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**NATURAL RESOURCES MANAGEMENT POLICY IN AFRICA:
IMPLEMENTATION CHALLENGES FOR PUBLIC MANAGERS**

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Foreword

This paper draws from a larger study, conducted for the U.S. Agency for International Development's Bureau for Africa, Office of Analysis, Research and Technical Services (AID/AFR/ARTS). The study was funded through a buy-in to the Implementing Policy Change (IPC) Project, managed by USAID's Research and Development Bureau, Office of Economic and Institutional Development (AID/RD/EID). The study team members were: James Gage, International Development Management Center (IDMC), University of Maryland System; Derick Brinkerhoff, IDMC; Jo Anne Yeager, Abt Associates; Mark Renzi, Management Systems International; Gary Costello, IDMC consultant; and Veronica Clifford, IDMC. The views expressed in this paper are solely those of the authors and should not be attributed to the U.S. Agency for International Development.

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I. INTRODUCTION

The developing nations in sub-Saharan Africa confront an especially acute set of constraints and problems as they seek to emerge from the poverty that has gripped that portion of the continent (see, for example, World Bank 1981, 1989b). These obstacles have proven all the more intractable due to the complex, interlocking connections among their various economic, political, sociocultural, institutional, and physical factors. Numerous observers have noted the struggles of African governments to cope with the crises their populations endure, frequently citing weaknesses in administrative capacity to manage reforms at both the macro and sectoral levels (Balogun and Mutahaba 1989, Rondinelli and Montgomery 1990).

These administrative weaknesses are particularly critical in natural resources management (NRM). Sub-Saharan Africa's continuing dependence on the natural resources base for socioeconomic growth highlights the importance of effectively managing its soils, forests, lakes, rivers, and wildlife to achieve sustainable increases in agricultural productivity and production, and ultimately incomes. African governments and international donors are increasingly concerned about NRM, and a significant and growing proportion of both project and program initiatives address policy reforms relating to natural resources. However, for these reforms to prove effective in improving NRM and contributing to sustainable development, they need to be successfully implemented. Experience with NRM policy implementation has shown it to be extremely challenging, some would say more difficult than other types of policies. What is it about NRM policies that makes implementation so problematic?

This paper seeks to shed light on this question by identifying and analyzing the management issues and tasks involved in NRM policy implementation in Africa. The paper draws upon published sources and the "gray" literature of unpublished reports and documents, supplemented by interviews with U.S. Agency for International Development (USAID) staff and NRM technical specialists currently working with USAID. As with any study based on secondary sources, its data base is subject to significant limitations. Our findings, analyses, and conclusions should be seen as suggestive rather than definitive, offering avenues for confirmation or disconfirmation through fieldwork.

The paper is divided into three sections. This first section introduces the study and provides a definition of policy and policy implementation. Section II summarizes what the literature says about NRM policy implementation, organized in terms of a framework that identifies the key characteristics associated with successful implementation. The concluding section briefly summarizes the salient features of NRM policies and their implications for the African public managers seeking to implement them.

Defining Policy and Policy Implementation

Drawing a definitive boundary around the concepts of policy and policy implementation is easier said than done. The widest bounds on the definition of policy extend to incorporate a government decision to institute a change plus the modified behaviors that result from response to the change. Ilchman and Uphoff's definition falls into this category (1983: 30-31): "Public policies are the use by a regime of its

resources to intervene in the accustomed behavior of some citizens to produce more or less of that behavior...." Slightly narrower conceptions focus more on the decision side, defining policies as government choices concerning rule systems, resource allocations, and delegations of authority.

In the natural resources sector, some examples of reforms being pursued in Africa illustrate that policy definitions tend toward the broader end of the conceptual spectrum. Kenya's wildlife policy aims to preserve biodiversity by changing attitudes and behaviors of communities adjacent to parks and reserves, with a focus on economic incentives for conservation (USAID 1990c, 1991c). In Lesotho, rangeland policy reform involves reallocations of resources and authority between public and non-governmental sector organizations involved in rangeland management (USAID 1986a). Reforms in forestry policy in Senegal, Mali, and the Gambia target community-level behaviors in combination with changes in the mission and operating procedures of government forestry departments (USAID 1979b, 1981, 1986c). Among the policy initiatives in Uganda and Madagascar is the development of an overarching planning framework for environmental action that specifies targets, indicators, timeframes, and roles and responsibilities (USAID 1990b, 1991a).

Definitions of policy implementation also vary. A narrow conception views implementation as the elaboration of policy choices into legislation and statutes and their official promulgation. Broader definitions extend beyond the nominal adoption of laws and statutes to include the translation of policy prescriptions into goals and actions that address the procedures, capacities, and behaviors needed to initiate and sustain the policy's intended objectives (Mazmanian and Sabatier 1989: 20-21). The wider definitions of policy implementation share an emphasis on the successive detailing of policy from the level of intent (as expressed in laws, statutes, and/or executive orders) through structuring of action (allocation of procedural and operational responsibility) to the "street" level of generation of policy outputs and impacts. Some analysts have argued that this latter level is the definitive component in characterizing both policies and policy implementation (Lipsky 1980).

This study employs the broader definitions of policy and policy implementation for natural resources management. In terms of policy, we look at government decisions and at the behaviors of NRM target groups. Regarding NRM policy implementation, we examine the operationalization of policies into programs, projects, activities, and outputs. At these microlevels, it occasionally becomes difficult to separate what is specific to policy implementation from the more bounded concepts of program and project implementation. Because projects and programs are the major vehicles used to get from policy choice to results and impact in NRM and other development sectors, this conceptual overlap is to be expected.

II. NATURAL RESOURCES MANAGEMENT POLICY IMPLEMENTATION: ISSUES AND TREATMENT IN THE LITERATURE

The literature reviewed for this study cites numerous organizational and management factors and raises a wide variety of issues relating to successful NRM policy implementation. To facilitate a coherent presentation of the results of the review, we have used a simplified version of a widely accepted, empirically derived model of policy implementation as an organizing framework. This model sees policy implementation outputs as a function of three categories of variables: the problem the policy is intended to solve, implementation arrangements, and the sociopolitical and economic setting (Mazmanian and Sabatier 1989: 18-48). These variable categories order the presentation and discussion of the findings of the NRM policy implementation literature review. First, however, we turn to a brief overview of the model.

A Model of Policy Implementation

Policy outcomes derive from the interaction of three sets of variables: characteristics of the problem the policy addresses, the way implementation arrangements are structured and carried out, and key features of the setting in which policy implementation takes place. These variables can be summarized into a set of six sufficient conditions for successful policy implementation (Mazmanian and Sabatier 1989: 41-42):

1. The policy and its statute(s) contain clear and consistent objectives, or some criteria for resolving goal conflicts.
2. The policy accurately identifies the principal factors and linkages leading to, and influencing, policy outcomes, including specification of target groups and incentives.
3. Policy implementation is structured to maximize the probability of compliance from implementing agents and target groups. This includes:
 - o assignment of implementation responsibility to a capable and sympathetic agency,
 - o integrated implementation structures with minimum veto points and adequate incentives for compliance,
 - o supportive decision rules (e.g., appropriate authority and procedures),
 - o adequate financial resources,
 - o access to, and participation of, supporters.
4. Leaders and top managers possess substantial strategic management and political skills, and are committed to the policy objectives.
5. The policy receives ongoing support from constituency groups and key stakeholders within a neutral or supportive legal system.
6. Socioeconomic and political conditions remain sufficiently supportive and stable so that the policy is not undermined by changes in priorities, conflicts, and/or radical shifts in resource availability for implementation.

This elaboration of conditions associated with effective policy implementation will serve as a guide. We now turn to the NRM literature.

