer the distinction between traditional management systems and state management systems, but the identification of effective hybrid resource management systems. Legal reforms can also create an institutional vacuum at lower levels and cementing an open access situation as in some of the pastoral areas of former Soviet Union (Mearns 1996a). Niger's situation has been described as a deadlock (Ngaido 1999) and in South Africa and Tanzania (Cousins 1996; Rhode 1998; Shivji 1996) the devolution process has been slowed down to avoid negative experiences such as conflicts, appropriation of the process by the powerful and rich community members, etc.

The belief that legal reform in favor of pastoral communities enables local institutions to become stewards over rangeland resources has not yet been proven. Legal rights, as a rule, enhance economic rights, but the former are neither necessary nor sufficient for the existence and performance of the latter (Rabinowicz and Swinnen 1997). The next section investigates complementary policy interventions that can facilitate or enable an effective and successful devolution process.

BUILDING AND STRENGTHENING LOCAL INSTITUTIONS

The definition of institutions "as the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction" (North 1990) is restrictive because it considers only the rules and the norms of interaction but not the role of decision-makers themselves. In this paper, we define institutions to encompass both rules and organizations that shape and enforce these rules (Kirk 1999). There are two different general approaches to local institutions in rangeland devolution programs that are based on opposite assumptions. The first one assumes that traditional local organizations with their rules and regulations can, in fact, take over directly the role of the state in the management of rangeland resources. Such assumption is supported by a number of researchers. Sylla (1995) argues that "there are abundant examples of

traditional institutions, past and present, which have been effective in managing natural resources at small group level." Lane and Moorehead (1995) share the same conviction stating that "where local producers are given the opportunity and the resources to develop their own management institutions and tenure systems, they are well able to do so." Bruce (1986) and Lawry (1990) assert that local communities, as primary beneficiaries of these rangeland resources, ought to be made responsible for their management and long run conservation.

The second approach is based on the assumption that traditional institutions do not have the strength and capacity to take over the roles that are being re-assigned to them. For example, one important component of many rangelands devolution programs is a rangeland improvement component, which may require both labor and financial resources for re-seeding, planting, and protection. These activities are very important in order to reverse the process of degradation in rangeland and improve the availability of feed resources (Osman et al. 1994). Traditionally, local rangeland institutions did not conduct such activities. Their function was limited to the allocation of grazing rights and land/water allocations in a rainfall-dependent environment. The extensive appropriation of rangelands' high-potential areas for cultivation constitutes another important bottleneck for devolution programs.

Nassif et al. (1998) have found in their study on the El Brouj district in Morocco that 15% of the recorded disputes were about the appropriation of pasturelands. Nesheiwat et al. (1998) reported 420 disputes of rangeland encroachment in Jordan from 1990 to 1996. In Niger, Ngaido (1993) indicated that 76% of the reported 121 disputes on pastoral resources referred to land encroachments on grazing areas and corridors. In eastern Sudan, the delimitation of a northern boundary for sorghum cultivation to stop rangeland encroachment in the early 1990s was a pre-condition to furthering devolution and decentralization (Kirk 1999).

We do not contend that local institutions are not capable of assuming new responsibilities. However, specific weaknesses of rangeland management institutions need to be taken into consideration in order to provide local institutions with additional or enhanced mechanisms that would enable them to sustainably manage pastoral resources. Most local authorities have been affected in their capacity to mobilize traditional social capital. One reason may be the breakdown of customary social and economic security systems that they originally provided to community members (Kirk 1999; Ngaido 1995, 1997a, 1998). The history of cooperation and networks among groups, their "social capital" (Meinzen-Dick and Knox 1999) may have weakened or may only be reconstructed at high costs.

These developments pushed many states and donor agencies to question the capacity of traditional institutions to promote collective action and instead to promote new institutions to foster collective action. Effective collective action is believed to be based on common interests, a democratic decision-making process, enforceable

sanctions, a strong reinforcement of 'good' group behavior by means of social norms including the high social costs of loss of reputation (Mearns 1996a) and, for rangelands, willingness to manage the resources according to agreed grazing system and plans. In Western and Southern Africa and in transitional economies (Table 1) many types of pastoral organizations ranging from cooperatives to associations and users' federations have been externally initiated. The creation of these institutions also requires the formulation of new rules and regulations, which are generally both formal and informal.

On rangelands the major concern regarding the external inducement of local institutions refers to the opposing logic and operational mechanisms, and overlapping claims over pastoral resources of traditional and new institutions (Kirk 1999). The exclusion of traditional institutions from the newly created structures generates conflicts. Traditional institutions, which have legitimacy and potential social capital, and newly created institutions with government institutions' support may be claiming control over the same resources. In fact increasing contestation over boundary demarcation, over group-internal regulations to restrict pasture access or over restrictions on "foreign herds" access options have been recorded in Kenya, Mali, Namibia, and Niger. Such situations affect negatively the success of devolution programs. To reduce potential conflicts it is critical to involve traditional local institutions at the beginning of the process (Kirk, Löffler and Zimmermann 1998).

Under both types of institutions, however, devolution requires collective action for developing access and use rules, monitoring compliance to these rules, sanctioning offenders and mobilizing the needed labor or financial resources (Meinzen-Dick and Knox 1999).

Moreover, the effectiveness of rangeland institutions does not depend exclusively on the creation of new organizations and rules or the recognition of existing institutions, but on the degree to which established rights are effective, on the existence and relevance of rules and regulations, on members' adherence to these rules, and on the support of the state (Ngaido 1998).

Secure property rights are complementary to the building up of new institutions and organizations and to the strengthening of existing ones. There are many arguments in support of granting tenure security to local institutions or communities in order to foster collective action. Some of these will be discussed in the next section that deals with tenure security in rangelands.

PROVIDING TENURE SECURITY

One of the underlying premises for the need for tenure security is that mis-management of resources results from a lack of well-defined rights (Bromley 1991). Ciriacy-Wantrup and Bishop (1975) argue that "common property, with the regulatory institutions it implies, is capable of satisfactory performance in the management of

natural resources, such as grazing and forest lands, in a market economy" while Lawry (1990) proposes to grant private property rights to local communities to promote a sustainable management system to secure resource users. Tenure security is thus considered as the major enabling instrument for enhancing the capacity and strength of local institutions to manage common rangeland resources (Kirk, Löffler and Zimmermann 1998).

The issue of tenure security has focused on the community's local resources. One of the challenges is to define these, especially in the case of rangelands, where resources external to the community are at least as important as local resources. It has been well documented that pastoral people use different environmental "niches" or "patches" to optimize their production systems (Scoones 1995; Cousins 1996; Swallow 1994; Behnke et al. 1993). However, such niches or patches are not always located in their community territories, and optimization depends very much on the types of institutional arrangements developed with the communities or institutions that control these resources. Pastoralists are always obliged to extend their local resources with additional resources located at the provincial, national and international levels (Kirk 1994, 1999). In this respect the differing dimensions of locality and space have direct effect on property rights institutions and are important parameters that must be taken into consideration for devolving irrigation systems, forests, fisheries and rangelands.

In addition, our broad definition of rangelands, suggests the parallel existence of different property rights regimes. For example, communities may hold common property rights over their local pastures, use-rights over the routes and grazing corridors, access rights that are generally based on reciprocal arrangements with neighboring communities, and private rights on the fields that they cultivate on high potential areas of their pastures (Kirk 1999). Ngaido (1998), therefore, proposes the classification of property rights in rangelands as:

- *Private property rights*, which can be enjoyed by individuals or by families, can be either on animals, water resources or high-potential tracts of rangelands (e.g., 'wadis' or 'bas fonds'). Private property assures full control over the resource including the right to sell or lend.
- *Secured access rights*, which are the dominant rights over pastoral resources, are use-rights granted to community members by traditional leaders on their common pastures and water resources for their production activities. Under such tenure regimes, individuals have only priority use-rights, which can be maintained for long time periods but do not entitle individuals to private property. However the flexibility of this tenure system allows leaders to recapture unused land or redistribute land to needy members.
- *Access options* are bundles of options available to individuals and communities for securing their livelihood and production systems in response to the constraints they face. These options could be based on formalized or

informal institutional arrangements such as reciprocity or on market relations like purchase of feed or rental of harvested fields. In eastern Sudan, written inter-ethnic contracts on reciprocal range utilization in times of crises co-exist with informal oral arrangements since the 19th century. They are increasingly complemented by market transactions on feed resources, such as agricultural by-products and water, as well as by manifold tenancy arrangements for feed resources based on fixed rent or sharecropping (Kirk 1993, 1999).

The choice of the type of property rights to grant to local institutions depends very much on how the central state perceives the evolution of local institutions and the behavior of resource-users. If the state feels that local institutions have been eroded and that new structures are needed to manage the resources, it can take different types of actions ranging from private property with titling (as in Tunisia, or group ranches in Kenya) to "priority use-rights" (as in Niger).

Little (1987) argues that "pastoral areas present a predicament to policy of private holdings since they do not easily lend themselves to subdivision." This assertion is supported by many researchers who consider that individual privatization of rangelands will increase the fragility of an already fragile ecosystem and impede the improvement of rangeland resources, as beneficiaries will favor the cultivation of high value crops to forages. Evidence from eastern Sudan (Kirk 1999), Jordan (Nesheiwat et al. 1998) and Morocco (Nassif et al. 1998), however, suggests that if the system of networks that served as access options are no longer functional, the majority of community members will seek individual control over the resources. Hence, the choice and effects of any property-rights regime on the management of rangelands depends very much on how access options are integrated into the whole process of devolution. Traditionally, the capacity of pastoral institutions to arrange access to extra feed resources during forage shortage periods through different networks and routes depending on rainfall and pasture conditions strengthened local institutions. Ngaido (1998) argues that the effectiveness of rangeland management institutions is based and will be based on this availability of resources both at the local level and at the extended level. It also depends on the decision-making power and on the enforcement mechanisms in place. Empowerment is needed more than ever as the encroachment of agriculture on rangelands and urbanization on the one side, and desertification on the other, increase the opportunity costs for access options.

Devolution of rangelands encompasses multiple resources that are strongly inter-linked, and the choice of the property regimes has implications not only on local communities but also on neighboring communities and countries. For example, the allocation of common property rights only to one section of the group may create many problems because all the community members that do not see a real benefit from their

participation will not have incentives to become members. This may happen when pastoral groups are artificially subdivided by administrative units (districts, provinces).

The allocation of private property of rangeland resources may also have detrimental effects on the groups that previously relied on these resources as access options. The multiple uses and users of the resources is an important feature of rangelands that needs to be taken into consideration when granting property rights to pastoral groups or individual users. In the next section we will discuss how the choice of the property rights regime and institutional arrangements influences the capacity to forge collective action.

FORGING COLLECTIVE ACTION

All devolution programs require some forms of collective action, which is defined in the Oxford dictionary of sociology (Marshall 1994) as "action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests." Collective action has proven to be a critical element for achieving efficiency, an acceptable "just" distribution of assets within society, and sustainable pastoral systems. It is also desirable that communities, whose livelihoods depend on natural resources, themselves define the rules for access and use. What are the means and mechanisms that the state can use to promote collective action? Can a central state really provide external help to strengthen collective action?

There are many areas where collective action is required but in the present paper we will concentrate on the capacity of groups or institutions to: (1) set their own rules for the management of rangeland resources, (2) create the mechanisms to enforce them, and (3) mobilize labor and financial resources to manage and improve their rangeland resources. This choice is dictated by the fact that many rangeland devolution programs are precisely concerned with these three issues. Local institutions have long experiences of these aspects of collective action. All three depend very much on how members of the community value their "common interest".

The power to set rules and create the mechanisms to enforce them is perceived by many researchers as an important condition for effective management of the resources (Bruce 1986; Lawry 1990; Vedeld 1992; Hesseling 1996). It is believed that traditional institutions often possess the enabling framework for the determination of rules, norms and practices. This reduces the transaction costs because rural communities have already developed socially based enforcement mechanisms that are effective and have the adherence of community members.

In relation to the second aspect of collective action - mechanisms to enforce rules and regulations—the state should retain two important roles. One concerns the development of a legal and institutional framework that enables local institutions to sanction offenders and the second is to play the role of "arbitrator and broker" (Scoones

1995). For example, the recognition of the local land and pastoral chiefs in Niger illustrates this system. Chiefs, who are integrated into the administrative structure of the country, have been granted the role to conciliate disputes. None of the disputing parties can seek arbitration of the court without previously seeking chiefs' conciliation (Ngaido 1997a). In Morocco, the Naib, who act as managers of tribal collective lands, have also the responsibility to conciliate land disputes (Nassif et al. 1998). In both cases, the role of the state is to provide the broad framework that empowers local communities and provide recourse to state judicial and administrative apparatus when local institutions fail to conciliate conflicting parties or sanction violators. Part of this framework includes the right to form coalitions and associations to recognize customary law and its authorities (Kirk, Löffler and Zimmermann 1998). However when local institutions are no longer capable of responding to the needs of their members, even if equipped with a legal framework, they may not be able to forge collective action and implement their responsibilities.

In the case of externally initiated institutions, common economic interest is generally present because membership is based on the use of a common resource for production activities. Pastoral associations in the Sahel or group ranches in Kenya constitute good examples of externally induced institutions based on economic interests (see Table 1). This is not to say that social relations do not exist, but that, contrary to traditional institutions, which have a deeply rooted socioeconomic base, these institutions have the tendency to prioritize economic relations. Which mechanisms can be used in this case to forge collective action? Certainly the general tendency is to create new rules of access and use of the resource. If traditional institutions are not included in these new institutions, it is very difficult to rely on existing social capital to sanction and enforce offenders. The main strategy consists of setting up a system of fines to sanction offenders and rely less on social cohesion and 'trust'. The transaction costs for externally induced institutions tend to be higher because of their lack of traditional legitimacy. This may explain the necessity to integrate existing elements of indigenous collective action in the devolution process.

The third element of collective action -the power to mobilize labor and financial resources to manage and improve rangeland resources—has become an important requirement for rangeland programs. Communities and users are expected by the state, and by donors to participate in the development of rangeland resources and contribute to parts of the management costs associated to their new responsibilities (Grell and Kirk 1998). In previous sections we alluded that one of the major constraints for traditional institutions in rangelands is that they are not sufficiently equipped to mobilize labor or financial resources from their members for land improvements. This is a specific problem for mobile livestock systems, as in sedentary agricultural systems collective action has been a historical driving force for land development and productivity increases: irrigation systems, terracing in Asian agrarian societies, and land clearing in Africa have only been made successful through collective action. On the contrary in the

past feed availability on rangelands depended solely on rainfall and not on technical improvement, so that labor and financial contributions by the members were historically less important. However certain activities on rangelands also require collective investment, as for the construction of deep wells in Sudan (Kirk 1993). In this case created institutions tend to be more effective and members are generally willing to contribute both labor and financial resources.

Another important issue pertinent to the collective action debate is how to set rules and sanctions where rangeland resources serve as access options. How can the state promote a framework that would allow resource-users to enhance their coping strategies and maintain their group networks? This is very challenging because the state may not control all the access options, which may be located in other countries. Regional agreements between neighboring countries to facilitate transhumance constitute an important strategy for integrating these access options into national rangeland policies. However, such agreements are sustainable only if they function on a reciprocal basis like traditional systems. Once improvement takes place in a given region or country, the tendency is to limit access because it is difficult to set an access price for outsiders to graze on improved rangelands due to valuation problems and high costs of enforcing exclusion. In most cases, even if the rangelands are improved by the state, local communities do not allow other community members to come and graze the area (Ngaido et al. 1998; Rae et al. 1996). Finally, some researchers claim that the size of the group influences the ability to foster collective action (e.g. Ostrom 1992). Sylla (1995) argues that "generally it is in small organizations that exclusive pastoral rights are most vigorously defended", and "if the scale of the resource moves at a larger level, regional, small organizations have limited influences." This statement is supported by the evidence that once different pastoral institutions are put in place at different levels, the lower levels do not have much decision making power. The process becomes a top-down approach. Experiences, not only with pastoral institution building, suggest that "starting small and forging collective action around a set of common interests [...] is the most likely route to successful organizational development" (Scoones 1995). Unfortunately, rangelands are characterized by large spatial extent, which require the involvement of different heterogeneous groups (such as different ethnic groups) and 'large' groups (such as clans and lineage). These groups often act in distinct administrative units, which may impede the success of collective action.

The instruments of devolution programs discussed in the previous sections emphasized the "push" mechanisms that may induce communities and institutions to take over their assigned roles. The recognition of traditional and the external inducement of local institutions, tenure reforms, and empowerment of local communities are instruments that are used to promote the efficiency of the pastoral systems. However, these instruments are locally based and miss an important component of livestock production systems: the access options to external resources. On the other hand, "pull" mechanisms, as an endogenous demand for institutional

change that explicitly takes into account the particular spatial requirements of successful rangeland management, have only been rarely developed. The following section will discuss the importance of finding mechanisms to use existing pastoral livelihood strategies as a base of policy formulation.

PATHWAYS FOR DEVOLUTION

CRITICAL ASSESSMENT OF COUNTRY EXPERIENCES

Devolution is a complex process. Four major instruments have been identified to be crucial for a successful devolution: 1) the strengthening of existing local institutions, 2) if needed, the external inducement of institutions, 3) property rights reforms, and 4) the confirmation of traditional property rights.

Experiences from African and Asian countries, summarized in Table 1, show that only a few countries have employed all four instruments. Only Niger Senegal and Lesotho have developed policies based on concerted action with all instruments, while post-apartheid South Africa is still in a phase of policy formulation and seems to favor the comprehensive approach as well.

It is striking that all countries under consideration primarily relied on externally initiated institutions for rangeland management in the course of the devolution process. Some did so because they explicitly wanted to avoid the re-emergence of power of traditional authorities, whereas others tried to amalgamate indigenous local authority systems with state created and influenced organizations to co-manage rangelands. With the exception of conflict resolution, there are few assignments of new tasks to these new institutions. The most important are pasture improvements and restrictions on herd size to better react to a quickly changing environment. Doubts may come up when questioning if they have to be regarded only as the "emperor's new clothes," as an attempt of a devolving state to maintain influence via the creation of new bodies.

Compared to reforms of authority and enforcement organizations, most states are much more reluctant to reallocate property rights to prepare the ground for successful devolution. If property rights reforms have been started they are mostly oriented towards privatization of rangelands in the sense of individual private property. Exceptions include Niger, Burkina Faso and planned action in South Africa. Furthermore, even in a combined effort to operate with different instruments, most countries implicitly follow the 'single resource approach' and underestimate access options, complementary and secondary rights to land, water, tree products etc. Again, South Africa as a 'latecomer' in the devolution debate in the 1990s seems to try to learn from shortcoming of other countries and has adopted a more holistic view of rangelands and pastoral livestock production.

Inconsistent and hesitant operations in the devolution process has, in turn, created unintended effects, such as deadlocks in the implementation, the non-functioning of

newly created institutions or the appropriation of power by small, but influential segments of pastoral societies (Table 2). The effects of devolution policies on property rights clearly indicate one direction: tenure security is guaranteed only to the more affluent parts of pastoralists' population who can realize enclosures and private rights in key resources (Ethiopia, Mongolia, Nigeria), whereas insecure and disputed property rights with emerging land conflicts are the rule for the majority of herders. This is often due to well-intended devolution reforms that have not yet been implemented at the lower levels, thus creating an institutional vacuum and favoring rent seeking and the redistribution of assets.

Collective action as an outcome of devolution does not get started easily in all countries. The results are not yet encouraging as the typical problems of groups to formulate common interests, strategies and mechanisms for active participation and rewarding of members predominate. In the devolution process local institutions are characterized by the interference of traditional authorities or absentee herd owners, by eroded experiences to organize collective action, lack of skills and training, and new emerging conflicts for which the group is not prepared.

As a consequence, devolution has not yet been able to slow down or to reduce the negative effects for livelihood strategies of pastoralists emerging from reduced herd mobility, limited access options, general impoverishment, and a widening distribution of income and wealth within pastoralists' groups. Contested and vague property rights, difficulties to re-establish collective action, and weak local institutions foster the shrinking and degradation of the pastoral resource base.

In summary, it is apparent that devolution is under way in most of the African and central Asian countries that heavily rely on pastoralism; but it is also clear that the complexity of the devolution process and the complementarities between instruments and their sequencing have not yet been tackled sufficiently by those benefiting from devolution, by the state, and by donor organizations.

Three major questions emerge from our discussion: What should be the guiding principles for deciding the rights and responsibilities to devolve? To whom should rights and responsibilities be devolved? What should be the sequence of the devolution process?

THE SUBSIDIARITY GUIDING PRINCIPLE

The principle of subsidiarity may help answer some of these questions. Subsidiarity requires that the distribution of power and responsibility should be in favor of lower-level governmental institutions and smaller jurisdictions (Vanberg 1997), and political authority to be always allocated at the lowest possible institutional level, that is, close to the citizens, who are the ultimate sovereign. Moreover, it must be compatible with efficiency and accountability (Swift 1995).

Before looking at the hierarchical structures of rangeland management, it is helpful to put subsidiarity in broader context and distinguish between the horizontal and vertical dimensions of the principle. The horizontal dimension, which is the basis of market economies, gives priority to private performance over government performance of economic tasks compared to government ones, not only for efficiency reasons but also in order to secure individual freedom. This is exactly what rangeland devolution programs try to achieve by "rolling back" the frontiers of the state and strengthening common property regimes to promote individual and collective action. Vanberg (1997) considers this dimension of subsidiarity as the libertarian idea which is, in fact, the vision of ongoing transformation processes or institutional reforms as part of structural adjustment programs of the last decade.

To achieve devolution objectives in concrete terms, however, you need the vertical dimension. This dimension, which includes institutional structuring (like the division of administrative competencies between state and society for allocating private and public tasks, or the way by which allocated tasks are performed at different decision-making levels), acts as a principle for action. Rules are defined in a dynamic sense for the central state and other subordinate governmental or societal units (Döring 1997). These dynamic aspects of subsidiarity may help to clarify a) the necessary steps and sequences of devolution of responsibilities and authority for different uses and users of rangelands, b) the possible limits to the devolution of authority, and c) the learning process of the devolution process.

Three main rules can be identified as integral parts of the vertical dimension of subsidiarity.

The first is the rule "*interdiction of withdrawal*", which asserts that the state cannot (through the central state) withdraw the decision-making power and authority from the private sector and civil society organizations for all those tasks that can be performed by subordinate units of the private sector and civil society organizations.

As a prerequisite the minimum level of state participation and devolution instruments for rangeland management must be well defined. For example, only the nation-state can initiate and facilitate the negotiations and contracts on international transhumance routes. The next question is: should the management of these routes be left in the hands of local groups which use their traditional mechanisms or should state institutions control the management? Our first rule indicates that local groups should retain management authority if they are able to perform this task. The Rural Code in Niger classified the routes and the transhumance routes into the state public domain (Article 25) but requested the maintenance of traditional access rights for the benefit of all the herders (Article 24). This provision highlights the importance of these pastoral resources for herders, nationals as well as foreigners, in conducting their activities. Withdrawing the pastoral rights over these resources would limit the capacity of pastoral authorities to manage the use of these resources. However in case of weak pastoral

associations a state may decide, as a first step, to perform management tasks through its own administration.

The second rule, "*help and support*", indicates that the state should provide temporary support to subordinate units. The emphasis here is on the word "temporary". Devolution does not mean that a state gets rid of its responsibility once and for all, but that the state is expected to support local institutions during the learning process to enable them to perform assigned tasks at an even more efficient level in the future. This leads to the sequence of the devolution process, the determination of the rights that can be given to users and the specific time frame. It also implies that the state reserves the right to withdraw the decision-making power and authority from local institutions when they cannot perform the assigned tasks. In the case of Morocco, for example, tribal collective lands are registered and can be titled in the name of the tribe, but the Minister of Interior acts as a *tutor* for these lands (Nassif et al. 1998).

The third rule, the rule of "*re-transfer*", asserts that in cases where the state supports the private sector or users associations it has to give back responsibilities for tasks they have learned to perform. It has to be assured that the central state is always ready to critically assess performance in the devolution process and devolve power back to other levels after a period of transition.

One consequence of these guiding principles is the need for a critical assessment of the devolution process. Policy makers have to ask themselves if devolution is a viable option when the requirements set in user groups will not be fulfilled, in particular when the transaction costs for inducing collective action are too high due to weak existing networks, lack of social cohesion, strong socioeconomic differentiation, or loss of homogeneity.

DEVOLUTION AS RESTITUTION? PARTICIPATORY MANAGEMENT PROGRAMS

Devolution efforts aim at recognizing that customary tenure systems could be the basis for development, and at restoring local control over resource use and management. Local groups, which have developed sustainable rules and practices to manage these resources, should be made responsible. Devolution or management transfer generally refers to programs that "roll back the boundaries of the state" by shifting responsibility and authority from the state to created non-governmental bodies (Meinzen-Dick et al. 1996; Vedeld 1996). This could also be a mere restitution of the role of community management previously appropriated by the state. Vedeld (1996) argues that "rolling back an interventionist state will leave a power vacuum" and "will not lead to improvement at the local level because civil society is often weak." In this case, the rule of temporary help and support applies.

