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Recent Reforms in Natural Resources Management in Africa: Trends in the Roles of Public-Sector Institutions

Phase II Final Report

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Recent Reforms in Natural Resources Management in Africa: Trends in the Roles of Public-Sector Institutions

Phase II Final Report

R. C. Zimmerman

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Foreword

This report has been prepared to provide an overview of institutional issues affecting natural resources management (NRM). The report focuses on those institutional issues affecting the role of public sector institutions to assist farmers in promoting the more sustainable use of resources, with an emphasis on institutions related to forestry and wildlife.

The Africa Bureau of the U.S. Agency for International Development (USAID) supports research that assists USAID in meeting more effectively its overall objective for Africa—the promotion of sustainable, broad-based economic growth. Funded through the Policy, Analysis, Research, and Technical Support (PARTS) Project (698-0478), the Bureau's Natural Resources Management Analytical Agenda is guided by the Development Fund for Africa (DFA), other congressional mandates, and Agency initiatives.

The Africa Bureau is accountable for achieving people-level impacts, as measured in terms of economic growth. Given the time-sensitive dimensions of NRM initiatives, it is critical that reliable and valid intermediate indicators be developed to help track progress toward the DFA goal. The NRM Framework was developed, in part, to help organize such intermediate indicators, and a key element of Levels I (Policies) and II (Conditions) of the Framework has been the role of public sector institutions.

The analysis for this report was initiated under the Africa Bureau's Natural Resources Management Support (NRMS) Project (698-0467) and was completed under the PARTS Project. The analysis itself was undertaken by the U.S. Department of Agriculture Forest Service (USFS). It provides a basis for much of the analysis being done by the Bureau related to institutional issues as conditions for change. As is discussed in other Bureau reports, including the *Plan for Supporting Natural Resources Management in Sub-Saharan Africa*, the existence of institutions that support innovation is one of the key conditions affecting the adoption of improved NRM approaches and technologies. Many USAID field projects and programs reflect this perspective. For that reason this ARTS Technical Paper—previously circulated to the field in draft form—has provend to be an invaluable introduction to these issues.

This report has been prepared by USFS consultant Robert Zimmerman. Tony Pryor was instrumental in providing the analytical leadership for USAID through the Bureau's Office of Analysis, Research, and Technical Support; Division of Food, Agriculture, and Resources Analysis (AFR/ARTS/FARA).

— Curt Reintsma
Division Chief
AFR/ARTS/FARA

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Glossary of Acronyms and Abbreviations

ADP	Agricultural Development Program (The Gambia/WB)
ANAE	Association Nationale pour les Actions Environnementales (Madagascar)
ANGAP	Association Nationale pour la Gestion d'Aires Protegees (Madagascar)
ANR	Agriculture and Natural Resources (USAID NPA Program, The Gambia)
API	Air Photo Interpretation
APN	Agent de Protection de la Nature (Madagascar/WWF)
BPS	Biodiversity Planning Service (SAVEM Project, Madagascar)
CRMA	Community Resource Management Agreement (The Gambia)
DEF	Direction Eaux et Forets (Madagascar Forest Service)
DFA	Development Fund for Africa
EIA	Environmental Impact Assessment
EPA	U.S. Environmental Protection Agency
ESSA	Ecole Superieure des Sciences Agronomiques (Madagascar)
FAFIALA	Public-private extension and experimental center (Antananarivo Province, Madagascar)
FD	Forest Department (The Gambia; Kenya)
FTM	National Institute of Geodesy and Cartography (Madagascar)
GEAP	Gambian Environmental Action Plan
GIS	Geographical Information System
GOM	Government of Madagascar
GOTG	Government of The Gambia
GPF	Gestion et Protection des Forets (Madagascar)
GTZ	Gesellschaft fuer Technische Zusammenarbeit (German Aid Agency)
HQ	headquarters
IMF	International Monetary Fund
KEPEM	Knowledge and Effective Policies for Environmental Management (USAID NPA Program, Madagascar)
MNRE	Ministry of Natural Resources and the Environment (The Gambia)
MOA	Ministry of Agriculture (The Gambia)
NGO	nongovernmental organization
NEAP	National Environmental Action Plan
NPA	nonproject assistance
NR	natural resources
NRM	natural resources management

NRMS Natural Resources Management Support Project (USAID)

ONE Office Nationale de l'Environnement (Madagascar)

PAAD Program Assistance Approval Document
PAIP Program Assistance Initial Proposal
PARTS Policy, Analysis, Research, and Technical Support Project (USAID)
PBS programming and budgeting system
PLI people-level impacts (USAID NRM Organizing Framework)

SAF Sauvegarde et Amenagement des Forets (project at Morondava, Madagascar)
SAVEM Sustainable Approaches to Viable Environmental Management (USAID project, Madagascar)

TA technical assistance

UNSO United Nations Sudano-Sahel Office
USAID U.S. Agency for International Development
AFR/ARTS/FARA
Bureau for Africa / Office of Analysis, Research, and Technical Support / Division of Food, Agriculture, and Resources Analysis
R&D/ENR Bureau for Research and Development / Office of Environment and Natural Resources
USFS U.S. Department of Agriculture / Forest Service

ZODAFARB Zone d'Action en Faveur de l'Arbre (Madagascar)

Executive Summary

1. Introduction

In late 1991, the USAID/R&D/ENR-funded Forestry Support Program and USAID/AFR/ARTS/FARA jointly commissioned an "Analysis of Institutional Structure and Reform: Impacts on Natural Resources Management" in two phases. This Analysis complements a number of other USAID-funded studies designed ultimately to demonstrate that policy and other institutional reforms lead to better natural resources management (NRM).

Phase I (4 weeks) was devoted to a preliminary collation and categorization of institutional problems in African NRM from documentary sources. Phase II (9 weeks, of which 6 were spent in Madagascar and The Gambia in connection with the design of USAID nonproject assistance, or NPA, programs) was to describe and analyze solutions to the issues identified in Phase I, using additional documentary and field data. Phase II was also to include a preliminary analysis of the linkage between institutional reforms and "people-level impacts" (PLIs), and of the "proper" or "effective" role of public-sector institutions in NRM.

Limitations of time and data, as well as the fact that many reforms are still on paper or in initial phases of implementation, eventually dictated a modified approach which retains, however, the objectives given above. Thus, recent reforms in The Gambia, Madagascar, and selected other African countries were analyzed in terms of their convergence towards, or divergence from, a framework that lists the potential roles of public NRM institutions. The framework also includes norms for the functioning of these institutions, defined as addressing or having addressed some of the priority issues identified in Phase I; the two phases of the Analysis were thus linked primarily by this means.

The framework is not to be seen as a prescriptive model of the "proper" role of public NRM institutions, but rather as a provisional frame of reference for judging trends in institutional reforms. It is also designed to support USAID's NRM Framework (1991), primarily as a checklist for the design or planning of Levels I and II activities and conditions.

The Phase II report describes the framework used and recent reforms as they (either conceptually or in practice) conform to or deviate from this framework. The report also flags new issues as they have emerged from project/program design or from the initial implementation of NRM projects. At least one example of PLIs (Level 5 achievements of the NRM Framework) stemming from recent institutional reforms is given.

2. A Framework for the Roles of Public NRM Institutions

The framework is in two parts. The normative *roles* used reflect a fairly conventional, "residual" view of the government as establishing the common framework of rules, providing services that private groups or interests cannot or will not provide, and acting as an arbiter rather than as an actor in the economic sphere. The various roles are expressed as elements:

- *Element 1 / Rules:* Government establishes and revises the policy and legislative set of rules governing the use and conservation of natural resources on the basis of the utilitarian "greatest good for the greatest number,"

taking into account modern concepts of sustainable development and biodiversity conservation.

- *Element 2 / Information:* Government informs, educates, and provides technical standards and assistance to complement private efforts and to take into account the long-term public interest.
- *Element 3 / Monitoring:* Government monitors the state and use of resources to inform the policy-making and legislative process.
- *Element 4 / Mediation:* Government mediates and arbitrates among competing economic and other interests, allocates resources fairly, and ensures that resource pricing reflects fair market and social values.
- *Element 5 / Enforcement:* Government enforces laws and technical standards but delegates this role to lower levels of government and to local communities as far as possible.
- *Element 6 / Research:* Government conducts or commissions research that transcends private, short-term interests.
- *Element 7 / Infrastructure:* Government provides infrastructure that private interests cannot provide, in support of the utilitarian principle of resource use or accessibility.
- *Element 8 / Social Ownership:* Government owns and manages resources in cases where public, long-term interests clearly predominate (economic concept of "irreplaceable assets").

The normative *functioning* used for the report means addressing the following issues that African experience with NRM has shown to be critical or of a high priority:

- *Element 9 / Linkage:* Government supports the creation of a structure where government, and nongovernmental organizations (NGOs), as well as donors, can review and coordinate NGO NRM projects, arrange funding, transmit policy and other directives, exchange technical information, set legislative and research agendas, and revise priorities.
- *Element 10 / Recurrent Costs:* Government addresses the chronic problem of insufficient nonsalary operating budgets.
- *Element 11 / Programming / Budgeting:* Government addresses the problem of ineffective planning, programming, and budgeting of its operations.
- *Element 12 / Pay:* Government addresses the problem of inadequate salaries and allowances, especially nonliving wages.
- *Element 13 / Royalties:* Government establishes or revises royalties for resources in the public domain that reflect true replacement, market, and social values.
- *Element 14 / Policies:* Government adopts or revises resource policies on the basis of public and intersectoral inputs so as to base them on a broad consensus and on intersectoral linkages.
- *Element 15 / Procurement:* Government addresses the problem of inefficient and/or corrupt public procurement systems.
- *Element 16 / Administration:* Government seeks to redress organizational weaknesses as defined.
- *Element 17 / Resource Management:* Government acquires the ability to use data to establish resource-management norms such as allowable cuts, off-take quotas, and carrying capacity.
- *Element 18 / Resource Mandates:* Government seeks to remove jurisdictional overlaps, ambiguity, conflicts, or gaps detrimental to resource management.

3. Recent Reforms in Relation to the Framework

Element 1 / Rules

The National Environmental Action Plan (NEAP) process has spurred governments to examine and revise the entire NRM policy and

legislative framework. The Gambian NEAP is a good example. The Madagascar NEAP has been criticized as being too oriented towards nature protection in its narrow sense. NPA conditionalities have helped to implement reforms, many identified under NEAPs, but usually only in a few specific directions. There is usually a gap between the political call for devolution of authority over natural resources and the necessary enabling framework. NPA in both The Gambia and Madagascar has conditioned the creation of this framework. The Gambia is proceeding with devolution using an administrative device (Community Resource Management Agreements) and may revise legislation to facilitate devolution on the basis of experience; USAID NPA supports this approach. The Gambia has already experimented with long-term grazing leases (Dankunku project), which is *a rare example of PLIs (higher productivity and incomes) directly traceable to a recent institutional reform.* In more conventional NRM, the framework of rules is still largely deficient.

Element 2 / Information

Again, the NEAPs have served to educate and inform, though mainly in a broad environmental sense rather than for specific resource management. The creation of national environmental agencies has also strengthened the public educational/informational role. In Madagascar, a semipublic organization (ANGAP) is now playing this role around protected areas, which some see as an abdication of government responsibility. The creation of semipublic guards/extension workers (APNs) paid for by an international NGO has greatly increased the technical assistance (TA) capability around protected areas, but it has created some resentment. The Gambia is experimenting with Community Resource Management Agreements as a way of focusing government TA in connection with devolution. On the other hand, conventional extension generally remains weak and may have deteriorated in Madagascar.

Element 3 / Monitoring

NEAPs have generally strengthened the capacity of governments to monitor resources in a broad environmental sense (e.g., using satellite imagery). The newly created environmental agencies have also been designed with a monitoring capacity in mind. More conventional monitoring of resources (forest inventories, off-takes from logging or fishing, soil fertility, range quality, etc.) remains weak.

Element 4 / Mediation

The newly created environmental agencies, which have a coordinating and conciliatory (rather than regulatory) role represent a strengthening of the mediating role, at least at the interministerial level. NEAPs are statements of sustainable development with the reconciliation of competing interests that the concept implies, especially in The Gambia. Governments have accepted the necessity to revise royalties in line with realistic resource pricing. Many cases of unfair allocation of resources (failure to collect royalties, mining in nature reserves, etc.) remain.

Element 5 / Enforcement

In Madagascar, and the projects and structures created under the NEAP, enforcement around protected areas has been strengthened essentially by replacing the government with semiprivate organizations, which has been controversial. The emphasis on nature protection in Madagascar and the relative neglect of other serious natural resources (NR) problems (deforestation in nonprotected areas, soil erosion, brush fires, range degradation) has been criticized. The Gambia intends to focus on strengthening enforcement (in both the regulatory and technical standards sense) through devolution (Community Resource Management Agreements). Conventional enforcement remains weak in both

Madagascar and The Gambia, especially in Malagasy forestry.

Element 6 / Research

The creation of environmental agencies has strengthened the research capability in the environmental field. The institutionalization of some of this capability is still doubtful. In sectoral resource fields, some local forestry projects have conducted research that informs the policy-making and regulatory functions of government. In general, there is still a lack of site-specific technical packages for conventional extension. Governments probably conduct research that could be left to the private sector. In The Gambia, the division of agricultural research between the government and NGOs has been examined critically.

Element 7 / Infrastructure

There are few examples of the establishment of public infrastructure resulting in more effective NRM. In Madagascar, efforts to reduce shifting cultivation and deforestation through the provision of infrastructure to support sedentary agriculture have so far been unsuccessful. In The Gambia, the provision of saltwater retention dykes, of range fencing, and of firebreaks has locally improved NRM.