Clarity and Consistency of NRM Policy Objectives

Our review found that the clarity and consistency of NRM policy objectives in Africa vary on two dimensions: a) the scope and level of the policy, and b) the newness of the policy (how long the policy has been in place). Regarding the first dimension, national-level NRM policy objectives with broad scopes tend to be expressed in relatively vague terms, encompassing often ill-defined attitudinal and behavioral targets. For example, among the Gambia's stated NRM policy objectives is, "to bring about the long-term sustainability of the natural resource base of the Gambia" (Gambia 1990: iii). Because of their vagueness, these national objectives exhibit a surface consistency since they are not sufficiently detailed to point up where inconsistencies might exist. Obviously, the more general the language used to express a policy objective, the easier it is for groups with diverse and conflicting interests to support it. Thus vagueness can have a well-recognized political utility for any government.

The lack of clarity in policy statements has had several important effects. First, vague national NRM policies have allowed countries, including those in Africa, to pursue resource-destroying economic

development policies while simultaneously advancing NRM policies that in intent clash directly with current resource utilization. The inherent inconsistencies between NRM and development strategies are increasingly hard to ignore, however. This point is made by several of the chapters in Warford (1989), who stress the need to incorporate environmental and NR considerations into national income accounting, and to realign economic development policies to promote sustainable NRM (see also Atkinson 1991, Miller 1991, OAU 1991). At the sectoral level, these inconsistencies are a key focus of, for example, sustainable agriculture (Dejene and Olivares 1991, Davis and Schirmer 1987, Okigbo 1990, Wilson and Morren 1990, World Bank 1989a); and social forestry (Gartland 1990, Gregerson et al 1989, Niamir 1990, Romm 1986).

Second, vaguely defined national-level NRM policy statements, while able to garner wide public support, frequently engender conflict and stalemate among implementors and other stakeholders. Because the policy statements leave vast areas open to (potentially inconsistent) interpretation, with few guidelines that link national-level policy to specific local-level natural resource use, implementation becomes bogged down in disagreements over intent, priorities, operational issues, and impacts. Thus NRM policies become yet another arena in which the various interest groups in implementing organizations and the larger society jockey with each other for access to, and control over resources.

Written sources and interviewees noted several outcomes of this situation. In some cases, the conflict generated leads to a collapse of the policy development process, as in Senegal where the government's effort, assisted by FAO, to develop a Tropical Forestry Action Plan (TFAP) was aborted over the inability to resolve disagreements in both content and procedure. In other cases, the outcome is a flawed policy and weakened prospects for implementation, because relevant groups were not involved since the initial policy definition did not specify their participation, as in Ghana's TFAP where NGOs were left out of the planning process (Vukmanic 1989), and in Cameroon where indigenous people were ignored (Winterbottom 1990). Another outcome, found especially at the local-level, has been to treat implementation as an experiment where inconsistencies are avoided by exempting local communities from the larger policy environment (Shaikh et al 1988: 37-38). This can create situation-specific policy clarity, but it rarely aggregates to provide increased clarity and consistency for the national-level policy.

More narrowly focused and/or local-level policy statements contain much higher degrees of both clarity and consistency. This finding reflects several factors. Technically, it is easier to be more specific when the policy intervention target is narrowly bounded. Elements of appropriate intervention are easier to identify and describe in advance, resulting in clearer operational guidance. Inconsistencies can to some extent be controlled for since the intervention can be buffered from the larger setting, for example as noted previously, by treating it as an experiment (see Rondinelli 1983, Brinkerhoff 1991). Procedurally, narrow, local-level policy objectives have long been the target of donor-funded projects, and thus are subject to the project preparation guidelines that demand specificity of objectives and outputs. Most of the African community-level NRM projects in forestry, soil conservation, and so on demonstrate these policy features; as, for example, the case studies in Shaikh et al (1988).

Findings on the time dimension's relationship to clarity and consistency of policy objectives raised the issue of the history of African nations and of particular policies. Policies of longer standing tended to be more detailed and elaborated, some dating back to the colonial era. Interestingly, such policies have tended to become increasingly inconsistent. The Sahelian Forestry Codes, for example, were written in 1935 with the purpose of exploiting certain aspects of the forest, while protecting others. In the intervening fifty-plus years, political, social, and resource use systems have changed considerably, but these laws have remained the basis for policy implementation and interpretation. Indeed, the Sahelian countries have added a series of statutes, laws and decrees to adjust to changes, yet the codes remain intact (Elbow and Rochegude 1990, Elbow 1991, Shaikh et al 1988). In an example from Tanzania, fisheries regulations dating from the colonial period remain in force for Lake Tanganyika, despite the fact that they are at cross purposes with locally-based resource use (Cohen 1991: 48).

Newer NRM policy objectives tend to be both more detailed and more technically consistent (within the bounds of broad versus narrow scope). This finding reflects several things; one being the increased involvement of donors in NRM, and thus the application of detail-producing program and project identification, preparation, and implementation procedures. It also reflects the improved state of technical knowledge about NRM policies, their interactions with other policies and practices, and so on (see for example Blackwell et al 1991). As knowledge has increased, so has the recognition of the complexity of NRM, which directs attention to the need for more knowledge and understanding. Emphasized in interviews with technical experts and the literature is the diversity of individual countries' resources and diversity of resources within a single country, and hence the diversity of policy solutions needed for NRM. In addition, the level of detail and consistency in newer NRM policies is partly a function of the increased attention and ownership African policy-makers, local and international NGOs, and other concerned stakeholders have accorded NRM issues. This latter is a factor cited in most of the sources discussing National Environmental Action Plans (NEAPs) (see Falloux et al 1991).

Various sources note that clear and consistent policy objectives, by themselves, have not led to quantum leaps in efficiency and effectiveness of implementation. Morell and Poznanski (1985: 139) state that,

... many of the statutes, laws, and regulations in developing countries contain admirable rhetoric: strong environmental goals, relatively strict standards, actions designed to alleviate ecological damage and avoid new environmental problems. In reality, however, enforcement of these laws has been weak or non-existent, particularly in rural areas.

Since policy clarity and consistency are only one of the necessary factors associated with effective policy implementation, it is not surprising that the NRM literature finds that developing detailed policy objectives alone is not enough to promote implementation, as an example from the Gambia illustrates. The Gambian government, as an element in detailing land tenure policy to promote better NRM, proposed a State Lands Bill that would: a) convert customary land rights to 99-year leaseholds for both urban and provinces, b) change the authority to grant leases from district authorities to the Land Administration Boards at the division level, and c) change the law such that expired leases would remain state-owned land. Implementation would have a catalyzing effect on NRM on those lands, providing security of tenure and incentives for long-term development of the land by individuals, though it would provoke some conflict with traditional landholders. The policy has not passed the legislature due to the prohibitive cost of setting up the institutional arrangements to survey the land, train necessary individuals, and so on (Bruce et al 1990).

Identification of Critical Factors and Linkages Necessary for Achieving Policy Objectives

A common thread woven throughout the literature and the USAID project/program documents is the complexity and multiplicity of factors and linkages that characterize NRM. Both the literature and the NR experts interviewed agree that given the systemic nature of NRM, it is very difficult to identify and take into account all the factors and their interconnections with impacts on achieving NRM improvements (Cleaver 1990, Hoehn 1991, Leonard 1985, Matowanyika 1991, Stryker et al 1989, Weber 1991). To a degree not found in most other development sectors, the factors relevant to NRM extend across local, regional, and national boundaries, even reaching the global level. Issues such as global climate change, declining biodiversity, diminishing tropical rainforest cover, desertification, deforestation, water and air pollution, soil conservation, and so on represent challenges of daunting proportions. To the extent that identifying and coping with these factors is critical to policy success, implementation of NRM policies is highly complex and highly situation-specific.

The literature addresses complexity in a variety of spheres: physical, institutional, social, and/or economic. For example, Heermans and Minnick (1987: 4), analyzing reforestation in the Sahel, note that,

The dynamic processes related to the restoration and management of soil, water, vegetation and wildlife are complex: the understanding of a particular ecology within the traditional setting requires experience over a long period of time. New management approaches must be tried and evaluated on a small scale based on the environmental and socio-economic circumstances particular to the area.