Participatory management or co-management refers to programs that seek to increase users' direct involvement in resource management in conjunction with a continuing role for the state at some level (Vedeld 1996; Hesseling 1996). As Drijver (1990) argues, participation in environmental projects is often seen as a means for promoting an effective and efficient realization of the objectives of sustainable management of resources.

In the case of Tunisia co-management systems are part of the Forestry Code. Communities that want to improve their rangelands can ask the Forest Services to put their lands under the forest regime, which entitles the Forest Services to take full control over the land and undertake the necessary improvements. The interesting feature of this co-management experience is that the decision to transfer the management of collective pasture from the community to the Forest Service is taken by the community members. Once the area is rehabilitated, community members have to pay a fee in order to use the area for grazing or cutting fodder. The improved pastures remain under the custody of the Forest Services until the full cost of the improvement is recovered. Once these costs have been paid for, community members can reclaim and manage the improved pastures (Mares 1996). In this case the rule of re-transfer applies.

In Morocco, the rangeland development project (Projet de Développement Pastoral et d'Elevage de l'Oriental) is being implemented in the eastern regions of the country with the support of IFAD and AFESD. This is an 8-year project, which consists of granting greater responsibility to local users by using tribal affiliations as the base of cooperative membership and by involving communities in the decision-making (El Alaoui 1997). The major assumption being that building on existing tribal structures provides a stronger base for the project, reduces potential disputes between cooperative institutions and tribal institutions, and reinforces collective action and solidarity between tribal members. However, a number of constraints have been identified such as the heterogeneity of local institutions forming the cooperatives, membership composition[2], and the neglect of traditional reciprocal feed access options. Many of the pastoral communities have been hit hard during the 1998 drought and people are realizing the negative effects of enclosing community resources (Harzenni, personal communication).

PRIVATIZATION OF RANGELAND RESOURCES

Privatization refers to the transfer of ownership of resources from the public sector to groups or individuals. In the latter case, this also involves individualization. Privatization of rangelands has been an important agenda for the Moroccan and Tunisian states. The major difference between these two countries is that Morocco continues to favor collective tribal ownership while Tunisia has moved, since 1988, towards full privatization. Morocco is a clear example where the government has been

[2] Tribe, subtribe, clan, etc.

actively involved in enhancing traditional land tenure systems by (1) increasing the tenure security that customary rights provided to their holders, (2) guarantying and protecting traditional tribal claims (Nassif et al. 1998), (3) creating the conditions and mechanisms for efficient resource use, and (4) empowering traditional institutions. Collective tribal pastures are now collectively owned by all community members who have grazing rights regardless of whether they own animals or have a breeding contract with outsiders (Nassif et al. 1998). But the use and management of collective tribal rangelands suffer from the absence of local mechanisms to control stocking rates and improve the pastures.

In Tunisia, since the colonial period land policies have targeted the development of the private sector. The process of recognition of tribal rights was similar to Morocco. The process, which started much earlier (in 1901), recognized customary tribal rights (Mares 1996; Nasr et al. 1997) and demanded the delimitation of these lands according to tribal boundaries. As early as the 1930s, long-term leases were granted under the provision that the lessees, once the terms of the contract were met, could purchase the land. In the 1980s, privatization has been the main slogan of the Tunisian government and 90% of tribal collective lands have been individualized. This has had a substantial effect on the management of these resources and on the welfare of many livestock herders.

It is often thought that devolution and increased tenure security not only assure a more efficient use of the resource base, but also a more sustainable use. However sustainability depends on many other external factors[3] that are directly linked to the feeding strategies of pastoral communities. As a consequence in most extensive livestock production systems, any enclosure of local resources has detrimental effects on the environment as well as on the capacity of pastoral communities to cope with droughts.

SUSTAINING DEVOLUTION PROGRAMS: LIVELIHOOD STRATEGIES

The major shortcoming of devolution programs in rangelands is the too narrow concept of rangelands boundaries that are under the control of a given community and thus the failure to account for the external networks that help to complement local feed needs (Ngaido 1998). The issue of devolution of rangeland management is, very complex because rangeland resources in a given location may not suffice to sustain the feed needs of a given community for the entire year. Such scarcity has always been a major constraint to pastoral production in dryland areas (Lawry 1990) and has been the major driving force for the development of many risk management strategies based on institutional and market feed access options (Ngaido 1998). In this paper, we postulate that resource scarcity in rangelands is not uncertain because of rainfall variability

[3] Such as access options to external feed resources, water, etc.

(Scoones 1995), but because of distorted state development policies that have hindered many pastoral production strategies. Pastoral communities have a deep understanding on the potential of their local land resources and as such, all their production strategies are geared towards supplementing their feed needs and mitigating the effects of droughts. Scoones (1995) supports that "pastoralists must avoid risk by moving herds and flocks to make best use of the heterogeneous landscape" and that tracking in "uncertain environment requires access to areas across official borders and boundaries."

Hence, any focus of policy reforms solely on the resources that are under the control of local communities, also called the "single resource approach", misses an important part of the risk management strategies that have long sustained rangeland production systems. Sylla (1995) argues that if, as is often the case, community pastures do not satisfy the group's annual feed requirements, small user organizations will not be able to sustain their livelihoods, for they do not have control over external resources. He therefore proposes the development of larger structures that would encompass different user groups. There is evidence that the resource base of most pastoral societies cannot support livestock production all year round and hence users are obliged to link up with other groups and production systems for sustaining their livelihoods.

The main challenge of devolution policies is how to accommodate complex pastoral production systems and integrate livelihood strategies in the design of the enabling framework. Scoones (1995) argues that "appropriate forms of governance and legal measures are required at both international, national and local levels to facilitate mobility and improve tracking efficiency."

Numerous examples from Africa show that "the imposition of unsuitable land tenure legislation and pastoral policy by donors and post-colonial state undermined the ability of rural producers to coordinate their actions" (Lane and Moorehead 1995). Table 2 indicates that devolution strategies in Africa and Asia have not been able to support and promote the maintenance of these complex livelihood strategies.

CONCLUSIONS AND POLICY IMPLICATIONS

Despite the increasing awareness of the necessity to devolve rangeland management and the various attempts to formulate and to implement devolution policies in African and Asian countries, applied researchers, policy-makers, and other organizations of civil society still have to go through a long and perhaps painful learning process to pave the ground for viable pastoral systems.

Country experiences have revealed that the urgently needed holistic view on rangeland devolution cannot easily be put into practice. The practiced "single resource approach" is prompting the multiplication of conflicts within pastoral societies (e.g., role of affluent absentee owners) as well as between pastoralists and agriculturists, and is limiting the capacity of pastoralists to carry out their traditional livelihood strategies

and fight successfully against the constant threat of poverty. Rangeland devolution policies, which continue to restrict their strategies and instruments solely on local pastures while ignoring complementary, secondary rights and access options, will not be able to enhance welfare or contribute to poverty alleviation in marginal areas.

These characteristics render devolution of rangeland management much more difficult to perform than, for example, devolution in sedentary agricultural systems. This often leads to a different pace and intensity in the implementation of devolution policies in these two systems, and to increasing sources of conflict. While agriculturists, may have in place efficient collective management practices and local institutional arrangements to make up for the withdrawal of the state during the devolution process, pastoralists often find themselves in a temporary institutional vacuum. Thus far policy-makers, donors and researchers have underestimated the additional resource conflicts resulting from differing institutional settings.

Any comprehensive and carefully implemented devolution policy may reduce the incidence of conflicts, but will not bring all of them to an end. This is particularly true as structural transformation is accompanied by out-migration, absentee owners and an increasing demand for food crops. Devolution, thus, has to go hand in hand with new and improved mechanisms for conflict resolution. In part the application of the subsidiarity guiding principle to the devolution process, can mitigate conflict. However it is crucial to recognize that the state has to play an important role in enabling a multi-tier institutional setting for conflict resolution, starting from traditional or newly created local organizations up to courts at the central level that are legitimized by civil society.

The country experiences have shown that in the formulation of devolution policies most countries followed the naive comparison between the over-burdened, impotent state-dictated rangeland management and the idealized vision of well functioning local institutions, effective collective action and well-defined property rights. Any devolution process should start with a clear and critical assessment of the strengths and weaknesses of the institutional setting currently in place. This analysis should involve all actors (the state, local organizations, third parties involved and organizations from civil society) from the very beginning. This interaction may help to start an intensive dialogue between the involved parties to assign their roles and functions in the devolution process, to build up their bargaining positions and to make them more independent from existing rigid government structures and thinking.

Especially in the case of a strongly centralized government orientation this multi-actor setting may mitigate the aversion towards the devolution of power to traditional institutions and the reallocation of property rights.

Research on devolution on the other hand has been concentrating mainly on the efficiency-enhancing hypothesis of institutional change. The on-going processes in developing countries and economies in transition have clearly shown that a complementary “power view” on the distributional effects is important as well. The

main hypothesis of the distributional theory of institutional change is that institutions reflect societies' power structure. According to this view new institutional arrangements are the consequence of new power endowments resulting from repeated conflicts about the distribution of resources in society (Hanisch and Schlüter 1999). Hence the plea for devolution can be seen as arising from unsolved conflicts under state management and the devolution process itself can be viewed as a conflicting process.

The experiences with (re-distributive) land reforms, the political-economic analysis of their implementation and the investigation of the role of different interest groups can help rationalize the debate, anticipate strategic behavior of the different actors, and evaluate the impact of the devolution process on efficiency, equity and sustainable development.

Devolution is a costly process, it includes permanent redistribution costs as well as sunk transaction costs. There is strong suspicion that governments undertake devolution programs in order to get rid of burdening responsibilities and high administrative costs.

By following the principle of subsidiarity, an effective devolution process can be started and a more fine-tuned sequencing of policy implementation and instrument mix may be achieved. Co-management, complete devolution to user groups and retention of central control can be used to address specific needs.

Researchers as well as policy makers have to find the way to integrate traditional and modern institutional regulations and mechanisms into a new "hybrid" form of efficient, equitable and sustainable resource management. There is still a long way to go to transform bad government of rangelands into good governance.

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Table 1: Instruments for rangeland devolution in selected African and Asian countries

	Instruments for devolution			
Countries	Strengthening existing local institutions	Creation of new institutions	Property rights reforms	Confirmation of traditional property rights
Burkina-Faso[a]	Traditional authorities	Rangeland Associations (pre-cooperatives)	Reform of land legislation	Reluctance by central state; fear for traditional authorities
Ethiopia[b]	Tolerated traditional authorities	Pastoral Associations	Private titles to end pastoralists' transhumance	Indirect confirmation; Informal rules
Jordan[c]	Tribal institutions are recognized but do not have a managerial role	Cooperatives for the management of grazing reserves	Individual rights (Meeri) allocated to settled tribal members	Land allocation during settlement was based on tribal affiliation
Kenya[d]	Local institutions were isolated	Group ranches	Land titling; by-laws on conflict resolution	Yes
Kyrgh-zstan[e]	No; but devolution of certain responsibilities	Livestock cooperatives or associations	Re-privatization of livestock, leasehold arrangements for pastures	No, allocation still in hands of former collectives
Mali[f]	Traditional chiefs	Pastoral Associations	Deadlock; conflicts between absentee and local herdowners	
Mauritania[g]	Traditional organizations and leaders	Pastoral Associations plus other new institutions	Donor driven: granting of use rights to PAs	Confirmation of traditional pastoral use rights
Mongolia[h]	Not intended; re-emergence of autonomous cooperation, effective land control by local herder groups	Post-socialist herding communities (kin groups) herders cooperatives	Re-privatization of livestock, lease rights for pastures allocated by local administration	No; confirmation of artificial administrative boundaries, contrary to transhumance needs
Morocco[i]	Tribal institutions were recognized	Creation of pastoral cooperatives on agrarian reform lands; creation of pastoral cooperatives in the Eastern region of Morocco (Oujda) is a recent process	Tribal members have perpetual use-rights on tribal arable lands; common use-rights on pastures	Yes; confirmed by the 1919 decree on collective lands
Namibia[j]	No	Intended: land boards as tools of central government	No; state ownership of communal lands, single resource approach	

Niger[k]	Integration of traditional chiefs	Pastoral Associations	Single resource approach; common access for all pastoralists	Reclaim tenure control; traditional use rights
Nigeria[l]	Local institutions were isolated	Grazing reserves regulations	Reform of existing land legislation; certificates of occupancy	
Senegal[m]	Traditional pastoral institutions	Multi-level Pastoral Associations	Use rights	Traditional use rights
South Africa[n]	Controversial: resentments against local/ tribal authorities	Open-access; network of CPAs; commonage	Under preparation: reconcile public and pastoral community interests, secure tenure with different options	Rights vested to those who hold the land; beneficiaries chose who and where to administer their rights
Tunisia[o]	Tribal institutions were recognized before 1964	1964-1971 creation of cooperatives; since 1971, elected Management Councils manage pastures and allocate land rights	Collective ownership to tribes; privatization of arable lands. Since 1988, complete privatization of rangelands	Yes, since 1905
Zimbabwe[p]	No	Grazing scheme committees	Committee draws up by-laws for operation/enforcement	

a. Sanou 1996
b. Swallow and Kamara 1998;, Kamara 1998
c. Nesheiwat et al. 1998; Ngaido, 1997b; IFAD, 1995, 1997
d. Haro et al 1998
e. Mearns 1996a
f. Shanmugaratnam et al. 1992
g. Shanmugaratnam et al. 1992
h. Mearns 1996a,b
i. MAMVA, 1994; Nassif et al. 1998; Mahdi, 1997a,1997b; Chiche, 1997; El Alaoui, 1997
j. Rhode 1998 Kirk, M., U. Löffler, and T. Petermann, 1998
k. Ngaido 1999
l. Kolawole 1997
m. Shanmugaratnam et al. 1992; Sylla, 1995
n. Cousins 1996; Rhode 1998; Moor and Nieuwouldt 1996
o. Mares, 1996; Nasr, 1995; Abbes et al, 1997; Nasr and Bouhaouach, 1997
p. Moor and Nieuwouldt 1996

Table 2: Effects of devolution strategies in selected countries

	Effects of devolution strategies and instruments				
Countries	Property rights	Collective action	Local institutions	Livelihood strategies	Resource base
Burkina Faso[a]			Proposals; still unheeded in 1996		
Ethiopia[b]	Privatization/ enclosures, loss of communal grazing areas	Collective enclosure efforts; communal grazing, setting of rules	Conflicts between PA (state) and traditional chiefs	Reduced mobility, increased risk exposure. Reduced herd sizes	Shrinking communal pastures
Jordan[c]	New legislation is under discussion		Stewardship will be granted to local communities		
Kenya[d]	Tenure security to participants		Traditional management rules/practices undermined	No more mobility to cope against risk; impoverishment of herds	
Kyrghyzstan[e]	Still weak private sector institutions	Some peasant farms organized joint summer grazing.	Revival of traditional her-ding groups; need for state support	Animal privatization; increase of absentee herders	
Mali[f]	More insecure property rights; disincentives for pastoralists	Slow progress of pastoral associations; no competent staff; bad management of water point	Lack of ex-change between pastoral associations; restricted mobility		Endangered and lack of skills to secure resources
Mauritania[g]	Conflicting property rights on wells; boundaries not well defined	Optimum size of pastoral associations not clear; influence of absentee herd owners	Top-down approach; critical interference of traditional leaders	Economic viability still low	Lack of water points slows down process
Mongolia[h]	Attempts of rich breeders to secure exclusive rangeland use-rights	Still strong wish for collective org. of herding, 'co-management' management/tradition herders	Decentralization due to privatization; non-state institutions poorly developed	Animal privatization: influx of new breeders => widening gap poor rich, loss of social capital	

Morocco[i]	Collective rights that could be titled to tribes	Use of local rules and regulations to manage rangeland resources	Local tribal leaders manage resources	In transformation; increasingly, tribal members are appropriating common resources	Degradation in many tribal pastures
Namibia[j]	Privatization based on inheritable leasehold		Formalization of communal land regulations		
Niger[k]	Lack of implementation; pastoralists are disregarded	No identifiable advantage of membership in pastoral associations	Lack of formal education and skills	Pastoralism to sufficient to make a living	
Nigeria[l]	Privatization of key resources to the detriment of pastoralists				
Senegal[m]		Pastoral associations easy to establish due to existing traditions	Based on local nobility/leader; lack of skills		Lack of water points (major constraint for development)
South Africa[n]	Sharing of rangelands through formal channels (holistic view)	Bureaucratization and ignorance of regulation of CPA	Imposition of influence through out-side administr.	Favor powerful groups within society	
Tunisia[o]	Privatization of tribal collective lands have affected negatively pastoral production systems	Only on the tribal pastures under forestry code.	With privatization, the role of local institutions have been reduced to monitoring the process	Pastoral communities have been negatively affected because most of their access options have been curtailed	Degradation have been reported on remaining tribal pastures
Zimbabwe[p]			Conflicts between new and traditional structures	Reduced mobility	
(Footnotes: see Table 1)					

PROPERTY RIGHTS AND COLLECTIVE ACTION IN THE DEVOLUTION OF IRRIGATION SYSTEM MANAGEMENT

Douglas L. Vermillion[1]

INTRODUCTION

Water has been called the first resource. Without it, life could not exist. With it, not only life but health, prosperity and power can be obtained. And yet it is becoming increasingly scarce, polluted and politicized. In today's world of growing competition for this precious resource, it is becoming increasingly urgent that society and nations develop equitable property rights for water and enable local communities to manage water services. In developing countries about 70 percent of accessible fresh water is used for agriculture (FAO 1993).[2]

The purpose of this paper is to identify policy recommendations and research priorities which will lead to more effective efforts to devolve the management of irrigation systems from governments to water users associations. This paper focuses on the question, "What are the essential motivating factors which will invoke collective action among water users to ensure effective and sustainable management of irrigation systems after devolution?" We will see that the most important motivating factors are property rights, broadly defined, which provide security and incentives for farmers to invest in irrigation management. How devolution programs are structured and implemented can also shape farmer perceptions about related property rights, and hence, can have an important impact on collective action among water users.

In brief, our analysis is structured as follows. How irrigation management devolution programs are structured, or organized, will determine what kinds of property rights are given to water users. What property rights are held by water users will, in turn, determine to what extent farmers are willing to provide collective action for irrigation management. The quality of management will, in turn, affect how well irrigation systems perform and what outcomes they produce, such as financial viability, condition of infrastructure and agricultural productivity.

Before we go any further, a few definitions are needed. By property rights, we mean the claims, entitlements and related obligations among people regarding the use

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[1] Independent consultant for water policy and institutions.

[2] Water for agriculture also often includes water for aquaculture and drinking water for livestock. In industrialized countries industry uses about 40 percent of available fresh water, in less developed countries this figure is only about 10 percent.

and disposition of a scarce resource (see Furubotn and Pejovich 1972).[3] The leading theorists Furubotn and Pejovich (1972) and North (1990) both include goods and services as potential objects of property, or assets. Following Eggertsson, we include three types of rights, rights to use an asset, rights to obtain benefits from an asset and rights to alienate or sell an asset (1990). Property rights are primarily social conceptions, but in order to have force on human behavior, they must be enforceable through sanctions. Sanctions may involve modern legal codes, punishments imposed by users groups or other social pressures. Key obligations which may be attached to property rights are financing construction and maintenance of infrastructure, financing costs of service provision, and following rules regarding use or protection of the resource.

Applying these concepts to irrigation, we broadly consider irrigation infrastructure, water, land, funds owned by an irrigation organization, legal status of an irrigation organization, and a license or commission to provide an irrigation management service to all be potential types of property, to which rights and obligations may be attached.

Following Meinzen-Dick and Knox (1999), devolution is the transfer of rights and obligations over resources to resource users groups. For irrigation, this normally involves transfer of rights and responsibilities for irrigation system management from the government to local water users groups. Collective action is the coordinated behavior of groups toward a common interest or purpose.

IRRIGATION DEVELOPMENT, CURRENT TRENDS AND THE NEED FOR DEVOLUTION

The 1950s through 1970s was the *era of capital-intensive expansion of irrigation worldwide*. The need for rapid, large-scale development of infrastructure created large, powerful bureaucracies whose focus was on civil engineering. Irrigation development was synonymous with construction. Irrigation management was an after-thought. By the 1970s, construction costs were rising as the best locations for irrigation development were already used. At the same time rapid deterioration and poor management of irrigation schemes were widespread. The rate of growth in financing irrigation operations and maintenance (O&M) did not keep pace with the enormous growth in irrigated area.

The 1970s and 1980s could be characterized as the *era of irrigation improvement*, wherein the emphasis was increasingly on rehabilitation, introduction of new technologies and management techniques, training, introduction of irrigation service fees and farmer participation. But deterioration, under-financing and poor management

[3] Furubotn and Pejovich emphasize the social basis of property rights: "….property rights do not refer to relations between men and things but, rather, to the sanctioned behavioral relations among men that arise from the existence of things and pertain to their use." Property rights are "norms of behavior" which define "the position of each individual with respect to the utilization of scarce resources" (1972).

performance persisted. From the late 1980s until the present, a new paradigm of irrigation development has come to the forefront—the *era of reform*. It is now widely understood that irrigation systems will not be able to perform as needed without basic institutional reform, and this generally means devolution of some or all responsibility for irrigation management to water users associations.

Economic and social changes are advancing at an ever-accelerating rate. These also create increasing pressure to devolve management for irrigation systems to local users groups. *The central challenge facing irrigated agriculture today and in the foreseeable future is how to produce more food with less water*. With an increase of 90 million people per year, world population in 30 years is expected to exceed eight billion. In the coming 30 years approximately 80 percent of the additional food supply needed to serve the growing requirement will have to be produced on land served by irrigation. This is expected to result in a 650 percent increase in the demand for water over this time (Serageldin 1995). Furthermore, given the balance of economic and political power, industrialization and urbanization in developing countries will no doubt cause a reduction in the share of available fresh water which is allocated to agriculture. Except for rare inter-basin transfers of water or possible effects of long-term climate changes, the total supply of water in water basins is basically fixed (Seckler 1996). The inevitable result of this convergence of factors is increasing competition and pressure to use water more productively.

Largely driven by government fiscal shortages and a common inability to raise sufficient revenues from collection of water charges, an increasing number of governments around the world have adopted programs to devolve responsibility for irrigation management to water users associations (Johnson et al. 1995).[4] Consistent with general structural adjustment strategies, irrigation management transfer has been supported by the major international development banks (EDI 1996; Arriëns, et al. 1996).

It is expected that decentralization and devolution[5] of water resources management will increase water user participation in decision-making and investment and that this, in

[4] Irrigation management transfer (IMT) is occurring in many countries in Asia, Africa, the Americas and the Pacific. Early efforts to transfer management from government to farmer organizations occurred in the USA, France, Colombia and Taiwan in the 1950s, 1960s and 1970s. Management transfer became a national strategy in developing countries only in the 1980s and 1990s, with Chile, Peru, Mexico, Brazil, Dominican Republic, Colombia, Haiti, Senegal, Mauritania, Niger, Zimbabwe, Tanzania, Sudan, Somalia, Madagascar, Turkey, Pakistan, India, Sri Lanka, Bangladesh, Lao, Vietnam, China, Indonesia and the Philippines and other countries implementing national transfer programs. This has been referred to as "turnover" in Indonesia and the Philippines, "management transfer" in Mexico and Turkey, "privatization" in Bangladesh, "disengagement" in Senegal, "post responsibility system" in China, "participatory management" in India and Sri Lanka, "commercialization" in Nigeria and "self management" in Niger.

[5] Herein, *decentralization* refers to movement of management roles from higher or central levels to lower or local units within the same agency or ministry. *Devolution* refers to transfer of management

turn, will improve management incentives, accountability, agricultural and economic productivity and cost recovery (World Bank 1993). Devolution programs generally involve efforts to organize water users associations, train future managers, make essential repairs and formalize agreements between water users and the government.

Inasmuch as the reforms are normally motivated by financial pressures and driven by donor deadlines, devolution policies tend to be adopted before a clear strategy for implementation has been identified. There is a significant knowledge gap about actual results of irrigation management transfer—especially which strategies work and what are the necessary pre-requisites.

At the heart of the *theory of devolution* is the argument that local, common users of a resource, who are empowered as a group to take over management of the resource, have the incentive to manage more efficiently and sustainably than does a centrally-financed government agency.

Some are concerned that devolution programs are sometimes promoted in environments where these pre-requisites do not exist (World Bank 1993). Some may be introduced through policy and technical assistance. Some emerge only slowly in society. There is further concern that partial or incremental attempts at devolution may not be effective and may strengthen resistance to reform (Vermillion 1997a).