Element 8 / Social Ownership

In Madagascar, the NEAP process has resulted in a much greater public ownership of ecologically sensitive areas. This trend has been criticized as having been too donor-driven. On the other hand, Madagascar probably has too many forest reserves that cannot be either protected or managed. The devolution of forests to local communities may be a long-term compromise solution (as opposed to outright privatization), but it is being resisted by the Forest Service. In The Gambia, the government hopes to extend Community Resource Management Agreements to most of the country, thus effectively turning over resources to local ownership by means of long-term leases. In The Gambia, the public domain remaining in central ownership seems reasonable in the light of the public interest and the means available to manage this domain.

Element 9 / Linkage

Madagascar is a good example of convergence to the norm used as it has created structures (ANGAP, ANAE, FAFIALA) that link the public sector and NGOs (and donors) in the areas of nature protection and general NRM. The absence of a linkage structure in The Gambia was keenly felt during the design of USAID's Agriculture and Natural Resources (ANR) NPA Program, which foresees NGOs acting as catalysts in the diffusion of the concept of Community Resource Management Agreements.

Element 10 / Recurrent Costs

No example could be found of a public NRM agency systematically addressing the problem of inadequate operating budgets. Indirect or partial solutions lie in the direction of debt swaps, local endowment funds, dedicated accounts for revenue from a resource under public management, retrenchment of public services, revision of budgetary priorities, improved revenue generation, and devolution. Debt swaps could be extended beyond the narrow concern for nature protection to support other NRM activities. Local endowment funds, established domestically with local currency, are another promising approach but raise the issue of whether they can be used to support public agencies and, if so, which. NPA has conditioned dedicated revenue accounts and improved revenue generation in both Madagascar and The Gambia. As Gambian pilot experience with local resource management agreements suggests, devolution can be an opportunity for the retrenchment of public services, and thus of addressing the problem of recurrent costs.

Element 11 / Programming / Budgeting

NPA in The Gambia has conditioned the introduction or continuation of programming and budgeting systems in two line Ministries. This has proved controversial because of fears that it may be too complex, too expensive in manpower and equipment, and disruptive of a precarious present system. Programming / budgeting in line Ministries is also pointless if the Ministry of Finance continues to impose arbitrary budgets. In the past, programming / budgeting has also revealed financial irregularities and has thus become politically sensitive.

Element 12 / Pay

Within the limited sample used, no example could be found of a government having addressed the problem of inadequate salaries and allowances (including the chronic problem of poor administration of travel allowances). This is an issue that cuts across the entire Civil Service and is usually tied to broader issues of structural adjustment, and thus to negotiations between governments and the International Monetary Fund (IMF). (Madagascar is an example.) It could not be addressed by sectoral NPA conditionalities.

Element 13 / Royalties

NPA has conditioned revised forest royalties, as well as improved collection systems, in both Madagascar and The Gambia. Thanks to recent economic liberalization in both countries, little ideological opposition to realistic resource pricing was found. In both countries, there is, however, little or no capability to conduct the necessary economic analyses. The effectiveness of realistic royalties as resource-management and revenue-generation tools remains to be demonstrated because of corruption, ineffective collection systems, and dwindling resources.

Element 14 / Policies

In The Gambia, the NEAP has been adopted as official policy, and, as such, it conforms closely to the proposed norm except for limited public consultation. In Madagascar, one Province (Antsiranana) has produced a policy and plan that comes close to the norm. Sectoral NR policies still diverge from the norm proposed, although they pay increasing lip service to resource interactions, biodiversity conservation, and public participation in NRM.

Element 15 / Procurement

No example can be given of a government having systematically addressed this chronic problem, which can paralyze NRM agencies, especially those with mobile field activities that depend on specific schedules.

Element 16 / Administration

No case of substantial improvement in the organizational efficiency of an NRM agency can be reported for the limited number of countries examined. The persistence and universality of the specific weaknesses reported (including the institution-building Gestion et Protection des Forets, or GPF, project in Madagascar, after 4 years of efforts) suggest that cultural factors are involved (conflict between social norms and the expectations of modern technocratic organizations). If this is so, short-term TA and management training are not likely to deal with the root causes of the problem. Management weaknesses are also not going to be corrected by NPA conditionalities.

Element 17 / Resource Management

Thanks to NEAPs and the new institutions created under NEAPs, much convergence towards the proposed norm has taken place in the environmental and nature-protection fields. In more

conventional NRM (forestry, fisheries, etc.) there is still a lack of purposeful data collection and data analysis to define management parameters (off-take quotas, carrying capacity, sustainable cuts). In The Gambia, the decentralization of NRM via local resource use agreements will probably force government technical services to think increasingly of these parameters, as the agreements rest on sustainable use and thus include enforceable off-take limits. In Kenya, the capability called for by the framework is to be found mainly in local consulting firms founded by former Civil Servants. These firms are used mainly by donors, as the government finds it difficult to do so because of its procurement system or because of ideological opposition.

Element 18 / Resource Mandates

NEAPs have generally forced governments to examine critically questions of overlapping resource jurisdictions, jurisdictional gaps, or jurisdictional ambiguity and controversy. NEAPs have probably succeeded mainly in creating structures (usually the new environmental agencies) for intersectoral coordination and for the resolution of resource conflicts. These structures are, however, as yet untested in the practical context of a direct confrontation between two competing interests. In The Gambia, the local resource management agreements are one way of introducing integrated resource use and of resolving potential conflicts between mandates (e.g., between forestry and livestock) at the local level. Many intersectoral issues (agroforestry extension, control of range burning, land-based uses affecting fisheries, etc.) remain without adequate institutional coverage.

4. Summary and Conclusions

Within the limited sample of countries and institutions examined, there has been *convergence* towards the framework primarily in the areas of policy and legislative rules (mainly in the environmental field), information and education (again mainly in the area of nature protection), monitoring (in connection with nature protection), mediation (reconciliation of environmental and economic interests), enforcement (in connection with nature protection), research (on biodiversity), social ownership (nature protection), linkage between public and private sectors (mainly in Madagascar), resource pricing (realistic royalties), and jurisdictional clarity and intersectoral linkages (at least critical reviews of mandates under the NEAPs).

On the other hand, there has been *divergence* (or at least no convergence) in the areas of information and technical assistance (conventional NR extension remains weak), conventional resource monitoring (e.g., soil erosion, soil fertility, forest inventories), mediation (rent seeking and dissipation continues), enforcement other than nature protection (deforestation and range burning continue unabated, especially in Madagascar), research (specific technical packages are lacking), recurrent costs, programming and budgeting, salaries, public procurement systems, organizational weakness, planning and management for sustainable use (except in connection with nature protection), and jurisdiction over intersectoral resource issues.

The most intractable problems remain control of diffuse resource degradation (as opposed to protection of specific conservation areas, especially where there is considerable international interest), recurrent costs (inadequate operating budgets), programming and budgeting, low salaries, public procurement systems, organizational weakness, and the inability to translate data into management parameters for sustainable use.

In general, NEAPs, NPA conditionalities, and projects that promote the devolution of control over resources have been the main direct or indirect sources of institutional reforms that conform to the norms outlined for this report. Sectoral institution-building projects are not as effective in introducing systemic reforms. Some problems, notably organizational weakness, may be so deeply rooted in cultural conflicts (e.g., between local social norms and Western techno-

1. Introduction

The Phase I (interim) report of December 1991 served as a *tour d'horizon* of the many institutional problems that affect the management of natural resources in Africa. The focus in Phase II was to have been on solutions, or attempted solutions, to some of the problems identified in Phase I. To this end, additional information was obtained in Madagascar and The Gambia in March–May 1992. This was done primarily while participating in the design of two nonproject assistance (NPA) programs.

Given some of the aims of USAID's current review of policy and institutional reforms in natural resources management (NRM), the Phase II (final) report was also to provide some perspective on the linkage between institutional reforms and "people-level impacts" (PLIs; Level V achievements in USAID's NRM Organizing Framework). The need to track PLIs is, in turn, related to the Congressional requirement for greater accountability in return for greater programming flexibility under the Development Fund for Africa, as exemplified by NPA. Finally, the report was to begin addressing the question of the most effective role (structure and mandate) of public-sector institutions in the natural resources field.

Circumstances eventually dictated a focus for the Phase II report which differs somewhat from the original aims described above. It was found that, given constraints of time and data availability, a primary emphasis on solutions to the key institutional problems identified in Phase I would have resulted in an uneven, and oddly selective, report. That is because for several of the issues there are no recent known solutions or even attempts at solution. The report would have also inevitably had to mix actual experience with institutional reforms (that is, solutions to institutional problems) with speculation concerning the effectiveness of the many reforms that are still on paper or in early stages of implementation.

As predicted in Phase I, it was also found difficult to demonstrate linkages between institutional reforms and PLIs, either because the reforms were just being introduced, or the reforms occurred so far back in time that attribution of impacts is not possible without careful historical research to filter out intervening variables. Similarly, it was not possible to arrive inductively at a "proper" or "effective" role and structure of public-sector institutions from the limited amount of data available. In particular, financial (cost-effectiveness) data were not available. More importantly, the very lack of demonstrable and replicable higher-level impacts (Levels IV and V, beneficial biophysical changes and increases in yields and incomes) undermines any attempt to define "effective" institutional reforms on the basis of results—as ultimately they must be.

As is often the case in comparative work, it was also found necessary to revise and broaden the organizing framework before data from two very different countries at different stages of implementation, as well as data from selected examples in other countries, could be accommodated meaningfully.

The organizing concept or framework (and, hence, focus) eventually retained for Phase II was that of examining recent institutional reforms in terms of their convergence towards, or divergence from, a set of criteria or norms that represent the potential roles that public-sector institutions play in the natural resources field. It is emphasized at the outset that these criteria were used as a frame of reference for judging

trends in public-sector reforms, and not necessarily as a prescriptive model of what these reforms ought to be.

At the same time, it is clear that there is no such thing as a value-free, purely *a priori* frame of reference, and the one used in this report is no exception. The set of criteria used reflects, first of all, a fairly conventional view of what "government" does, particularly with respect to natural resources. In turn, this view is based on broad (i.e., transcultural) experience with the "residual" role of government—that is, the promotion of the long-term public interest, the mediation of competing private interests, and the provision of goods and services that transcend private, short-term interests. The criteria also reflect certain assumptions, the validity of which may still need to be tested, particularly in Africa. These assumptions include the notion that government should be a "mediator" rather than an "actor" in the economic sphere (or "manager of natural resources" in the present context) and that the devolution of authority over natural resources to local communities leads to better NRM. Another implicit assumption is that the central government should only perform those tasks that lower levels of government cannot perform or cannot perform effectively.

The "proper" role of government is ultimately a political choice, and as such it will vary from country to country. "Effective" government will also be a mixture of results, cost-effectiveness, and political acceptability that will vary according to circumstances, including the particular point in a country's history. The framework presented here should be seen, therefore, as a standard of reference for determining the trends of reforms in relation to a particular body of experience. As noted, there is a general presumption that government ought to perform the various roles and functions listed, but this presumption should not be taken as a conclusion. It is only as more knowledge and experience are acquired, especially with the PLIs of institutional reforms, that the framework may eventually be transformed into a prescriptive model.

The framework used is conventional insofar as the *role* of the government is concerned. However, for the purposes of the present report, the framework has been expanded to include some elements concerning the *functioning* of government. These elements reflect (*a*) experience with public-sector resource management in Africa and (*b*) some of the priority issues or constraints identified in the Phase I report. In other words, the framework has also asked of recent institutional reforms whether or not they included efforts to address persistent, high-priority constraints. It is primarily by this means that the report has retained a partial focus on solutions to institutional problems in NRM and is thus linked to the Phase I report.

The framework was also kept sufficiently flexible and broad that it allowed the inclusion of fragmentary data on PLIs stemming from recent reforms and on the "proper" functioning of specific NRM agencies, again in line with the original aims of the study. This flexibility of the framework came, however, at the price of a certain lack of definitional and methodological rigor, as explained below.

Ideally, a rigorous analysis of natural resources and their institutional framework should address, in sequence, a hierarchy of questions that might have the following descending order from the general to the specific:

1) What are the intrinsic spatial, temporal, etc., characteristics of the resource to be addressed?
2) What should be the role of the public sector vis-à-vis this resource (after considering the role of the private sector)? Legislation? Monitoring? Enforcement? Mediation? etc.
3) Which public NRM agencies should be involved and how?
4) How should these agencies be structured?
5) How should these agencies function?
6) How effective are these agencies in terms of results (PLIs)?
7) How cost-effective are these agencies?

The present report examined recent changes in public NRM mainly from the standpoint of question 2 but in terms of "natural resources" in general rather than for a particular resource as analyzed in detail. The report also departed from its main level of abstraction (2) whenever some data were available to answer questions at levels 3 through 6. The report thus dealt mainly with categories of "government" roles but was only able to provide some details of the mechanics of those roles, and then only for some natural resources, with an emphasis on forestry. A more rigorous analysis would also have to examine the roles or potential roles of various levels of government, and not simply those of central-government NRM agencies, as the present report does.

The relationship of the present report to USAID's NRM Framework (1991) is one of support of the latter. It is envisaged that the framework for reviewing the role of the public sector, as refined, will serve primarily as a checklist for the design of Level I activities (policy, planning, legislation, etc.) needed to create Level II conditions (enforcement, conflict resolution, etc.) leading, in turn, to better NRM practices (Level III), a sounder resource base (Level IV), and PLIs (Level V). As noted, the report also provides some examples of successful NRM reforms (including PLIs) and of pitfalls with such reforms.