They begin with the physical factors, but immediately arrive at the social and economic. Other perspectives on NRM complexity take economic factors as their starting point:

The situation for renewable resources [in sub-Saharan Africa] is complicated because ... optimal rates of natural resource utilization are affected by changes in demographic and economic variables. There are market imperfections and government induced distortions, causing natural resource utilization to be inefficient. Rates of natural resource utilization are affected by uncertainty in the environment broadly construed - i.e. political events, technology advances, consumer demand, and climate change (Stryker et al 1988: 56).

The literature contains a wide variety of treatments of the systemic character of NRM and the numerous linkages among the relevant factors. A few examples illustrate this variety. Population growth and poverty have obvious and critical links to NRM that no country in Africa can ignore. Population growth and the struggle for daily subsistence has changed the patterns of resource use and strained NR bases such as forests, grasslands, and water beyond their sustainable carrying capacity. One report details their devastating effects on Lake Tanganyika. The most serious problems associated with overpopulation include excessive suspended sediment input into the lake caused by basin deforestation, overfishing and pollution. One of the primary manifestations of this problem is local extinction of species (Cohen 1991: 1). Overpopulation also puts pressure on social and institutional resource bases as well, such as traditional authority systems or local economic systems.

Another example is the connection between macroeconomic policies, often in the context of donor structural adjustment programs, and NRM. Several studies focused on this linkage, with somewhat tenuous conclusions:

The ultimate effects of structural adjustment policies on resource problems are difficult to predict. In addition to the uncertainty associated with their impact on relative prices, the ways in which these relative price changes influence the use of natural resources need to be better understood (Stryker et al 1989: 53).

Several studies point out the negative impacts of this linkage, noting that African countries are forced to choose between conserving their NR, or exploiting them for short-term gains to stave off immediate socioeconomic collapse and/or pay for past failed development efforts (see Atkinson 1991, Dorosh et al 1990, Kyle 1989, Miller 1991, Ledec 1985, Nagle 1991). At the anecdotal level, one interviewee recounted how the IMF pressured the Malian government to retain its existing policy of forestry fines (versus a more progressive extension approach) because the revenues generated were a source of income the government could use to meet IMF-imposed budget targets.

Because of the multiplicity of relevant factors and the complexity of their linkages, there is a wide consensus that the appropriate type of analytic approach for NRM policy analysis and implementation is a multifaceted, multidisciplinary one. This consensus is detailed in the literature, reflected in USAID project and program designs, and expressed by NRM specialists interviewed. We found little variation in

the general categories of factors deemed relevant, though some differences in level of detail and relative emphasis. For example, Matowanyika (1991: 88) takes a systems approach, dividing the factors to be addressed in the following categories:

- R = the biophysical and socio-economic resource base in any society;
- Ex = exogenous factors (such as external influences on resource management, technologies, philosophies and ideologies on development);
- En = endogenous factors (e.g. sociocultural factors, indigenous production systems and technological bases);
- Po = population changes (such as quantitative and qualitative changes and changes in consumption patterns, etc.);
- PE = political and economic factors (such as power bases, equity and inequity, historical factors in society).

Other analysts go into much more detail than these aggregate groupings. From the perspective of policy implementation, the major omission in Matowanyika's classification is a separate category for institutional and management factors, something found in the approaches of the vast majority of analysts across all types of NRM (e.g. Adeyoju 1976, Gregerson et al 1989, Honadle 1990, Thomson 1985, Morell and Poznanski 1985, Sayer 1990, Talbot 1990, Zimmermann 1991).

It should be noted that the literature addressing NRM institutional and management issues varies significantly in depth and quality. Some analyses treat institutional and management factors as a residual category, in which to place everything that cannot be explained by other factors. Some deal with these factors in detail, but in a "laundry list" fashion with little understanding of linkages and interactions. Other sources reveal a sophisticated understanding of the institutional and management dimensions of NRM policies.

The literature raises a number of issues that relate to dealing with the complexity of NRM to increase the chances of attaining policy objectives. Discussed here are host country understanding of NRM, and government NRM policy analytic capacity.

Host Country Understanding of NRM

A key issue relates to who possesses the understanding and knowledge about NRM problems, options, and solutions. Both authors and interviewees observe that to be implement NRM policies successfully, both resource users and host country governments must fundamentally change the way they view their resources, and each other. One aspect of this understanding relates to public education and consciousness-raising about NR and the environment. Numerous sources mentioned this (e.g., Cohen 1991, World Bank 1991a), and it is included as an activity in several of the USAID projects reviewed. For example, Gambia's forestry project has a mass media campaign, and both Uganda's Action Program for the Environment and Kenya's Conservation of Biodiverse Resource Areas include public education for environmental awareness (USAID 1979b, 1991a, 1991c).

Not just local resource users and the public at large need greater NRM understanding. Many sources mentioned the need for better awareness among government decision-makers. Specifically mentioned by reports and interviewees is the tendency for policy-makers to undervalue *in situ* resources. Recently, economists have been working on analytic frameworks that attempt to value resources, especially those which are not traded in the market place such as watersheds, biological diversity, and parks and protected areas (See Dixon and Sherman 1990, Doolette and Magrath 1990, Costello et al 1990, and McNeeley 1988).

Two other themes relating to understanding run through much of the literature. One is a caution not to assume that unsustainable resource use is always a function of misunderstanding or lack of knowledge. This is true at the national and local levels. National governments consciously exploit the NR base to meet immediately pressing needs, often under crisis conditions (Atkinson 1991, Leonard 1985). Locally, for the large numbers of Africans living at the margin of subsistence, the need to eat today often supercedes actions to husband NR for the future. In the absence of viable alternatives, the poor will continue to exploit and degrade the resource base to survive. As Honadle (1990: 17) observes regarding forestry, "Without opportunities to earn a living in non-harmful or restorative ways, people will continue to damage forests even if they are aware of the dangers in doing so."

The other theme is a reminder that local people frequently possess valuable and accurate information about the NR base and NRM practices that work (Matowanyika 1991, Gregerson et al 1989). For example, Wamalwa (1990) describes how in Kenya traditional systems of land tenure and resource management, developed to cope with harsh arid and semi-arid environments, provided a model for government NRM policy formation. Another example from Sudan is presented in Atta El Moula (1990).

NRM Policy Analytic Capacity

Design and implementation of effective NRM policies are dependent on accurate assessment and monitoring of NRM situations, conditions, and actions. The literature stresses that African governments and international donors require adequate data if they are to make reasonable decisions on how best to protect and manage natural resources (e.g., World Bank 1991a). Most of the USAID projects and all the programs (referred to in USAID terms as "non-project assistance" or NPA) include monitoring and evaluation components in recognition of this need.

Environmental Impact Assessments (EIAs) have been used since the early 1980s, often initiated by international project development requirements (Atkinson 1991). Some African countries, including Nigeria and Kenya, have sought to include EIAs as an integral part of their national planning process, with varying degrees of success (Ayanda 1988, Hirji and Ortolano 1991). Problems cited with implementing EIAs include: no incentives for compliance with the assessment findings; lack of public concern for environmental protection; lack of clear government commitment to EIAs; and a limited number of qualified individuals to conduct, monitor and evaluate the issues raised in the assessments.

The most comprehensive NR assessment process is found in the NEAPs, initiated in 18 African countries. NEAPs incorporate previous studies, as well as forming new linkages to exchange information and build governments' analytic capacity. The countries involved in the NEAP process have agreed to meet annually (World Bank 1991a). Among the recommendations of the last meeting were a strengthening of the quality of the NEAP environmental assessment process through emphasis on environmental information systems, economic analysis, monitoring and evaluation, and training (see also Falloux et al 1991).

Policy Implementation Arrangements

The structures, procedures, and resource allocations for NRM policy implementation are a major focus of discussion in much of the literature as well as a significant component of USAID projects and programs reviewed. As noted in the previous section, institutional analyses vary in depth and quality, though all reach the conclusion that NRM requires a stronger and more capable set of national and local institutions to achieve desired impacts (e.g., Sayer 1990). Here we summarize the major points authors make regarding policy implementation arrangements in several crosscutting categories.