This paper focuses on the basic institutional elements which are included in devolution itself. Two questions are addressed. First, *What is the essential set of elements (rights, responsibilities and powers) which should be included in irrigation management devolution?* In other words: Is there a critical mass of elements that should be included in a devolution program so that it will result in an effective and sustainable result, and if so, what are these elements? The second question is, *What are the outcomes of devolution efforts which do and do not contain this essential set of elements?*

IRRIGATION MANAGEMENT GAPS AND INADEQUATE PROPERTY RIGHTS

Perhaps it would serve to clarify the conceptual and *real* relationship between property rights, collective action and irrigation management by considering a few examples which illustrate management gaps or dysfunctions which can arise when property rights are inadequate to meet management requirements.

In the early 1980's, in the Dumoga valley (a transmigration area in North Sulawesi, Indonesia), the author came upon a farmer placing large wooden logs in the upper reaches of the south main canal of the Dumoga Irrigation Project. The canal served

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roles from a government organization to a non-governmental or financially autonomous one, which is usually a local organization constituted by resource users.

more than 5,000 hectares of farmland. He did it to divert large extra flows into fields where only a few farmers were constructing new rice fields. When asked if this wasn't prohibited, he replied, "Yes, but we are closer to the wood." All the project officer did as he passed by on an inspection was to remove the logs and depart. After a short while the farmer restored the logs to its illegal position. Construction of the project was nearly completed, but rules and rights, together with enforcement mechanisms, were yet to be developed.

In the early stage of the Small-scale Irrigation Turnover Program in Indonesia, in the late 1980's, project staff informed farmers in a small scheme located in a hilly area of West Sumatra that a certain, but undisclosed, amount of funds were available to make small repairs to their scheme before full management responsibility would be turned over to them. Farmers were invited to make a list of priorities for repairs. This was seen as a form of farmer participation. The farmers responded by generating a long wish list. High on the list was a curious request for the government to raise the masonry embankment along a 300-meter reach of the upper main canal by about 25 cms. When asked why they requested this, some farmer representatives answered that about 11 years before, the government had first installed the masonry embankment. By now the canal had accumulated about 20 cms of silt. They said that if the government raised the embankment another 25 cms they would probably not have to do any desiltation for another 11 years!

From our perspective on property rights and collective action, we would conclude that the free government assistance had created a sense of speculative dependency among farmers towards the government for the irrigation scheme. Government investment had served to create the impression that the irrigation structures belonged to the government and it was the responsibility of government to minimize the cost of irrigation to the farmers. Such assistance had discouraged farmers from taking collective action to maintain the canal.

A director of an irrigation agency in a developing country in Asia told this author about a problem he had observed. The government provides repeated assistance to irrigation schemes where the farmers are deferring maintenance and expecting the government to return and make repairs at the government's expense. Farmers in neighboring systems which are much better maintained by farmers see this pattern and eventually complain to the government and demand that it provide similar assistance to them. Procedures made it difficult for the agency to require matching investments from farmers and eager donors provided generous amount of aid to finance rehabilitation projects.

In the mid-1990s, the author visited a pilot site for management transfer in the state of Maharashtra, India. A minor canal command of approximately 200 ha had been transferred to farmer management. The farmers reported that their new water users association had doubled the irrigation water charge after transfer but that the total cost

of irrigation to farmers had actually declined. When asked how this could be, they answered that before transfer, each individual farmer had to pay a bribe each time he requested water. After transfer the association purchased water from the Irrigation Department at a bulk rate for each season. The association prevented payment of bribes.

The transfer had created a group property right to an agreed amount of water, receivable upon payment of a seasonal water charge. This single transaction improved equity and efficiency by replacing the multiple, informal transactions that went on previously.

In South Sumatra, Indonesia, the author observed a concrete water division box that had been installed at the location where a traditional notched-log proportioning weir had existed before. The box divided a tertiary canal into three quaternary channels. After construction, farmers re-directed the new channels back together just downstream from the new box and re-installed their traditional proportioning device. The device defined farmer conceptions about how local property rights to the water should be allocated. The new box confused them. Design engineers were oblivious to the traditional system of water rights within the scheme.

During the campaign for the Philippine Senate in the early 1990s, several candidates announced that, if elected, they would vote to abolish the national irrigation service fee. They said farmers were too poor and shouldn't have to pay the fee. This precipitated a large demonstration of farmers which converged on the capital and insisted, curiously, that the irrigation fee not be abolished. The protestors said that their payment of the fee was their only basis for demanding an acceptable irrigation service from the government. In their minds payment of the fee established their right to an acceptable service.

About thirty years ago a reservoir and large-scale irrigation system was built in northern Thailand, near Chiang Mai. A feeder canal conveyed water from the reservoir through the city of Chiang Mai to a farming area serving several thousand hectares. By the mid 1990s, Chiang Mai had grown into a city of over five million people. By then, factories, businesses and hotels were extracting water from the main canal and dumping heavily polluted water back into the canal. The government considered constructing a new feeder canal to take water from the reservoir (which was originally constructed solely for agriculture) to serve a new industrial park. All this has happened in a setting where farmers in the scheme have no water rights to protect their supplies from their resource-rich competitors.

These examples indicate the range of manifestations of property rights issues in the management of irrigation systems. While such issues may be treated as "technical" or "management" problems, considering the underlying property rights is often key to understanding and addressing the situation.

PROPERTY RIGHTS FOR IRRIGATION MANAGEMENT

Many people think that property rights are related only to physical resources. But our definitions above say that they can be related to services as well as goods. This implies that property rights may be vested in irrigation decision-making authority, service provision and financing, in addition to rights to water and irrigation infrastructure. We consider a organization to be a manifestation of "social capital", and hence a form of group property. Experience with irrigation management devolution indicates that rights over decision-making, service provision and financing are as important as are water rights and infrastructure use rights. Therefore, we summarize below the key types of property rights which can and normally should be vested in irrigation management organizations. We hypothesize that the more of these rights are devolved to viable water users associations, the more devolution is likely to succeed.

Property rights, which may be inherent in, or devolved to, water users associations (either fully or shared with the government) are the following:

Water right – The association and individual members have a right to a share of the water supply (of a useable quality) at the point of extraction from the resource base and at the level of individual users.

Right to determine crop and method of cultivation – Individual water users, sometimes constrained by group imperatives, have the right to select which crops they will plant and how they will cultivate them. This is essential if farmers are to have the potential to optimize productivity based on local knowledge.

Right to protect against land conversion – The association has the right to protect its irrigated land against conversion to non-agricultural or non-water use purposes, in the event that the majority of members oppose such conversion. Irrigated land is the main revenue base to finance the association, recover investment costs, and ensure sustainable livelihood for members.

Infrastructure use right – The association has the right to operate, repair, modify or eliminate structures. Without this right, the association is unable or unwilling to invest in long-term maintenance and repair and is likely to consider the infrastructure as the property of the government.

Right to mobilize and manage finances and other resources – The association has the power to impose service fees, establish sideline revenue activities, plan and implement budgets, require labor or other inputs from members, recruit and release staff and provide training.

In addition the following may be considered key organizational rights to devote to water users associations:

Right of organizational self-determination – The association has the right to determine its mission, scope of activities (whether single function or multiple function,

including businesses), basic by-laws, rules and sanctions and method for selecting and removing officers.

Right of membership in organization – All water users who are eligible for membership according to association by-laws have the right to be members of the association and receive its privileges, services and benefits--as long as they comply with its rules and obligations. This also implies the right to exclude non-members from the service provided by the association.

Right to select and supervise service provider – Where members of the association are unable or unwilling to directly implement the O&M service by themselves, the association may appoint third parties (such as contractors) to implement required services. The association has the right to set the terms of such contracts and supervise service providers.

Right to support services – Subject to government policies or agreed conditions, the association has the right of access to support services it needs in order to function properly. This may include access to credit, banking services, agricultural extension, technical advisory services, subsidies, conflict resolution support and other legal services, marketing assistance, training and so on.

CHARACTERISTICS OF RIGHTS

Not all rights related to irrigation management are the same. They vary in many respects, as will be indicated below. It should be emphasized that it is the details about specific characteristics of irrigation management rights that constitute the most substantive and important matters to be negotiated and resolved in devolution programs. Policy makers, planners and farmer leaders should be aware of these sometimes subtle but important characteristics. These are described briefly below.

Exclusivity – This is the extent to which non-members or non-right holders can be excluded from gaining access to the resource or benefits which are supposed to be only for members. If non-members are prevented from receiving water allocated to the association, we can say membership rights and benefits are exclusive. If the association cannot prevent encroachment on its water supply by non-members then the association's service is said to be non-exclusive. A water users association which cannot prevent non-members from using its services is in a very weak position to exact fees and other obligations from its members.

Transferability – Some rights can be transferred from an original holder to another person, either temporarily or permanently, according to the rules of an association and the terms agreed to in negotiations. This is a normal prerequisite for water markets. With regard to services, if a water users association requires help with managing an intake and main canal, it may only have the option to have the government irrigation agency provide this service. However, if it has the right to select who provides this

service, then the right to service provision is transferable between the government or another party.

Scale – Rights can be granted at one level or scale but not another. A water users association may hold a water right, but not individuals; or in the case of Chile, individuals, not associations, may hold water rights (Gazmuri 1994). Associations at the tertiary canal level may have rights to use, repair and modify irrigation infrastructure but federated associations at the secondary and main canal levels may lack such rights. It is important that it be clear at what scale or level rights are provided.

Duration – Rights to membership in a water users association may be permanent for land holders (as long as they meet membership obligations) and temporary for renters or sharecroppers. Water rights may change seasonally in response to changes in water supply conditions.

Recognition – Rights may be recognized by some stakeholders but not all. Traditional rights may be recognized and respected by local water users but not recognized by the government or water users from other systems or sectors. Increasingly, rights need to be recognized both internally and externally in order to be assured.

Assurance – Assurance is a related but broader concept than recognition. Although a right may be valid and legal, assurance that it will be honored or protected may depend upon many things, including political will, dispute resolution arrangements, and availability of sanctions. It is one thing to establish formal rights (to water, use of infrastructure, control of financing, etc.) but it is another matter to assure realization of such rights. Devolution programs should provide both establishment and assurance of rights devolved, through necessary political support, campaigns, financing mechanisms, and other means to assure rights are respected.

Comprehensiveness – We have stated above that there is a basic set of rights which belong to, or should belong to, irrigation management. It is rare that devolution programs transfer all or nearly all of this set of rights to water users associations, including full recognition and assurance. This is a primary concern in this paper—what difference does it make if many or only a few of this set of rights are devolved to water users associations? How does this difference affect the viability, sustainability and performance of local irrigation management after devolution? Because of the diverse nature of irrigation systems worldwide, generic answers to these questions are difficult to obtain. Nevertheless, we make an attempt in the following sections of this paper.

STRUCTURING DEVOLUTION TO PROMOTE COLLECTIVE ACTION

The term *collective action* creates images of farmer groups repairing canals or rotating water. However, as with property rights, our analysis requires a much broader concept of collective action. We consider action to be both decision-making and the

behavior invoked by it. It is collective because it represents the *shared interests* of a defined group of resource users. Drawing partly from Ostrom (1990), we see that there are three basic types of collective decisions or actions.

The first is *constitutional actions*. This involves the design and establishment of the group or association, wherein its mission and basic structure of authority and decision-making are determined and adopted. The second type of collective action is about *collective choice*. This is the development of rules and sanctions for operations and maintenance of the irrigation system, financing costs of irrigation, settlement of disputes, and modernization and improvement of the system. The third type is *operational actions*, which are the specific decisions and actions in the course of implementing operations, maintenance, financing, dispute resolution, and modernization and improvement of the irrigation system. These three levels are hierarchical: constitutional actions set the conditions and limits within which collective choices occur; collective choices set the limits within which operational actions occur.

We will now demonstrate a practical consequence of these concepts. Devolution programs are often limited to small-scale systems or minor canal commands within large-scale systems because officials object to devolving management responsibilities to farmers for main system infrastructure and large service areas. They reason that farmers lack the necessary technical skills to operate and maintain larger and more complex structures.

However, it is easier to accept that farmers are capable of collectively defining the kind of service they want and forming an organization to ensure that the service gets provided. These two functions are, in essence, the two highest forms of collective action--constitutional and collective choice. If these two functions of self-determination for irrigation service are devolved, then--in terms of the shared interest of water users--it may not matter which party actually delivers the main system O&M service (which requires higher technical skills), as long as the shared interests are fulfilled. Lack of technical skills is not a good reason to oppose devolution, if the association has the capacity to define the service desired and then select and commission the technical expertise to deliver it.

The key challenge for devolution programs is to create an enabling environment wherein communities of water users can structure their organizations, establish rules and policies, and implement them in a way which ensures the local productivity and sustainability of irrigation systems.

The following is a list of key enabling factors which are hypothesized to be conducive to the emergence and development of desired collective action in water users associations. The list is distilled from literature on the subject and interactions with numerous practitioners in international meetings and fieldwork.

- Irrigation makes a significant improvement in productivity and profitability of irrigated agriculture, compared with rainfed agriculture [implies existence of water rights and right of crop choice].
- Irrigated agriculture is an important component of farm family livelihoods.
- Most farmers are either landowners or cultivators with multi-year leasehold status.
- A generally-accepted system of land and water rights exists or can be expected to exist by the time irrigation management transfer, or devolution, is implemented [implies water rights, land conversion protection and right of crop choice].
- Social divisions are not serious enough to prevent communication and joint decision-making among farmers.
- Social traditions support group organization for irrigated agriculture, existence of producer cooperatives and other rural organizations [implies right of organizational self-determination].
- Farmers are dissatisfied with the current irrigation management service by the government and believe that improvements in the quality of irrigation management could significantly increase the productivity and profitability of irrigated agriculture [implies right of crop/cultivation choice, right to use infrastructure, right to support services].
- Farmers believe that these improvements can be realized through the association's control over the management of water services [implies right to use infrastructure, right of organizational self-determination, right of membership, right to select service providers].
- Farmers believe that their association can reduce or contain increases in the cost of irrigation to farmers [implies right of organizational self-determination, right to manage finances, right to select service provider].
- Farmers generally perceive that their private benefits of devolution outweigh their costs and that the benefit/cost ratio of devolution is roughly equal among farmers [implies right of organizational self-determination, right to manage finances].
- It is technically feasible to implement the water service with existing infrastructure or after pending improvements are made [implies right to use infrastructure, right to support services].

Many of the above enabling factors imply the existence of various property rights. Although many of these factors may seem obvious to some, it should be emphasized *that most irrigation management devolution programs do not take such factors into*

account in the planning process. Schemes that are lacking in many of the above factors may require more intensive external support to develop viable water users associations. Both effective devolution of implied organizational rights and external support to local organizations are needed.

It is not possible to state universally what are the necessary pre-conditions for development of water users' associations. Some factors might be essential in one place but not in another. In one place, some factors may be so important that they compensate for the absence of others. However, we hypothesize that the more enabling factors that exist in a location, the greater is the likelihood that viable water users' associations will develop and collective action will emerge.

RESULTS OF COMPREHENSIVE, PARTIAL AND MINIMAL DEVOLUTION OF PROPERTY RIGHTS

We will now examine comparative evidence of the results of irrigation management devolution. We compare devolution programs which we characterize as relatively comprehensive, partial and minimal in their devolution of the basic set of property rights for irrigation management, identified above. Impacts on the performance of irrigation financing, operations, maintenance and productivity are considered (Vermillion 1997b). For each type, we provide summary information from different experiences and then include more detailed information on a case study.[6]

COMPREHENSIVE DEVOLUTION

Comparative Evidence

Comprehensive devolution means transfer of all or most of the basic set of property rights listed above. Not many devolution programs in developing countries have done this. Examples of relatively comprehensive irrigation management devolution include the USA, France, Spain, Japan, Mexico[7], Chile and China.[8]

As a result of Mexico's large-scale management transfer program, annual government subsidies for irrigation O&M fell from $40 million in 1989 to zero by 1993, at which time approximately 2.4 million ha of service area had been transferred to farmer management (Johnson 1996). From a sample study of six irrigation districts in

[6] The author wishes to acknowledge the substantial inputs of M. Svendsen, C. Garcés-Restrepo, and M. Samad, the co-authors of the case studies on the USA, Colombia, and Sri Lanka, respectively.

[7] Mexico's devolution program was preceeded by passing of a national water law which established water rights and legal status of water user associations and federations. Associations have infrastructure use rights, crop choice, service for pay, local financial control and right of self-determination.

[8] Contrary to the perceptions of some outsiders, China generally provides long-term land use rights to farmers, water rights, infrastructure use rights, crop choice, service for pay, local financial control and legal status and right of self determination for farmer associations.

Mexico, Gorriz, et al. (1995) report an immediate and consistent nominal increase in water fees after transfer of between 45% and 180%, at a range of $2.25 to $7.79 per 1000m3 in 1994. Fees also increased modestly in real terms relative to the cost of production (Johnson 1996).

Johnson (1996) reported a slight reduction in total irrigation system staff after transfer in Mexico but a substantial reduction of government staff from 7,742 before transfer to 4,450 by 1993. Farmer-sponsored organizations generally are not willing to hire or retain "excess" staff, as governments often do in developing countries.

In Mexico, water fee collection rates rose from only 15% before transfer to 80% to 100% afterwards. Collection rates are generally 60 to 70% during the first transitional year and above 80% by the second year (Gorriz et al. 1995). This high rate is largely due to the requirement by districts that farmers pay fees before water is delivered (Johnson 1996). In the large-scale transfer of 3.3 million ha served by large-scale irrigation systems in Mexico, the shortfall in meeting irrigation district costs fell from an annual national deficit of $66 million in 1989 to $41 million in 1993, when transfer was 80% completed. Local self-reliance in financing irrigation O&M rose from 43% in 1989 to 78% in 1993, at the national level.

Reports of experiences in Mexico (Johnson 1996; Gorriz et al. 1995); Colombia (Vermillion and Garcés-Restrepo 1996); and the United States (Svendsen and Vermillion 1994) indicate farmer perceptions that O&M staff have become more responsive to farmers after turnover. It is reported that maintenance work was more responsive to farmers' priorities after turnover in Chile (Meinzen-Dick et al. 1994).

Research in Mexico has shown no significant increase in area irrigated, cropping intensity or yields before and after management transfer (Johnson 1996). Gross economic returns have remained similar or have declined after transfer, being in the range of $1,500 to $1,900 per ha. (Johnson 1996).

Reforms toward local financial and managerial self-reliance in the Bayi and Nanyao irrigation districts in Hebei, China led to increases in surface water costs from $13/ha/yr in 1984 to $36/ha/yr in 1992 in Bayi and from $24/ha/yr in 1984 to $60/ha/yr in 1992 in Nanyao (in 1991 dollars; Johnson, et al., 1994). In China, total water fee collection throughout the country increased from US$50.70 million in 1984 (when reforms were just starting) to $415.12 million in 1992 (in 1994 dollars). This was partly due to an increase in collection rates from 30% in 1984 to 70% in 1991 (Turner and Nickum 1997).

The reforms in China during the 1980's promoted formation of sideline enterprises to cross-subsidize local government budgets after the demise of line agency funding from central government sources (Gitomer 1994). Today, sideline enterprises are a common source of financing for irrigation districts. For example, the Bayi district in Hebei province developed nine sideline enterprises between 1984 and 1992 after it

became financially autonomous. The enterprises produced approximately US $60,000 in profits during this period, of which 65% was allocated to the district for water management costs and the rest went to salaries and bonuses of enterprise workers, many of whom were family members of irrigation management staff who were employed by the district to work in the "diversified management division". By 1994, 30% of the Bayi district revenue was from its sideline enterprises (Vermillion, et al. 1994).

Long-term time series data on irrigation efficiencies before and after management devolution are available from case studies in the medium scale Nanyao and Bayi irrigation districts in the north China plain (Johnson et al. 1995). In Nanyao district, the rise in annual cost of irrigation water from US$4.68 per ha in 1972 to US$31.84 per ha in 1993 (in 1991 dollars) helped bring about a decline in water duty from 11,000 m3 per ha in 1973 to only 4,500 m3 per in 1993. This trend was part of a larger policy to reduce water consumption per ha and cannot be attributed only to the reforms, which occurred in the mid 1980s. However, it is apparent that the reforms did not reverse the trend. It is likely that the more active involvement of farmers and village governments in irrigation management helped facilitate the decline in water consumption per ha.

Annual discharge into the Nanyao system increased from 28 million m3 in 1972 to about 60 million m3 in 1982 (at the collapse of the commune system) and then steadily declined thereafter to 20 million m3 in 1993. The same peak and decline trend occurred in the Bayi system, where total annual discharge (from surface and groundwater) went from 6 million m3 in 1972 to 34 million m3 in 1980, then declining to 17 million m3 in 1993. The average annual number of surface irrigations decreased from 3 in 1973 to 2 in 1992 in Nanyao and from 6 in 1973 to 4 in 1992 in Bayi—after peaking in 1982 in both systems. Introduction of the "pay for service" system at main canal, village, and farmer levels undoubtedly influenced the decline in water diverted and delivered per ha after reforms in the mid 1980s.

Johnson et al. (1994) report that annual grain yield (wheat and maize) per unit of water in two systems in the north China plain increased steadily between 1973 and 1992 and the rate of increase accelerated after the reforms in the mid-1980s. Annual grain yield per unit of water (100 m3) in Nanyao was 66 kg in 1973, 70 kg in 1982 and 135 kg in 1992. Similarly in Bayi, yields per 100 m3 increased from 28 kg in 1973 to 65 kg in 1982 to 150 kg in 1992. Data on the impacts of devolution over such a long time period is rare and suggests that transfer had a positive effect on yield returns to water, given the parallel upturn in trend in both systems at the time of transfer.

Comparative post-facto evidence about reduced costs of irrigation as a result of transfer also comes from New Zealand where the government privatized 49 irrigation schemes through outright sale of the districts in the early 1990s. Forty-seven were sold to farmer groups. Farley (1994) reports that water charges on privatized schemes are 2 to 4 times lower than on government "pre-privatized" schemes, despite the fact that government schemes still retained subsidies for O&M costs while privatized schemes

paid the full cost of operations. This is attributed to privatized schemes on the average cutting operational costs by 66%, reducing overhead costs, and designing simpler repair and maintenance work.

In the Hawea system, annual water charges were US $23.90 per ha before privatization and US $10 per ha afterwards. The Greenstreet system was privatized in 1990 and by 1994 had an annual water fee of US$2.10 per ha and cash reserves of US $3.30 per ha, compared with average water fees exceeding US $7.00/ha and average debt loads of US $30 per ha for government schemes in the same region. The Bannockburn system, privatized in 1990, had an annual water charge of US $10.80 per ha with no debts, while government schemes in the same region had water charges ranging from US $25 to $47 per ha with large debts.

Only a few studies refer to impacts of management transfer on the environment. In Chile, water users associations, which took over control of irrigation systems, reportedly became empowered by transfer and the 1981 Water Law Code and successfully pressured paper factories to invest in pollution reducing equipment, at the threat of cutting off water to industrial users (Meinzen-Dick et al. 1994).

Case Study: Comprehensive Devolution in the USA

Nature of devolution – The Columbia Basin Project (CBP) is a large multi-purpose, reservoir-based project located on the Columbia River in the state of Washington in the USA. The irrigated area is about 230,000 hectares, which is divided into three districts. All water used by the irrigation system must be lifted 85 meters, from which point it is distributed to the command area, largely by gravity flow. Today, each farmer-controlled district consists of 2,000 to 2,500 landowners and is controlled by a five- to seven-person board elected from among the water users. Seventy-four percent of all landholders have less than 160 acres of irrigated land in the project. Districts purchase water from the US Bureau of Reclamation and then resell it to their members.

For over five years the districts negotiated with the Bureau over water and cost allocation and which works should be reserved by the Bureau, managed jointly between districts, and transferred to individual districts. After coming to agreement in 1969, the Bureau transferred management of the system to three farmer-governed irrigation districts (Svendsen and Vermillion 1994). Farmers generally favored the transfer of management. Their primary interests were in obtaining more local control over water allocation, water fee structures, O&M expenditures, and drainage ways and in minimizing water charges. The Bureau's main interest was in shedding responsibility for delivering water to individual farms and handling special water sales. It preferred to focus mainly on construction and regulation of water and land use at the basin level. The farmers did not like the "red tape" of government management and the Bureau didn't want the "headaches" of dealing with thousands of individual farmers.

Control over the dam and intake was retained by the government, since the headworks involved a massive hydro-electric power generation facility. Full responsibility for managing the main and subsidiary canal network was transferred to the three districts (see Table 1).[9] This also included responsibility to fully finance the cost of O&M and develop a capital replacement fund to pay for all future costs of rehabilitation. Farmers pay a 30% surcharge over the routine O&M fee to build up this fund.