The framework used for this report has been designed with natural resources in mind, as revealed by such elements as "royalties," "resource management," "resource mandates," and "social ownership." Most of the roles and functions described could be applied, however, to other areas of public life. On the other hand, it is worthwhile to recall that natural resources differ in fundamental ways from other areas of government activity. Natural resources are often vast, naturally variable in time (e.g., rangelands), ill-defined and mobile (e.g., water resources), and not easily fitted into narrow institutional mandates. On the ground, it is often difficult to draw jurisdictional boundaries between resources, which may also be functionally related (e.g., forests and runoff). Natural resources can be at the same time commodities, habitats, amenities, scientific assets, and the controls of other resources (e.g., forests). There are often powerful economic interests in natural resources, many of which are vital life-support systems. The actual impacts of institutional reforms in NRM may be felt at a point far removed in time and space from the original point of intervention. As a result, causal relationships between NRM reforms and impacts are often extremely difficult to prove.

The recent reforms discussed in the present report are primarily those that have been associated with (*a*) nonproject assistance by USAID and other donors, and related conditionalities; (*b*) National Environmental Action Plans (NEAPs); (*c*) national NRM institution-building projects; and (*d*) the devolution of authority over natural resources to local communities, usually in connection with (*a*) and (*b*). Thus, the report provides some perspective on how these various initiatives have affected resource management in Africa. Selected other examples of NRM reforms have been cited from African countries other than The Gambia and Madagascar. Incidentally, the recent trend towards devolution can be seen as an opportunity to rethink the role and structure of central governments and to solve some of the institutional problems identified in Phase I. This subsidiary point of view has been woven into the present report.

2. A Framework for Reviewing the Roles and Functioning of Public NRM Institutions

For the purposes of the present report, governments as the advocate of the interests of society-at-large play the following *roles*, at least insofar as natural resources are concerned:

1. Governments define, establish, and revise the policy and legislative framework which governs the protection and use of natural resources, with the overall goal of enabling the greatest number of people to derive maximum economic, cultural, and other benefits consistent with sustainable use of resources. This goal is thus the old utilitarian concept of the "greatest good for the greatest number" coupled with the modern concern for sustainable development and biodiversity conservation [keyword used to refer to this element: *1/ Rules*].
2. Governments provide information, education, and technical assistance, so as to enable the public to use resources profitably and responsibly. Bearing in mind that this role is shared with the general educational system, the media, and nongovernmental organizations (NGOs), the special responsibility of government is to provide leadership and to uphold technical and other standards based on the best available knowledge [keyword:*2 / Information*].
3. Governments monitor resource trends by means of statistical sampling, collation, and analysis of reports, market surveys, remote sensing, and other means. This information is made available to the public, and it informs the policy and legislative process [keyword: *3 / Monitoring*].
4. Governments mediate and arbitrate among economic, conservation, and other interests. They ensure the fair allocation of resources, including the efficient operation of free markets for natural resources and the realistic pricing of these resources. They also ensure that nonmarket values are taken into account in resource pricing and allocation [keyword: *4 / Mediation*].
5. Governments oversee the use of resources to ensure that laws and technical standards are observed. They enforce sanctions in case of violations, and they delegate this role to the level of government or community closest to a particular resource and most willing (because of a direct stake) and able to conserve that resource, subject to residual powers of supervision and sanction in case of abuse [keyword: *5 / Enforcement*].
6. Governments carry out scientific and economic research on natural resources, particularly in areas of long-term public interest (as opposed to immediate, private economic interest). They promote and delegate research on natural resources (to research institutions, industry, NGOs, and other organizations [keyword: *6 / Research*].
7. Governments create and maintain public infrastructure that facilitates the use, protection, or enjoyment of natural resources—that is, infrastructure that is beyond the means and interests of private interests to provide [keyword: *7 / Infrastructure*].
8. Governments own and manage natural resources in those cases where the national public interest or "social values" clearly predominate (e.g., areas or resources of outstanding or unique beauty or scientific, recreational, or heritage value—that is, the economists' "irreplaceable assets") [keyword: *8 / Social Ownership*]. By implication, direct ownership and management of

resources by a government (especially a central government) is the exception rather than the rule. There are, of course, "hybrid" solutions to the issue of ownership of natural resources in cases where outright sales of resources are politically unacceptable or future social uses cannot be foreseen accurately. One such solution is the long-term logging or other "management" concession based on realistic rents and agreed management plans, assuming that there is the will and means to monitor potential abuses. Another solution is the long-term lease of resources to local communities under the concept of devolution.

The role definition given above also implies that governments recognize the resource-management role of market forces, especially of prices insofar as these reflect accurately relative scarcity and extraction, replacement, and social costs (see 4 / Mediation).

Governments should also strive for maximum delegation of powers, in the sense that services that are better performed or delivered at a lower level of government should be delegated to that lower level (see 5 / Enforcement).

The normative *functioning* of governments used for the present analysis included the following selected elements, which, as noted, reflect some of the priority issues identified in Phase I and recent experience with NRM in Africa:

9. Governments should increasingly examine the extent to which the role of diffusing information and of providing technical assistance (see 2 / Information) can be assumed or at least complemented by NGOs, subject to supervision and certain technical standards. The rationale includes the reduction of government expenditures, the skill of and trust enjoyed by NGOs in community organization, the often greater presence of NGOs at grassroot levels, and the growing technical skills of at least some NGOs. In most African countries, there is, however, a need to create the necessary linkages between government and NGOs for the more effective two-way diffusion of better NRM knowledge and practices, to facilitate the vetting and funding of projects, and for governments to exercise the necessary policy and technical supervision. The increasing use of NGOs addresses in part the issue of unrealistic ratios between government staff and resources (Phase I report, p. 7) [keyword: *9 / Linkage*].
10. Governments should provide adequate funding for their NRM functions, in particular for field activities such as patrolling, extension, and the preparation of management plans. The termination of agency services well before the end of the fiscal year should be taken as an indicator of severe malfunction (see also 11 / below); if present services cannot be operationally maintained with present budgets, the services should be cut back, and the funds thus released should be used to make other services (or services elsewhere) fully functional. Governments should improve their cost recovery through a revision of their fee and royalty schedules and of their collection systems (see Priority issues, Phase I report, p. 14) [keyword: *10 / Recurrent Costs*].
11. Governments should introduce effective programming and budgeting systems so that there is a reasonably coherent progression from mandate to staffing to operations to operating budgets in the administration of NRM agencies (see Priority Issues, p. 14 of Phase I report) [keyword: *11 / Programming / Budgeting*].
12. Governments should review the issue of salaries and indemnities so that, as a minimum, living wages are provided (thus reducing the problems of second jobs, absenteeism, and corruption) and a serious deterrent to field mobility (inadequate allowances or

their untimely or delayed disbursement) is removed (see Priority issues, Phase I report, p. 14) [keyword: *12 / Pay*].

13. Governments should revise resource royalties so that these reflect replacement costs or residual values. The gap between royalties collected from a resource and the amounts invested in the management of that resource should be progressively narrowed (see Priority issues, Phase I report, p. 14) [keyword: *13 / Royalties*].
14. Governments should revise resource policies or codes so that these reflect the inputs of the public and of all ministries concerned, current realities of use, the concept of local control and management of resources, the intersectoral nature of resources, and modern concepts of sustainable use and biodiversity conservation (see Priority issues, Phase I report, p. 14) [keyword: *14 / Policies*].
15. Governments should revise their procurement systems at a minimum so as to reduce the present complexities, corruption, and delays, and should strive to guarantee that, if proper and clearly advertised procedures are followed, deliveries can occur within specified limits of time (see Priority issues, Phase I report, p. 14); [keyword: *15 / Procurement*].
16. Governments should introduce minimum standards of management (job descriptions; clear lines of authority; delegation of tasks and authority; monitoring and evaluation of task implementation and completion; clear schemes or terms of service and promotion; in-service training; performance indicators; incentive schemes; planning, programming, prioritizing and budgeting of activities; reasonable balance between headquarters (HQ) staff functions and field operations; ability to assign task forces to perform specific functions as needed; instilling a sense of service; etc.) and constantly upgrade them (see Priority Issues, Phase I report, p. 14) [keyword: *16 / Administration*].
17. Governments should be capable of the complete cycle of data-collection design, data collection, data analysis, translation of data into management parameters such as sustainable yields or off-take quotas, preparation of management plans for specific resources or specific areas, and revision of yields, quotas, and management plans in the light of additional data and analysis (see Priority Issues, Phase I report, p. 14) [keyword: *17 / Resource Management*].
18. Governments seek to avoid overlapping or conflicting mandates concerning natural resources, while providing mechanisms for dealing with the inherently intersectoral nature of many of these resources (see Phase I report, pp. 8-9) [keyword: *18 / Resource Mandates*].

3. Recent Institutional Reforms in Relation to the Framework for Public NRM Institutions

Element 1 / Rules

In both Madagascar and The Gambia, the preparation of the *National Environmental Action Plans* (NEAPs) has provided the opportunity to reexamine and expand the policy and legislative framework governing natural resources. However, the two plans differ considerably in origin and in focus; the Gambian NEAP has probably contributed more towards the development of a comprehensive framework of rules governing natural resources.

The Madagascar NEAP (1988) grew out of the Malagasy Strategy for Conservation and Sustainable Development of 1984. The NEAP has been formalized with the adoption as a law (90-033) of the Malagasy Environmental Charter (1990). The NEAP has thus become the broad and formal framework for coordinated and prioritized action in the environmental and resource fields that was its original intent. A spate of projects and programs have since been started within this framework, and with clear reference to it. It would be nearly impossible in Madagascar today to initiate a project or program in these fields outside the NEAP framework.

On the other hand, the Madagascar NEAP has been criticized for its heavy emphasis on conservation in and around protected areas and for having been largely donor-driven during its preparation. Thus it tends to diverge from both Elements 1 (utilitarian concept) and 14 (policies or frameworks should rest on as broad a consultation as possible and on sectoral inputs). The Madagascar NEAP, which is one of the earliest such plans, was, of course, strongly influenced by international scientific concern over the unique fauna and flora of the island and their threatened extinction.

In particular, the Forest Service (Direction Eaux et Forets, DEF) feels rightly or wrongly that it has been "penalized" by the NEAP because of the heavy emphasis on protected areas other than ordinary forest reserves and because some of its professional staff has been lured away by new semipublic institutions created under the NEAP (see Element 9 / Linkage). DEF also has mixed feelings about the new, better-equipped Nature Protection Agents (APNs), which have taken over custodial responsibility for protected areas (other than ordinary forest reserves) from Forest Guards (see Element 9 / Linkage).

Donors (other than scientific organizations) have also complained that the NEAP has diverted attention and resources (see Element 10 / Recurrent Costs) from ordinary natural resources management (NRM). On paper, one of the six long-term programs of the NEAP concerns watershed protection, reforestation, agroforestry, improved water supply and sanitation, waste management, and pollution control in general. During its first Phase (1990–95), however, the NEAP does not address three of the main environmental/resource problems of Madagascar—namely, soil erosion, shifting cultivation, and range burning—with the same intensity as nature protection, although soil conservation, agroforestry, and reforestation are "priority activities" during this Phase.

From an institutional standpoint, the Madagascar NEAP has so far failed to promote the coordinated development of a comprehensive set of policy and legislative rules governing all natural resources. There are, for example, areas of potential conflict (or at least poor coordination) with the Tropical Forestry Action Plan (submitted to the GOM in 1991, apparently still

in draft form) and with the draft Forest Policy prepared by DEF in early 1992 (intended to replace the policy of 1987). The latter two are also not fully coordinated. The draft Forest Policy of 1992 is discussed later under Element 14 / Policies. In early 1992, a World Bank mission and other donors, including the U.S. Agency for International Development (USAID), discussed plans for some form of forestry sector review or sectoral strategy that would identify and address, among other issues, the remaining weaknesses in the policy and legislative framework for forestry.

Unlike its Gambian counterpart, the Madagascar NEAP does not systematically or explicitly review the principle of devolution of authority over natural resources, the mandates of the various NRM agencies, or systematically identify gaps and weaknesses in the entire policy and legislative framework governing natural resources. In The Gambia, it was found that a NEAP that does this and that has been formalized as government policy is of great assistance to subsequent institutional reforms. On the other hand, as part of the implementation of the Madagascar NEAP, the new Office National de l'Environnement (1991–) will have a section devoted to the review of policy and legislative needs.

USAID's KEPEM NPA Program (1992–97) has sought to fill gaps in the policy and legislative framework. Thus, it uses conditionalities to encourage the adoption of legislation concerning environmental impact assessment (EIA), a nongovernmental organization (NGO) code that clarifies and simplifies the rules of association and of the financial status of NGOs, the devolution of authority over natural resources to local communities, and the establishment of endowment funds devoted to specific resources. It has also conditioned the revision and publication of stumpage fees (royalties) for wood that put a more realistic price on this resource (see Element 4 / Mediation).

Other projects have sought to assist the Government of Madagascar (GOM) in improving the policy and legislative framework for NRM. *USAID's SAVEM project* (1990–95) has helped create linkages—including funding mechanisms—between government, NGOs, and local communities (see Element 9 / Linkage). The *Swiss-funded Projet Appui au Reboisement Villageois* (1984–90) undertook the difficult task of applying a forestry law of 1985 (the so-called ZODAFARB) which foresaw the free acquisition of land through tree planting. The project quickly revealed a number of institutional flaws, among them the virtual inability of the Cadastral service to survey land plots and process the land titles, and abuses of the ZODAFARB law by urban dwellers not interested in tree planting or in titles to agricultural land. The successor to this project, the *Programme Forets et Developpement Rural* (1990–) is deliberately continuing to test the framework for improved land-tenure security and local initiatives in NRM in collaboration with GOM. It is, for example, testing the partial privatization of the Cadastral service so as to accelerate land titling.