Allocation of Implementation Responsibilities

In keeping with the perspective on policy implementation that extends from the promulgation of policy directives at the national level to NR user group behaviors at the local level, the literature is in major agreement that NRM policy implementation responsibility needs to be shared across a wide number of entities, both public and private, formal and informal. The designs of donor-funded NRM initiatives reflect this agreement in practice.

Because of the common property characteristics of NR and the market failures associated with exploiting them sustainably, many analysts argue for the necessity of a strong government role in NRM on technical grounds (Bromley and Cernea 1989, Ostrom 1990, Repetto 1989, Warford 1989). This argument resonates with the predispositions of most African government officials, who feel that the state should be the major player in economic development. The problem, several authors indicate, relates to the tendency to centralize all implementation responsibility in government, without regard to either capacity or technical efficiency. The extreme centralization of African governance is cited as a constraint in almost all sectors, and NRM is no exception (e.g., Morell and Poznanski 1985, Thomson 1985). Stryker et al (1989: 105) observe that, "direct management [of NRM] is often bureaucratic, cumbersome, uninformed, and not well accepted by users of the resource. In addition, the state is subjected to many political and social pressures that impede efficient management and its financial and managerial resources are severely constrained."

Thus much of the literature's focus is on analyzing ways of allocating implementation responsibility and defining appropriate roles that can effectively integrate the public sector, NGOs, and the private sector (less on this latter) at the national and local levels. The following quote aptly summarizes the general features of the implementation arrangement much of the literature favors:

The state ... might be responsible for establishing a general legal and administrative framework within which natural resource management takes place. It might also provide incentives through taxes, subsidies, regulated prices, and other indirect policy instruments. Finally it might support research activity designed to find solutions to resource management problems. Where externalities are not too widespread, however, direct regulation and management of natural resources should probably be left to the local community, which is better informed, already has a customary system for enforcement and litigation, and is more likely to command the respect and obedience of its local constituents (Stryker et al 1989: 105-106).

Zimmermann (1991) advances the caveat that among the difficulties in undertaking analysis and experimentation with institutional arrangements is the length of time between intervention and impact. For example, many countries, with donor assistance, have recently created new NRM apex entities--public, parastatal, and/or NGO--to serve as nodes of responsibility for NRM policies, programs, and projects. However, empirical evidence is not yet available to determine their success or failure.

The range of possibilities for institutional "homes" for NRM entities contains an array of pluses and minuses. Atkinson (1991) illuminates some of the trade-offs. By being situated outside the regular ministerial system, NRM units can often carry out regulatory and consciousness-raising functions more effectively. However, because of their lack of integration into agencies with line responsibility for resource allocation and field activities, and their lack of access to technical expertise, these units frequently lack capacity to make meaningful impact on the development process.

A further complicating factor for institutional placement is that NRM policy cuts across the functional and sectoral division of responsibilities characteristic of most African ministry systems. As Falloux and Rochegude (1988) recount in their discussion of land tenure policy in the Sahel, numerous ministries

and departments share, and compete for, responsibility and authority for land tenure/use policy. The result is duplication of effort, bureaucratic infighting, insufficient technical expertise in any single agency, and overburdening of clients trying to gain access to services. In NRM policies, there is no such thing as a single institutional "home" for implementation.

The predominant NRM implementation arrangement, both advocated in the literature and found in practice, in Africa is a co-management model. For instance, co-management is advocated by the World Bank as an organizing principle for forestry policy (1990). A variety of analyses concentrate on ways to structure NRM policy implementation that capitalize upon the strengths of existing institutional arrangements. A strong focus here is on the role of NGOs as mediating structures between central government agencies and local NR users (Mallya and Talbott 1990, Talbott 1988, Ross and Getahun 1987). For example, Gregerson et al (1989: 180-184) distinguish six potential advantages of NGOs for social forestry: 1) in-depth, long-term knowledge of local people's problems, needs, preferences, livelihood strategies, and capacities; 2) relationships of trust with local people, helpful in gaining local support for new initiatives; 3) administrative flexibility and greater leeway in policy-making; 4) autonomy, which gives them the ability to engage more easily in experimentation and trial-and-error approaches; 5) agricultural extension experience, which gives NGOs a technical base to build on; and 6) effectiveness at coordinating the activities of community groups and NGO networks.

Various other sources in the NRM literature present country case studies of NGOs that illustrate these advantages; for example, community self-help organizations ("mobisquads") in Ghana working on agroforestry (Dorm-Adzobu et al 1991), a self-help water project in Kenya (Thompson 1991), and the community cooperatives active in Niger's Guesselbodi Forest (Heermans and Minnick 1987). Most of the USAID NRM projects and programs in Africa contain components where NGO participation and actions are called for (e.g., USAID 1979a, 1989c, 1990a, 1990d, 1991a).

Another stream of analysis takes a concentrated look at traditional institutional structures (village chiefs, councils, moot courts, tenure arrangements, and so on) in terms of their potential to support NRM policy change at the community level (Anderson and Grove 1987, McLain 1991, Thomson 1990 and 1985). Some of these traditional structures have been weakened by social, economic, and environmental stress, but in many situations they retain a certain amount of power and authority (Gambia 1991, Lawry 1991 and 1990, Shaikh et al 1988, Wamalwa 1990). As discussed in more detail below, some African countries, with donor support, are experimenting with ways to use these traditional structures to reinforce incentives for improved NRM.

The bulk of the literature contains little in-depth treatment of how governments can manage a co-management policy implementation strategy, concentrating rather on organizational issues within each of the NRM partner entities. The systems approach presented by Wilson and Morren (1990) is one exception. Another is found in Talbott and Furst (1991), where they presents a detailed monitoring and evaluation schema for NEAPs. The lists and diagrams of activities, responsibilities and timeframes for NEAP implementation begin to approach this participatory planning process from a strategic perspective.

Structuring Incentives for Policy Implementation

An important but difficult element of the co-management approach relates to incentives. As many authors have shown, short-term economic incentives have driven the degradation and exploitation of natural resources, and unless changed will continue to severely constrain the implementation of long-term, sustainable NRM policies (e.g., Bruce and Fortmann 1989, Repetto 1989). Incentives are often not sufficient enough to stimulate collective action given the common property nature of NR, thus the economic return for collective action is marginal (Counsell 1990, Lawry 1990). This feature of NR

constitutes the basis for the strong regulatory flavor of most NRM policies, and for the predominant role of government in structuring incentives. Yet as Warford (1989: 17) recognizes, managing policies demands resources:

... incentive systems are not costless because to a greater or lesser degree they involve monitoring, policing, and regulation. A system of stumpage fees, for example, may require extensive monitoring; irrigation water charges may need metering. The bureaucratic and legal costs of administering land reform schemes may be overwhelming.

The recognition of the costs of managing incentive systems is reflected in one of the debates in the literature. The discussion concerns the trade-offs of using traditional incentive systems in the service of NRM policy reforms versus those associated with formal legally-mandated ones. A variety of cases argue for the benefits of allowing traditional local systems of resource use and adjudication to structure NRM incentives. Two rationales are generally advanced. The first cites the inherent superiority and efficiency of traditional incentive systems: better fit with local needs, preferences and capacities; reduced need for government intervention; increased empowerment.

The second looks at government capacity to enforce a comprehensive set of laws and regulations that would provide an internally consistent set of incentives to NR users, and concludes that African countries are, and will remain, unable to effectively manage such a set. This kind of formal incentives framework is too costly and demands an institutional and human resources infrastructure beyond what African nations can create in the near term. The persistence of African governments to try to do "everything," despite evidence of their incapacity to do so, opens the door to selective enforcement of NRM regulations. The result, as Morrell and Poznanski state (1985: 165), is that, "... corruption provides the prevalent mechanism for nonenforcement of applicable laws, standards, and regulations... The prevalence of corruption in so many developing countries constrains the choice of effective approaches to environmental [and NRM policy] implementation."