The districts have the status of semi-municipal corporations, legally constituted by the state government for the purpose of irrigation and drainage. They have rights of eminent domain but are generally exempt from liabilities for damages to property caused by the irrigation and drainage system. They are tax-exempt, not-for-profit entities constituted by the water users. A formal water right is granted to each district by a concession from the state government. The right is divided into basic allotments for water users, measured in volume of water per unit of land per season. The districts have the powers to make their own rules and sanctions (subject to environmental policy and general regulatory constraints), plan and implement O&M, set budgets and water charges, hire and fire staff and apply very strong sanctions. Since transfer the districts have seized and resold more than 20 farms because of failure of owners to pay the water charge. Water is not delivered if water charge payments are in arrears. The districts can raise sideline revenue to help contain inflation of water charges. This includes the right to sell excess water to users outside the district. The districts agreed that the Bureau should retain ownership of system infrastructure, because they wanted to avoid liabilities attached to ownership.

Interestingly, the Bureau has the right to take over management of the system again if the districts should seriously fall behind in their agreed repayment schedule for construction or fail to properly maintain the system. The Bureau conducts technical and financial audits every three years to ascertain whether the districts are maintaining agreed performance standards. The districts are obligated to comply with recommendations for essential and important preventive maintenance.

[9] This is with the exception of a few structures which serve all three districts.

Table 1: Key characteristics of devolution in USA, Colombia and Sri Lanka

Elements	Columbia Basin, USA	RUT, Colombia	Hakwatuna Oya, Sri Lanka
Water right vested in legally-recognized WUA	Water right & strong legal status	No water right, limited powers	No water right, weak status
Legally binding service agreement	Between govt & WUA, users approve O&M plan	Informal, board defines service to users	Informal, govt not legally bound
Balance between management responsibility & authority	Balanced. Full authority for management responsibilities	More responsibility than authority, govt oversight	More responsibility than authority, close govt supervision
Integrated management for financing, O&M, conflict resolution	Integrated and independent in all 3	Not fully integrated due to partial dependence on govt in all 3	Not integrated. due to strong dependence on govt in all 3
Balance between incentives & type of accountability required in farmer organization	Strong mgt control through sanctions and personnel incentives	Only partial control over staff, labor laws restrict incentives	No, ID still deploys staff, WUAs have no hired staff & rely on volunteerism

Management transfer in the Columbia Basin contains all of the five elements of devolution which are hypothesized to be essential to produce viable local management of water.

The process of devolution was relatively complete. It included elimination of direct government subsidies, removal of government staff, negotiated agreements about improvements of scheme infrastructure, and a clear understanding that farmers would be responsible to finance all future rehabilitation and modernization (see table below).

Table 2: Devolution process in USA, Colombia and Sri Lanka

Transfer activities	Columbia Basin USA	RUT, Colombia	Hakwatuna Oya, Sri Lanka
Water user associations created	Yes	Yes	Yes
Train farmer representatives	Yes	Yes	Yes
Train management staff	Yes	Yes	Yes
Revise O&M procedures	No	No	Partial
Revise water charges	No	Yes	No
Reduce government financing	Eliminated*	Substantial	Moderate
Remove government staff	Yes	Yes	No
Main system improvements	No	Yes	No
Subsidiary system improvements	Yes	No	Yes
Farmers prioritized improvements	Yes	No	No
Farmers invested in improvements	Yes	No	Minor
Responsibility for future rehabilitation transferred	Yes	No	No

*Indirect subsidies to farmers continued, such as low charges for pumping water.

Performance results. In the Columbia Basin Project, before transfer farmers were already paying close to the full cost of O&M (except for subsidized cost of electricity for pumping water out of the Columbia Basin, which continued after transfer). Under pressure from farmers to contain costs, the boards reversed a pre-transfer upward trend in water charges. Water charges declined in real terms from $80 per acre in 1969-70 (the time of transfer) to $49.42 per acre by 1989 (in 1989 USD; Svendsen and Vermillion 1994).

In the Columbia Basin Project there were 612 US Bureau of Reclamation (USBR) staff in 1969—the year of transfer. By 1985 only 83 USBR staff remained and were assigned only for functions at the intake and main system levels which were not transferred to the districts. USBR staff in the Irrigation and Land Management Division of the Project dropped from 297 in 1969 to only 22 in 1985. Government staff previously assigned to the districts were either re-hired by the districts, transferred to other systems, or retired.

Following transfer, the irrigation districts have diversified their revenue sources in an effort by farmer-elected board members to keep water charges as low as possible. Before transfer in 1976, the water charge was 80% of revenue. This fell to 67% of

revenue by 1989 as the districts developed seven mini-hydropower stations and engaged in water selling contracts and other income generating activities.

In short, the government used the transfer to discontinue subsidies and remove its own staff from the districts. The districts responded by significant reductions in costs and water charges. They also minimized financial risk through revenue diversification and ensured sustainability of infrastructure by raising a capital replacement fund (which was required by the transfer agreement).

In the Columbia Basin, USA, the farmer-elected board has continuously exerted pressure on district staff to contain costs of management. It was reported that district managers all believed that the cost containment policy was gradually compromising the long-term sustainability of infrastructure. As required in the transfer agreement, after transfer the USBR conducted technical audits every two years.[10] Between 1973-77, there were only five cases found by auditors where important preventative maintenance was recommended. By the period 1980-84, there were 20 such recommendations. During the entire post-transfer period however, auditors never reported any cases where urgent remedial maintenance was required. This suggests that cost-cutting measures may be compromising the quality of maintenance over time, while still holding the line against significant disrepair.

In the Columbia Basin, management transfer has apparently had little or no effect on the quality of irrigation service received by farmers. There was a gradual shift to higher value, less water intensive crops after management transfer, but this was primarily the result of changing market prices and a shift from furrow and basin to sprinkler irrigation. The reduction in water costs after transfer had the effect of increasing average farm incomes by about 15% over what they would have been without the reduction. It is estimated that this could increase net income by about $1,600 per year on a typical 65-hectare farm. The value of agricultural production in the Columbia Basin increased from approximately US $ 182 per irrigated ha at the time of transfer in 1969 to about $283 in 1989 (in 1989 USD; Svendsen and Vermillion 1994).

PARTIAL DEVOLUTION

Comparative Evidence

In India, where the cost of electricity for pump irrigation is heavily subsidized, Pant (1994) notes that turnover of a public tubewell to farmer management in Uttar Pradesh led to more efficient pump use, which brought about a reduction in water costs from US $2.70 to $1.20 per ha in kharif (summer) season and a reduction from US $6.20 to $3.20

[10] The US Bureau of Reclamation regional offices conducted technical audits of systems after transfer. These involved on site inspection of all physical structures and examination of finances and management practices. Maintenance assessments were rated according to degree of urgency of need for repairs.

per ha for the rabi (winter) season. The number of irrigation applications increased from two to three. Annual losses of US $876 before transfer of a public tubewell in Uttar Pradesh changed to consistent surpluses after transfer. The turnover of the public tubewell increased water and electricity use efficiencies by reducing average pumping time per irrigation from 42.4 and 39.3 hours per ha in kharif season for two years before turnover to 13.4 and 22.8 hours per ha in kharif season during the first two years after turnover (1992-94).

Pant's study also documented a decrease in irrigated area but increases in cropping intensity and yields after the transfer. The average irrigated area in rabi (winter) season was 103 ha during 1990-92 (before transfer) and 59.5 ha during 1992-94 (after transfer). Cropping intensities were an average of 143% during two years before transfer and 162% afterwards. Yields for wheat, rice and sugarcane increased about 10%, indicating that farmers preferred to intensify rather than extensify production after transfer.

In a post-facto comparison of tubewell system performance for 30 sample tubewells, Shah, et al. (1994) reported that turnover of public tubewells in Gujarat caused an increase in irrigated area between 30 and 400% in sample systems and a reduction in the price of water by 40 to 50%.

Transfer of management for the 12,000 ha Paliganj Distributary Canal in the Sone Command in Bihar, India to a federated farmers' organization in 1989 resulted in a new rotational arrangement in the dry season, policing of breaches and new use of farmer canal repair parties. The impact on equity of water distribution was reported in a simple, short-term before and after comparison. Before transfer in 1988, 16.7% of water entering the distributary reached gate 10, which was two-thirds of the distance to the tail end of the canal. By 1990, after farmers had taken over O&M for the canal, 21.2% of water entering the canal reached gate 10 and for the first time in known history, water reached the tail end of the canal (Vermillion 1992). Before transfer, 30.7% of the canal command area which is located in the tail end received an average of 10 to 12% of total canal water. During 3 years after the transfer, 18% of available canal water reached the tail area (Srivastava and Brewer 1994). In Paliganj Canal, management improvements due to transfer led to an increase in irrigated area in the dry season from 3,613 ha in 1990 before transfer to 4,350 ha after transfer in both 1992 and 1993.

In a before and after comparison case study in a 180-ha block of a medium-size irrigation system in Southern Luzon, Philippines, Oorthuizen and Kloezen (1995) found that average total annual expenditures for O&M were $31,196 during the four-year period before transfer and were only $7,696 per year (in 1982 dollars) on average during the four years following transfer—a 75% reduction in budget. In the Philippines, staff of the National Irrigation Administration, at regional and system levels throughout the country, decreased from 2.6 staff per 100 ha service area 1976 to 1 staff per 100 ha by 1985 as a result of management transfer.

Turnover of the system in Southern Luzon led to a decrease in agency staff from 24 in 1982 to only 6 in 1987, or a reduction in average service area per staff of approximately 75 ha in 1982 to 300 ha per staff in 1987. This led to a 60% reduction in annual operating expenses. Similar declines in government staff and operating expenses were reported by Svendsen (1992) in a sample of transferred systems. The decline in staff of the National Irrigation Administration (NIA) in the Philippines was part of a policy of attrition to not replace staff after retirements. The requirement that NIA had to become self-financing, motivated the agency to reduce costs where possible.

Bagadion (1994) reports average irrigation fee collection rates in the Libmanan-Cabusao pump irrigation system in the Philippines to have been an annual average of 27% for the period 1982-88 and 60% for the post-transfer period 1990-92. Bagadion also reported that the Libmanan-Cabusao pump system, Philippines, was able to convert annual average losses of US $42,218, for the period 1981-89, into an annual average surplus of $42,880 after transfer, during 1990-92.

The study by Oorthuizen and Kloezen found that fee collection increased from 20% before transfer to 81% after transfer, in 1989 (Oorthuizen and Kloezen 1995). Within four years the system's budget deficit declined from an annual average during 1982-85 of US $19,178 to an average of $553.57 during 1986-89, the first four years after transfer. This largely occurred because farmers cut annual expenditures by one fourth and increased fee collection from 20% to above 80% (as mentioned above).

In a paper on transfer in several systems in the Philippines, Wijayaratna and Vermillion (1994) report on improvements in water distribution, expansion of irrigated area, and increases in cropping intensities. The Banurbur system irrigated 486 ha in the dry season before transfer and 750 ha afterwards. The increase continued for several years. The Maramag system irrigated 524 ha in the dry season before transfer and 719 ha afterwards. The MNOH system in Bicol added an additional 390 ha to wet season irrigation after transfer and a third crop was planted in several blocks for the first time.

Case Study: Partial Devolution in Colombia

Nature of devolution – In Colombia, the initiative for irrigation management devolution came from the water users themselves, who in 1976 successfully lobbied the government to take over management of the Coello and Saldaña districts in central Colombia (Plusquellec 1989). These first transfers were only partial in that they did not include WUA control over budgets, O&M plans or personnel. The government irrigation agency, HIMAT, retained a strong supervisory role in these areas.

The initial transfers were considered successful (Vermillion and Garcés 1996), and by the end of the economic recession of the 1980s, the government adopted a national devolution policy as part of its overall strategy of economic liberalization and political

decentralization.[11] Between 1990 and 1997, 17 irrigation districts were transferred under the national program.

The Roldanillo-La Union-Toro, or RUT, irrigation district is located in the prosperous Cauca valley, and serves 9,700 ha. It was built between 1958 and 1971. Water is pumped from the Cauca river through three pumping stations, for both irrigation and drainage. The district has predominantly smallholdings, with 75% of holdings being less than five ha. The main crops are cotton, grapes, fruit trees and sugarcane. Water is delivered on demand. Since it is pumped twice, from the river into the canals and from the canals onto fields, it constitutes a major cost to farmers.

RUT was the first district to be transferred under the national program, in January 1990. As part of the government's overall policy to eliminate subsidies to the agricultural sector, the government discontinued its subsidy to the scheme. Before transfer the subsidy was approximately 60 to 80% of total costs. Since the scheme had been rehabilitated before transfer, no arrangements were made for further repairs as part of the transfer process. After transfer farmers began to realize that they had seriously under-estimated how much pumping costs would be without a subsidy. They have since pressured the government to provide a temporary subsidy of approximately US $800,000 for energy costs. Several staff remained with the district after transfer and no training was provided as part of the transfer process.

As is the case elsewhere in Colombia, in RUT there is no water right or concession vested in the district or individual farmers. Water is allocated administratively by the government. The WUA consists of a general assembly of members and an elected board of directors. WUA members are all owners of farmland within the command area. A general assembly of members meets at least once a year to re-elect board members and approve policies.

Under the transfer, the WUA takes over management of the entire irrigation network, including the intake. From the time of transfer until 1995-96, the government had to approve O&M plans and budgets, changes in irrigation fees and reductions in staff (the latter of which was resisted by the government). The district can establish rules and apply sanctions against members. The maximum sanction applied has been fines against members for infractions. More severe penalties apparently require involvement of the government. The WUA has the right to make contracts with third parties and raise supplemental revenue aside from water charges. WUAs are still prohibited from making profits (Table 1).

Under the transfer process the irrigation agency, HIMAT (or INAT as it was renamed after 1994)[12] facilitates the formation of water users associations. This

[11] The strategy included removal of agricultural price supports, input subsidies and trade barriers.

includes preparation of a constitution, formulation of by-laws and designation of basic rules and sanctions. Farmers elect representatives to a Board of Directors. This is followed by preparation and signing of a concessional contract agreement between INAT and the WUA. Whether or not the transfer process includes training, rehabilitation, or changes in O&M plans, fees or personnel depends, on a case-by-case basis, on the interests of the WUA and INAT and agreements reached between them during pre-transfer negotiations (Table 2).

Recognizing the problems inherent in this partial "delegation of administration", and needing to induce greater farmer investment in future expansion efforts, the government passed the Land Development Law No. 41 in 1993. The new law declared that thereafter full control over irrigation district finances, O&M procedures and personnel would be vested in the water users associations. This was an enlargement of devolution but it still did not include designation of a water right, clear responsibility and authority for financing maintenance and rehabilitation and ownership of scheme infrastructure.

Performance results – In RUT district in Colombia, farmers supported management transfer, expecting that it would improve management efficiency and contain costs. After transfer the WUA immediately began to reduce staff (although this was resisted and limited by the government). It also replaced ditchtenders inherited from the agency with new ones hired by the district board. Operations were decentralized into zones. The district began making structural repairs at its own expense, reportedly in more pragmatic and cost efficient ways than had been done by public agencies before transfer. The district also began to diversify its revenue sources and hired lawyers to collect overdue fees. These actions were intended to improve accountability and competence of staff, management efficiency and the financial solvency of the district.

In the first five years after transfer, government expenditures were eliminated entirely. The total cost of irrigation in RUT is relatively high, largely due to the two-stage pumping of water from the river. Under pressure from farmers, the board initially reduced the O&M budget even as the government withdrew its subsidy. Expenditures on O&M were decreased from US $163/ha in 1989 to $95/ha by 1995 (in 1995 USD). This was achieved largely through substantial decreases in the amount of water pumped per ha[13] as well as lower spending for maintenance. Despite these stringency measures the cost of irrigation as a percentage of gross value of output rose from 2.1% in 1989 to 3.5% by 1994. This was largely due to declines in the economic value of output, caused by drops in crop prices.

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[12] In 1994, responsibility for meteorology was removed from the agency and its name was changed to the National Institute for Land Development (INAT) to reflect its narrower focus on development of irrigation, drainage and flood control facilities.

[13] The Relative Irrigation Supply (supply/requirement) fell from 2.0 in 1989 to 1.1 by 1995.

Over time actual farmer payments of water charges declined from $83 before transfer to $65 per ha by 1995. This was mainly due to a declining fee collection rate, from above 90% to less than 70% by 1995. By 1995, only 70% of RUT's budget was mobilized from fees. In an effort to balance finances, the board was then pressured to both increase the water charge and reduce the O&M budget. These efforts were insufficient and due to concerns about pump station maintenance and lobbying from farmers, by 1995 the government again began subsidizing routine O&M costs in the district.

In brief, after transfer the WUA board responded to farmer demands to reduce the cost of irrigation. However, this resulted in under-financed maintenance. It is likely that this was partly related to an expectation that the government would resume its subsidies and eventually sponsor rehabilitation in the future.

There is reason to doubt the sustainability of infrastructure maintenance after devolution in Colombia. In the RUT scheme in Colombia, an inspection of the canal network in 1996 revealed that approximately 17% of the main and secondary canal lengths and 18% of control structures were defective. However, it is estimated that it would require an increase of only two percent in the O&M budget to repair all defects in the network within three years. Five years of budget cutting after transfer raised concern by the government about apparent under-financing for maintenance. Local financial sustainability of scheme infrastructure is in doubt with the advent of resumption of government subsidies.

In RUT in Colombia a significant improvement in cropping intensity occurred at the time of transfer and afterward. Intensity rose from 110% to 160-170% after transfer. Gross value of output (GVO) per unit of land did not change after transfer but the value of output per unit of water improved significantly. This is primarily due to a reduction in the amount of water pumped per hectare, as the district attempted to reduce management costs after transfer.

MINIMAL DEVOLUTION

Comparative Evidence

In Senegal, project reports indicate that transfer of lift schemes brought about improved supervision of pumps by farmer hired staff and led to a reduction in over-pumping. Due to a loss of government subsidies, however, water charges rose by 200 to 400%--despite a decrease in the cost of electricity for pumping by about 50% (Meinzen-Dick et al. 1994).

Regarding system maintenance, studies on lift irrigation in Senegal (Wester et al. 1995) and Indonesia (Johnson and Reiss 1993) report an acceleration in deterioration of pump set equipment for lift irrigation after turnover of equipment and networks to farmer organizations. In Indonesia this was attributed to lack of local knowledge, skills

and spare parts. In Senegal, farmers continued to maintain the network while pump set equipment deteriorated, indicating a shortage of skills, spare parts and cash rather than lack of farmer motivation. While the Indonesia study substantiated the finding with data on pump operating hours and ratios of irrigated versus design area, the Senegal study relied only on reports of breakdowns. Accelerated deterioration of infrastructure is most often reported in pump irrigation schemes, where government subsidies are withdrawn (such as in Senegal, Bangladesh and Indonesia).

The study in Senegal by Wester, et al. (1995) reported declines in cropping intensity, partly due to lack of skills and parts for pump management as well as other problems with credit and marketing related to structural reforms. In a comparison of two localities in the Senegal River Valley, researchers found that in the Doue Region of the Senegal River Valley, privatization of irrigated agriculture support services was accompanied by a decline in cropping intensities but an expansion in irrigated area, from 620 ha in 1985 to 1,070 ha by 1991. Farmers shifted to growing more of their crops only in the wet season, partly due to rapidly rising input prices and greater complexities of dry season irrigation after management transfer. Similarly, in the Ile a Morphil in the Senegal River, privatization led to a near doubling of irrigated area between 1985 and 1993 and an increase in cropping intensity from 86% during 1985-88 to 93% during 1990-93 (Wester et al. 1995).

In Senegal, it is reported that irrigation management transfer has increased waterlogging and salinization due to poor management practices by new and inexperienced managers hired by farmer associations (Agsieve 1994). Because of the short time frame reported, it is difficult to assess whether this is a long-term problem or only a learning adjustment.

Samad and Dingle (1995) compared the performance of six pump schemes along the White Nile in Sudan which were managed by three types of organizations: farmer groups (which had recently taken over management), the White Nile Agricultural Corporation (a parastatal), and a contracting private holding company. Wheat yields per unit of water delivered were 11 kgs/100 m3 in schemes managed by farmers and by the private company. They were 17 kgs/100 m3 in schemes managed by the parastatal. This difference was attributed to better access to agricultural inputs by the parastatal.

Gross margin/100m3 of water delivered for the 1993/94 wheat crop was $0.34 in the turned over schemes, $1.09 in the parastatal schemes, and only $0.09 in schemes managed by the private company. Average net farm income was $17.68/ha in the turned over scheme, $42.26/ha in the parastatal scheme, and only $6.90/ha in the scheme managed by the private company. The differences were attributed to higher cost of inputs and difficulty of obtaining timely inputs for the private sector entities. 1993/94 was the first year after transfer and the farmers and private company had little, if any, experience in management before this time.

In conjunction with organizing farmers and turning over management responsibility in the Kano River Irrigation Project in northern Nigeria, water fee collection rates rose from only 50% before management transfer in 1989 to more than 90% in 1990 after farmers became involved for the first time in collecting the fee. Resembling the approach of NIA in the Philippines, farmer organizations are granted rebates for 10 to 15% of fees collected if the total collection rate exceeds 80% (Maurya 1993).

In the Kano River Irrigation Project, newly organized farmers changed water distribution schedules to discontinue nighttime irrigation and improve head/tail equity. This led to an additional 12% of water volume reaching middle and tail reaches of distributary canals within the season the changes were introduced, which resulted in an 80% increase in dry season cropped area (Musa 1994). The study reported an increase in maintenance investment and activity after transfer and an increase in cultivated area, which was attributed to better operations.

Management transfer was introduced to the system largely because of lack of government funds for irrigation O&M, the consequent rapid deterioration of the system due to lack of maintenance and the new policy mandating financial autonomy for the river basin authorities and large scale irrigation systems. In the 1992/93 season following the transfer, 70% of distributary canals and 60% of field channel lengths were cleaned by farmer groups. As a result 10% more wheat and 8% more maize was grown in the dry season than in previous years. However, absence of data for multiple years prevents us from generalizing about trends in productivity and the sustainability of farmer investments in maintenance (Maurya 1993; Musa 1994).

Case Study: Minimal Devolution in Sri Lanka

Nature of devolution – In Sri Lanka, irrigation schemes above 80 ha in service area were the government's responsibility until the 1980s. In 1988, the government of Sri Lanka adopted the participatory irrigation management policy, which called for transfer of operation and maintenance of minor irrigation schemes and distributary canals of medium and major schemes to farmer organizations. This program sought to decrease recurrent expenditures by the government, improve operations and maintenance and improve the productivity of irrigation schemes through self-reliant farmer organizations (Abeywickrema 1986; Brewer 1994).

The devolution of responsibilities did not include transfer of control by farmer organizations over O&M plans or budgets, water charges or staff to farmer organizations (see Table 1). Farmer organizations must obtain approval from the Irrigation Department before making special repairs other than weeding or desilting. All major and medium scale irrigation schemes are the property of the government. The government has absolute rights over water and much of the land in the schemes which are in resettlement areas legally belongs to the government. Water is allocated administratively, whether farmers pay the nominal fee or not. The great majority do not.

The Agrarian Services Act of 1991 gives the Commissioner of Agrarian Services considerable regulatory control over farmer organizations. This includes regulating elections, auditing accounts, approving business transactions and prohibiting expansion of mandates of farmer organizations (Samad and Vermillion 1998). The 1994 amendments to the Irrigation Ordinance of 1968 authorizes farmer organizations to plan and implement operations and maintenance in distributary canals and formulate rules and sanctions related thereto. However, these plans and rules still require approval of the Irrigation Department.

The Hakwatuna Oya scheme is located in the center of Sri Lanka in the intermediate zone between the wet and dry parts of the island. Hakwatuna Oya is an ancient reservoir irrigation scheme which was rehabilitated in the 1960s. The scheme has high conveyance losses and experiences serious water shortages in the tail end during dry season. The irrigated area is about 2,400 hectares. Most farm sizes are between .5 and 2 hectares. A majority of farmers are landowners.

The reform process includes formation of informal field channel groups of about 15 to 20 farmers. Each group nominates a representative to the distributary canal organization, or DCO, which is the farmer organization registered with the Department of Agrarian Services (Table 2). In some schemes, DCOs are federated to the level of the entire scheme, but this ultimate body is not recognized as a legal entity. The transfer generally includes some rehabilitation of distributary networks, which may or may not be done with farmer participation. Government field operations staff generally remains assigned to the schemes after transfer and function under supervision of the Irrigation Department. The government continues to provide partial funds for maintenance and assume responsibility for future rehabilitation. Government subsidies for maintenance are generally channeled through DCO organizations as service contracts.

Discussions with farmer leaders in Hakwatuna Oya indicated that no significant changes in operational procedures had been made and that decisions about planting dates and irrigation scheduling are still taken in pre-season meetings attended by farmer representatives and officials of the irrigation and agriculture departments. Decisions are still made jointly, between farmers and the government, much as before transfer. In summary, this has been a minimalist approach toward devolution, with the emphasis being on transfer of responsibility rather than authority.