In The Gambia, the Government (GOTG) has gone much further towards the provision of a comprehensive policy and legislative framework for NRM, albeit in a much smaller and less complex country. In 1987, it adopted a framework law, the *National Environmental Management Act*, which established a Natural Environment Management Council at the Minister level (chaired today by the Minister of Natural Resources and the Environment), assisted by an eponymous Committee at the Permanent Secretary level (again chaired by the Permanent Secretary of the MNRE). The Act also introduced the principle of environmental impact assessment.

In 1990, the GOTG established the *Ministry of Natural Resources and the Environment* out of sections of existing ministries, and it adopted a *Natural Resources Policy* which was considered at the time a model but which was quickly overtaken by events. In retrospect, the Policy was probably too "sectoral" (forests, soils, waters, etc.) and "static" (it did not deal sufficiently

with dynamic linkages). By today's standards, it was also insufficiently "environmental" in the broadest sense. It did not deal at all or adequately with such issues as resource tenure, local control and management of resources, pricing of resources, pollution control, waste management, or reforms in resource and environmental law.

Most of these issues have since been addressed by the *Gambia Environmental Action Plan* (GEAP) tabled in its final draft in May 1992, and to be adopted by Cabinet as national policy before the end of 1992. The GEAP should be seen as a model for other African countries. It grew as a local initiative out of the 1990 national conference on resources (which produced the Policy mentioned earlier). Although GOTG has received some external assistance for its final preparation, the GEAP is an eminently Gambian document in its analyses, assessment of priorities, review of administrative structures and of legislative needs, and recommendations for solutions. It apparently rests on a thorough interministerial exchange of views, although presumably there is no complete consensus on all issues or priorities. It remains to be seen whether the leading role of the Ministry of Natural Resources and the Environment will always be accepted, especially if it comes to a head-on collision between Ministerial interests. Its preparation can be criticized on the ground that it included very little public consultation (except apparently the elites of the various interest groups outside the Government, as is customary in a small, closed society such as The Gambia).

The GEAP spells out important principles, such as the devolution of authority over resources to local communities and the realistic pricing of resources. The GEAP is also a remarkably comprehensive document concerning both concrete resource and environmental issues and related institutional aspects. Perhaps the only major institutional issue that the GEAP does not address fully is land tenure and tenure reform, which have been in an institutional limbo ever since Parliament failed to pass a controversial State Lands Bill. The bill had provided for, among other reforms, a reduction of customary rights and more secure land tenure as an incentive to better NRM (Brinkerhoff, Gage, and Yeager 1992). The GEAP also calls attention to the detrimental NRM effect of insecure land tenure. More than half the land users lease their lands annually, which is a strong disincentive to long-term conservation; 90 percent of the country is under customary tenure. As in most countries, land tenure is, of course, a politically sensitive issue. USAID's project assistance initial proposal (PAIP) for the Agriculture and Natural Resources NPA Program recommended on the basis of an earlier study (Bruce, Freudenberger, and Summers 1990) that this issue receive more study before specific interventions are advocated. The Agriculture and Natural Resources (ANR) project assistance approval document (PAAD) upheld this recommendation.

Aside from the land-tenure issue, *USAID's ANR Program* has sought to support and complement the GEAP insofar as the policy and legislative framework is concerned. It has promoted, by means of conditionalities, the adoption of the GEAP as official policy (a process already under way), the translation of GEAP recommendations into funded programs, the revision of all natural resources legislation to facilitate and establish clear rules for the local control and use of natural resources, and the abolition of the Livestock Marketing Act as an unnecessary interference in the resources market. Thus, barring unforeseen political obstacles, by the mid-1990s The Gambia will have a reasonably complete set of policies and rules governing natural resources. The ANR Program should also help improve resource pricing via revised fees and royalties (see Element 4 / Mediation). As noted, the land-tenure issue may, however, still be unsettled by then.

It should be added that The Gambia is already experimenting with different forms of resource tenure using, in one case, obscure clauses in existing legislation. Thus, the Gambian-Ger-

man Forestry Project, using Ministerial discretionary powers under the Forest Act of 1977, has already (1991) turned over on a pilot basis forests to local communities. Under Forest Management Agreements, these communities manage local forests under the technical guidance of the Forest Department, and are allowed to retain revenues obtained from the sale of forest products. As part of a Gambian–United Nations Development Program (UNDP) Grazing Management Project (1986–92), local livestock owners' associations have obtained long-term leases on grazing lands, and the right to retain grazing fees (but not yet cattle head taxes) for investment in range improvements. This project has been successful in that it has substantially increased the productivity of the land (through deferred grazing and a reduction in range burning) and the incomes of people; *it is thus a rare example of the short-term achievement of Level IV and V impacts through an institutional reform.* Critical to the success of the scheme was a dairy plant which translated higher productivity into higher-value-added products and, hence, higher revenues.

These two Gambian NRM projects have provided invaluable precedents for GEAP and for USAID's ANR Program, both of which promote local control and use of resources. The GOTG now speaks of so-called Community Resource Management Agreements (CRMAs) as a formula for resource tenure and use of potential application to most of the country. The central focus of the NGO project under the ANR Program is the catalytic role of NGOs in the negotiation of CRMAs between local communities and the central government. The latter retains powers of technical supervision and of sanctions in case of abuses.

In summary, The Gambia is becoming a showcase of the creation of a comprehensive policy and legislative framework for NRM, including the devolution of control over natural resources. This assessment assumes that the legislative reforms identified by GEAP and the ANR Program will actually be carried out.

Element 2 / Information

The following recent developments in Madagascar show both a convergence towards the normative role envisaged for public-sector institutions and the failure to approach this norm.

The NEAP of 1988 has provided a boost to the capacity of Government to inform, educate, and provide technical assistance, at least in some sectors. The new *Office National de l'Environnement* (ONE; assisted indirectly under USAID's KEPEM NPA) will have as one of its main roles that of information and education; however, some fear insufficient emphasis will be put on conventional resource management (soil erosion control, soil fertility maintenance, controlled burning, sustainable forest use, etc.) either because traditional extension services are expected to play that role or because ONE will be too much oriented towards nature protection or pollution control. Under *USAID's SAVEM project*, the new *Association Nationale pour la Gestion d'Aires Protegees (ANGAP)* has an education, training, and communication section that will inform, educate, train, and provide extension to people in zones adjacent to protected areas. It may be argued that ANGAP, which is a semiprivate organization, is an admission of failure of the government to educate and assist the people around protected areas to protect nature and use resources sustainably. ANGAP can also be seen as a reinforcement of government services through a linkage mechanism (see Element 9 / Linkage); to that extent, it represents a convergence towards the framework.

The 375 Nature Protection Agents created under USAID's *Debt-for-Nature Swap Project (WWF; 1989–)* are increasingly performing an extension function as well (see Elements 5 / Enforcement, 9 / Linkage, and 10 / Recurrent Costs). They are also theoretically freeing some government foresters from custodial duties, and thus making them available for extension work. On balance, the APNs probably strengthen the

educational role of the government. On the other hand, with the APNs there has been a reversal of roles in the sense that APNs often train government foresters, instead of the latter providing technical leadership.

In general, the educational / technical assistance (TA) role of the Madagascar Forest Service (DEF) remains extremely weak despite the World Bank-led, multidonor *Management and Protection of Forests (GPF)* project (1988–suspended 1992) and the efforts of bilateral projects such as the Swiss-funded *Projet Appui au Reboisement Villageois* (1984–90) and *Projet Sauvegarde et Amenagement des Forets (SAF)* at Morondava. DEF does not have a separate extension branch, and the forest technicians at the two lowest levels (Cantonnement and Triage, where extension takes place) combine regulatory and extension functions in violation of a basic principle of extension. The village forestry project mentioned above found that it had to train its own "paysans-forestiers" to supplement the lone forest technician in the entire project area (150 square kilometers). With the current management and financial crisis in DEF (see Element 16 / Administration), the extension function has probably been further weakened, which represents a divergence from the normative role put forward by this report.

The program that replaced the village forestry project mentioned above (see Element 1 / Rules) is now experimenting with a permanent experimental and extension center (Centre FAFIALA) which acts as a meeting place and clearinghouse of information for government technical services, NGOs, and farmers. The Centre also assists with the marketing of farm produce. It was found that, without such a permanent structure, the impact of extension efforts was quickly dissipated, particularly when project activities end. If such centers are successful and their funding assured by means of endowment funds (whether or not initially established from "debt-for-NRM swaps" and eventually replenished from users' fees), they would represent an ideal solution under Elements 2 / Information, 6 / Research, 9 / Linkage, and 10 / Recurrent Costs of the framework.

Under the GPF project, DEF staff were to be trained to prepare management plans for forests in two pilot areas. Progress has been slow because of management problems in DEF. However, discussions with headquarters (HQ) technical staff disclosed a good grasp of the concept of mobile, well-trained teams eventually operating out of central or regional HQ in support of forest management wherever needed, including in local communities that one day may have responsibility for local resources. This view of the role of DEF is in line with the model (see Elements 5 / Enforcement, 10 / Recurrent Costs).

A prime example of the failure of DEF to play its TA role concerns the management of private coppiced eucalyptus plantations east-southeast of the capital Antananarivo. These plantations are vitally important in the supply of poles and fuelwood to the capital, and generate considerable amounts of revenue. The plantations are generally badly managed (rising stools, too many shoots per stool, etc.), which results in unnecessary low productivity. Several reports, including some prepared under the GPF project, have called attention to this problem. Thus, the technical knowledge for improving coppiced plantations is available. The means to prepare extension materials and to visit the plantations and their owners were available under GPF. However, owing to a lack of leadership and poor management, this simple extension task was never carried out systematically throughout the plantation zone.

There are also reports that the Tavy (Shifting Cultivation) Research Institute of FOFIFA (the state agricultural research organization) has produced technical packages that are ready to be extended in the humid forest zones. Again, there has been practically no action because of poor linkages between research and extension (both agricultural and forestry) in a resource area of critical importance (destruction of the rain forest). In general, projects such as GPF and the Food and Agriculture Organization's (FAO's)

Amenagement Integre des Vallees Forestieres (preceded by more than 20 years of similar projects) have had little impact on the ability of government to perform its educational and TA role. In fairness, the problem of shifting cultivation is particularly intractable because of the cultural and sociological aspects of this form of land use. The same applies to the inability of the Livestock Service to have an appreciable impact on the problem of destructive range fires.

Several recent developments in The Gambia show a convergence towards Element 2 / Information of the framework. The national conference on the environment of 1990 and the Gambia Environmental Action Plan (GEAP) (1992–2001) were and are in themselves major efforts to inform and educate the public, albeit handicapped by the low rate of literacy. The pilot Forest Management Agreements signed by local communities and the Forest Department under the auspices of the Community Forestry Program of the Gambian-German Forestry Project (1980–93; renewable) and the long-term grazing leases and range-management scheme at Dankunku under the UNDP-funded Grazing Management Project (1986–92) conform to the norm of private management of resources and intensive, targeted government technical assistance. In particular, the reduction of range burning at Dankunku is an outstanding example of information, education and technical assistance by a public-sector agency.

As mentioned earlier, the GOTG now foresees CRMAs as a form of mutually binding extension (by government technical services) and execution (by local communities) package of potential application to the entire country. These Agreements imply a purposeful deployment of task forces to areas where the population is receptive and willing to be bound to a specific technical package. Under these agreements, the government reserves the right of supervision to uphold certain technical standards and to prevent abuses, in conformity with Element 5 / Enforcement of the framework. USAID's ANR Program (1992–97) strongly supports this concept and is designed to accelerate its application by using NGOs to facilitate the establishment of the agreements. Thus, the devolution of authority over resources can be an opportunity to retrench (use of small, well-trained, and mobile task forces) and thereby to reduce government expenditures. The latter will be particularly true if one day a deferred payment-for-services clause can be built into CRMAs (which in The Gambia include a transfer of resource revenues to local communities).

CRMAs can also be seen as "requested, binding extension packages with an areal application" (the CRMAs signed so far in The Gambia involve thousands of hectares). They are thus a departure from conventional extension, which tends to be "punctual, nonbinding and often uninvited." Theoretically, the role of the government under Element 2 / Information should, therefore, become more effective as well as cost-effective.

The experience with other extension services in The Gambia is perhaps illustrative in this respect. The Soil and Water Conservation Unit was built up in the 1980s with USAID support (1978–91). Today it still retains a core of technical competence, but its work has apparently become more and more confined to bottomlands where dyking is required to combat salinization. There is, of course, a strong immediate economic incentive (rice production) to concentrate the work there, and a strong disincentive (insufficient operating funds and mobility; more diffuse problems) to extend the conservation work to upper watersheds where it is badly needed in the long run. Perhaps the mechanism of CRMAs could help the unit to extend its work geographically without unduly dispersing its scarce technical and financial resources.