Sources also discuss the role of international donor agencies in providing incentives, compensating African nations and certain local populations (for example, residents of wildlife buffer zones) for the preservation of certain resources. Just as governments need to provide incentives to users of resources that are valued differently by individuals than by the state, so the international community must provide economic incentives to guide the consumption of NR that the global community values more than do individual governments (Stryker et al 1989). This is the rationale for debt-for-nature swap programs (Peucker 1990, USAID 1989b).

Financial Aspects of Policy Implementation

Developing country governments' problems with revenue generation, recurrent cost coverage, and sustainability of development investments are well recognized (e.g., Brinkerhoff and Goldsmith 1990). These problems are especially acute in Africa, and strongly constrain host country capacity to respond to NR degradation on a scale that will have widespread impact. Most of the USAID project and program documents cited problems with recurrent costs as a critical issue (e.g., USAID 1984, 1990b, 1991a). Sources in the literature also address the financial dimensions of implementing NRM policies, noting a host of weaknesses in government accounting, budgeting, and financial oversight functions (Zimmermann 1991).

One aspect of the co-management model is that each actor involved in implementation contributes resources. For example, in Niger's Guesselbodi project, Heermans and Minnick (1987: 125) discuss the mix of central and local resources that combine to cover the costs of the project:

... recurrent costs are ... divided into those paid by the government (forest manager's salary, vehicle, fuel) and costs paid by forest revenues which are essential for continued management of the site (forest guards, stocking center, maintenance).... The twenty-year time frame can be divided into three periods: an initial start-up (infrastructure and studies), first rotation (restoration and management) and second rotation (maintenance and management)....

Centralization emerges as a financial constraint on co-management. Most African public revenue systems return all locally generated revenues to the center, where decisions are made on priorities and allocations. These systems are characterized by "leaks" in the public revenue pipeline. These occur at the local level where, for example, forestry agents pocket bribes instead of collecting fines, or gamepark personnel overlook poaching in exchange for a payoff (Zimmermann 1990, Thomson 1985, USAID 1990c). And they take place at the central level as well, where various combinations of inefficiency and corruption lead to more or less significant draining away of funds.

To cope with budgetary overcentralization, a number of NRM programs are experimenting with policies that return some revenues to their point of collection, to be used to maintain NRM systems by providing recurrent cost coverage and incentives to local people. Heermans and Minnick (1987) recount the example of the Guesse!bodi forestry project. Another forestry example comes from Cameroon where the government is employing a taxation system that divides taxes collected among the central government, local councils, and a fund for forest development and regeneration. Tax rates are fixed annually as part of the government's national budget preparation (Fultang 1990). The case studies in Shaikh et al (1988) present additional "success stories" in channeling fees and taxes back to local cooperatives and village groups to cover recurrent costs.

Given the current state of NR in Africa, sources in the literature stress that external assistance is critical to help host countries with the startup and restoration costs involved in NRM policy implementation. At the national level, host country governments will require long-term funding for institutional strengthening and support. Most of the participants at the first NEAP workshop agreed that continued donor support would be critical to the implementation of the NEAPs (World Bank 1990c).

Other resource provision roles are cited for international NGOs. Development NGOs (CARE, Catholic Relief Services, Save the Children, and so on) can assist with organizational training, and environmental NGOs (World Resources Institute, World Wildlife Fund, and so on) will be invaluable as technical resources. One interviewee stated that an appropriate mix to assist African countries with NRM policy implementation would combine development and environmental NGOs, with international donors acting as facilitators and financiers. For NRM the co-management model also applies internationally, bringing together a partnership of host country agencies and indigenous NGOs, donor agencies, international NGOs, as well as the private sector. For example, the "Club of Dublin" is using this international version of the co-management model to implement national environmental action plans throughout Africa; meeting yearly, they exchange information on their successes and failures in implementing NRM policies (World Bank 1991a).

Management and Political Skills, and Commitment

USAID documents and the literature emphasized as critical issues increased management capacity, of which management skills is a component, plus commitment by host country officials. The following assessment is echoed by many of the sources reviewed: "Management of natural resources ... in Africa ... is very much constrained by a number of factors. Most important is the severe shortage of management skills, especially in many of the countries that face the severest resource problems" (Stryker et al 1989: 65). The treatment of skills and commitment can be classed in terms of what kinds of skills and commitment are required, who does or does not have them, and who needs them.

Management Skills

The sources reviewed were practically unanimous that management skills are a key constraint on NRM (Adeyolu 1976, Horberry and le Merchant 1991, Ledec and Goodland 1988, Morell and Poznanski 1985, Nagle 1991, Falloux and Mukendi 1988, Zimmermann 1991). However, we found relatively wide variety in the literature in terms of specifying more precisely what kinds of management skills are needed. A common pattern was major detail on the skills needed for the technical aspects of NRM, with an undifferentiated management skills category added at the end. For example, a United Nations report notes that modern forestry management needs an appropriate management system; but the skill elements elaborated focus on training in assessment of ecological and physical factors, social implications, and the effects of economics and technological innovations (UN 1988).

The literature on forestry is among the relatively more detailed regarding management skills specifically. Authors frequently pointed out that existing management skills relate to policing and enforcement functions; in the case of forestry departments of Sahelian countries, for instance, to enforce the provisions of the 1935 Forest Codes (Elbow and Rochegude 1990, Gregerson et al 1989, Honadle 1990, Shaikh et al 1988, Sayer 1990, Thomson 1985). Forestry agent management behaviors revolve around imposing and collecting fines from the villagers; these actions are supported at the national level because fines represent a source of revenue. Similarly, the enforcement of buffer zone policies for game and forest reserves in Uganda has led to eviction orders and imprisonment to settlers on an irregular basis over the last twenty years (Aluma et al 1989).

The NRM policies currently being pursued by many African governments, however, require the reorientation of implementing agencies toward community co-management of NR. This participatory implementation strategy is a key feature of new policies in forestry, rangelands management, wildlife conservation, nature tourism, and sustainable agriculture. In terms of management skills, this shift means that, as many authors observe, the current skill mix is ill-suited to these new policy objectives.

Efforts to develop more appropriate skills are illustrated by the case of Niger. In support of new forestry policy, the Cooperative League of the United States of America (CLUSA) introduced cooperatives and worked with forestry agents and villagers to improve management skills (Heermans and Minnick 1987; Shaikh et al 1988). CLUSA trained forestry agents in new management and organization techniques, and supported them as the cooperative structure was introduced, discussed, and finally accepted by the villages involved. A contract was created between the cooperative and the government of Niger, giving them exclusive cutting rights over the forest resources if provisions were followed. Thus the cooperatives formalized the co-management implementation strategy. The effort has concentrated on addressing the endemic problems of the Forestry Code and local attitudes, and has drawn technical and financial support from a host of donors and PVOs.

Another category of skills noted as weak relates to basic government functions and organizational maintenance. This category appears frequently in analyses of experience with NPA and with NEAPs, where successful policy change depends to a significant extent on governments' capacity to perform such tasks as drafting legislation, planning, developing and implementing procedures, budgeting and financial tracking, performance monitoring, and so on (e.g. Stryker et al 1989, Talbot 1990, Weber 1991b, Zimmermann 1991). Authors attribute some of the weak capacity to fulfill these basic government functions to inadequate skills. For example, Slade and Weitz (1991) make this point in their analysis of the extreme case of Uganda, where the tumultuous events of the past 20 years have severely degraded public sector capacity to carry out the most basic of government functions.

An interesting point made by several sources and interviewees relates the skills gap to African government choices about who should be involved in NRM policy implementation. The presumption,

common in many African governments, that the state is the primary actor in socioeconomic development has to a significant extent created a management bottleneck (Stryker et al 1989). If NRM is seen as the exclusive purview of central administrations, then policy implementation will be strongly dependent upon the skills and capacities of public officials and agents. Thomson's studies of NRM policy in Niger (1985) and Mali (1991) convincingly illustrate the pitfalls of this point of view.