Performance results. In the Hakwatuna Oya scheme in Sri Lanka, despite the turnover of the distributary and field channel networks to farmer organizations, there were no significant changes in operation and maintenance or in deployment of Irrigation Department staff. There were 12 agency personnel before transfer, in 1989, and 11 in 1996. However, farmer leaders interviewed agreed that the establishment of farmer organizations improved communication between farmers and the irrigation department and that agency staff were more responsive than before.

There has been a pronounced decline in government expenditure for O&M beginning well before transfer and continuing thereafter. Average annual expenditure on O&M by the government before transfer was US$ 6.5/ha, compared to US$ 3/ha during the first five years after transfer. The reform itself did not cause the decline in government expenditure but was part of the overall strategy of reducing government investment in irrigation.

Irrigation water has traditionally been supplied free of charge to farmers in Sri Lanka. Previous attempts to levy a fee from farmers have failed. The government expected that management turnover would facilitate cost recovery by involving farmer organizations in collecting charges from farmers. The 1994 amendments to the Irrigation Ordinance of 1969 vests authority with farmer organizations to recover irrigation costs from farmers, including the right to levy a fee for the service. However, in general, cost recovery in transferred schemes remains very minimal and the cost of irrigation to farmers has remained about the same before and after transfer.

The cost of irrigation is far lower in Sri Lanka than in the other two cases. However, the modest nature of the reform in Hakwatuna Oya has not resulted in any significant changes in total cost of O&M or cost of irrigation to farmers. The government has reduced its level of spending but continues to subsidize routine maintenance and has not changed its policy about financing future rehabilitation.

In Hakwatuna Oya in Sri Lanka, government expenditure for maintenance remained about the same before and after transfer. Farmers slightly increased their investment in maintenance after transfer to the level of $2.50 per ha (much of it in the form of labor). This is double the level of government spending on maintenance, which has continued after transfer. An inspection of scheme infrastructure found about 15% of main and distributary canals and five percent of control structures to be defective. It was estimated that it would take an increase in the annual budget of 375% to handle routine maintenance and eliminate the backlog of disrepair within three years. This raises serious concern about the capacity of farmers to ensure the financial and physical sustainability of scheme infrastructure.

The study by Samad and Vermillion (1998) in Sri Lanka found no detectable change in irrigated area, crop patterns, cropping intensity (169%) or yields (3-3.6 t/ha for padi) as a result of the transfer of management of distributary canals to farmers. The transfer neither improved nor interfered with agricultural productivity. Economic productivity, measured in GVO per unit of land, declined somewhat after transfer, from US $800-1,000 in 1985-90 to US $600-800 in 1991-95 (in 1995 US dollars), but this is primarily related to changes in the price of rice rather than changes in irrigation management, which were nominal.

COMPARISON OF THE THREE CASES

There appears to be a tendency for irrigation management devolution programs to lead to reduced costs for irrigation management for the government and increased costs to farmers. More comprehensive programs tend to improve fee collection rates and financial viability of irrigation system O&M. Impacts on O&M and agricultural productivity are variable. They also tend to result in efforts to reduce the costs of irrigation and create additional sources of revenue.

When governments have a policy to reduce or eliminate staff along with transfer programs, this is done most often by relocating staff into systems which are not being transferred (as in Indonesia and Sri Lanka), not rehiring staff when they retire (as in the Philippines), having former agency staff be rehired by the farmer association after transfer (as in Colombia), transferring staff into non-O&M activities, such as construction of new systems (as in Turkey) and having the agency revise its overall mandate, such as with the US Bureau of Reclamation in the USA going into environmental regulation after the construction era in the USA. Less comprehensive devolution programs tend to not solve the problem of deterioration of infrastructure.

One might argue that the different outcomes of these cases are more the result of differences in levels of economic development than devolution strategies. A larger comparative analysis would be needed to test this, but there is some reason to discount this argument anyway. In 1989, the annual gross value of output (GVO) per hectare was approximately US $3,100 in the Columbia Basin, USA, US $954 in RUT in Colombia and $1,540 in Hakwatuna Oya in Sri Lanka (all in 1995 USD). However, the cost of irrigation (COI) is much higher in the USA than in Columbia and Sri Lanka and COI is much higher in Colombia than in Sri Lanka.

Figure 1 (p.220) shows the annual COI as a percentage of GVO for the year of transfer and five years thereafter, in each of the three cases. This indicates a key concern of farmers, which is: *Does the ratio between the benefits and costs of irrigation improve after devolution?* In this analysis, COI relative to GVO is positively rather than inversely related to level of economic development. Despite the high percentage of COI to GVO in the Colombia Basin (6.5-8.5%), it was the only case which experienced a significant decline in the ratio. COI as a percentage of GVO did not change significantly in the other two cases, although GVO rose slightly during five years after transfer in Colombia and declined in Sri Lanka.

CONCLUSION

The comparison of relatively comprehensive, partial and minimal devolution of property rights suggests that more comprehensive devolution does tend to result in better performance results and fewer negative outcomes than less comprehensive approaches. But one rather surprising finding is that most cases of devolution, even less

comprehensive ones, produced positive results in several ways. We conclude that irrigation management devolution has the potential to enhance the performance and sustainability of irrigation systems and that this potential is increased when more property rights and enabling factors exist in the context within which devolution occurs.

SEVEN CHARACTERISTICS OF MORE EFFECTIVE DEVOLUTION

The above experiences with irrigation management devolution suggest the following seven characteristics which tend to be a part of more successful devolution programs. International experience with irrigation management devolution suggests that policy makers and planners should pay special attention to incorporating these characteristics into management transfer programs.

An essential bundle of rights should be transferred. These include a water right, infrastructure use right, right of organizational self-determination, right of crop choice, right to manage financing and the right to select the water service provider.

There should be a clear redefinition of the role of government. The former irrigation management agency should reorient itself into a provider of support services, such as technical advisory service and extension, management assistance for large intakes and main canals, dispute resolution, and financial assistance through conditional subsidies.

Devolution programs should introduce new mechanisms of accountability. Examples are socio-technical and financial audits, subsidies requiring matching local investment, fee payment for service provided, service monitoring and so on.

The type of organization taking over management should fit the complexity and intensity of management required. For more complex situations and larger service areas, planners need to find alternatives to the ubiquitous water users association, originally developed for small schemes and tertiary sub-systems. These include semi-municipal irrigation districts, mutual companies, federations of water users associations and contracting of services to professional irrigation management firms. An additional source of complexity, which is rising in importance, is the growing diversification of uses of water within irrigation systems, such as for domestic needs, small-scale industry, fisheries, care of livestock, etc. This has implications for membership and structure of local water management organizations.

Subsidies should be structured so as to encourage local investment in irrigation management. The promise of fully subsidized rehabilitation in the future should be replaced with awareness that joint investment will be required. Subsidies for O&M costs should be linked to amounts of local investment and collection of service fees. Confirming property rights over infrastructure can provide an additional incentive for investment.

Support services should be available on an on-demand basis. Supply-driven programs only generate dependency on the government. To maintain a local sense of ownership and self-determination, water users associations should be able to request support services as needed and not be pressured into participation in government programs. Associations should have the right to select service providers.

Water users associations should have productive linkages with the external environment. Water users associations need to be able to integrate their organizations with the external environment, such as for water basin management, agricultural extension networking and expanding the range of productive activities from only cultivation to input provision, crop processing, marketing, etc.

PRIORITIES FOR RESEARCH

Irrigation management devolution is a widespread phenomenon occurring in many settings and being implemented with variable strategies. Research is needed which will provide evidence about what kinds of strategies work best in what settings, what additional enabling conditions help and what are the impacts of different devolution strategies. The following are eight priority research topics which this author believes are important for enhancing irrigation devolution programs worldwide.

1. *Organizational fit.* What organizational models work best in medium and large scale irrigation systems, in water demand-driven versus supply-driven settings and in settings with strong versus weak local institutions?

2. *Locally-appropriate mechanisms of accountability.* What new organizational, legal and financial mechanisms are needed to achieve that which has not been achieved in the past—namely, accountability of farmer leaders to farmers, government agencies to water users associations, and service providers to water users associations?

3. *Restructuring old patterns of irrigation investment.* How can government subsidies for the cost of O&M and rehabilitation and modernization be restructured so as to break loose from the old problems of co-dependency and encourage sustained local investment?

4. *Identification of needed support services and modalities.* What kinds of external support services are needed by water users associations after devolution? What are the most efficient and effective ways of providing these services? How can water users be enabled to take the initiative in seeking out and selecting support service providers?

5. *Linking up to sustainable water basin management.* Water users associations are increasingly under threat of competition for water from more powerful interests, such as hydro-power, urban water supply and industry. How should water users associations be organizationally related to water basin management so as to enable them to have an effective voice and protect their interests.

6. *Performance assessment.* Does devolution really lead to improvements in irrigation system performance? What are the points of weakness that need to be supported or corrected? What strategies lead to better results? How should farmers be involved in performance assessment?

7. *Changes in irrigation design and procedure.* What kinds of changes should be made in the design of irrigation structures or in O&M procedures as a result of management devolution? Sometimes schemes with elaborate, highly-flexible control and measurement structures are not suitable for schemes managed by farmer groups. What kinds of simplification are needed?

8. *Participation of water users.* To what extent should water users be involved in the formulation and implementation of management devolution programs?

The key challenge for both researchers and policy makers for management devolution programs is to identify what kinds of property rights should be devolved to users in order to create an enabling environment wherein communities of water users will have the motivation and capacity to act collectively to establish strong organizations, formulate rules and policies and implement them in ways which ensure the local productivity and sustainability of irrigation systems.

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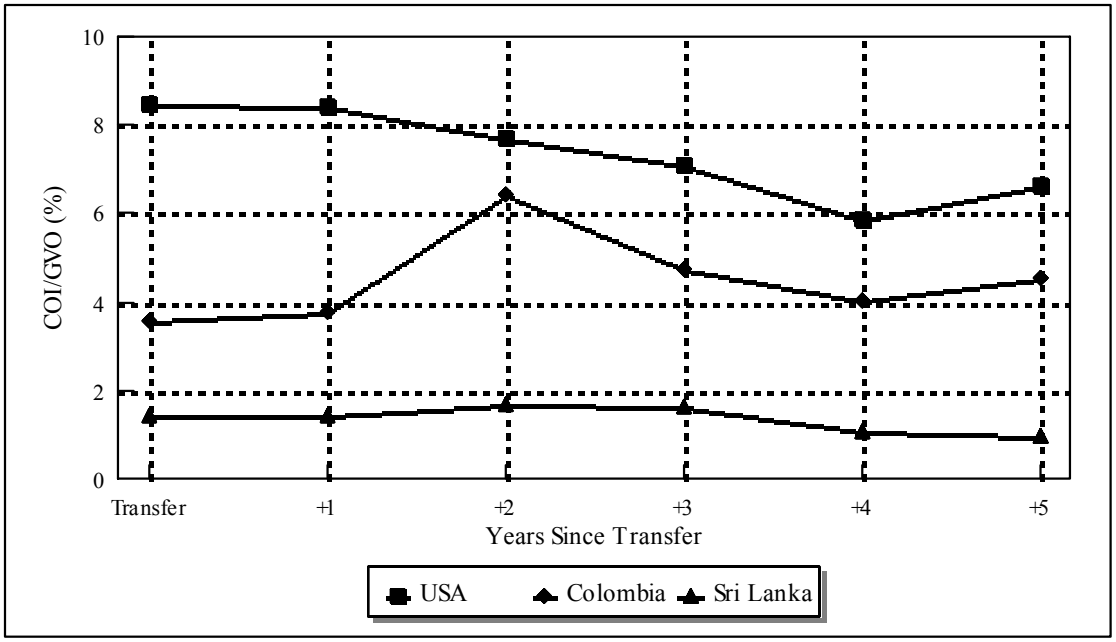
Figure 1: Cost of irrigation as percentage of gross value of output



* Schemes: Columbia Basin in USA, RUT in Colombia, and Hakwatuna Oya in Sri Lanka

** All figures calculated in constant US dollars.

PART III. CASE STUDY PAPERS

WORKSHOP FIELD VISITS

CO-MANAGEMENT ARRANGEMENTS AT THE MAKILING FOREST RESERVE

Makiling Forest Reserve (MFR) is a multiple use forest reserve of approximately 4,244 ha straddling the provinces of Laguna and Batangas. The reserve is situated on Mt. Makiling, ranging between 400 m above sea level and 20 m above sea level with slopes generally above 25%.

Today the reserve is administered by the College of Forestry, University of the Philippines at Los Baños (UPLB-CF). Formerly, various institutions managed MFR as its mandate changed from reserve under the Bureau of Forestry, to botanical garden under the Commission of Parks and Wildlife, and then national park under the National Power Corporation. Despite changes in administration and mandates over the years, the main land use policies of MFR have undergone little change. The purpose of MFR has been to serve as a training and research laboratory for forestry studies.

Another fairly consistent policy regarding the MFR land use has been the government's low tolerance for *kaingeros* (slash and burn farmers), settlers, and illegal collectors. In the early 1970s, the university tried to evict those residing in the reserve. Although many moved and resettled, later on many moved back. Having lived in the reserve for decades (in many cases from before it was declared a reserve), the families feet they had a right to the land. As a result, contested claims to the land arose between the university and the forest residents.

In the mid-1980s, however, a more tolerant approach towards established farmers and settlers was adopted in the hope of balancing UPLB's training aspirations with social justice imperatives set by the Aquino government. It was in this spirit that the university and the residents drafted a Memorandum of Understanding (MOU) specifying who has the right to live in the reserve. The list of residents is fixed in an effort to prevent migrants from adding to the population. In exchange for these rights, the resident farmers have agreed to protect the forest and create a buffer. The university has deputized community volunteers as forest guards along with forest guards who are employees of the university. Farmers have delineated land for cultivation purposes and agreed not to expand the area of cultivated land. There is also a limit as to the number of houses that can be built.

From the university's perspective, the main land use objectives of the MFR are as follows:

1. to provide a sustainable venue for instruction, research and extension in the fields of forestry, environment and natural resource management;
2. to preserve watershed areas for hydro or geothermal development and downstream water consumption;
3. to safeguard the integrity of biodiversity
4. to provide sites for outdoor recreation; and
5. to work with "relevant and concerned" communities for the sustainable development of the reserve

The first four of the above objectives have been explicitly or implicitly promoted periodically by the current MFR administration. The last objective, which has recently been integrated into MFR's mandate and was meant to address the cultivation, settlement and/or resource collection problems, has not yet been actively promoted. It is a contentious objective among UPLB decision-makers. It is also sufficiently vague to leave uncertain the fate of the communities cultivating, settling and/or collecting in the MFR. Despite frictions between administrators of the MFR and the local communities of Mt. Makiling, there is agreement on promoting conservation. The agreement includes long-term stewardship contracts, inducing community participation in activities such as reforestation, implementing soil conservation technology, integrating forest trees onto farmland, and monitoring and reporting violations.

However, with the population rising, society changing, and needs for additional income as children are born, the dynamism of the social structure serves as a continued source of conflict. There is a difference of opinion within the university as to how to manage the resources. Within the community, there is a conflict between generations, with younger generations advocating less protection of the reserve's resources to enable more opportunity for income generation.

Nevertheless, collective action among farmers remains a predominant feature of the community, engendered by the continuous threat of eviction and need to band together to protect the community's rights. Residents have participated in formulating a long-term management plan for the forest. Community forest guards patrol the reserve boundaries and report outsiders and violators within the community. They have also created a tribunal based on norms of what is and is not acceptable behavior and punish violators (though it is easier to punish community members than outsiders that are involved in illegal activities). Another reason collective action has worked stems from incentives to protect land that is fairly productive (as a result of agroforestry) and produces high value crops. The older generations hope to be able to transfer this land to their children. Resources are well

managed and long-term investments are made, even in the absence of more traditional guarantees of tenure security.

Is the MOU an instrument of devolution or more an example of social negotiation and external recognition of rights? Although it provides a degree of tenure security to community residents, the agreement has only been approved by one department of the university and remains under discussion. Subsequent administrations are able to change or dissolve the agreement if they choose. Whether this is a real threat or not is unclear and depends on the extent to which the university views the residents' claims as legitimate and the perceived backlash that revoking these rights might incur. The fact that the parties rely on different bases to legitimize their claims makes this an apt illustration of legal pluralism. The history of farmers organizing to negotiate with the University further provides an example of how collective action is used to establish property rights. It appears that if farmers abide by conservation-oriented management plans and help protect the forest, they are less likely to be evicted, so even the incomplete property rights provide an incentive for conservation of the resource base.

COMMUNITY-BASED COASTAL RESOURCE MANAGEMENT IN ANILAO, BATANGAS

Since the early 1980s, the government has initiated conservation and management of certain reef areas of Anilao. The Marine Parks/Reserve Development Inter- Agency Task Force (MPRD-IATF) officially declared Sombero Island a marine park and issued rules and regulations to ensure its protection. In line with this, an information campaign was launched to educate the dive resort owners, divers, dive boat operators, the *barangay* (village) officials and the local populace. Mooring buoys were set up to minimize boat anchor damages and a ban on spearfishing was reiterated. However, the inadequacy of these measures in protecting the Anilao reefs led to the initiation of further efforts.

Beginning in 1991, a municipal ordinance was passed that led to the constituting of a Resource Executive Committee (comprised of municipal government officials and a representative of the NGO, the Haribon Foundation) and the establishment of three marine sanctuaries with the objective of protecting the coral reefs and reducing/eliminating destructive fishing practices. The ordinance forbids fishing in the sanctuaries. Two of these sanctuaries are private (resort owned) while the other is community managed. Subsequently, the municipality was lobbied to impose a 'no diving' regulation. In 1992, this became part of the ordinance, but is only applied to the community-managed reserve.

The Haribon Foundation played an important role in organizing the small-scale fishers into a people's organization known as SPSTI, whose members manage one of the sanctuaries. Additionally, it has provided funds for small-scale fishers to

purchase a boat for patrolling the sanctuary, which is used for fishing and rented to divers on weekends to raise income. After a portion of the revenues is deducted for the maintenance of the boat, members who joined the dive boat share the profits.

Workshop participants met with members of SPSTI in the small village of Balanay where seventy five percent of the households depend on fisheries-related activities and chiefly rely on hook and line as well as net fishing technologies. The fishers pointed out that conflict has arisen between the small fishing community and the tourism industry. The latter is politically powerful, but does little to accommodate the interests of local fishers. Nevertheless, some workshop participants felt that the tourist industry could be a potential ally in protecting marine resources and providing income to fishing communities. There is evidence that diving tourism in the area may have contributed to improvements in the resource base through restricting destructive fishing practices like dynamite. Coral reef and fish species have increased in quantity and diversity in recent years.

There is also an asymmetric distribution of power between small fishers and commercial fishers. While the workshop group was visiting, a commercial fishing boat was illegally occupying municipal waters. In spite of the gains secured by the collective action of small-scale fishers on paper, enforcement remains a problem. The user group can sanction members, but penalizing outsiders who are caught breaking the rules depends on the local government, which in turn depends on relations between the municipal leaders and the fishers' user group. Although the mayor appears supportive, politically powerful interests influence his actions. Coastal resource management tends to fall off the political agenda when election time comes. As a result, enforcement and implementation of the rules is inconsistent.

Although fishers know their rights and are very articulate when it comes to advocating them, they lack the power to enforce these rights. Encroaching commercial trawlers are reported to the coast guard, but generally the latter do not respond. Insufficient financial resources also weaken enforcement capacity (e.g. lack of motorized boats for small scale fishers to patrol waters). The 'bay-watch' group would likely benefit from gaining legal status, which would enable them to register complaints within the formal legal system and take matters to court.

In addition to Haribon, other NGOs, people's organizations and government institutions have initiated conservation and wise utilization activities for Anilao Reef. The CERD (Community Education, Research and Development), for instance, is organizing fisher communities in Solo and Bagalangit barangays to form people's organizations that are capable of pushing for fishery reforms, such as a ban on commercial fishing in Balayan Bay. Ugnayan Tao Kalikasan, an NGO based in Los Baños, also organizes FARMCs (Fishery and Aquatic Resource Management Councils) in several barangays of Mabini along the Anilao Reef. A coalition of

people's organizations, Save Balayan Bay Movement (SBBM), of which SPSTI is an active member, is also actively carrying out fishery reforms and resource management in Balayan Bay.

SAN BENITO IRRIGATORS' ASSOCIATION AND MULTI-PURPOSE COOPERATIVE PILA, LAGUNA

The San Benito communal irrigation system occupies 137 hectares of prime agricultural land irrigated by the Santol creek. The system and its agricultural land were formerly owned by a powerful local family. After the implementation of the Land Reform Program in 1972, the land was parceled and distributed to farmer-beneficiaries tilling and cultivating the land for their landlords. After the redistribution of the land, the local landlords turned the irrigation system over to the local government. A year later, the operation and maintenance of the irrigation system was again turned over to the Samahang Nayon (local community organization).

The farmers organized themselves into an Irrigators' Association (IA) as a condition set by the National Irrigation Authority (NIA) for granting irrigation related assistance. With the assistance of the Irrigation Community Organizer (ICO), the San Benito Irrigator's Association was registered on March 21, 1986. The majority of farmers have acquired the land (mainly through loans) and only a fraction are renters. All members of the Irrigators' Association are also members of a bigger farmer's cooperative called San Benito Multi-Purpose Cooperative numbering 232 rice farmers.

The Irrigation Association launched its first major rehabilitation of the system in October 1996 with a 50-year loan obtained from the National Irrigation Administration. In addition to this, farmers contributed their own resources amounting to 10% of the financial costs of rehabilitation. Chargeable cost of this rehabilitation project amounted to P262, 964 [1] payable within eight years with P36, 225 annual installments. Another system rehabilitation was started in 1990. The total chargeable cost for the second rehabilitation was P1, 095, 101 payable with eighteen annual installments of P61, 65 0. An assigned leader collects payments from the farmers, issues an official receipt and remits the amount collected to the Association. In total, farmers pay P800/ha/year for amortization and ongoing operations and maintenance (O&M). So far, the Association has kept up with its amortization payments to NIA, and won awards for being one of the best Irrigation Associations. However, there is some indication that they may be underfunding O&M. Further, an announcement by the President that the irrigation should be free caused an immediate drop in farmers' payments. Even though the government

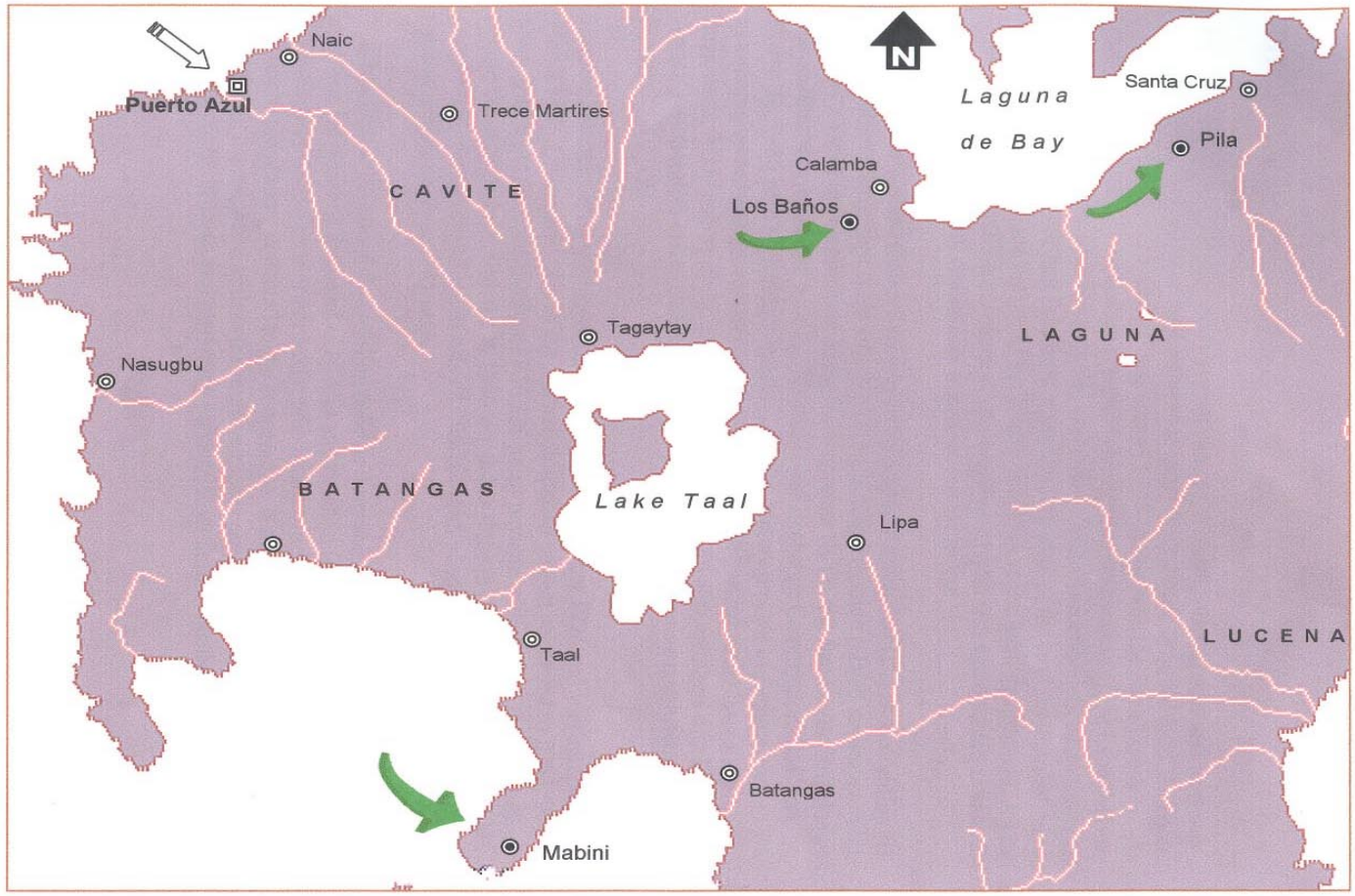
[1] P = Pesos. In June 1999, US$1 = 38 Pesos.

policy had not gone into effect, the prospect of this change threatened the financial viability of the Association.