Under a series of World Bank-financed development programs (the most recent, ADP II, 1987–92; a third phase is now being designed), agricultural and livestock extension and the Agricultural Communications Unit (the extension aids unit) have received substantial technical and financial assistance. Operating funds have

not been limiting, although in practice field operations have been stymied because of poor management. Agricultural extension operates using a "flexible T & V" system. Despite these efforts, results remain mixed. There have been some "impact points of proven value," but relatively few "contact farmers" have profited from extension so far. In the third phase, more emphasis is to be put on group extension. One of the more successful recent innovations (the introduction of sesame as a cash crop; since cut back because of overproduction) has been due to an NGO rather than agricultural extension. As noted, the most successful case of livestock/range management extension has been in one area under a separate project based on local control of resources and revenues therefrom.

Thus, agricultural extension still shows little convergence towards the norm for information and technical assistance. On the other hand, there is now a functioning multimedia communications unit in the country that could be more effectively used by other Ministries as well. The number of village extension workers has also been cut in half in recent years, well below the normally accepted ratio of agents to farm units, and yet World Bank staff believes the delivery of services should not be impaired provided other problems (timely payment of salaries and allowances, more effective training, better messages, etc.) are solved. The Gambia is, incidentally, an excellent country in which to analyze in detail the effectiveness and cost-effectiveness of the delivery of technical services because of its small size and availability of data on staff, costs, distances, farmers reached, etc. Local USAID staff believe that the cost for these services could be assumed by GOTG, thus rendering external support of nonsalary recurrent costs unnecessary.

Element 3 / Monitoring

In general, the recent emphasis on environmental problems has boosted governments' capacity to monitor natural resources and to produce data of use to public policy or to the economy. There has thus been convergence towards the norm presented here. The actual use of the data collected for resource-management purposes is a different matter and is discussed under Element 17 / Resource Management).

In Madagascar, the vast size of the country and the relative inaccessibility of many areas had led in recent years to much use of satellite imagery. At first, this effort was entirely externally driven and financed (see, for example, Green and Sussman 1990). The capacity to interpret satellite imagery (both LANDSAT and SPOT) is now (1992) being developed within *FTM* (the national geodesy and cartographic institute), mainly with French assistance. FTM will also have a geographical information system (GIS) capability. FTM already has adequate competence for conventional remote sensing, including an aircraft for low- to medium-altitude air photo work. Recent discussions with the Forest Service (DEF) shows a willingness to subcontract remote sensing to FTM (coupled with secondment of technical staff for interpretative work) rather than a tendency to built up a separate capacity.

Despite these efforts, the state of knowledge of Malagasy forests remains woefully inadequate. The last inventory dates back to the 1970s and was never officially published. As a symptom of the inadequate data base, estimates of the size of the various forest types often vary by millions of hectares. Data on standing volumes and yields are still practically nonexistent. Under the multidonor *GPF Project* (1988–92), a new inventory was begun for two priority areas, but, by early 1992, only 30,000 hectares had been inventoried (in the so-called Moramanga ZABA, or wood-supply zone for the capital). The latter was actually a major achievement given the management and other problems within DEF. It has also created a core of valuable experience within DEF. DEF's Inventory Service claimed that the Moramanga effort was at the limit of its absorptive capacity, and thus more assistance

would have been pointless. The Service is apparently able to inventory about 20,000 hectares per year, unassisted. Under a possible future phase of GPF, DEF/FTM/Switzerland intend to complete a national inventory based on a mix of satellite, API, and ground work. USAID's KEPEM will also be able to complement the inventory effort. The total area of actual forest that should be inventoried is estimated to be about 5 million hectares.

Under GPF, a number of preliminary market surveys and economic studies were carried out in the forest sector (Bertrand 1989; Ramamonjisoa 1990). These efforts have been valuable, and have already informed the policy process and the design of assistance programs, notably USAID's KEPEM. DEF remains, however, extremely weak insofar as its own capacity to carry out economic analyses is concerned. KEPEM foresees that the analyses leading to a revision of stumpage fees (as called for under one of its conditionalities) will be carried out by outside consultants.

The *Office National de l'Environnement* (ONE) established (1991–92) under the NEAP, and supported under KEPEM, will have monitoring and evaluation data banks that will presumably centralize the sectoral data collected by other agencies. This represents a major boost to the monitoring capacity of the government, assuming effective implementation. USAID's SAVEM project has, in addition, established a *Biodiversity Planning Service (BPS)* which will inventory and monitor the protected areas.

In The Gambia, the *Environment Unit* of the Ministry of Natural Resources and the Environment is being developed into the principal GOTG monitoring agency. It is the unit that led the preparation of the GEAP, and is likely to become the key operational coordinating unit of GOTG (ANR conditionalities call for a decision before the end of 1992). The unit is being assisted by a two-year (1991–93) United Nations Sudano-Sahel Office (UNSO) project, *Assistance in Planning, Monitoring and Coordination for Natural Resources Management.* The unit will also receive technical assistance under USAID's *ANR Program*. The unit will not so much collect its own data as collate and analyze those collected by other GOTG agencies. The ANR Program will collect substantial amounts of baseline data for its own evaluation purposes, but these data will also be relevant to the needs of the Environment Unit. The ANR Program includes the establishment of a GIS within the unit or possibly the Planning Unit of the same Ministry.

The institution-building described above is a major convergence towards the framework. In other respects, however, GOTG capacity to monitor remains weak and dependent on external aid. Thus, The Gambia has a time series of data on forests going back to the 1940s, but the series is not systematic. The last complete inventory (coupled with a land-use classification), carried out under the Gambian-German Forestry Project in 1980, is now out of date. In early 1992, USAID, GTZ (the German aid agency), and GOTG were discussing the possibility of a joint financing and execution of a new inventory, in the case of USAID under the ANR Program.

The ANR Program also foresees a series of market surveys and analyses under technical assistance. These studies will form the basis for a revision of forest fees and royalties. As in Madagascar and other African countries, the capacity of GOTG to carry out economic studies is weak to nonexistent, at least within a line Ministry such as Natural Resources and the Environment.

In general, in most African countries a trend that must be guarded against is the adoption of highly sophisticated monitoring systems for high-visibility problems such as deforestation and endangered species to the neglect of more "mundane" but equally important problems such as soil fertility, soil erosion, range quality, crop yields, or genetic quality of herds.

Element 4 / Mediation

In both Madagascar and The Gambia, the prepa-

ration of NEAPs, the establishment of environmental coordinating agencies (ONE in the former, the Natural Resources Management Council and the Environment Unit in the latter), the actual or proposed devolution of authority over natural resources, development projects around protected areas, the sharing of benefits from the latter, and various expressions of the concept of sustainable development must be seen as advances (at least at the conceptual level) in governments' ability to reconcile competing interests and to allocate resources fairly. GEAP in particular is an attempt to express the reality of sustainable development for that country.

Both countries have liberalized markets since the mid-1980s, The Gambia more so than Madagascar. The Gambia is often held up as an example of economic reform. Thus, both governments have become much more arbiters rather than actors in the economic sphere. Insofar as NRM is concerned, this shift means that both countries accept the concepts of unsubsidized resource prices (as incentives to investment in those resources), of realistic resource pricing, of the abolition of marketing monopolies, and generally of market forces acting as resource-management tools (as when rising prices reveal growing scarcities). Without this acceptance, it would have been impossible for USAID to impose NPA conditionalities concerning the revision of stumpage fees to reflect true costs and growing scarcities (Madagascar and The Gambia) and the abolition of a marketing board (The Gambia).

Specific examples of mediation and "fair" allocation of resources can be given for both countries. In Madagascar, the Government has accepted the principle that people in areas adjacent to parks and denied some former uses in the parks should benefit from park revenues. In The Gambia, the Government has accepted that, under Forest Management Agreements, controlled grazing will now be permitted in forests.

The use of nonmarket (i.e., nonmonetized and social) values in resource pricing and, more generally, in resource accounting is still new in both countries, as it is in most developed (sic) countries. Discussions of royalties and of national accounts in both countries revealed almost complete unfamiliarity with the economics of nonmarket functions such as the watershed role of forests. Thus, in both countries, national accounts still do not reflect the nonmarket contributions of resources. For example, in The Gambia forestry is usually shown as contributing about 3 percent of the GDP on the basis of sales of forest products, whereas calculations by GTZ show that if the environmental, medicinal, grazing, and other roles of forests are taken into account, the contribution may exceed 25 percent. The recent draft Forest Policy of Madagascar makes no mention of the total contribution of forests to the national economy, thus failing to strengthen forestry's case in the public arena. Indeed, because of the emphasis on the costs of reforestation, government documents still often show forestry as being a net sink of funds. In this respect, there has been little or no recent convergence towards the framework.

Many examples could, of course, be given of the continuing failure of governments to play an ideal mediation and arbitration role. In Madagascar, the logging of precious hardwoods against the payment of derisory stumpage fees (or no fees at all, which is an enforcement issue) continues unabated and represents a blatant case of "rent dissipation." Despite years of pressure from donors, GOM still has not acted on the presence of a graphite mine in a nature reserve. In The Gambia, a ban on production of charcoal has been upheld successfully since 1980. Yet, for cultural and other reasons, range burning is generally tolerated, even when it threatens national parks.

Element 5 / Enforcement

In Madagascar, there has been little convergence towards, or even divergence from, the norm used for the enforcement role. As part of the debt-for-nature swap project (WWF), the protection of

conservation areas (parks, nature reserves, etc., but excluding ordinary forest reserves) has been transferred from Forest Service guards to so-called Nature Protection Agents funded under the swap (i.e., off-budget). Nearly 400 have been deployed. These APNs have proved controversial because, depending on the source of criticism, they are (*a*) better trained and equipped than the Forest Guards they are supposed to complement (forestry agents have not been completely removed from the vicinity of protected areas); (*b*) they are a visible vote of no-confidence in an already demoralized Forest Service, although technically they are employees of this Service ; (*c*) they have an unclear legal status, and although they have no power of arrest they are often compared to "vigilantes" or a "private police" acting in an official capacity; (*d*) they are a reflection of the undue emphasis placed on nature protection; and (*e*) they have not released forestry agents for work elsewhere.

On the positive side, the APNs have undoubtedly improved the protection of conservation areas at no extra cost to the government. Thus they have accomplished their primary purpose. In practice, they have acted more and more as forestry and agricultural extension agents in the development zones created around the conservation areas. Relations with villagers and forestry agents have been better than predicted. The Forest Service has benefited from the presence of the APNs (better extension, more mobility, training, etc.). The APN program is now (early 1992) being evaluated by USAID.

The APN program has raised the important point that the concept of swaps should perhaps be extended beyond nature protection to include broader NRM (forestry, soil conservation, fisheries, range management, etc.). In other words, endowment funds could be established to finance (sustainably, out of the fund's income) extension services which are now constantly beset by insufficient salaries, allowances, and other operating funds; poor training and morale; low mobility; and other problems (see Phase I report). If this were feasible, and the public NRM would retrench to retain primarily a technical supervisory role, a major step towards the normative role and functioning (Elements 2 / Information, 5 / Enforcement, 9 / Linkage, 10 / Recurrent Costs) of public NRM institutions would be taken.

The enforcement role of DEF has not improved measurably in recent years, despite the GPF project, mainly because of chronic problems with poor leadership and management, and with insufficient operating funds (GPF provides only operating funds for specific activities). More fundamentally, there has been no political support of strict enforcement of forest laws, notably against illegal logging. DEF still lacks the capacity to prepare management plans, and to supervise the execution of these plans. The KEPEM Program seeks to remedy in part this weakness, as the program's long-term vision is a Forest Service with a core of competent, mobile professionals who can uphold technical standards as the protection and management of forests is gradually being turned over to local communities.

There has apparently been a serious erosion of the enforcement role of the fisheries and livestock services because of austerity measures, morale problems, and, in part, security problems. Thus, in parts of the country, efforts to control range fires, to improve ranges, and to organize and advise cattle owners have had to be curtailed because of banditry.

In The Gambia, the adoption of the concept of CRMAs represents, in theory, a major step towards the norms presented in this report. As noted earlier, these agreements are mutually binding on local communities and government technical services. They include a technical plan with which GOTG imposes certain standards. In return for benefits, the communities assume responsibility for protection and adequate management of resources. The government reserves the right to supervise and stop abuses; the existence of a technical plan makes it easier to detect deviations from agreed guidelines. If CRMAs become widespread and prove effective, the

enforcement role of the government is theoretically reduced and focussed. This is a prime illustration of the concept of devolution as an opportunity to retrench and define a "proper" residual role for the public sector.

Element 6 / Research

In both countries, the NEAPs have addressed the issue of research, and thus it may prove that these plans have promoted research on natural resources and governments' ability to conduct this research. In Madagascar, the Office National de l'Environnement, created in 1991 under the NEAP, has a Research Support Unit. USAID is directly or indirectly supporting research on biodiversity through the many conservation-through-development projects in that country. In forestry, the Swiss-funded ESSA-Forets and SAF (dry forest in Morondava) projects have carried out research since before the NEAP. The SAF project, in particular, has produced research which has informed public policy (sustainable yield of dry forests; suppression of fires). FOFIFA, UNESCO-MAB, FAO, GTZ and Switzerland are conducting research on agroforestry, sustainable shifting cultivation, soil conservation, and soil fertility. There are longer-established research programs concerning agronomy, livestock, fisheries, and water resources.

In terms of the framework, the key issues are (*a*) how much of the research should actually be carried out by the government because it concerns long-term public interests or because it is needed now but is being neglected by private interests; (*b*) how much of the research should be carried by the government directly and why, and how much should be delegated to whom; and (*c*) what role do government agencies play in deciding research priorities. Unfortunately, these issues could not be addressed within the scope of the present study.