The mainstream of analysis supports the perspective that NRM requires broad participation; discussing the state of, and the need for, management skills in the NGO and private sectors as key to NRM policy success. In addition, this viewpoint is operationalized in the assistance components of most of USAID's projects and programs. Many of the Sahelian case studies in Shaikh et al (1988) illustrate the benefits of local management capacity to effective NRM interventions (see also Elbow 1991, Falloux and Mukendi 1988). Several sources focus in particular on NGO management skills in the NR sector (see Ross and Getahun 1987, Talbott 1988).

Political Skills

Few of the sources in the literature reviewed mentioned the political skills associated with NRM. This appears to be an analytic gap in NRM policy implementation. In any sector, policy implementation requires actions in several bureaucratic and public settings, where managers can exercise little if any direct control (Brinkerhoff 1991, Thomas and Grindle 1991). Part of the complexity of NRM policy implementation derives from the broad array of actors involved, all of whom have a role to play in improving NRM. As Honadle and Cooper (1989) argue, much of what needs to be done to achieve NRM implementation success hinges upon implementors' skills in thinking and acting politically. This means engaging in bargaining, networking, and negotiation with groups both inside and outside government to influence resource allocations, actions, and attitudes. Gamman (1991) and Wilson and Morren (1990) also stress the need for these kinds of skills.

Commitment

The link between commitment to NRM policies and prospects for implementation was widely recognized in USAID project and program documents (see, for example, USAID 1990d, 1991c). This recognition is also reflected throughout the literature. Authors addressed commitment among implementors to undertake the administrative and technical actions necessary to implement NRM policy, and among resource users to engage in the changed behaviors that will result in improved NRM. Sources also noted the close relationship between the presence and absence of commitment, and patterns of incentives.

Top-level commitment is mentioned as a requisite for initial decisions to pursue new NRM policies, and as a condition to see policies through to implementation. Several of the NEAPs have been carried out under the direct sponsorship of the head of state; including Rwanda, Lesotho, and Madagascar (Falloux et al 1991). As a mechanism to build commitment within the agencies charged with policy implementation, the Gambia's Multisector Task Force arranged for their report and recommendations to be promulgated as a cabinet paper by the Minister of Agriculture (Gambia 1990). Commitment is not irreversible and can derail policy reform, as an interviewee example from Senegal shows. In November 1991 the President of Senegal, under political pressure from Mouride religious groups to increase availability of agricultural lands, cancelled an executive order that had designated 40,000 hectares of virgin timber as protected forests.

This example illustrates another concern voiced in the literature regarding the source of initiative for NRM policies and its relationship to commitment. Some NRM policies arise mainly at the initiative of, and pressure from, international donors (Atkinson 1991, Turnham 1991). For example, biodiversity was

mentioned as falling in this category. Analysts raised questions about how committed developing country governments really are to implementing NRM policies. As has been observed regarding development assistance in general, in some cases host country governments acquiesce to policy targets and programs out of a desire to gain access to needed resources rather than out of "true" commitment to those policies and programs (Brinkerhoff 1986, Cohen et al 1985, White 1990).

Commitment among staff of implementing agencies is mentioned in numerous sources. Again the literature on forestry in the Sahel addresses this issue, noting in particular the problems of generating commitment to participatory NRM practices in "old school" foresters used to enforcing regulations, fining violators, and pocketing side-payments (Elbow and Rochegude 1990, Gregerson et al 1989, Honadle 1990, Shaikh et al 1988, Sayer 1990, Thomson 1985). Community wildlife programs face similar problems (Ledec and Goodland 1988, Munasinghe and Wells 1990, USAID 1990c).

The literature also addresses commitment issues among resource users. Many authors cite the centrality of local commitment to NRM policies (Heermans and Minnick 1987, Talbott 1990, Mallya and Talbott 1990). The commitment-incentives link is key here; local resource users' commitment to NRM policy implementation is constrained by their need to survive, and the absence of economically viable incentives for nondestructive NRM (Costello et al 1990, Thomson 1991). The literature on insecurity of land tenure and its impact on incentives directly addresses the commitment issue from the resource users' viewpoint (Barrows and Roth 1989, Bruce and Fortmann 1989, Bruce et al 1990, Lawry 1991, Ledec 1985, LTC 1991, Stienbarger 1990).

A few sources specifically targeted private sector (for-profit as opposed to NGO/PVO) commitment to NRM, emphasizing the weak incentives for conservation and the consequent low commitment to sustainable economic development. Elbow (1991), writing about Niger, notes that non-local, private wood merchants will clear forests if restrictions and fines are not harsh; they seek short-term economic gain, do not live in the area, and see no personal stake in the preservation of the resource. A more sanguine perspective comes from a case study of the Cameroonian timber industry, which argues that if loggers have the responsibility for their future resources, they will be more committed to operating in an ecologically responsible way (Gartlan 1990, see also Maddy 1986). Other analyses approach private sector commitment to NRM from the perspective of common property and incentives to consume or conserve (see, for example, Bromley and Cernea 1989).

Ongoing Stakeholder Support

Almost all of the NRM literature we reviewed recognized that support from key stakeholders is associated with successful policy implementation. Repeatedly mentioned are the need: to accurately identify stakeholders, including winners and losers (Chopra 1989, Gamman 1991, Honadle and Cooper 1989, Thomson 1985); to facilitate participation of stakeholders in the policy decision-making and implementation process (Blackwell et al 1991, Catterson 1988, Dorm-Adzobu et al 1991, Elbow 1991, Gregerson et al 1989, Mallya and Talbott 1990, Opsal and Talbott 1990, Shaikh et al 1988, Talbott 1990, Warsame 1990); and to recognize and address the incentives and disincentives for improved NRM, policy reform, and organizational change (Honadle 1990, Lawry 1990, Ledec 1985, Morell and Poznanski 1985, Weiss 1991).

Identifying Stakeholders

Sources pointed out that among the features contributing to the complexity of NRM is the number and diversity of stakeholders involved. Illustrative of this complexity is Elbow's (1991) analysis of NRM in Niger's Baban Rafi forest, which discusses the numerous user groups and assesses winners and losers.

He identifies: 1) farmers, who are potential losers if forests are preserved rather than cleared; 2) transhumant herders, for whom the preservation of forest and pastures is important, but their desire to maximize animal populations creates an unsustainable NRM situation; 3) local woodcutters who have a minimal stake in the process because of having diversified their economic activities, but would like to harvest wood for profit as one component of their livelihood strategies; 4) commercial woodcutters, whose major interests are profit generation and employment, and, having no stake in the local environment, will cut wood until it is gone or until someone prevents them from doing so; 5) women, for whom reduced availability of fuelwood means increased gathering time, and thus a higher aggregate workload; 6) traditional healers and others with special niches (e.g., sculptors) whose interests support the maintenance of biodiversity of herbs and trees. Elbow goes on to analyze the patterns of interaction among these groups, the formal and informal systems of NR rights, allocation mechanisms, and exploitation modes, and incentives for and against sustainable NR use.

Most analysts focus their attention on user groups at the local level that are the target of NRM policies. Several sources, however, note the need to extend the stakeholder analysis perspective "beyond community-level human organizations to include more formal organizations... (Fleuret 1988: 71)." The stakeholders in this broader arena are particularly important because they include the implementors of NRM policies, whose interests and behaviors have a direct impact on how effectively policy directives are translated into action. For example, Thomson (1985) includes government officials in his assessment of winners and losers in Niger. Among the winners he identifies in this group are forestry agents who take bribes instead of collecting fines, and livestock agency staff who sell water illegally to herders. Other writings on Sahelian forestry policy also focus attention on forestry agents as major stakeholders in the process (e.g., Elbow and Rochgude 1990, McLain 1991).