While NIA has contributed to capacity building of the organization and assisted with investment in the physical infrastructure, ownership of the irrigation works remains unclear until the rehabilitation loans are repaid. NIA agreed to grant title to the farmers once the loan is paid off, but because the scheme was owned by a family before land reform, it is not clear whether NIA has sufficient basis for issuing title to the scheme itself.

Farmers have felt the need to maintain both the Irrigation Association and the Multi-purpose Cooperative. The former has non-profit status and the latter is run like a business. They feel that maintaining the Association's identity is essential to protect its assets, particularly in light of the unclear tenure situation that they face. Aside from managing and maintaining the irrigation system, the multi-purpose cooperative is also active in providing credit, milling, and marketing services to its members.

Location map of field visits



SOUTH AFRICAN FISHING INDUSTRY EXPERIENCES WITH LOCAL ACCESS RIGHTS AND MARINE RESOURCES MANAGEMENT

Richard Martin

INTRODUCTION

South Africa has a coastline of more than 3000 km and an Exclusive Economic Zone (EEZ) of 200 nautical miles which contain a huge variety of fish species. The value of fish landings for quota species amount to about R1.7 billion and R188.145 million for non-quota species. This represents 0.5% of the South Africa's GDP and 1.5% of the Western Cape GRP.

This industry is by and large based in the Western Cape with landings close to 90% on the Cape harbours. The fishing industry employs 27 000 people. It is an extremely complex industry, with a great diversity in catching techniques, processing, marketing, capital investment, equipment and infrastructure.

The South African fishing industry includes a number of sectors based on the west coast rock lobster, the south coast rock lobster, abalone, line fish, pelagic species such as anchovy and pilchard, and demersal species like hake, which are harvested by trawling. In addition smaller industries are based on the harvesting of seaweed, bait organisms, oysters, east coast crustaceans and guano. Mariculture primarily involving mussel farming is a relatively new development which has seen substantial growth.

Recreational fishing attracts about 500,000 participants annually, and while it is difficult to quantify its value, its contribution to the South African economy must be substantial. The principal non-consumptive uses of living marine resources include whale viewing from coastal sites, watching of seals and seabirds, and recreational diving. There is substantial growth potential for eco-tourism based on living marine resources.

The historical development of the industry has however seen access to the resource largely removed from the traditional fishing communities and concentrated in the hands of a few companies. In the case of hake for example approximately 70% of the catch is allocated to two companies, Irvin & Johnson and Sea Harvest.

This trend also extends vertically in the industry with companies owning not only harvesting rights but also the processing, cold storage and marketing concerns.

The institutional structures involved in the management of the resource include the Sea Fisheries Research Institute that undertakes research which underpins the setting of the annual quota, the Consultative Advisory Forum that advises the Minister on the Total Allowable Catch (TAC) and the Transformation Council that allocates quotas to small businesses and previously disadvantaged fishers.

The fundamental problem with the South African fishing industry remains the exclusion of the ordinary fisher folk from acquiring harvesting rights and the unequal distribution of the common resource.

STRUCTURE AND CHARACTERISTICS OF SA FISHING INDUSTRY

The South African fishery sector is a very diverse industry, which can be subdivided in demersal, pelagic, crustacea/molluscs, lobster, line fishing and seaweed subsectors.

The sector of demersal species produces the highest processed value (R1,040; 482,000 in 1996) representing more than half of the total value of the fishing industry. The other sectors range between R5,073,000 (seaweed) and R110,056 (line fishing) (Table 1).

Deeps sea trawling provides about 80% of the fresh and frozen seafood consumed by South Africans. This sector has also developed a wide international market mainly centered on high value-added products and is the leading foreign exchange earner in the fisheries sector exporting for a value of R290 million. Other important export products are tuna, lobster and abalone (a shallow water resource), the latter being exported mainly to the Far East. Tuna is blast frozen and exported unprocessed (since canning technology is not available). For some of these species export restrictions apply and a share of production is reserved for the domestic market (abalone 10%, lobster 20%).

Factor intensity is very variable across subsectors as well as across production stages and depends very much on the technology used by the different fishing methods. Line fishing is certainly the most labor-intensive activity, employing 19000 commercial fishers for a landed value of R70 millions. Demersal fishing is also a quite labor-intensive industry. As the major fishing subsector it employs almost one third of the remaining labor force of the fishing sector (excluding line fishing). Deep sea trawling provides permanent, non-seasonal employment throughout the year for 8072 people of which 2600 are sea-faring. The inshore fishery employs approximately 320 sea-going and 790 land based personnel. The subsector which has the highest productivity per worker is the abalone fishing sector. Only around 300 workers (of which 55 are divers) are employed in this industry producing a wholesale value of R56.6 million.

Like most fisheries around the world, South African fishing industry is highly regulated. A number of harvest control regulations are used not only to avoid rapid stock depletion, but, as described below, to exclude a whole section of the population from access to fisheries resources. The outcome is a very skewed distribution of rights on fishery resources. The predominant instrument is the assignment of quotas of annual allowable catch. In the dominant subsector of deep-sea trawling there are 25 quota holders, only 13 of whom actually conduct trawling operations. The inshore trawling industry had 23 quota holders in 1982. However, rationalization of fishing efforts and economic factors dictated further concentration. As a consequence, in 1995 the number of quota holders had shrunk to 11. Large quota holders discharge the catch at factories and processing plants based at Hermanus, Mossel Bay and Port Elizabeth. The smaller quota holders catch, process and market their own fish through retail outlets. In the pelagic sector a system of individual quotas was introduced in April 1974. Following this, the private boat owners were almost completed excluded from this industry, so that today a few large companies have control over all production levels as well as distribution. In 1987, permits were also introduced in the squid industry to counteract unsustainable exploitation. The abalone total allowable catch for the 1994/5 seasons was set at 615 tons and three companies owned 82% of the total quota. All the fish is caught by 55 registered divers who have the right of exploitation and are compelled by law to deliver their catch to the 5 companies that have the sole right to process and export the abalone (Martin 1996). However, the number of recreational diver permits has escalated from 33,088 in 1993/94, and recreational divers catch an estimated 550 tons, or 89% of the total commercial quota.

Line fishery is a particularly complex industry because of its multi-species catch composition and diversity of participants, ranging from full-time commercial, to semi-commercial and recreational operators. It sustains a huge support and service industry and is a key element of marine-related tourism and associated infrastructure along the coast.

In some subsectors there is indication of monitoring and enforcement problems related to harvest regulation. Abalone, for example, attracts extensive recreational fishery and given the value of the product and the lack of capability of the inspectorate to control illegal operations, poaching is a widespread industry. As a consequence abalone is being harvested before fulfilling its reproductive potential, with major implications for the sustainability of the industry.

FISHERIES MANAGEMENT

THE MARINE LIVING RESOURCES ACT

The 1999 Marine Living Resources Act was long overdue. The Sea Fisheries Act of 1988 benefited some sectors of South African society and stopped others from gaining access to marine resources. The Act was implemented in September 1998 in response to two over-arching purposes. The one was to allow previously excluded communities full access to the fishing industry and the other to prepare SA for the free trade and deregulated markets which dominate the international market place. The guiding principles of the Act are taken from the White Paper on Marine Resources which states that all the natural marine living resources of South Africa as well as their habitat represent a national asset and are the heritage of all South Africa's people.

INSTITUTIONAL STRUCTURES FOR MARINE RESOURCE MANAGEMENT

The Marine Living Resources Act of 1998 sets out three mayor institutions for marine resource management:

- Consultative Advisory Forum
- Fisheries Transformation Council
- Sea Fisheries Research Institute

The Consultative Advisory Forum (CAF) is an advisory body appointed by the Ministry. The role of the CAF is to provide guidelines on the following issues:

- The management and development of the fishing industry, including issues relating to the total allowable catch;
- Marine living resources management and related legislation;
- The establishment and amendment of operational management procedures, including management plans;
- Recommendations and directives on areas of research, including multi-disciplinary research; and,
- The allocation of money from the Living Marine Resources Fund.

The powers of the CAF are limited to its advisory functions. In order to enable the forum to exercise its functions the CAF can consult any industrial body or interest group in the fishing industry that is recognized by the Ministry.

Transformation of the fishing industry is one of the principal purposes of the Marine Living Resources Act. The Fisheries Transformation Council (FTC) is responsible for a number of management tasks from leasing rights to assist in the development and capacity building of various user groups.

The Sea Fisheries Research Institute conducts research aimed at advising the decision-makers on the optimal utilization of South Africa's living marine resources and the conservation of the country's marine eco-system.

SOUTH AFRICAN FISHERIES COMMUNITY TRUSTS

BACKGROUND (REPORT OF THE COMMITTEE OF INQUIRY, 1994)

In 1992, the Minister For Environmental Affairs and Tourism commissioned a study into the socio-economic conditions prevailing in the fishing communities along the west coast. The Quota Board identified guidelines for the allocation of quotas with specific regard to the socio-economic position of the fishers. The possibility of awarding quotas to a Fishermen's Community Trust (FCT) was investigated, making each quota awarded area-specific. The main goal was to improve the socio-economic position of specific communities. The creation of the Fisheries Community Trusts was intended only for specific members of certain communities who were dependent on fishing, and not for the community as a whole. The Chief Directorate of Sea Fisheries was responsible for the application of the guidelines and for assistance in the formation of the trusts. Sixteen communities were identified to benefit from the FCT. The following criteria were applied in the allocation process:

- Number of fishermen/factory workers in the area;
- Infrastructure;
- Alternative employment opportunities;
- Average income earned by fishermen/factory workers; and
- Help available from quota holders in the area

Two thirds (2000 t) of the 3000 tons of allowable catch allocated for the FCT was distributed among 15 existing FCTs, while the remainder was put aside for later distribution among the newly identified communities. The fish had to be caught by a South African trawling company.

Communities were expected to take full responsibility for the spending of income from the Fishermen's Community Trusts, without interference from the Sea Fisheries Department. The FCTs were to be apolitical and directed toward the social improvement of fishermen and fish factory workers in every community where FTC's had been established.

Two issues arose regarding the management and use of the trusts.

On the one hand in some communities the expectation was that FTC funds would be used for cash payments to fishermen, which set high pressure and demands on the respective FCT. This interpretation was obviously in conflict with the original intention to improve the social condition of community members.

The second aspect is the question of what exactly a fishermen's community is, and which members of the community are regarded as fishermen. A lack of communication and insufficient information, too hastily imparted by officials, combined with sometimes deliberate misinterpretation made it difficult for members of the communities to differentiate between those who were and were not eligible.

Divisions and conflict arose in certain communities over these issues. Thus the registration of the Fishermen's Community Trusts has sometimes been delayed because of disagreement over issues as the contents of the Deeds of Trust, the legitimacy of an appointment of a trustee, and especially who should benefit from the Trust.

Moreover the fact that a general elections was announced at the same time as the division of quotas had to be determined further complicated the matter. The FCTs now became politicized. Communities were divided and fishers and their distress were being used for political gain.

OBSERVATIONS AND CONCLUSIONS CONCERNING THE OPERATION OF THE FCT

Election, Constitution and Legitimacy of Trustees

Most of the fishing communities first heard about the idea of FCTs at informational meetings held by officials of the Sea Fisheries department. These meetings were held with the aim to bring together all the interested parties of the fishing industry and present to them the features of the FCT. Pilot committees were formed to draw up and register their own distinct deeds of trust.

Because of the initial lack of interest in some communities and logistical problems with the organization of the meetings, these pilot committees were not always elected by the entire community of fishermen. This resulted in the trustees in many cases not enjoying the support and confidence of the community of fishermen.

On the one hand the Sea Fisheries department had been too restrictive in their guidelines for the composition of the trustees, and on the other hand the fishermen and factory workers wanted stronger representation on the Board of Trustees.

General administrative and financial management

Although no comprehensive investigation or audit of the administrative and financial management had been done, it appears on the surface that some of the FCT experienced problems due to lack of managerial and institutional capacity.

There was no proper supervision of the extent to which the prescriptions of the Deeds of Trust were followed with regard to procedures at the meetings and financial auditing.

Projects

The FCTs have initiated and allocated funds to the following projects:

- Educational tours for schools, donations to schools and study bursaries;
- Acquisition of tractors for moving boats;
- Loans for fishing tackle and equipment;
- Housing loans and building materials;
- Purchase of boats;
- Freezing facilities for fish;
- Renovation of cemetery and paying for coffins; and
- Food parcels and cash handouts

The FCTs did not have clear guidelines and support in determining and supervising the allocation and use of FCT funds. This created conflict between the FCT and deserving fishers.

Acceptability of the concept of FCT

In general, the idea of FCT was acceptable to fishing communities, although not always considered the best use of the quota allocated to the communities. Some communities favored the idea of catching the quota themselves and processing it locally. This would have provided more employment for local fishers and possibly would have provided the greatest benefit to the fishers.

General Evaluation of the functioning of FCTs

The primary aim of the FCT was the social, economic and educational uplift of fishing communities and the general improvement in the quality of life. Due to a lack in institutional capacity and other shortcomings this objective was not achieved in all communities. The reasons for the failure included amongst other:

- Trustees did not have experience;
- The FCT was hastily implemented;
- To find favour some FCTs distributed cash handouts while others distributed handouts;
- Inadequate infrastructure; and
- Interest groups in urban areas were very complex

This resulted in division, lack of trust, sowing of suspicion and violent action.

The fact that fishers at the grassroots level were generally not well organized, combined with geographic unclear boundaries of fisher "communities" made it difficult to identify the actual fishers in order to include them in the discussions.

The question of the identification of beneficiaries became a matter of debate in many communities. The definition of who is a fisher and what is a fishing community remained often unresolved. The Human Science Research Council investigation found that there were only three communities on the west and south coast in which more than half of the inhabitants were directly involved in the fishing industry.

Within the fishing communities the Trustees had further problems in identifying beneficiaries. Line fishers undoubtedly considered themselves "real" fishers, and undoubtedly this category suffered most from unpredictable weather and fluctuations in fish supply. For none of the Deeds included a clear definition of 'fishers' this issue became conflictual and was highly debated. As a consequence the question of the identification of the beneficiaries remained largely at the discretion of the trustees. It would have been advisable to implement a system of registration of all fishers and fish factory workers.

Cash payments did not contribute towards the achievement of the objectives of the Fishermen's Community Trusts. However, many fishers had a diametrically opposite point of view, because of chronic poverty they were only interested in cash payments.

OLIFANTS RIVER HARDER FISHERY

BACKGROUND

The catches of the Olifants River gillnet fishery are dominated by southern mullet, Liza richardsonii (Sowman et al. 1997). These so-called 'harders' are endemic to South Africa and are found in coastal waters from Namibia to KwaZulu-Natal. The species represents the product of a number of estuarine fisheries along South African coastline, and dispersed marine fishery using trek nets operate from the shore in various localities. Total landings in the Olifants River estuary probably comprise less than 1% of the annual landings of harders in SA.

There are 65 licensed fishing households. Although licenses are issued to individuals, no more than one license can be issued per household. The majority of license holders own a small wooden rowing boat, a set of oars and a 35 mm gillnet. In addition to the 65 legal license holders there are a further 30 unlicensed fishers.

MANAGEMENT

Fishers have specialized local knowledge regarding where and when to fish in relation to environmental conditions (e.g., tides, weather patterns). Until recently, management decisions affecting the resource have not been based on any scientific investigations. While the specialized knowledge of the fishers is crucial, for the development of an appropriate and acceptable management strategy the need for quantitative data to determine the optimal utilization of the resource is also recognized.

The management of the resource is undertaken at the national and provincial government level as stated by the Living Marine Resources Act and a variety of provincial ordinances. Although laws and ordinances do not make formal provision for local level involvement in resource management, the responsible agency Cape Nature Conservation has facilitated the establishment of a forum, comprising of representatives of resource users and relevant authorities. The forum has no legal status but provides the Conservation Department with an opportunity to consult with users on management decisions. Currently, management of the Olifants River estuary is guided by a proclamation issued in terms of the Nature Conservation Ordinance, No. 19 of 1974.

FISHING COMMITTEE

A Fishing Committee, comprising licensed and non-licensed fishers as well as other members of the community, has also been established in Olifants River Harder Fishery. The primary function of the Committee has been to:

- Draft guidelines for the allocation of fishing permits;
- Formulate goals and objectives;
- Draft a constitution for the organisation; and,
- Develop a co-management arrangement with CNC

Despite the above achievements there is the perception amongst fishers that the Committee does not represent the community's concerns. The main reported concerns are:

- The Committee is not neural
- It is a matter of who you know on the Committee
- The Committee does not report back to the community
- The Committee removes licenses without explanations; and,
- The Committee allows friends and family to get away with illegal fishing, but reports others.

CONCLUSION

The Living Marine Resources Act does not make provision for local participation in management of marine resources and centralizes allocation functions to the central government through the Chief Directorate Marine and Coastal Management.

In South Africa there is the increasingly realization that local user groups should be incorporated in the decision making process. The Consultative Advisory Forum recently allocated funding from the Marine Living Resources Fund to a case study on co-management of inshore resources. The findings of this study will inform the department on how best to engage local stakeholders.

Access to fishing rights is allocated by the Fisheries Transformation Council and the Management Advisory Group. These rights are allocated on an annual basis. Since the failure of the Fisheries Community Trusts there has been no attempt to investigate alternative vehicles to allow for fishing communities to gain access rights to marine resources. Access is allocated to small companies who mostly sell their rights to the big companies because they do not have the capacity to catch their own fish.

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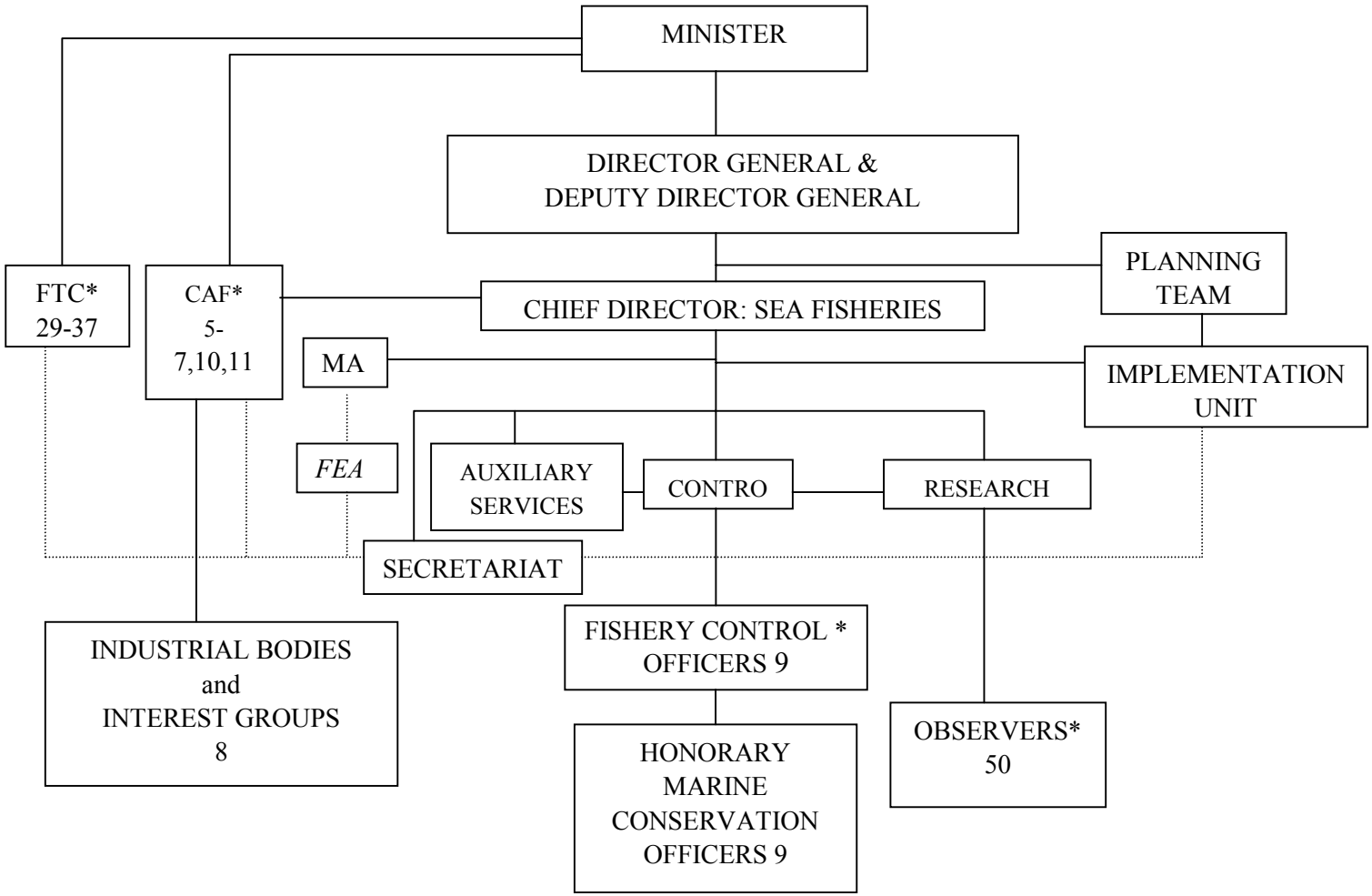
Table 1: Landing and production of SA fishing industry in 1996

	Nominal catch (tons)	Landed value (R'000)	Processed value (R' 000)
Demersal: Deep-sea, Midwater and Inshore Trawl	200,287	428,336	1,040,482
Pelagic Canned fish, fish meal, fish oil, bait	213,723	77,500	365,942
Rock lobster: West and South Coast	2,454	101,965	173,255
Crustacea, molluscs: Abalone, mussels, oysters, prawns, red bait	11,247	138,504	258,622
Line fish: Snoek, tuna, handline, small net	15,339	70,054	110,056
Seaweed (dry)	1,961	2,132	5,073
TOTAL	445,011	818,491	1,953,430

Source: SA Fisheries Handbook 1998.

Organizational Chart



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SHARED RESPONSIBILITY OF FISHERIES MANAGEMENT IN THE PHILIPPINES

Jessica C. Muñoz[1]

INTRODUCTION

The Philippines are an archipelagic country. There are about 7,100 islands and islets within the country's territorial water of about 220,000 square kilometers. Vast and diverse fishery resources provide food and livelihood to about 70 million inhabitants. In 1997, the total fish production was about 2.7 million metric tons. The Philippines are the world's 12th fish producer with a production of 2.3 metric tons of fish in 1995. Major exports are tuna and tuna-like fishes, shrimps and seaweeds. About one million people (5% of the country's labor force) are engaged in fisheries and its related industries. The fishery sector, therefore, plays a very important role in the economy.

Through the years, however, there has been a decline in the productivity of the marine and coastal resources, which has contributed to poverty among the municipal fisherfolk. The vicious cycle of poverty is the effect and cause of resource depletion and environmental degradation. The open-access nature of resource exploitation has also resulted in intensified resource use conflicts among the municipal fisherfolk. Further, the encroachment of commercial fishing vessels into municipal waters aggravated overfishing in most nearshore areas.

CBRM AS AN APPROACH TO FISHERIES MANAGEMENT

For the last ten years, non-governmental organization, people's organizations, the academics, local and foreign research institutions and the national government have initiated projects and activities regarding community-based resource management (CBRM). CBRM was viewed as an appropriate approach to address the problems faced by the coastal and marine resources especially because it enables the community to participate in the management process.