An overall impression is that, despite present and past efforts, there is a scarcity of specific, practical research in support of the 2 / Information and 5 / Enforcement roles of the government, at least in forestry. There is an urgent need for a management guide for the owners of private coppiced eucalyptus plantations (see 2 / Information). Despite long-standing concern over the disappearance of precious hardwoods, there has been no research on natural regeneration of these species and of how it could be promoted; past research on artificial regeneration by the French seems to have been lost. There is no extension guide for farm forestry on the central Highlands. The literature on range management is almost nonexistent. Research on agroforestry in support of more stable land use in areas of shifting cultivation is apparently ready to be translated into extension materials. These and other research or extension needs have been recently identified by the writer (Zimmermann 1992).

In The Gambia, the research on management of natural forests and on fire protection carried out by the Gambian-German Forestry Project is an excellent example of public-sector research in support of public interests (including devolution of control over forests), and thus of convergence towards the norm used in this report. It remains to be seen, however, how much of the research capability has been institutionalized locally.

Gambian agricultural research has been recently evaluated in the World Bank/FAO CP/IC Preparation Report (1991) for Phase III of the Agricultural Development Programme. Of special relevance to the present report is the discussion of the role of NGO agricultural research (which is particularly well-developed in The Gambia) vis-à-vis government research. The discussion draws heavily on a previous study of the strengths and weaknesses of NGO agricultural research by the Overseas Development Institute, London (ODI 1987). Whether or not the conclusions of this discussion are accepted, it is an attempt to define the respective roles along the lines proposed under Element 6 / Research of this framework. Not surprisingly,

among the conclusions are that complex genetic research and certified seed production should be left to government research, whereas NGOs have an important role to play with on-farm trials and with the diffusion of technical innovations.

Element 7 / Infrastructure

There are not many recent examples of infrastructure provided by the public sector in support of NRM in the countries examined. In the rainforest region of Madagascar, improved access to the forest has had, as in most such regions, a net detrimental effect as it tends to encourage uncontrolled settlement and land clearance and illegal extraction of logs. Ideally, the provision of forest roads should be part of a management plan that includes adequate safeguards.

Under the various versions of the "Forested Valleys" project, GOM has sought to reduce shifting cultivation on forested slopes by encouraging sedentary agriculture (mainly paddy rice) on the valley bottoms. It did this in part by providing infrastructure in the form of small dams and water pipes. So far, the use of appropriate technology (e.g., bamboo pipes) has proved to be a failure because typhoons and other violent weather quickly destroyed the structures and sent the people back up the slopes to resume shifting cultivation. The use of conventional materials such as concrete and steel proved to be financially unsustainable. Nevertheless, GOM has no choice but to continue experimenting with a mix of sedentary agriculture on valley bottoms and more sustainable agroforestry on the slopes to reduce destructive shifting cultivation. Both will involve investments in public infrastructure (dams, pipes, roads, dispensaries, etc.), not to mention other measures such as land titling, massive educational campaigns, and provision of alternative sources of income.

In The Gambia, two examples of public infrastructure in support of improved use of resources are the dykes designed to keep saltwater out of rice paddies (see Element 2 / Information) and the establishment of "green" (and productive: cashew and *Gmelina*) firebreaks around the highly combustible natural forests. If the Dankunku experimental grazing management project is to be replicated, GOTG will probably be forced to supply fencing, at least initially while profit-making livestock owners' associations are being formed. The GEAP foresees considerable public investment in infrastructure needed to protect or rehabilitate the environment (sewerage and sewage treatment, control of coastal erosion, etc.). Some cofinancing with the private sector may be desirable (e.g., of coastal antierosion structures which are primarily of interest to the tourist industry). Under the ANR Program, the main abattoir of the country is to be privatized as (in conformity with Element 8 of this framework) there is no justification for public ownership of this infrastructure.

Element 8 / Social Ownership

In the last 10 years, and especially under the influence of the NEAP, there has been a great increase in protected areas (parks, nature reserves, special reserves, etc.) establishment in Madagascar. The NEAP identifies at least 50 such areas, with a total area exceeding 500,000 hectares. As biodiversity research progresses, more areas worth protection will probably be identified and granted special status. The problem is that this impressive increase in social ownership may rest on a more precarious consensus as to what constitutes "predominant social value or public interest" than now exists. There is no doubt that at the moment the international donor and scientific community, particularly the latter, have a strong influence (backed by money) on what the requirements for public ownership are. This influence may wane for either domestic or external reasons. Already some Malgaches, including senior government officials, have questioned the wisdom of setting so much land aside for primarily preservation

purposes. Precedents of dereservation exist. Thus, most of the Masoala peninsula of northeastern Madagascar, which contains the largest single block of undisturbed rainforest and many rare species, was once reserved and now no longer is. The present plan under the USAID/MBG project to establish a 3,000 square kilometer park is apparently encountering opposition, possibly because of the valuable timber the park would contain.

The number and size of protected areas inevitably raise questions of the long-term sustainability of their protection and management, despite the debt-for-nature swap and the APNs supported under this swap. The development projects around the protected areas may fail to ease demographic-economic pressure against the areas, in which case no amount of protection will save them. It would seem advisable for GOM to seek a broader consensus in the years to come on where the line of public ownership for nature protection should be drawn. The March 1992 National Forum on the constitutional future of the country shows that the country is well able to consult a wide spectrum of public opinion on public issues.

The existence in Madagascar of small privately owned and managed nature reserves (associated with tourism) also point to the need to question which reserves should be in the public domain and which could be safely privatized.

In terms of the framework, Madagascar probably has too many forest reserves under central control. DEF is responsible for 66 reserves totalling about 1.5 million hectares out of a total forested area (closed forest) of some 5 million hectares (1987 satellite imagery). This means that each forest officer is theoretically responsible for some 700 square kilometers of reserved and unreserved forest; in the field there is a forest technician per 100–150 square kilometers of forest. Not surprisingly, DEF is neither protecting nor managing these forests. It could not, even if it had the will, the skills, and the means to do so.

Ideally, DEF should only retain those reserves that are needed for training of foresters, for research and experiments, for special purposes such as faunal or reservoir protection, and where DEF can provide some visible management and retain reasonable control over access and use. In the long run, as implied in the KEPEM Program, there has to be control, surveillance, and management of the remaining forests by local communities motivated by a clear economic stake in the preservation of these forests. Vis-à-vis these communities, DEF would then play the residual roles foreseen under Elements 1 / Rules through 7 / Infrastructure, and 13 / Royalties and 17 / Resource Planning. It should be added that, at the moment, there is deep skepticism within DEF of the wisdom of devolving authority over forests to local interests (fear of short-term exploitation and inability of local authorities to control powerful economic interests).

In The Gambia, the park and nature reserve system has been expanded and improved recently, in part with USAID's assistance (e.g., Kiang West). It seems reasonable in size in relation to the resources to be protected, the interests of the vital tourist industry, and the means likely to be available from GOTG and the donors. Effective management of the parks, including fire protection, is still a long way off. GOTG has accepted the principle of revenues from the parks going into a dedicated account to be used for investments in park improvements. This is in line with the principle (implied in the notion of devolution) that retention of revenues from a resource should act as an incentive to good management of that resource.

The Gambia has 66 forest parks (reserves), the same number as Madagascar despite the 55:1 difference in country size. The Gambian reserves are, however, small, totaling only 34,000 hectares. GOTG manages this estate with essentially one professional forester, and fewer than 100 technicians. The present system is tenable, at least so long as the Gambian-German Forestry Project provides TA and additional funding to supplement GOTG operating budgets. This

project is now bringing key forests under visible management and improving fire protection. GOTG is open to concepts of multiple-use, including controlled grazing in some reserves, which should help to reduce pressures against the forests. In the light of the alarming rates of deforestation in the country, a case could be made for expanding the Reserve system (i.e., increasing public ownership). It seems more likely that The Gambia will protect the remaining unreserved forests via CRMAs. USAID's ANR Program is supporting this approach. Gambian CRMAs are an example of a compromise solution between private and public ownership.

Element 9 / Linkage

The increasing use of NGOs to supplement the role of public NRM institutions, particularly under Element 2 / Information, raises the issue of an institutionalized linkage between the government and NGOs. This linkage is needed for the transmission of policy directives and of technical information, for coordination of field activities, for channeling funds, for the vetting of projects and their funding, and for channeling feedback from the field to the public policy, legislative, research, and extension structures.

Madagascar has recently moved far in this respect, according to some perhaps too far. Thus, there has been convergence towards the framework, but not without controversy. Under NEAP, USAID's SAVEM project has established the *National Association for the Management of Protected Areas (ANGAP)*. The purpose of ANGAP is to harmonize and support conservation-through-development efforts in and around the 50 protected areas identified by the NEAP. ANGAP is a semipublic organization, or, in French legal terminology, a "private organization of public utility." In its initial five-year phase, ANGAP is financed mainly from donor grants, but it will also receive park revenues (entrance fees, concession sales, etc.) that were previously collected by the DEF on behalf of the central Treasury. ANGAP has a policy/planning function for its mandated areas, coordinates and funds activities, monitors and evaluates, and performs all the functions under Element 2 / Information. It also supports GOM services in the mandated areas. A detailed analysis of ANGAP will soon be available as part of the evaluation of the SAVEM project. Only some controversial issues are mentioned here.

Not surprisingly, ANGAP has been criticized as a minigovernment or parallel government within the mandated areas. The main criticism has probably been, however, that ANGAP has lured some of the better staff from government services, thus further undermining them. It has allegedly done so through better pay, allowances, and general working conditions. In practice, the differential is not great, particularly if Civil Service fringe benefits are taken into account. One lesson, however, is that rumors can be damaging to morale and to policy support, and thus the establishment of semipublic structures such as ANGAP should be accompanied by full disclosure and comparison of the terms of employment. Another criticism is that ANGAP is another symbol of the disproportionate attention and resources devoted to nature protection (but see ANAE below). A final criticism is the potential overlap between ANGAP and ANAE around protected areas.

On balance and in terms of Element 9 / Linkage of the framework, there is no doubt that ANGAP is a useful structure for reinforcing and extending government services in and around protected areas, for focusing and supporting activities, and for channeling resources (funds, TA) and technical exchanges. The long-term political support for ANGAP is, however, not assured as it may be seen too much as a parallel government.

Under NEAP, Madagascar has also established a *National Association for Environmental Activities (ANAE)* which corresponds more closely to the norm presented for the linkage between NGOs and the government. ANAE is another semipublic organization (but incorporated as a private foundation) with a board of

directors composed of civil servants (from ONE), local and international NGOs, and church and business representatives. ANAE supports the preparation, appraisal, and implementation of local-level NRM miniprojects (reforestation, watershed management, etc.). The actual implementors may include NGOs, private firms, and, interestingly, government services such as agricultural and forestry extension. ANAE is being funded by the World Bank and two bilateral donors. Initially it will be active mainly around protected areas, hence the risk of overlap with ANGAP activities despite assurances that there will be coordination and collaboration.

As noted earlier, one Swiss-funded program (Forets et Developpement Rural/Faritany Antananarivo; its aim is to establish models of local resource management, starting in the key Province of the country) has also created a mixed public-private local extension/experimentation/marketing center (Centre FAFIALA) as a mutually reinforcing linkage between the public and private sectors.

Innovations such as ANAE and FAFIALA, particularly if one day they could become entirely self-financing through endowment funds and/or users' fees, should be followed closely as they address key institutional problems in NRM: linkage between public and private sectors; recurrent costs; unrealistic ratios between staff and tasks to be performed; steady input of technical assistance; systematic feedback from the grassroots; local participation; local monitoring of resources; assessment of PLIs.

In The Gambia, the absence of a well-developed linkage among NGOs (the umbrella organization, TANGO, is embryonic) and between NGOs and the government was keenly felt during the design of the ANR Program. This is because the ANR Program will rely mainly on NGOs to diffuse the concept of CRMAs to be negotiated between local communities and government technical services. For the donor, this creates problems of funding, project appraisal, and supervision. For its part, GOTG was keen that there be a formalized structure for joint project appraisal, for the transmission of policy directives, for the coordination of projects, and generally for a two-way dialogue between NGOs and GOTG, especially given the innovative and "political" nature of CRMAs. Under the program, a tripartite GOTG/NGO/donor committee will be formed to perform these functions. This committee will, of course, lack the permanence and visibility of ANAE in Madagascar. As noted, ANAE is a national foundation that exists outside a project or program (although currently vulnerable in its dependence on donor funding).

Element 10 / Recurrent Costs

As the Phase I report emphasizes, insufficient operating budgets to cover the nonsalary recurrent costs of government activities is a principal, chronic institutional problem. In the case of mobile field NRM activities such as extension and patrolling, this problem is often so severe that activities are essentially suspended for part of the year (while personnel costs continue to be covered). The problem is one not simply of lack of funds but also of poor programming and budgeting. Typically, personnel costs take up more than 80 or even 90 percent of recurrent budgets, thus leaving few funds for operations. In this case, it can be safely stated that there can be no "proper" functioning of public NRM and other institutions without efforts to address and solve this chronic and universal problem.

It is perhaps symptomatic of the intractability of the problem of recurrent costs that no example of a local and systematic initiative to solve the problem for a particular NRM agency could be found for the countries examined. The examples discussed below concern mainly donor-driven, indirect attempts to solve the problem or to circumvent the problem with stop-gap measures, usually as part of a broader set of aid measures. Most of these attempts have already been mentioned and, hence, are only recapitulated here.