Policy implementation in any sector depends upon the actions of a broad array of agencies and groups (Brinkerhoff 1991). Thus the number of stakeholders falling in the category of implementors can be large, sometimes larger than the number of beneficiary target groups. Honadle and Cooper (1989), for example, report on stakeholder analyses of implementor groups for social forestry policy in Malawi and Zimbabwe where as many as 20 different entities were identified as having roles to play. Similarly, the NEAP process has involved significant numbers of actors (Talbot 1990). This feature of NRM policy implementation significantly adds to the challenge of successfully translating policy intent into action and impact. As one of the classic studies of policy implementation demonstrated, implementation delays increase exponentially as the number of stakeholders with veto power of one sort or another rises (Pressman and Wildavsky 1973).

An issue raised by several sources as important for charting NRM winners and losers is the time factor. Those who are consistent winners become stronger and more entrenched over time, and perennial losers become weaker and more vulnerable. Among NR users, winner groups develop increasingly powerful access to resources and patterns of resource use that are hard to modify. Chopra (1989: 343) makes the point about India, but equally applicable to Africa, that, "over a period of years, the 'gainers' [industry and agriculture] have consolidated themselves into powerful interest groups making it difficult to introduce change that alters the direction of [NR] management. This may pose a threat to implementing optimal resource utilization [policies]." Thomson's case study of Niger illustrates how the dynamics of this process over time decrease the possibilities for improved NRM. Increasingly at-risk rural groups, as part of their survival strategies, seek to,

... create and strengthen patron-client alliances. Poor peasants and herders seek patrons for protection. They are thereby removed from the pool of potentially mobilizable individuals who might engage in pro-environmental political action at some future point: patrons do not want to reduce their leverage by stemming the environmental degradation which has driven clients to them in the first place (1985: 241).

A further effect of the time dimension is the uncertainty it introduces into making future assessments about winners and losers from NRM policies. The complexities and gaps in knowledge of NRM limit policy-makers' and implementors' capacity to be predictive with high degrees of confidence. As several sources and interviewees noted, this fact highlights the need for effective policy monitoring (Hassan et al 1990, Hirji and Ortolano 1991, Weber 1991a, World Bank 1991a).

Among implementors the time factor also plays a role in influencing winners and losers. Many NRM policy planning and implementation entities are relatively new additions to the public sector of host country governments. As many of the institutional analyses in the USAID project/program documents noted, newly formed NR and environment ministries and agencies tend to be fragile and weak (e.g., USAID 1991a, 1991c, 1990b; see also Zimmermann 1991). Although they will be winners if policies are successfully implemented, they face an extremely powerful set of bureaucratic and political losers who have been in place for a relatively long period of time.

Facilitating Participation

Participation has long been recognized as instrumental for the achievement of sustainable development objectives (Brinkerhoff and Goldsmith 1990 and 1992, Cohen and Uphoff 1980, Finsterbusch and Van Wicklin 1987, Panos Institute 1987). As noted above, issues of participation occupy a prominent place in the NRM literature. For example the planning process for developing a conservation of biodiversity policy for Lake Tanganyika used a participatory "whole-basin" model, "involving authorities on fisheries development, parks and regional land use, watershed management and deforestation. [B]ringing together individuals with a range of concerns ... [built] an early consensus on those actions which are both vital and feasible, given the socioeconomic and political realities of the region" (Cohen 1991: 5). The gains in realism and implementability of NRM plans resulting from increased participation are also cited in the case of the NEAPs (Talbot 1990, Opsal and Talbot 1990).

The flip side, lack of participation, particularly by indigenous people, is the topic of several critical reviews of other planning experiences (e.g., Winterbottom 1990). This type of criticism is closely linked to discussions of the need for, and benefits of, indigenous local-level knowledge about NRM to make policy prescriptions effective (e.g., Niamir 1990, Thompson 1991). The wider development literature also advocates increased inclusion of local knowledge to increase the effectiveness of interventions in the rural development sectors (e.g., Cernea 1985, Korten and Klaus 1984).

As discussed previously in the section on policy implementation arrangements, a broad swath of the NRM literature discusses the utility and appropriateness of using NGOs to facilitate participation in policy analysis, planning, and implementation (Talbot 1988, Ross and Getahun 1987, Niamir 1990, see also Paul and Israel 1991). NGOs have a well-recognized place in NRM and environment issues; playing a variety of roles: advocacy, monitoring and "watchdogging," education and awareness, direct intervention, and technical assistance. Regarding wildlife conservation, Ledec and Goodland (1988) provide a long list of national and international NGOs. Talbot (1988) inventories NGOs with NRM intervention and technical assistance capacity in West Africa.

From a policy implementation perspective, it is important to recognize that broad and sustained participation is not costless for stakeholders. Local populations, as many sources note, view involvement in NRM in terms of its relationship to their survival strategies and economic activity. With limited time, energy, and resources, local people, and especially the poor living at the margin, weigh their choices carefully (e.g., Thomson 1985). For policy managers, fostering participation means spending more time in meetings and discussions, dealing with delays in achieving targets, negotiating new roles with stakeholders, bargaining over resource commitments, lobbying for support, and coordinating joint action (Brinkerhoff 1991, Honadle and Cooper 1989). Referring to the inclusive process countries are using in

the NEAPs, Talbott (1990: 45) concludes that,

Achieving participation is difficult and time-consuming. Real participation is vertical (i.e., between the rich and the poor; the formally educated at schools and universities and those educated by other means; and between the tiny percentage of people who have access or even control of national and regional decision-making processes and those who effectively do not). Governments and donor organizations, for the most part, have insufficient tools to induce authentic participation. Environmental challenges often invoke contentious issues relating to the political and economic conflicts between vested interests and the livelihood struggles of the disenfranchised.

Addressing Incentives

Incentives issues are intimately connected to stakeholders (winners and losers) and options for participation. The NRM literature looks at incentives for both resource users (the targets of policy intervention) and policy implementors, though the former group is the subject of more in-depth and detailed treatment. One common theme is the conflicting incentive frameworks that are created by inherently conflicting policies.

This theme emerges in the sources that discuss structural adjustment and NRM (e.g. Kyle 1989, Stryker et al 1988), and the more general topic of the anti-NRM impacts of the prevailing economic development paradigm (Atkinson 1991, Miller 1991, Schramm and Warford 1989). It is highlighted, for instance, in the literature on sustainable agriculture and desertification where incentives to abuse lands to feed growing populations and achieve some degree of food security outweigh those for NR conservation (Falloux and Mukendi 1988, Okigbo 1990, OAU 1991). It also appears in the sources that examine land tenure policies and their impacts on NRM in forestry, rangelands, and agriculture (Lawry 1990 and 1991, Falloux and Roehgude 1988).

A related theme the literature addresses concerns conflicts among incentives due to differential impacts on various stakeholders. The example of Sahelian forestry co-management policy mentioned elsewhere is relevant here. Though the policy is designed to provide incentives for local people to manage trees in ways that conserve the resource, it offers few incentives for forestry agents to change their enforcement operating mode (Heermans and Minnick 1987, Elbow and Roehgude 1990). Another example comes from The Gambia, where Bruce et al (1990) note the potential incentives conflicts in the government's State Land Bill, which basically privatizes all lands with government titling. This bill, if passed, will pit traditional landholders against potential investors and entrepreneurs.

Of particular importance for examining the interplay between NRM stakeholders and incentives is the question of timeframe. Numerous authors point out that the benefits of improved NRM show up mainly in the long-term. However, in the case of the poor, the exigencies of short-term survival overwhelm any incentives for NR conservation or sustainable use (Lawry 1990, Thomson 1985). Even if people are not living on the margin, the time dimension of NRM causes problems for incentives. Because many environmental changes are gradual rather than dramatic, with diffuse rather than concentrated effects over the years, people do not see the cause-and-effect linkages between new NRM practices and outcomes. In short, people's incentives to change practices and behaviors are weak when they do not perceive that: a) there is a problem, or b) the immediate costs are worth the effort for the long-term benefits. Stryker et al (1988: 79) put the time-incentives issue in economic terms, observing that,

Poor farmers without access to capital markets have a relatively high rate of time preference, which causes them to value current much more than future consumption. This effect may be strengthened if the environment in which they operate is very risky. As a result, they are not

likely to invest in soil conservation, [or trees, long-term plantings, infrastructure, and so on].