Among property right regimes, communal property is considered the appropriate regime to support devolution process of natural resource management to communities. At present, the Philippines are in the process promoting the concept of common property as the institutional setting for local fisheries management. Central to this is the active participation of the coastal communities in fisheries management.

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EXISTING RESOURCE USE PATTERNS

The Philippine territorial waters are divided into coastal and oceanic. Traditionally, coastal waters are being utilized as fishing grounds. Over the years, however, the resource use patterns of most bays and gulfs has changed, leading to the zoning of the coastal waters to accommodate existing resource uses. Aside from capture fishing, aquaculture has become an industry that utilizes a major portion of the coastal waters. About 60% of fishing activities are conducted within 15 kilometers of the coastal area. In some areas, local tourism has replaced municipal fishing. While a large portion of the coastal areas is harvested, some areas are undergoing resource rehabilitation. At present a number fish sanctuaries, marine reserves, marine parks and mangrove reforestation/reserves are being established in municipal waters where appropriate.

THE LOCAL GOVERNMENT CODE AND THE FISHERIES CODE

The enactment of Republic Act (RA) 7160 and Republic Act 8550 institutionalized the management of natural resources, specifically fisheries, within the organizational structure of the local government units.

THE LOCAL GOVERNMENT CODE

The RA 7160, better known as the Local Government Code, places municipal waters under the jurisdiction of the local government units (LGU). Municipal waters include streams, lakes and the waters within the municipality and well as marine waters up to 15 kilometers offshore. According to the Local Government Code LGU will provide:

- Enhanced interest in environmental health
- Extension and on-site research services and facilities related to agricultural and fishery activities
- Solid waste disposal system or environmental management system and services and facilities related to general hygiene and sanitation
- Enforcement of forestry laws limited to community-based projects, pollution control law, small mining laws and other laws regarding environmental protection
- Enactment and enforcement of the necessary fishery ordinances and other regulatory measures in coordination with NGOs and people's organizations in the community

- Forging of joint ventures to facilitate the delivery of certain basic services, capacity building and livelihood development

The local governments are tasked to implement activities and projects related to natural resources management. However, ordinances formulated and passed by the LGUs must be in accordance with the national fishery and environmental laws.

THE FISHERIES CODE

The Fisheries Code or RA 8550 states that the local government units, especially municipal governments, shall have jurisdiction over municipal waters. Municipal governments, in consultation with the Fisheries and Aquatic Resource Management Councils (FARMCS) shall be responsible for the management, conservation, development, protection, utilization and disposition of all fish and fishery/aquatic resources within their respective municipal waters. NGOs, people's organizations and the coastal community should be involved in the consultation process. The Fisheries Code responsibilities include:

- Enact appropriate fishery ordinances in accordance with the national fisheries policy
- Enforce all fishery laws, rules and regulations as well as valid fishery ordinances enacted by the municipal council
- Integrate the management of contiguous fishery resources/areas which must be treated as a single resource system
- Grant of fishing privilege to duly registered fisherfolk organizations/cooperatives
- Ensure that the municipal waters are utilized by the municipal fisherfolk
- Maintain a registry of municipal fisherfolk for monitoring fishing activities and for other related purposes
- Issue permits to municipal fisherfolk and organizations/cooperatives that will be engaged in fish farming, seaweeds farming
- Grant demarcated fishery rights to fishery organizations/cooperatives for aquaculture operation
- Provide support to municipal fisherfolk through appropriate technology research, credit, production and marketing assistance and other services

CREATION OF THE FISHERIES AND AQUATIC RESOURCE MANAGEMENT COUNCILS

The Fisheries Code encourages the development of fisheries and aquatic resources in municipal waters and bays. Recognizing the need to involve local

government units as well as coastal community in the management of coastal resources, the Code supports the establishment of the Fisheries and Aquatic Resources Management Councils (FARMCS). The FARMCS are to be established at the national, municipal and barangay levels. Three levels of management councils are to be created, namely: the National Fisheries and Aquatic Resource Management Council (NFARMC); the Municipal/City Fisheries and Aquatic Resource Management Council (M/CFARMC); and the Integrated Fisheries and Aquatic Resource Management Council (IFARMC).

NATIONAL FISHERIES AND AQUATIC RESOURCE MANAGEMENT COUNCIL

The NFRAMC, headed by the Undersecretary of Agriculture, shall be composed of 15 members including the Undersecretary of Interior and Local Government, five members representing the fisherfolk and fishworkers, five members representing the commercial fishing and aquaculture operators and processing sectors, two academics, and one representative of a non-governmental organization involved in fisheries. They shall serve a term of three years. The functions of the NFARMC are: to assist in the formulation of national policies for the protection, sustainable development and management of fishery and aquatic resource, and to assist the Department of Agriculture in the preparation of the National Fisheries and Industry Development Plan.

MUNICIPAL/CITY FISHERIES AND AQUATIC RESOURCE MANAGEMENT COUNCIL

The M/CFARMC shall be created in each of the municipalities and cities abutting on municipal waters. However, if needed, the LGU may create Barangay Fisheries and Aquatic Resource Management Council (BFARMC) and Lakewide Fisheries and Aquatic Resource Management Council (LFARMC). The BFARMC and the LFARMC will serve as advisory capacity for the LGUs. MFARMCs shall be composed of the Municipal or City Planning Development Officer, the Chairperson of the Agriculture and Fishery Committee of the Municipal or City Council, one representative of the Municipal/City Development Council, an accredited NGOS, a private sector representative, and eleven fisherfolk representatives (7 municipal fisherfolk, one fishworker, three commercial fishers). The functions of M/CFARMC are: to assist in the preparation of the Municipal Fishery Development Plan and submit the plan to the Municipal Development Council, to recommend the enactment of municipal fishery ordinance to the Municipal/City Board through its Committee on Fisheries, to assist in the enforcement of fishery laws, rules and regulations in municipal waters, and to advise the Municipal/City Board on fishery matters through its Fishery Committee on Fisheries.

INTEGRATED FISHERIES AND AQUATIC RESOURCE MANAGEMENT COUNCIL

The IFARMC shall be created in bays, gulfs, lakes, rivers and dams bounded by two or more municipalities/cites. It shall have 14 members composed of the Chairperson of the Committee on Agriculture/Fisheries of the concerned municipality or city, the Municipal/City Fisheries Officers of the concerned municipality, the Municipal/City Development Officers, one representative from an NGO, one from the private sector, and nine from the fisherfolk. The IFARMC shall have the same functions as the MFARMC. However, the IFARMC will prepare an integrated fishery development plan and recommend the enactment of integrated fishery ordinances. This type of council is deemed most to undertake integrated coastal resource management.

PROBLEMS REGARDING DEVOLUTION OF FISHERIES MANAGEMENT

In the initial years problems with devolution varied from one municipality to another. Some of the problems were:

- Lack of budget to accommodate decentralized personnel
- Environmental management was only partially devolved
- Contrary to the provision of the local government code no share from the national tariffs and duties was actually available
- Lack of strong political will among a number of local government executives to implement resource management devolution
- LGU personnel's lack of expertise especially on fisheries and environmental laws
- Weak enforcement of fishery laws

The process of devolution of fisheries management is slow but positive results start to emerge. Despite some problems that beset the LGUs in the implementation of the Local Government Code, local governance has had the most positive outcome among all Philippine governance systems. The Code empowers LGUs as well as the coastal communities to manage their fisheries resources. It opens new avenues for cooperation between LGUs and civil society. Many LGUs have shown that they are capable, creative and responsive to the needs of their constituencies.

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PASTORAL AND AGRO-PASTORAL ORGANIZATIONS' COLLECTIVE ACTION APPROACH TO DEVOLUTION OF NATURAL RESOURCE MANAGEMENT IN WEST AND CENTRAL AFRICAN COUNTRIES

Boubacar Hassane

INTRODUCTION

Traditional societies in Africa have been poorly prepared to integrate the western modern type of administration and business enterprises until the late 1970s and in many cases this situation still prevails today.

The main factors impeding integration are:

- lack of organization
- lack of expertise
- lack of trust in the public administration

This paper tries to report efforts being made to tackle the problems hindering pastoral communities' collective action strategies in West and Central African countries. It will outline the main strategies that pastoralists organizations in Niger are pursuing in order to influence devolution policies of natural resource management (NRM).

HISTORICAL PERSPECTIVE

Since independence and beginning with the devastating droughts in the 1960s, 1970s and early 1980s, in the Sahel region of West and Central African pastoralists have experienced major economic, social and political difficulties. These difficulties comprise (1) famine, (2) heavy economic losses, (3) dislocation of cultural values, (4) depletion of natural resources, (5) marginalization and (6) and negative stereotyping. Many of the tradition pastoralist systems broke down.

The policy responses of various African governments, implemented through their technical and extension services, have, however, been highly criticized. Especially the legislative response has been inadequate: it mainly consisted of laws (land tenure legislation) meant to sedentarize pastoralists in the long run. This was meant to reportedly give these communities access to public amenities such as health care, education and public welfare. The outcome, however, resulted in a loss of land and livelihood means for the pastoralist communities.

Various projects were implemented with the intention to help the rural communities. Some of these projects involved (1) water development, (2) irrigation schemes, (3) animal health and trade and (4) education (nomadic).

Most of these projects were not able to meet their goals and consequently the question of the causes of the failures arose. The major cause was identified in the lack of local participation. Rural communities had not been involved in the projects' identification, preparation, evaluation and implementation. It became obvious that the projects had not taken into account neither pastoralist communities' needs nor their cultural values and production system experiences.

CREATION OF PASTORAL ORGANIZATIONS

Since 1980, many user associations and local NGOs were created. This development was mainly a response to (a) international donors directives and conditionalities on loans and grants included in structural adjustment programs and (b) the famous speech of the French President Mitterand at "La Baule" urging for liberalization and decentralization in Africa based on democratic principles. This speech had a considerable impact in Africa's francophone countries in the western and central parts of the continent. These pressures induced a number of measures of institutional change allowing the liberalization of the economies, determining laws regarding the freedom of association and religion, and starting a process of devolution of authority and responsibility. Pastoralists began to get organized under the leadership and/guidance of the more educated members.

SOME MAJOR PASTORALISTS' ASSOCIATIONS AND NGOS

Although many informal pastoral groups existed prior to the 1980s, they were formally recognized after the beginning of the liberalization and decentralization drive. Some of the new organizations were created by civilians with common interests (e.g. Miyetti Allah Cattle Breeders Association or MACBA in Nigeria), others were created by governments or their specialized agencies (e.g. Association Nationale de Eleveurs Centrafricains" or ANEC in Central African Republic). ANEC later became FNEC or "Federation Nationale des Eleveurs Centrafricains". MACBA, formally recognized by the government in the early 1980s, did not live up to expectations, in spite of being the only widely known pastoralists association in the country. Many more associations were created through the years in other countries.

DIFFICULTIES FACED BY PASTORALIST ORGANIZATIONS

Pastoralist organizations have not been able to keep pace with the institutional changes referred to earlier. Some of the major difficulties facing pastoral organizations are:

- The lack of formal institutional recognition,
- The lack of trust towards technical and administrative services,
- The lack of material, financial and human resources to carry out their mandates.

The breakdown of existing production systems due to climatic and institutional changes is negatively affecting the sustainability and equity of natural resource management systems, both spatially and temporally. The negative impact can be detected in(1) agricultural yields, (2) livestock production, (3) mining extraction methods and in the (4) shrinking of resource availability due to wildlife protection parks for industrial tourism.

NEW STRATEGIES ADOPTED BY PASTORALISTS' ORGANIZATIONS

Major challenges have led pastoralist organizations to rethink their strategies. Some of the newly adopted strategies are:

- Influencing policies and legislation regarding natural resources to their advantage (or avoid to be disadvantaged by these). This includes sensitizing and mobilizing members and exerting lobbying through pressure groups at the local, regional and national level.
- One major example is represented by the fights against land tenure laws (Code Rural). The "Federation National des Eleveurs du Niger (FNEN-DADDO), an umbrella pastoral organization in Niger and the NGO "Eleveurs Sans Frontiers" (ESF-DANGOL) created in 1994 and 1996 respectively, were able to block, at least for the time being, the implementation of this land tenure legislation and introduced amendments to include the interests of pastoralist communities. The strategies adopted to fight the Code Rural include:
- Lobbying technical and government officials on the ground that the content of this legislation disadvantages pastoralist communities and as such jeopardizes the country's major hard currency earner, the livestock production sector. This sector is mainly controlled by pastoralists, as owners or as major labor suppliers. According to the Code pastoralists have only access rights on the land by do not control it. Support and enforcement of such unfair laws would foment social discontent among the pastoral and agro-pastoral communities and eventually spread the rebellion struggles already existing in the northern and eastern parts of the country.

- Mobilizing traditional pastoralists chiefs against the Code in its present form. The enactment of the Rural Code would reduce their power base, because the consequent restructuring of the existing production systems would favor the farming communities and disadvantage the livestock producing communities. The traditional chieftaincy in Niger is organized along the lines of the two production systems. That is the sedentary farming communities are headed by village heads who are in turn led by a chief called "chef de Canton" appointed by a group of village heads. In the same way pastoralists camps are headed by camp or group of camps leaders or "chefs de tribus" and these leaders are placed under the leadership of a pastoralists' chief or "chef de groupement".
- Mobilizing producers at the local level, members of pastoral organizations (FNEN- DADDO and ESF-DANGOL) as well as non-members. They are expected to help their chiefs to take a stand against the Code Rural or any law that disregards pastoralists' interests. The struggle is reinforced by an intensive (i) registration drive of pastoralist community members and (ii) education campaigns on electoral and democratic processes (legal literacy). These strategies are intended to increase participation of pastoralists in elections and empower pastoral communities, which have been kept intentionally out of the decision making process in the past.
- Undertaking intensive sensitization campaigns through local, regional, national, and international forums on the inequities of land tenure legislation concerning traditional societies and their production systems. During seminars or conferences in Niger, Africa or overseas, donor agencies, development partners, user association representatives and NGOs are informed about the unfair nature of current land tenure legislation. For instance according to the Rural Code only farmers have the right to own land. Pastoralists are denied ownership. Pastoral organizations are also encouraged to build networks beyond their national borders. In March 1998 these efforts translated in the creation of the "Reseau des Eleveurs Africains (REA)" network during the Ouagadougou Burkina Faso meeting on pastoral organizations issues. This network became active in 1993. Its function is to identify existing pastoral organizations and to harmonize their efforts and strategies in order to improve their overall impact.
- Sensitizing the Western public opinion on the cultural heritage of traditional societies in West and Central Africa. The aim is to protect the different indigenous communities and their culture preserve diversity and plurality. This entails the identification of indigenous organizations around the world and the establishment of working relationship in order to influence positively conflict resolution processes- and increase peace building capacity.

The main goal of these strategies and joint efforts is to induce changes in legislation and regulations pertaining to resource allocation and management. Even

in cases where the legislative process cannot be influenced, these strategies and networks can help to reduce the enforcement capability at the grassroots level. These strategies have so far had positive outcomes.

PASTORAL ORGANIZATIONS' PRIORITY ACTIONS

Pastoral organizations are involved in different fields as well:

- Education: pastoral organizations organize campaigns to foster schooling. Formal education is necessary in order to increase literacy. This increases the chances of active participation in the decision making process and it also allows to sustain traditional cultures and ways of life in an ever-changing world.
- Health and welfare: pastoralist organizations are actively involved in building rural dispensaries and potable water delivery systems. One of the major aims is to reduce death rates in indigenous communities, which are subject to various water born diseases.
- Trade: pastoralist organizations are engaged in all management aspects related to the livestock production systems. Control over livestock sales and related fields (veterinary drugs distribution and sales, animal feed distribution and sales) empowers pastoralist communities and increases their bargaining power.
- Information networking: pastoralists' organizations keep communities constantly informed about national and international issues and trends. They also can pressure government agencies to involve communities in decision-making.

CONCLUSIONS

Pastoral organizations in Western and Central Africa are actively working to correct the trends of injustice, human rights abuses, negative stereotyping, and intellectual and physical poverty of their members. One major step is to devolve major responsibility of natural resource management to pastoralists' communities and involve them in project development. One of the promising approaches initiated by the World Bank is the Operational Directive OD 4.20 that requires consultation and participation of stakeholders in all stages of project development, whereby targeted communities are constantly involved in the decisions making processes.

Pastoralists organizations are trying to built collective action for fairer devolution policies of natural resources management in Africa through (1) intensive sensitization campaigns, (2) continuous civic education on national issues and (3) networking with other peer pastoral organization at the national and international level.

Table 1: Major pastoral organizations in West and Central Africa

COUNTRY	ASSOCIATION	NGO	CONTACT
Benin	APEB		Alh. Belko Djouro
Burkina Faso	CRUS	APESS, SPONG	Alh. Yero(?) / Dr. Boubacarly
Cameroon	MBOSCUDA		Dr. Amadama Hassan
Central African Republic	FNEC		Alh. Dahirou Daouda Ibrahim Ousmane Biri
Guinee-Conacry	SAGE		Dr. Boubacar Diallo M. Mamoudou Diallo
Mali	TABITAL PULAAKU	CCAONG	Amb. Moustapha Dicko M. Bokoum
Nigeria	MACBA		Alhaji Kauje Alhaji Abakau
Mauritania	AEM (?) FLAM		Alh. Ould Hacen
Niger	FNEN-DADDO	ESF-DANGOL	Dr. Boubacar Hassane (227-75 24 49)
Senegal	Union Cooperatives		Hamihou Thiam (?)

THE PROCESS OF DECENTRALIZATION AND NATURAL RESOURCE MANAGEMENT IN NIGER

Adamou Issaka Ounteni

INTRODUCTION

After independence the Republic of Niger operated the first reorganization of its territorial administration with the adoption of law No. 61-50 of December 31, 1961. Through this reform, the old administrative local districts have been transformed into territorial collectivities granted with moral and financial autonomy.

In the following years further legislation was enacted to allow a steady readjustment of the decentralization process. The Act No. 83-26 of August 21, 1983 established a new institutional setting for active participation of the populations in local governance affairs.

Consecutive droughts and increasing population pressure generated an ecological crisis followed by conflicts related to the management of natural resources. Aware of the gravity of these problems, the authorities and external partners encouraged the utilization of participatory approaches for the management of natural resources through the creation new local management structures. The main focus of this strategy was to facilitate the organization of local communities on a democratic basis and to give them responsibility over the management of their environment.

DECENTRALIZATION CONCEPT: THE NIGER PERCEPTION

Over time it has been realized that rural development could not be realized without real decentralization. This is understood as "a principle of administrative organization of a country, based on the recognition of the concept of local interest". The ultimate objective of this organizational structure is to provide local territorial communities with autonomy or self-government capabilities.

A number of conditions have to be met in order for decentralization to be effective:

- The existence of territorial communities to which the government can recognize a status of moral and judicial autonomy
- The existence of common interests in local affairs within one particular community
- The existence of democratically elected local bodies to manage local affairs subject to the control of both civil society and central authorities
- Fiscal and financial autonomy

The decentralization process implies the willingness to restructure the political-administrative institutional setting and the willingness of the government to share power with local authorities. Grass root democracy allows and demonstrates the willingness of civil society to participate in the governance of local problems.

LOCAL INSTITUTIONS AND NATURAL RESOURCE MANAGEMENT

In 1983, the Societé de Développernent has established decentralized subunits linked to the regional and local administrative government agencies. Unfortunately, the territorial administrative organization and the participation set up instituted by the "Société de Développement" have remained theoretical in decentralization matter and very insufficient in controlling the populations even though some minor readjustment have been done.

The following bodies have been established:

- At the national level: "Conseil National de Développement" (National Council for Development);
- At the state level: "Conseil Regional de Développement" (Regional Council for Development);
- At the local level: Sub-Regional Council for Development; and
- At the district level: Local Council for Development

Developmental projects operating in the rural sector, have induced the creation of local institutional bodies.

Theses local bodies or "structures locales de gestion" (SLG) have a variety of forms and names depending on the philosophy of the sponsor or funding donor: some examples are: village management committees, cooperatives, land management committees, rural markets, local Government Natural Resources Management Committee (LGNRMC).

Even though some have failed to accomplish their task, we recognize to these local bodies the following advantages over centralized management structures:

- They have better knowledge of local problems, and can provide better solutions;
- They provide an effective local concertation medium representative of various social groups;
- They allow consensual decision making and ease the implementation process; and
- They increase the bargaining power of rural populations in negotiations.

However, even the supporters of these local management structures recognize that some problems exist:

- They often emphasize more political group dynamics than actual management of natural resources;
- They often have low decision making capability against certain particular interests;
- They sometimes do not have the financial strength to realize specific projects;
- They are generally short-lived and disappear after the completion of the project; and
- They sometimes lack effective judicial status

These local management bodies are sometimes confronted with a problem of legitimacy.

In this regard it is important to notice that any process of decentralization needs an enabling framework, legal and institutional. The central authorities are in charge of providing this setting for local natural resource management bodies to become effective.

Over the years successive governments have legislate and ratified a number of laws on decentralization and administrative restructuring. Some of the most important norms adopted are:

- Act No. 0010/MRA/D of May16, 1994 relates to the creation and attributions of a special commission in charge of the determination of the new administrative (territorial) division of the Niger Republic;
- Law No. 96-05 of February 6, 1996, relates to the creation of administrative constituency and territorial communities. This law has allowed the organization of the republic of Niger in regions, states, local government area and municipalities ;
- Law No. 96-06 of February 6, 1996, determines the fundamental principles of autonomy for the administration of regions, states and municipalities along with their responsibilities and resources, and specifies the deliberating and executing bodies for each governmental level;
- Law No. 98-29 of September 14, 1998, relates to the creation of municipalities, and determines their borders and the names of their capital; and
- Law No. 98-37 of October 6, 1998, modifies and completes the law No. 96-06 of February 6,1996.

DECENTRALIZATION AND TRADITIONAL ORGANIZATIONS

With regard to the ongoing experience at the local level, one has to ask if the implementation of the decentralization process, as it is conceived, does not carry the seed of contestation. It is a reality that this process has already met some obstacles. It

is apparent from the legislation on decentralization that traditional institutions are not part of the new design. The delegation of authority and reallocation of rights and responsibilities concerns only newly created local institutions. Will new conflicts regarding natural resource management emerge between traditional, customary institutions and newly created institutions?

In the end, the decentralization process is a political process. This complex institutional change process not only requires resources to be implemented but also political will, or power.

The territorial approach to natural resources management adopted in Niger may also render more difficult the implementation of the decentralization process.

To our mind the decentralization process will proceed and will be able to rely on the creation of effective local institutions, because local populations support these changes through active involvement and requests for more participatory arrangements.

CONCLUSION

In the new political context of democratization, the centralized practice of natural resources management is giving way to a more decentralized approach that presents a more transparent and participatory form of management.

The main advantage of decentralization is a more effective information flow between users and administrators.

This structural reorganization of Niger's administrative structure not only allows but also requires a mentality and behavioral change of Niger's society. The main opportunities and challenges of the decentralization process for civil society are that:

- The population will be able to participate in the democratization process at the local level through the organization of democratic elections.
- The population will be able to take responsibility for decision-making and management of local affairs through the election of representatives.
- The population will be able to actively participate in local service provision.
- Decentralization will allow better interaction and information flow between population and administration.

DEVOLUTION OF NATURAL RESOURCE MANAGEMENT IN THE REPUBLIC OF MALI

Colonel Ismaïla Cisse

INTRODUCTION

Mali is mainly an agricultural country and economically it ranks among the "third world developing countries". Most of its revenues are derived from the exploitation of natural resources. The key activities include:

- Traditional and modern agricultural activities for food crops, cash/ marketable crop production;
- Transhumant pastoralism;
- Forestry exploitation for timber; and
- Recent mining exploitation (high income producer but environmentally degrading)

The main exports revenues of the country are derived from cotton and cattle raising/livestock.

These activities have some serious consequences:

- Land disputes: which are often originate from contradiction between the traditional and the modern (land and estate code)land management
- Negative environmental impact (massive deforestation/increase of bush fires/ agricultural expansion and urbanization/overgrazing etc.)
- Conflicts over resource use between different uses (also due to lack of appropriate planning):
    - disputes between farmers and cattle breeders,
    - conflicts between farmers and fishermen, for the exploitation of deep areas,
    - conflicts between urban and rural population, because of the expansion of towns on the rural areas.

Policymakers in Mali are very concerned about these conflicts and about the negative environmental impact of natural resource exploitation. Decentralization is thought to be very important to achieve a more sustainable and equitable development. Especially the involvement of communities in the management of natural resources and is considered a fundamental step. Emphasis is thus on the interaction between state and local communities.