Debt-for-Nature Swap

In Madagascar, conservation areas formerly inadequately patrolled by the Forest Service are now protected by so-called Nature Protection Agents financed from an endowment fund established on the basis of a debt swap. In this particular case, the present endowment fund for technical reasons does not ensure perpetual financing of activities, but it could be revised to do so. Thus, *swaps* could be a sustainable solution. The Madagascar example implies, however, the provision of semipublic services which may not be politically acceptable everywhere. Incidentally, in Madagascar there is no evidence that the debt-for-nature swap has indirectly alleviated the recurrent-cost problem of the Forest Service (now no longer directly responsible for nature protection). In general, the Madagascar WWF swap has been criticized as being top-down, exclusive (one NGO), narrowly focused (nature protection), potentially inflationary, and inadequately linked to local institutions (KEPEM PAAD 1991, 202–3).

Local Endowment Funds

As a way of circumventing the administrative and, on occasion, political complexity of establishing funds from a debt swap, endowment funds can be established using exclusively local currency from internal public and private sources, supplemented if necessary by initial grants from donors. This is a promising approach now being examined by USAID under a separate study.

Dedicated Accounts

Both Madagascar and The Gambia have accepted, as part of NPA conditionalities, the concept of resource revenues (fees, fines, royalties) going in part into dedicated accounts to be used by the particular line agencies to fund some of their activities. Many francophone African countries already have National Forestry Funds, the record of which has been spotty. These dedicated accounts are useless unless they are accompanied by a revision of royalties and an improvement in the collection systems, as indeed conditionalities in Madagascar and The Gambia require.

The effectiveness of dedicated accounts remains to be demonstrated. The revision of royalties and fees may yet run into political opposition in Madagascar. In addition, the collection system may remain ineffective because of corruption and lack of field staff in Madagascar. The amounts collected may be insignificant in relation to operating needs, for example because of low volumes of valuable timber left in The Gambia. In both countries, treasuries may yet veto dedicated accounts, particularly if they divert substantial amounts from central revenue or are seen to establish "dangerous" precedents for further dedicated accounts. Dedicated accounts may be used by Treasury as an excuse for cutting back on the operating budgets of line agencies (which is why the Gambian ANR Program speaks of dedicated accounts *supplementing* minimum operating budgets; moreover, these accounts are not intended to cover personnel costs).

Retrenchment

In Madagascar (field forestry staff) and in The Gambia (village-level agricultural extension) established staff positions either have not been filled or have actually been reduced. In The Gambia, the retrenchment was deliberate and part of structural adjustment. As noted, it should not detrimentally affect the delivery of services, provided the residual staff is made more effective. In Madagascar, forestry staff has never been up to strength because of drastic economy measures. As a result, most of Madagascar's forest estate now exists in an institutional vacuum. In The Gambia, a substantial part of the Ministry of Agriculture's (MoA's) operating budget has been paid for by the World Bank; this arrangement is likely to continue. Local USAID staff claim that GOTG has the means to cover MoA operating expenses (1991–92, US$ 2.1 million,

or 3.5 percent of the total GOTG recurrent budget; the extension services and research amount to $1.4 million) but has so far been unwilling to address the problem, in part presumably because of long-standing World Bank support of recurrent costs.

In Kenya, a multidonor mission recently suggested to GoK that the operating budget of the Forest Department (FD) be spread over fewer activities by removing the FD from large, dry regions of the country where activities are minimal. This suggestion was rejected mainly on political grounds (equal Ministerial presence throughout the country; the ceremonial role of government services should not be underestimated). A similar suggestion by another donor to cover one district with more mobile extension foresters from one office rather than with a more static presence in each division of the district was rejected for similar reasons. In fact, donors in recent years have had to counter GoK requests to increase central-government presence at the lowest levels (locations and sublocations). Substantial retrenchment of government services is probably impossible without a genuine commitment to devolution.

Revised Budgetary Priorities

This approach is mentioned as a potential rather than an actual solution, at least in the countries being described. In The Gambia, USAID staff maintain that agriculture and natural resources are underfunded within the overall GOTG budget, despite their contribution (over 70 percent) to the GDP. An early ANR Program design included a conditionality that required a percentage increase in the ANR budgets, but the conditionality was dropped in part because of unresolved technicalities but mainly because it was felt that an external aid program could not tie the hands of Cabinet five years hence, given competing and shifting political priorities.

In most African countries, there is scope, however, for a careful examination of line items *within* Ministerial budgets which may help alleviate the problems of inadequate operating budgets. Thus, in Kenya it was found that the forestry budget included obsolete and unused appropriations from the colonial period (e.g., telegraph expenses) that could have been shifted profitably to the crucial fuel vote for the extension branch. It was also found, however, that changing the format of the annual estimates was a complicated technical and political task, well beyond the scope of a foreign-aid mission. In general, the issue of rational programming and budgeting urgently needs attention (see Element 11 / Programming / Budgeting).

Improved Revenue Generation

As mentioned above, both Madagascar and The Gambia have agreed to revise royalties in part to generate operating funds for the line agencies collecting the royalties. It is too early to tell whether this approach will alleviate the problem of recurrent costs. On the other hand, in The Gambia fees and fines already replenish a Fisheries Development Fund and cover a substantial part of the cost of fisheries patrols.

Devolution

The devolution of authority over natural resources to local communities, which in turn may allow the retrenchment of government services (reduction of custodial functions, deployment of small task forces from central HQ as needed, payment of users' fees for government services) may turn out to be a promising way to reduce operating expenses, or to spread the same amounts over fewer, but more purposeful, activities. As noted, in The Gambia this opportunity will be investigated under the ANR Program, assuming the concept of Community Resource Management Agreements will be diffused at a sufficient rate.

Element 11 / Programming / Budgeting

As described in the Phase I report and as noted above under Element 10, several institutional problems in NRM can be traced in part to the lack of proper planning, programming, and budgeting systems. Among these problems are operating budgets that bear little relation to mandated tasks, chronically unused or underutilized line items, field activities disrupted by untimely replenishment of funds, budgets that are not adjusted on the basis of feedback from the field, and generally budgets of line agencies that reflect arbitrary ceilings imposed by Treasury rather than actual needs and shifting priorities. Beyond these immediate administrative problems, the lack of adequate programming and budgeting also means that there are no checks on performance—that is, on the cost-effectiveness of government activities. There can be no reasonably efficient functioning of budgeting of activities.

The issue of programming / budgeting could not be examined in Madagascar. It is known that, under the GPF project (1988–suspended 1992), steps were taken to improve programming and budgeting in the DEF, mainly through the assignment of a financial adviser. Little progress was apparently achieved, as a result of the broader management crisis in DEF. DEF largely failed to program and implement activities for which GPF had made funds available. The question of administrative weakness is examined under Element 16.

In The Gambia, USAID introduced a programming / budgeting system to the Ministry of Agriculture in 1988 as part of the Gambia Agricultural Research and Diversification (GARD) Project. By 1992, the system was not yet institutionalized and sustainable. Among the problems have been overreliance on external TA, turnover of MoA personnel, lack of commitment to the system, insufficient briefing of personnel in the various departments that must contribute to the inherently decentralized system, and poor linkage to the Ministry of Finance, which continues to impose arbitrary ceilings. More seriously, the transparency introduced by the system has revealed financial irregularities, undermining support for the system in some quarters.

The ANR Program intends, however, to pursue and extend the introduction of programming / budgeting in both cooperating Ministries—Agriculture, and Natural Resources and Environment (MNRE). If implemented, this would represent a major convergence towards the framework postulated in this report. The issue was considered sufficiently important to warrant a conditionality to that effect. Preliminary discussions with MNRE showed lukewarm support for a formal programming and budgeting system (PBS), mainly because of fears of having to change a familiar budgeting system and of having to add staff and equipment (computers). Apparently, support in MoA was equally lukewarm for some of the reasons given above. There was also disagreement within USAID staff concerning how far the PBS should be taken within program life. One faction felt that PBS should be introduced as a means to improve the annual preparation of budgets and to check actual expenditures. The other faction believed that GOTG should already go one step further and tie the PBS to performance indicators (e.g., farmers reached by extension) so as to begin assess cost effectiveness and thus use PBS as a management tool. The issue was settled in favor of the former view so as not to add complex and potentially controversial issues too soon.

Element 12 / Pay

No recent example of deliberate, public-sector convergence to the norm can be given for the countries considered in this study. The same potential solutions discussed under Element 10 / Recurrent Costs are, however, relevant here. In Madagascar, an indirect "solution" to the problem of pay and allowances for forest guards was, as noted, the replacement of these guards in sensitive conservation areas with APNs paid for out of an endowment fund derived from a debt-for-nature swap. The KEPEM NPA Program has discussed with GOM the possibility of eventu-

ally using part of the Forestry Fund, replenished from royalties and fees, to pay for at least the travel allowances of field foresters. GoM has been open to the suggestion. Timely payment of allowances that actually cover costs or even leave a surplus is known to be an effective morale boost in the absence of adequate pay. In general, the question of salaries cannot be addressed by one project or program, as the issue affects the entire Civil Service and is often tied to structural adjustment programs. Thus, in Madagascar the KEPEM design raised the issue but could only refer to on-going GOM / World Bank / IMF discussions of inadequate Civil Service salaries (seriously eroded by inflation) as a possible source of solutions. Among these solutions, drastic staff cuts (and higher salaries for residual staff) do not seem feasible for NRM agencies, especially the Forest Service, which already is barely present in the field.

In Tanzania, where the lower Civil Service salaries are not living wages (thus forcing staff to have second jobs), recent discussions of the issue as it pertains to forestry were inconclusive. One suggestion was to boost allowances of field staff as a bonus for more efficient collection of revised fees and royalties. This suggestion was abandoned mainly because it could have led to (*a*) extortionary tactics in fee collection and (*b*) resentment on the part of civil servants who are not entitled to field allowances. In the case of industrial forestry, a more promising solution to the wage issue is to privatize this sector, which has considerable economic potential. Privatization is, however, still a sensitive issue in Tanzania.

In The Gambia, the problem of pay and allowances is less acute than in the two countries mentioned above. It was not addressed in the course of the recent ANR NPA design.

Element 13 / Royalties

In recent years, there has been wide acceptance in Africa of the concept of realistic pricing of resources, usually in connection with the liberalization of markets (see Grut, Gray, and Egli 1991). The acceptance by Madagascar and The Gambia of USAID NPA conditionalities requiring the revision of stumpage fees towards true replacement costs or residual values (see Element 4 / Arbitration) is part of this trend. Tanzania has also recently agreed to increase substantially its badly outdated forest royalties. To this extent, there has been considerable convergence towards the framework. The practice is another matter. Even in Kenya and Côte d'Ivoire, despite long experience with royalties and forest industries, royalties were still below 15 percent of replacement costs by the late 1980s (World Bank 1992). Indeed, in most African countries, royalties are still "considerably below the value of the standing timber" (Grut, Gray, and Egli 1991). The collection systems are also generally inefficient or corrupt or both.

The recent design of NPA in Madagascar and The Gambia revealed various issues in connection with the revision of stumpage fees. The economic data and analyses needed for the revisions are not available, and forest services generally lack the ability to collect economic data and analyze them. Thus, external assistance is required from data collection to the establishment of the new rate schedules. There is still a lot of confusion regarding the difference between fees and taxes on the one hand and royalties on the other. The calculation of replacement costs or residual value of indigenous species from natural forests is likely to prove difficult. In Madagascar, the domestic and export markets for precious indigenous hardwoods are so distorted by illegal transactions and by unawareness of intrinsic value that true market values for the calculation of residual values may only be revealed by repeated, well-advertised auction sales. There is considerable fear of the inflationary impact of "true" stumpage fees. In Madagascar, the expected opposition to much higher stumpage fees (because of high-level corruption) did not materialize, at least not at the discussion stage. The absence of officially pub-

lished royalties meant a lot of disagreement between the KEPEM design team and the Forest Service over what the rates are or ought to be. In Madagascar, Treasury did not seem to be aware of stumpage fees, which is not surprising given the low rates of collection today; Treasury eventually became an ally in the call for higher fees based on sound economics.

In both Madagascar and The Gambia, conditionalities call for the simultaneous improvement of the collection systems, without which higher fees are pointless. In the former country, an efficient system will be difficult to achieve because of the size of the country, few forestry agents, and corruption; on the other hand, the potential rewards are great, as even as low as a 30 percent collection rate might yield millions of dollars. In The Gambia, the small size, the existence of geographic chokepoints, and a tradition of reasonably effective controls (e.g., ban on charcoal) might mean an effective collection system but with few rewards (little valuable timber left).

Element 14 / Policies

In both Madagascar and The Gambia, the National Environmental Action Plans, which have been adopted as policies, generally represent a convergence towards the norm stated under this element (they reflect current realities of resource use, local control and management of resources, intersectoral nature of resources; sustainable use, biodiversity conservation) except for broadly based public participation. In The Gambia, the concept of devolution is clearly spelled out, and, as noted, it is being implemented.

In Madagascar, one province (Antsiranana) produced a local plan ("Provincial EAP") and resource-use policy that closely conforms to the norm of the review framework. The plan resulted from a provincial "estates-general" that included the main interest groups and was called at the initiative of the Provincial Forester who happened to be a friend of a senior local politician. The "estates-general" had also been supported and organized by the main sources of political and financial power (local politicians, local representatives of the central government, local traditional chiefs, the donor community) so that the plan produced was automatically endorsed by these power groups.