On the topic of incentives for NRM policy implementors, the treatment in the literature has somewhat less depth than that focused on NR user groups, with a few exceptions. Already noted are the sources that discuss Sahelian forestry and the incentives mismatch between local-level forestry department personnel and the new community co-management policies (e.g., Elbow and Roehgude 1991, Thomson 1985). As discussed earlier, other sources, including many of the USAID program analyses (e.g., USAID 1990a, 1990b, 1991a), cite the negative impacts of African civil service system procedures and practices on the incentives for public employees to engage in the behaviors called for to implement new NRM policies (e.g., Schramm and Warford 1989, Stryker et al 1989, Zimmermann 1991). These include: inadequate pay scales, corruption, insecurity of job tenure, highly personalized promotion practices, lack of vehicles and other equipment, and so on.

Supportive and Stable Socioeconomic and Political Conditions

Supportive and stable socioeconomic and political conditions are often underemphasized in relation to economic and technical issues when development interventions are designed and implemented (Brinkerhoff 1991). Nevertheless, they can be critical for policy implementation success. Because much of the NRM literature has a strong local-level focus and a normative orientation toward discovering and applying local peoples NR knowledge, sociocultural variables are frequently mentioned as important factors (e.g., Barrows et al 1990, Thompson 1991, Wamalwa 1990). For example, Winterbottom (1990) urges the inclusion of sociocultural data and indigenous knowledge in the preparation of Cameroon's Tropical Forestry Action Plan, and notes that such information is too often overlooked. Atkinson's perspective reinforces this point (1991: 409):

traditional environmental knowledge is not only devalued by development institutions, it is likely also to be largely overlooked in the environmental management literature ... without knowledge of the culture a people possess one is unlikely to be aware of their knowledge of their environment.

The interplay between socioeconomic and political conditions and successful NRM policy implementation is not easily investigated. Sources note that it requires a long-term understanding of people's livelihood strategies and resource use patterns (e.g., Anderson and Grove 1987, Hassan et al 1990). Donors, as well as host country agencies, are often not willing to invest substantial resources on "background" information (e.g., Rondinelli 1983). Only seven of the 19 projects surveyed mention cultural/ethnic issues as a factor for the project. However, many donor projects fail to produce sustained results, due in part to the lack of information or misinformation about social and political forces (see Brinkerhoff and Goldsmith 1990, Cernea 1985, Kersten and Klaus 1984).

Several sources noted that understanding of cultural factors can assist policy makers and implementers to determine local receptivity to an NR intervention (Bruce and Fortmann 1989, Muir-Leresche 1989/90, Wamalwa 1990). For instance, Elbow (1991: 5) makes an interesting observation about the general settlement pattern in Niger and its effect on NRM:

It is significant that the area still retains many of the characteristics of a pioneer area--a region still in the process of being settled ... The point to note is that these settlers did not come with sophisticated and pre-existing resource use/access codes that could be transferred to an untamed forest. Settlement and resource exploitation sites were chosen according to natural resource preferences (e.g., sandy over clay-like soils) and supernatural beliefs, and were little subject to social restrictions.

Some groups have difficulty accepting new policies and/or organizational structures for cultural reasons: "... the Fulani, due to their historic role as herders, were not as willing to buy into the cooperative structure as the Hausa. The Fulani did not care for the meetings, or the cooperative ventures to plant trees" (Elbow 1991: 6). Other groups, because of cultural characteristics, have been identified by projects to assist in policy implementation; the Touaregs, for example, were chosen as forestry guards given their supportive cultural traditions (Shaikh et al 1988). Some projects have incorporated the cultural importance of sacred trees and areas as part of the religion to maintain areas of greenery (Elbow 1991; Dorm-Adzobu et al 1991)

One subset of the literature that deals directly with the stability of the socioeconomic and political setting discusses NRM in African countries that have experienced civil wars. For example, O'Keefe et al (1991) look at Mozambique where natural resources continue to degrade because there is no chance to reach consensus on NRM policy due to the level of societal turmoil. Mallya and Talbott (1990) cite the negative impacts of 20 years of war and economic mismanagement on the prospects for implementing NRM policy reforms in Uganda.

III. KEY FEATURES OF NATURAL RESOURCES MANAGEMENT POLICIES AND IMPLICATIONS FOR IMPLEMENTATION

Our literature review has made clear that for each of the factors associated with successful policy implementation identified by Mazmanian and Sabatier (1989), their expression in the NR sector in Africa reveals significant complexities and difficulties. Thus it is not surprising that African policy-makers and public managers, and the donor agencies working with them on NRM policies, have encountered delays, setbacks, and frustrations, as well as some successes.

Development policy implementation in Africa is a challenge to managers in all sectors, as is well-recognized (Brinkerhoff 1991, Grindle and Thomas 1991). Several features of NRM policies, however, stand out as particularly troublesome from an implementation perspective. These include: the underlying contradiction between sustainable NRM and the prevailing economic development paradigm, the nature of NRM costs and benefits, the negative orientation embodied in NRM regulations, and the tendency for NRM issues to generate conflict (cf. Guimaraes 1991).

Implicitly, and in many cases explicitly, NRM policies call into question the national development strategies African countries pursue. In particular they challenge long-standing sectoral policies in the agriculture, industry and commerce, and irrigation sectors. Whereas actions in these sectors provide tangible goods and services to society in pursuit of positively-valued objectives; NRM policies in many situations play a "spoiler" role, highlighting the contradictions in society's economic activities with regard to NR use. NRM policy-makers and implementors have come under pressure to recast policy content in terms of positive contribution to national development so as to generate improved attitudes and response.

From a policy implementation perspective, NRM costs and benefits are problematic in a variety of ways. The first dilemma is the quantification of costs and benefits, and assignment of value to NR. The second difficulty concerns the barriers to individualizing costs and benefits that flow from the common property characteristics of NR. Third is the uneven distribution of costs and benefits among different social groups. Fourth is the disjuncture between the time when costs are incurred and when benefit flows begin. These issues cause problems due to their strong impacts on incentives among the various stakeholders involved in NRM.

The content of most NRM policies is embodied in systems of rules and regulations that are essentially proscriptive, imposing penalties and fines for violations. The emphasis is on "don'ts" rather than "dos." In the African context, where administrative and political factors lead to selective enforcement, NRM policy implementation opens the door to distortion of incentives as users try to circumvent regulations, and to corruption as enforcers engage in rent-seeking. The results breed cynicism, perceptions of unfairness, and reduced commitment among NR users and implementors alike.

As a result of the interplay among these various features, NRM policies show a strong tendency to generate conflicts. Because access to, and exploitation of, NR cuts to the heart of "who gets what" in Africa (and everywhere), NRM policy crystalizes the divisions and tensions that exist within individual countries. Since resources do not respect national boundaries, these schisms and pressures extend controversies regionally and even globally. NRM policies provoke conflicts along numerous, interconnected dimensions, such as: rural-urban, rich-poor/big-little, nomad-farmer, national-regional-local, public-private, North-South. African societies and public officials (including those with NRM policy responsibility) tend to avoid conflict. This raises the potential for implementation failure by setting up a cycle where: a) the more controversial the NRM policy, the more likely it is not to be fully formulated and elaborated (despite official rhetoric), b) the more ill-designed and poorly carried out the policy measures, the weaker the implementation and impacts, and thus c) the higher the degree of failure.

This review has illuminated key features of NRM policies that have an impact on implementation prospects and problems. The analysis has demonstrated the range and scope of the implementation challenges to African public managers. Given the complexities of NRM policy, field investigation of the implementation issues discussed in this study is called for to ground those issues in practice, to refine the analysis, and ultimately to increase the utility, effectiveness, and impact of African and donor resources allocated to addressing the NRM issues critical to sustainable development in Africa.

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