BRIEF PRESENTATION OF MALI

THE LAND

As a landlocked country, Mali is located in the heart of West Africa in the Sahel. It covers three different climatic zones:

- The desert-saharan zone, in the Northern part of the country with less than 200mm rainfall during the wet season,
- The sahelian zone in the centre of the country with an average of 400 to 500mm rainfall during the wet season,
- The Sudanese zone in the South of the country with annual rainfall superior to 500mm and reaching 900mm in some areas.

Its land area is about 1,241,000 km^2 (65% of the land area is desert) with a population of around 9.8millions.

It is crossed by the river Niger and its tributaries for 1,400 km.

The river Niger forms one of the African largest deltas, the Niger Central Delta covering more than 1 million hectares and representing the essential source in water and pasture of Mali. This is the main "transhumance" area.

ECONOMIC BACKGROUND

Mali is a mainly agro-pastoral country and agriculture is the predominant economic sector. Mine exploration development for gold has started only recently.

The principal export products are cotton with a fiber production of 500,000 tons in 1997, and livestock. The national cotton processing capacity doesn't exceed 2%, all the rest is exported unprocessed.

The industrial sector is poorly developed and consists almost entirely of agricultural processing activities. The government has formulated and adopted policies for the promotion of the industrial private sector, for the improvement of public infrastructure, and others aimed at income generation. The new tax code for example facilitates investment in rural areas.

SOCIAL BACKGROUND

The Malian population consists of various social entities and Islam is the main religion.

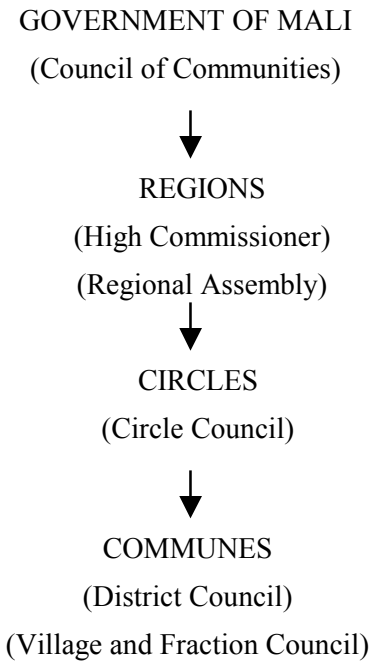
POLITICAL BACKGROUND

Mali gained independence in 1960 and today is going through a profound administrative structural reorganization. It has followed the principle of decentralization of administrative control.

The new administrative structure consists of:

- Central government
- Eight administrative regions and a district: district of Bamako, regions of Kayes, Koulikoro, Sikasso, Segou, Mopti, Timbuktu, Gao and Kidal
- 682 rural districts/communes.

The following chart depicts the administrative structure:



THE ROLE OF VARIOUS ACTORS (STATE, SUPPORT SERVICES, THE TERRITORIAL GROUPS AND THE COMMUNITIES)

With regard to natural resource management, the Government of Mali has formulated and adopted a National Program for the struggle against desertification which counts eight sub-programs to be developed at different administrative levels (national, regional, circle and commune).

Within the context of decentralization, a number of legislative acts and decrees have been adopted:

- The act determining the conditions of free administration of country's communities,
- The act on country's communities' code,
- Decrees of implementation notably those fixing the roles and responsibilities of various actors

The actors' roles are defined as follows:

THE STATE

Through its representatives (administration and technical support staff) the state plays a monitoring role of country's decentralized communities, in particular:

- Supervision of the legality of acts and decisions taken by decentralized communities as a guarantee for the respect of law;
- Consulting support to communities, through its decentralized services, and partners in development (LAGOS, Associations and Lobbying having conventions and framework agreement with the state)
- Integration and coordination, by support to suitable initiatives with national
- Orientation
- Arbiter, in order to avoid or limit the misuses and to settle differences between the communities and the actors of development

THE TERRITORIAL COMMUNITIES

Within the limit of law and in their interest, communities are responsible for:

- The development and the execution of the communities' development programs
- The development and the implementation of the territorial development plan,

THE POPULATIONS

Through communes and local councils the populations participate in the management and development of their territories.

Participation can be on an individual basis or organized in associations or groups.

ESSENTIAL QUESTIONS AND TOPICS/DOMAINS FOR FUTURE ACTION

- Initiatives to reduce the pressure on natural resources
- Research for ways to integrate traditional and modern management of natural resources in order to reduce multiple conflicts,
- Research for more appropriate strategies in order to compensate for populations' low capabilities
- Definition of efforts needed at the national and local level.

ANNEX 1

GLOSSARY OF TERMS

Agency	• bureaucratic arm of the government, such as an Irrigation Department, Forestry Service etc.
CBNRM	• community-based natural resource management, in which the government plays a relatively minor role
Collective action	• "action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests" (Marshall 1998)
Co-management	• "partnership arrangements in which government, the community of local resource users, external agents (non-governmental organizations, academic and research institutions), and other resource stakeholders share the responsibility and authority for decision making over the management of a natural resource; it covers various partnership arrangements and degrees of power sharing and integration of local (informal, traditional, customary) and centralized government management systems" (Pomeroy in this volume) • refers to programs that seek to increase users' direct involvement in resource management in conjunction with a continuing role for the state at some level (Vedeld 1996; Hesseling 1996)
Decentralization	• transfer of both decision-making authority and payment responsibility to lower levels of government • "systematic and rational dispersal of power, authority and responsibility from the central government to lower or local level institutions" (Pomeroy in this volume)

Deconcentration	• "the shifting of workload from central government ministry headquarters to staff located in offices outside of the national capital." (Rondinelli et al. 1989) • transfer of authority and responsibility from the national government departments and agencies to regional, district and field offices of national government offices. Also referred to as administrative decentralization
Delegation	authority and decision-making powers to local officials. The central government retains the right to overturn local decisions and can, at any time, take these powers back" (Pomeroy in this volume) • "transfers of authority to public corporations or special authorities outside the regular bureaucratic structure (Ostrom et al. 1993)." (cited in Agrawal and Ostrom in this volume)
Denationalization	• "passing of some • refers to the selling to the public or to workers of government-owned assets or enterprises meant for the production of goods or services (Dahal 1996)" (cited in Agrawal and Ostrom, in this volume)
Deregulation	• involves the dismantling of price controls, quotas, and barriers to entry so that market forces determine savings, investment, and consumption decisions of economic actors (Dahal 1996)
Devolution	• transfer of responsibility and authority over natural resources from the state to non-governmental bodies, particularly user groups • "increased empowerment of local organizations with no direct government affiliation" (Maniates 1990) • "strategy of governance prompted by external or domestic pressures to facilitate transfers of power closer to those who are most affected by the exercise of power" (Agrawal and Ostrom in this volume)

Devolution (continues)	• shift of responsibility and authority for resource management from the state to non-governmental bodies, which includes traditional institutions, the private sector and other organizations of civil society, such as herders' associations or village committees (Scoones 1995; Meinzen-Dick and Knox, in this volume) • "transfer of power and responsibility for the performance of specified functions from the national to the local governments without reference back to central government. The nature of transfer is political (by legislation), in contrast to deconcentration's administrative; and the approach is territorial or geographical, in contrast to sectoral" (Ngaido, in this volume).
Governance	• "the exercise of legitimate authority in transacting affairs, broadly understood to refer to the maintenance of social order through endogenously evolved sets of rules or authority structures, or some combination of locally evolved and externally imposed rules sets (Mearns 1996:300)" (cited in Ngaido in this volume)
Government	• "exercise of influence and control, through law and coercion, over a political community, constituted into a state within a defined territory (Mearns, 1996)" (cited in Ngaido in this volume)
Institutions	• "the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction" (North, 1990) • encompasses both rules and organizations that shape and enforce these rules (Kirk, 1999)
Joint management	• see co-management
Legal pluralism	• the multiple, often overlapping, and even contradictory bases for claims on a resource (e.g. state law, customary law, religious laws, project regulations, and local norms)

Local law	• dominant local interpretations of customary law, religious law, and other relevant normative and legal frameworks (Benda-Beckmann, Benda-Beckmann, and Spiertz 1996)
Local level	• usually the village or its equivalent
Management transfer	• formal transfer of management responsibility over natural resources from the state to other organization, with the state withdrawing from its former role
NGOs	• non-governmental organizations, usually referring to voluntary and non-profit organizations, but not membership organizations like user groups
Organization	• a team of individuals who seek some agreed upon collective goals within the framework of collective choice rules
Policies	• includes instruments, rules, regulations on various levels, especially by government
Privatization	• transfer of rights and responsibilities from the public sector to private groups or individuals. This can include non-profit service organizations (grassroots or external NGOs) and for-profit firms (Uphoff 1998) • "denotes transfers of responsibility for public functions to voluntary organizations or private enterprises." (Rondinelli and Nellis 1986, cited in Ostrom et al. 1993) • transfer of responsibility for certain governmental functions to non-governmental organizations, voluntary organizations, community associations and private enterprises
Property rights	• "*the capacity to call upon the collective to stand behind one's claim to a benefit stream*" (Bromley 1991:15, emphasis in original)

• "an enforceable authority to undertake particular actions in a specific domain" (Commons 1968)	Property rights (continues) • "actions that one individual can take in relation to other individuals regarding some "things"." (Agrawal and Ostrom in this volume)
Social capital	• "the shared knowledge, understandings, norms, rules, and expectations about patterns of interactions that groups of individuals bring to a recurrent activity (Coleman, 1988; E. Ostrom, 1990, 1992; Putnam, 1993)" (in Ostrom 1998)
State	• (as defined in many political texts) the political unit that has been assigned a monopoly over the authoritative allocation of values in a society
Statutory law	• law of the state; official government law
Subsidiarity	• "principle requiring that the distribution of power and responsibility should be in favor of lower-level governmental institutions and smaller jurisdictions (Vanberg 1997) and political authority to be always allocated at the lowest possible institutional level, that is, close to the citizens, who are the ultimate sovereign. Moreover, it must be compatible with efficiency and accountability (Swift 1995)" (Ngaido and Kirk in this volume)
Sustainability	• ability to be maintained over the long term; usually refers to environmental sustainability, but may also refer to organizational or financial aspects
User groups	• membership organizations composed primarily of natural resource users

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ANNEX 3

WORKSHOP AGENDA

SUNDAY, JUNE 20, 1999

17:30 - 20:00	*Registration and informal get together*

MONDAY, JUNE 21, 1999

OPENING CEREMONY

08:30 - 09:30	Registration
09:30 - 09:40	Welcome by DSE
09:40 - 09:50	Welcome by IFPRI/ CAPRi *Dr. Ruth Meinzen-Dick, Coordinator, CAPRi*
09:50 - 10:00	Welcome by ICLARM *Dr. Meryl Williams, Director General*
10:00 - 10:30	Opening by Government of Philippines *Mr. Edmund Sana, Assistant Secretary, Department of Agriculture*
10:30 - 10:45	Structure and objectives of workshop *Dr. Percy Sajise, Chairperson*
10:45 - 11:15	*Tea/Coffee Break/Group Photo*

PLENARY SESSION	**CONCEPTUAL FRAMEWORK FOR DEVOLUTION: ASSESSING THE PROBLEM AND IDENTIFYING ISSUES RELATED TO COLLECTIVE ACTION AND PROPERTY RIGHTS**
11:15 - 11:45	Collective Action, Property Rights and Devolution of Natural Resource Management: A Conceptual Framework *Ruth Meinzen-Dick and Anna Knox (IFPRI)*
11:45 - 12:00	Clarification questions
12:00 - 12:20	Resource sector paper: Forestry *Elinor Ostrom (Indiana University) and Arun Agarwal (Yale University)*
12:20 - 12:30	Clarification questions
12:30 - 13:30	*Lunch*
14:00 - 14:20	Resource sector paper: Aquatic Resources *Robert Pomeroy (ICLARM)*
14:20 - 14:30	Clarification questions
14:30 - 14:50	Resource sector paper: Water and Irrigation *Douglas Vermillion*
14:50 - 15:00	Clarification questions
15:00 - 15:20	Resource sector paper: Rangelands *Michael Kirk (University of Marburg) and Tidiane Ngaido (ICARDA)*
15:20 - 15:30	Clarification questions
15:30 - 16:00	*Tea/Coffee Break*

16:00 - 17:00	Plenary: Discussion of Conceptual Framework and Resource Sector Papers
INFORMATION MARKET	
17:00 - 18:30	The information market offers workshop participants and their organizations to present on their work, experiences and plans related to collective action, property rights and devolution of natural resource management.
19:30	*Opening Reception and Dinner*

TUESDAY, JUNE 22, 1999

08:30 - 08:40	Introduction to the Day
8:40 - 9:00	Terms of reference for working groups and formation of working groups
WORKING GROUP SESSION I	**APPLYING COLLECTIVE ACTION AND PROPERTY RIGHTS (CAPRI) IN DEVOLUTION PROGRAMS**
9:00 - 10:30	Presentation and discussion of resource specific Case Studies (in parallel sessions, by resource sector) - Water / irrigation - Aquatic resources (Richard Martin, Jessica Munoz) - Forestry (Elmer Mercado, Micha Torres) - Rangeland (Boubacar Hassane)
10:30 - 11:00	*Tea/Coffee Break*
11:00 - 13:00	Working group discussions continued
13:00 - 14:00	*Lunch*
14:00 - 14:30	Preparation of Presentation of Working groups results

14:30 - 16:00	Plenary: Presentation and discussion of working group results
16:00 - 16:30	*Tea/Coffee Break*
16:30 - 17:30	Identification of common key issues
17:30 - 18:00	Briefing on Field Trip

WEDNESDAY, JUNE 23, 1999

07:00 - 16:00	**FIELD TRIPS**
16:30 - 17:30	Group discussion of field trip findings in light of CAPR and devolution of natural resource management
19:30	*Buffet dinner at hotel*

THURSDAY, JUNE 24, 1999

08:30 - 08:40	Introduction to the day
08:40 - 10:00	Plenary Report on Findings of Field Trips Identification of new key issues, cross-cutting themes across sectors
10:00 - 10:30	*Tea/Coffee Break*

WORKING GROUP SESSION II

10:30 - 12:30	Options for Actions
12:30 - 13:30	*Lunch*
14:00 - 16:00	Working group discussions continued
16:00 - 16:30	*Tea/Coffee Break*

16:30 - 18:00	Plenary: Presentation and discussion of working group results
19:00	*Dinner*

FRIDAY, JUNE 25, 1999

08:30 - 08:40	Introduction to the day

WORKING GROUP SESSION III

8:40 - 10:15	Formulation of sectoral recommendations for policy and research
10:15 - 10:45	*Tea/Coffee Break*
10:45 - 12:00	Working group discussions continued
12:00 - 13:00	*Lunch*
13:30 - 14:30	Working group discussions continued Prioritization of recommendations for policy and research
14:30 - 16:15	Plenary: Presentation and discussion of policy and research recommendations
16:15 - 16:45	*Tea/Coffee Break*
16:45 - 17:15	Closing Remarks
17:15 - 17:30	Official Closing
19:00	*Farewell Dinner and Cultural Program*

TERMS OF REFERENCE OF WORKING GROUPS

WGI: APPLYING CAPRI IN DEVOLUTION PROGRAMS

1. Round of introduction
2. Case study
3. Question: In the context of devolution, what are the potentials and constraints? (See if they cluster in relation to conceptual framework)--visualize
4. Conclusions: write out in words for presentation in plenary

Plenary presentation of key findings from WG
(10 minutes per resource, only key issues, not repeat of case study)
Discussion of crosscutting issues

Participants to prepare list of questions for field trip, focusing on organizational issues

WGII: OPTIONS FOR ACTION

1. Brainstorm on:
   - Possibilities to strengthen CA in devolution programs
   - Possibilities to address PR concerns in devolution programs (based on problems and best practices identified earlier)
2. Check on feasibility, regional validity
3. Prioritize
   - Importance
   - Feasibility (easy/hard)
   - Time frame (long/short)

WGIII: RECOMMENDATIONS FOR POLICY AND RESEARCH

1. Elaborate recommendations for:
   - policies
   - research (key unknowns)
2. Consider:
   - Time frame
   - To whom are recommendations addressed
   - Country specification, including intra-regional

Note: policy-makers to be given priority in making recommendations for research

ANNEX 4

OPENING ADDRESS

MR. EDMUND SANA, ASSISTANT SECRETARY, PHILIPPINES DEPARTMENT OF AGRICULTURE

On behalf of the Philippine government, welcome to the Philippines. The Philippines is a tropical paradise of several thousand islands with extensive flora and fauna (the second most in Asia and the sixth most in the world). However, this tropical paradise is under threat due to exploitation by destructive agriculture and fishing, pollution and toxic materials. The Philippines ranks as a leader in biodiversity, but is also considered a 'hot spot' of degradation.

As Assistant Secretary of Agriculture, I am very interested in this workshop. We are searching for ways of managing resources and are in the process of fine tuning devolution to local government units and barangays (local villages). Devolution initiatives began nine years ago with the Local Government Code as a result of two environmental concerns:

1. Population pressure, catalyzing deteriorating food production systems. People are destroying the basis of their own livelihoods.
2. Siltation, pollution, waterlogging, etc.. Technologies are inappropriate, and there is a need for environmentally friendly technologies.

The Agriculture for People Program was set up to modernize agriculture and fisheries while enhancing food security and poverty alleviation. It is centered around local participation and involves local government units (LGUs), NGOs, people's organizations, and the private sector. LGUs are involved in planning, implementing, and extension; they are expected to serve as catalysts of social development and increase participation. However, the government cannot do it alone. Local communities are needed to function as equal partners and co-managers.

On behalf of the Philippine government, 'mabuyhi'.

ANNEX 5

CLOSING REMARKS

PERCY SAJISE, WORKSHOP CHAIRPERSON

Distinguished participants, sponsors of this workshop; CAPRi-IFPRI, Food and Agriculture Development Centre of DSE, ICLARM, Ladies and Gentlemen; good afternoon.

First of all, all of us deserve congratulations for working so hard to make this workshop a success. In my own evaluation, we have substantially attained our objectives for this workshop. I hope that, like me, you will go home feeling satisfied that you were able to contribute your share and you are taking home some new and exciting perspectives, some new learning that you are eager to apply in order to advance the frontier of knowledge in the area of collective action, property rights, and devolution—ultimately leading to sustainable management and use of natural resources.

To tell you frankly, I had a lot of hesitation when DSE and CAPRi first invited me to chair this workshop. Seeing the big names in this field as participants in this workshop, which I had just heard or encountered in the literature, made me feel apprehensive of whether I would be capable of steering this meeting. However, after I had the chance to meet with the team of DSE and CAPRi and the facilitators in Feldafing, Germany, my confidence slowly grew, and now meeting you in warm flesh and blood and having worked with you during the past five days, I have truly appreciated your professionalism, commitment, and contributions to this important field and phenomenon of devolution.

I must also recognize the very able role and assistance of our facilitators in helping us communicate and consolidate our ideas so that we could arrive at our outputs. During the past five days, you may have appreciated the facilitating technology of DSE—the visualization, participatory, and synthesizing strength of this technology. I have observed how people were able to put their ideas on cards, discuss them with each other, and cluster these ideas into a meaningful framework. I have also seen people who do not talk much but participate by putting their ideas in their cards, pinning the cards on the board, and defending their cards and ideas. This in itself is a demonstration of collective action, which, toward the end, led to a sense of "ownership" or property right on our products or output.

The past five days, we have had a very rich and exciting discourse of various views coming from policymakers, researchers, and NGOs on the factors that hinder or promote devolution by resource sectors as well as across sectors. It seems as if the

kind or type of resource sectors has a tremendous influence on the complexity and dynamicity of devolution involving property rights and collective action, as well as power sharing and control of such. There is the apparent complexity of the resource base itself, the institutions as well as technological forces that determine access and controls to the management of these resource bases, and these are interacting together at various levels and over a period of time. There is, therefore, a need to sort out and understand this complexity before any intervention is made. There must be mechanisms in place to allow for participatory decision-making and social transactions for defining changing roles and responsibilities of those involved in devolution, and resolving conflicts at all hierarchical or operational levels to cope with the complex and dynamic nature of such relationships.

There must be inter-sector interaction: agriculture and forestry, forestry and pastoral indicators of whether sustainable natural resource management is being attained in terms of the parameters of efficiency, equity, empowerment and environmental protection, which in itself may be too ideal since tradeoffs most likely will be taking place and are realities which have to be considered. The next step or concern is to make sure that something will come out of our efforts. In our individual niches, we could do something already—research, policy, and the document coming out of this will be the responsibility of the organizers. By the way, the forest group has already done its share in lending support for a position of the community to form a dialogue/forum with the university before continuing the demolition of infrastructures that is now going on in the mountain.

Personally, I have learned a lot from all of you. For example, many of these new lessons and insights will find application immediately in our own situation in Mt. Makiling where such a process is taking place between the university, which has been delegated the power by the state to manage the forest reserve, and the local community in the forest reserve. In this small corner of the world, co-management is hindered very much by the long history of a weak trust between the local community and the university and foremost, there is a need to establish a strong mechanism to allow social transactions and conflict resolution to take place in order to bring back this trust and then go forward toward a joint effort for sustainable management of the forest.

I have no doubt that you will go home stronger as “champions” of devolution for sustainable natural resource management. We will go home with a shopping list for everybody to refer to as reference for our own work and responsibilities in our respective jobs.

This, in general, ladies and gentlemen, is the statement of the Chairman. It has been my distinct honor and privilege to work with such a distinguished and exciting group of people. Thank you all and I wish you success in your endeavors, good

health for you and your family, and a passport for your safe journey home. Thank you very much.

The System-wide Program on Collective Action and Property Rights (CAPRi) is one of several Inter-Center Initiatives of the Consultative Group on International Agricultural Research (CGIAR). Experience has shown that institutions of property rights and collective action play an important role in how people use natural resources, which in turn shapes the outcomes of production systems. This System-wide Program examines the formation and effectiveness of voluntary, community-level organizations and property institutions as they relate to natural resource management.

The issues of property rights and collective action are of special concern to the CGIAR because of their effect on technology adoption, natural resource management, and poverty alleviation. As natural resource management issues emerge in the forefront of concerns we face today, the development of viable strategies to ensure the future productivity of resources demands a more profound understanding of the motivating forces which contribute to their sustainability. CAPRi aims to promote comparative research on the role played by property and collective action institutions in shaping the efficiency, sustainability and equity components of natural resource systems.

To address these complex issues requires an interdisciplinary approach, with insights and methodologies from a range of social, as well as technical scientists. All 16 CGIAR centers participate in this program, including CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICLARM, ICRAF, ICRISAT, IIMI, IITA, ILRI, IRRI, WARDA, ISNAR, IPGRI, with IFPRI, as the convening center. Membership includes all researchers at centers, national research institutes, NGOs, and universities who participate in component research projects.

Financial support for the program has been provided by the Norwegian Royal Ministry of Foreign Affairs, The Ford Foundation, the Government of Italy, and Swedish International Development Agency. Additional funding for specific research projects is provided by a variety of donors and the core funds of participating CGIAR centers.

Policy and strategy formulation for the System-wide Program is headed up by a Steering Committee which is comprised of representatives from each of the CGIAR centers, representing a diverse range of expertise, plus leading experts from research and other organizations in developing and developed countries. A smaller Executive Committee convenes on a regular basis to make decisions in support of the overall priorities set by the Steering Committee.

For more information on CAPRi, consult the website: http://www.capri.cgiar.org.

ICLARM is committed to improving the well-being and livelihood of present and future generations of poor people in developing countries. It aims for poverty alleviation, a healthier, better nourished human family, reduced pressure on fragile natural resources, and people-centered policies for sustainable development.

To achieve these aims, ICLARM undertakes, facilitates and disseminates scientific research to improve the production, management and conservation of aquatic resources such as fish. Its research objectives are:

- raising and sustaining the productivity of fisheries and aquaculture systems;
- protecting the aquatic environment;
- saving aquatic biodiversity;
- improving policies for sustainable development of aquatic resources; and
- strengthening the capacity of national programs to support sustainable development.

ICLARM believes that this work will be most successful when undertaken in partnership with national government and non-government institutions and with the participation of the users of the research results. For science and technology to be relevant, it has to be based on the needs of the users. Studying long established fishery practices and developing new techniques to suit local conditions and resource availability is essential for success.

The effort has to be a global one. The world's natural resources are part of an ecosystem that cannot be isolated into segments. Thus, ICLARM pursues partnerships between different sectors and different countries. Its offices and research sites are found across the globe, specifically in the Philippines, Solomon Islands, Malawi, Caribbean/Eastern Pacific, Bangladesh and Egypt. To support its operations, ICLARM obtains grants from private foundations and governments. These include the European Union, BMZ/GTZ, Department for International Development (DFID), Food and Agriculture Organization (FAO), Danish International Development Agency (DANIDA), Asian Development Bank (ADB), Ford Foundation, Swedish International Development Agency (SIDA) and other donor organizations.

For more information on ICLARM, consult the website:
http://www.cgiar.org/iclarm.