On the other hand, in Madagascar the March 1992 draft forest policy (to replace the 1987 policy) diverges in part from the norm. It is a sectoral, technocratically produced document, as opposed to a document that rests on a broad interministerial and public consensus. It compensates in large part by placing forestry in a broader context than is the case with conventional forest policies. Thus, it emphasizes the ecological role of forests, biodiversity conservation, sustainable development, public participation in forest protection and management, the role of trees in soil conservation and land tenure, and extension forestry. It is no substitute, however, for a document in which various sectors (agriculture, livestock, fisheries, urban planning, the Ministry of Finance, business, local communities, etc., as well as the Forest Service itself) spell out and coordinate their expectations of the role of trees and forests in the national context. The policy also provides no guidelines as to what public participation in forestry entails (actual devolution of authority, long-term leases in Forest Reserves, etc.). A modern policy should also spell out the economic rationale for certain elements, such as exports of forest products and transformation of forest products. On the other hand, in the economic sphere the draft policy conforms to the norm in that it speaks of the "pricing of forest products to take account of their ecological costs and intrinsic qualities."

Element 15 / Procurement

Inefficient and corrupt government procurement systems are a major institutional constraint on NRM in most African countries. They often paralyze the delivery of government technical

services, even when funds are available. The recently suspended GPF project in Madagascar is a case in point, as the low rate of disbursement under some items (as low as under 10 percent after four years) has been due in part to blockages caused by the procurement system. The Phase I report (Appendix II) describes similar problems with the Kenyan procurement system. No fundamental reform and, hence, convergence towards this element of the framework, can be reported for the countries examined.

Element 16 / Administration

The Phase I report (p. 14) and many other reports (see Brinkerhoff, Gage, and Yeager 1992, 16) identify weak administrative management or "organizational weakness" as a key NRM institutional problem. It has been mentioned, for example, as an "issue" or "critical issue" in 18 out of 19 USAID NRM projects and programs examined recently (Brinkerhoff, Gage, and Yeager 1992, 16). Virtually every evaluation of an institution-building project ever examined contains the same litany of specific weaknesses: inability or unwillingness (*a*) to plan, prioritize, and program activities; (*b*) describe and assign jobs and tasks clearly, and to revise job and task descriptions as circumstances change; (*c*) to schedule tasks in a logical time sequence; (*d*) to think through activities from A to Z, and the need for supporting or complementary tasks; (*e*) to see that tasks are completed; (*f*) to delegate tasks and decisions; (*g*) to define clear lines of authority; (*h*) to remove management levels of no demonstrable value; and (*i*) to encourage and facilitate, rather than automatically obstruct, initiatives, whether from within the organization or from the clients of the organization.

Recent (1990; 1992) evaluations of the DEF are no exceptions, as they use similar language to describe chronic management weaknesses. As a symptom of poor delegation of tasks, the Director allegedly handles over 150,000 pieces of correspondence annually, as even the most trivial matter reaches his desk. DEF, which has 450 to 650 employees (the vagueness is also symptomatic of poor management), has seven levels of hierarchy. Over one-third of the 75 professional foresters do mostly unproductive work at national HQ, while most of the field staff is essentially unsupervised or even unreachable from HQ. At the same time, an analysis done as part of the KEPEM PAAD showed that effective deconcentration of DEF (50 percent of present positions at national and provincial HQs reassigned to field units) would cost $18.4 million over the initial five years. This cost could not be justified, as solutions are more likely to be found with the devolution of authority over forests and with the retrenchment of DEF in the direction of small, mobile task forces in support of local managers of forests.

Neither KEPEM nor GPF, which was mainly an institution-building project, has addressed or solved the management problems of DEF. The Phase I report (Annex II) describes some partial solutions, but mostly similar persistent problems within the Kenya FD. In The Gambia, discussions of the Gambian-German Forestry Project (1980–93) and of the World Bank-funded ADP II (1987–92) suggested less severe organizational weaknesses than those known from Madagascar, Kenya, and Tanzania. On the other hand, many of the specific weaknesses heard in The Gambia, especially with agricultural extension, fit the list given above.

In summary, there has been little convergence towards the norm of the framework in the crucial area of administrative management, possibly because the remedies applied have not been relevant to the root causes of the problem. The specific weaknesses listed above are often given in evaluations as the problems themselves. Their universal recurrence and persistence suggest, however, that they are the symptoms of a deeper-seated problem of a cultural nature, possibly a conflict between local cultural and social norms and the requirements of a modern technocratic organization.

If this assessment is valid, then most institu-

tion-building projects as now conceived (including the one shaped and directed by the writer in Kenya) are sociologically "naive." Cultural conflicts (e.g., between Western and local conceptions of authority and delegation of the same) are not likely to be resolved by short-term "do-as-I-do" TA and management training nor by manipulations of organizational charts. They may require lengthy, frank discussions prior to project start of how Western expectations of achievement-oriented management can be reconciled with local norms regarding authority, delegation of authority (a particularly sensitive issue), gain or loss of status, socially acceptable ambition and initiative, etc. Such a prior exchange of views seems preferable to the usual ex post facto recriminations based on mutual incomprehension.

Element 17 / Resource Management

One of the priority issues identified in Phase I is not only the lack of basic data on natural resources (see Element 3 / Monitoring) but also the inability to translate data into management plans or parameters such as sustainable yields, harvesting quotas, or regulatory standards. Without this ability to use data for policy, management, or regulatory purposes, monitoring can easily become an expensive pro forma exercise. Without the purposeful use of the data collected, monitoring itself cannot be adjusted or refined to increase its data-collection efficiency. Management use of data is part of the complete cycle of "resource stewardship" (see 14 / Policies) to which public NRM agencies should aspire. This stewardship is defined as including (*a*) knowledge of the resource (see 3 / Monitoring; 6 / Research); (*b*) a grasp of the sustainable yield of that resource (17 / Resource Management); (*c*) having the will and the means to impose and enforce limits in the light of (*b*) (see 4 / Mediation; 5 / Enforcement); and (*d*) being able to express resources and their yields in realistic economic terms, and to generate revenues needed to maintain and develop a particular resource (see 4 / Mediation; 13 / Royalities).

There has been considerable convergence towards this element of the framework in both Madagascar and The Gambia, at least in terms of the creation of institutions devoted to resource planning. There have also been several planning efforts, but these have not yet been fully institutionalized locally.

In Madagascar, ONE (functional from 1991) has a monitoring, surveying, planning, and policy-advisory function (a role similar to that of the Office of Technology Assessment in the United States; ONE is not a Madagascar EPA). Under the SAVEM project, ANGAP and the BPS will play the role called for under the framework in the protected areas and their peripheral development zones. Under its support project, KEPEM will assist DEF in translating existing inventory data (notably in the priority Moramanga capital supply zone) into management plans complete with cutting quotas. KEPEM will also support the preliminary assessment of other management aspects of forestry. Two forestry projects (ESSA-Forets and SAF/Morondava) are already assisting DEF in the collection and interpretation of data for policy, management, and regulatory purposes. The GPF project has also made contributions in this direction, despite the problems it has faced. Some of the studies GPF has commissioned (see Bertrand 1989; Ramamonjisoa and Randriamiharisoa 1990) are important contributions towards resource stewardship as defined above. These studies tend to be, however, donor-driven and poorly integrated into DEF's management culture. DEF, like most of its African counterparts, is finding it difficult to make the transition from a primarily custodial to managerial role. As noted earlier, the ability to assess a resource in economic terms is particularly weak.

In The Gambia, the Gambian-German Forestry Project with its emphasis on inventories, studies, and use of the same in its Forest Park Management and Community Forestry subprojects represents a convergence towards Ele-

ment 17 of the framework. The local institutionalization of these efforts is, however, precarious as the FD has only four professional foresters. The project has relied heavily on external planning, with the notable exception of sociological baseline surveys for community forestry, for which there is a capability at the National Museum (The Gambia has no university). The Dankunku Grazing Management Project has made similar contributions in range management, as the scheme required the definition of carrying capacities. Again, the institutionalization of experience may be difficult, as the Department of Livestock Services has only nine professional extensionists (mostly veterinaries) and two professional range managers.

The Gambia has three existing or new agencies that theoretically will have the resource-planning capability foreseen by the framework. They are the Environment and Planning Units of MNRE, the mandates of which are still being defined under GEAP. As noted, these units are now receiving UNSO TA, including TA for the planning / management use of monitoring data. The MOA has a Department of Agricultural Operations with a similar mandate for resources of immediate relevance to agriculture; it has not yet exercised this mandate. The ANR Program will assist both Ministries with selected aspects of resource planning. With the diffusion of CRMAs, The Gambia will increasingly need technical services capable of defining sustainable yields.

In both countries, preparation of the NEAPs have served to expose many middle- to high-level civil servants to concepts of resource management as defined in the present report.

In Kenya, the public sector has available a considerable local capability for resource planning and management in the form of consulting firms. The senior professionals of these firms are mainly ex-civil servants. In most cases, however, public NRM agencies are indirect clients of these firms, which tend to be hired by donors who fund NRM projects. The unwieldy procurement system is one of the main deterrents to the direct use of consulting firms. Many in the private sector refuse in any case to deal directly with the government because of bribes and delayed payments. Another deterrent is the pervasive attitude within the government that planning involving public resources should be the exclusive domain of the Civil Service.

The Kenyan NRM consulting firms are generally well-managed and technically competent, which suggests that, given sufficient financial rewards and a less restrictive environment, many of the Civil Service administrative weaknesses listed earlier might disappear. On the other hand, the ex-Civil Servants who run the consulting firms are not a representative group (unusually competent and ambitious, familiar with Western expectations through education and residence abroad, etc.), so that projections of general behavior from this select group may not be reliable.

Element 18 / Resource Mandates

The issue of overlapping jurisdictions, vague or controversial mandates, poor intersectoral coordination, and institutional gaps (as when NRM innovations such as agroforestry extension have no institutional sponsorship) was not identified as a "priority" in the Phase I report (pp. 8–9, 14–15). That is because its current impact on NRM is not as serious or widespread as nonfunctioning NRM agencies or unrealistic resource pricing. However, as demographic and other pressures on resources increase, as competing demands have to be reconciled, and as complex intersectoral problems require solutions, jurisdictional vagueness or gaps could soon become a priority constraint. For this reason, a willingness to address jurisdictional issues was added as an element of the framework.

In Madagascar, The Gambia, and elsewhere in Africa, the preparation of NEAPs has inevitably forced governments to examine the jurisdictional aspects of resource degradation and of complex resource linkages and to propose solutions to the most urgent problems.

The NEAP process has probably been most effective in creating or supporting structures for

4. Summary and Conclusions

A sample of recent institutional changes in The Gambia and in Madagascar, as well as selected other examples from other African countries, were examined from the standpoint of their convergence towards, or divergence from, a framework that describes the potential roles and functioning of public natural resources management (NRM) institutions.

According to the framework, the *roles* of public NRM agencies include setting the policy and legislative rules, providing information and technical assistance in collaboration with the private sector, monitoring the state and use of resources, mediating and arbitrating among competing economic and other interests, enforcing rules and technical standards, conducting research on topics of public interest, providing infrastructure, and owning and managing only those resources where the public long-term interest clearly predominates.

The normative *functioning* foreseen by the framework means addressing priority and other institutional issues identified in Phase I of the study. These issues include the linkage between the public sector and nongovernmental organizations (NGOs), recurrent costs, programming and budgeting, salaries and allowances, resource pricing, resource policies based on a broad consensus and on the concept of sustainable use, procurement systems, organizational weakness, the ability to plan and manage resources sustainably, and jurisdictional clarity and completeness concerning natural resources.

Convergence towards the norms established, at least at the conceptual and institutional level, was found primarily in the following areas:

- *Policy and legislative framework.* This framework exists primarily in the broader environmental field under the influence of the NEAPs.
- *Information, education, and technical assistance.* This estimate, however, has been primarily in connection with the preparation of NEAPs, nature protection, and pilot schemes involving the devolution of control over natural resources (see Divergence below).
- *Resource monitoring.* Monitoring thus far has been mainly in connection with the recent concern over environmental degradation and species extinction (see Divergence below).
- *Mediation.* The role of public NRM agencies as arbiters in the economic sphere has been enhanced by recent economic liberalization (see Divergence below).
- *Enforcement.* Some convergence exists in connection with nature protection and devolution of authority (see Divergence below).
- *Research.* Convergence exists primarily in connection with nature protection (see Divergence below).
- *Infrastructure.* Some convergence exists in connection with local projects.
- *Social ownership.* Considerable convergence exists in connection with nature protection and devolution of authority (see Divergence below).
- *Linkage.* Considerable convergence, initially in connection with nature protection, exists in Madagascar.
- *Recurrent costs.* Some convergence exists in connection with debt-for-nature swaps, dedicated revenue accounts for public NRM agencies, improved revenue generation, and devolution (see Divergence below).
- *Programming and budgeting.* Some convergence exists in The Gambia (see Divergence

below).

- *Royalties and other resource pricing.* There is considerable acceptance of the concept of realistic pricing, aided by economic liberalization.
- *Resource policies.* Some convergence exists with NEAPs (see Divergence below).
- *Planning and management for sustainable use.* Some convergence exists in connection with NEAPs, conservation, and local control (see Divergence below).
- *Jurisdictional clarity and completeness.* Some convergence exists in connection with NEAPs (see Divergence below).

Divergence (or at least no convergence) was found, in practice, in the following areas:

- *Information, education, and technical assistance.* Conventional extension services remain generally weak, or have become weaker in Madagascar. In The Gambia, soil and water conservation have become more geographically restricted in recent years.
- *Resource monitoring.* Conventional resource monitoring (forest inventories, permanent plots, supervision of logging permits, etc.) remains weak, especially in Madagascar.
- *Mediation.* Resources from the public domain remain unrealistically priced or are obtained at no cost. Resources continue to be allocated unfairly, mainly because of inefficient NRM agencies, political pressures, or corruption. National accounts still do not reflect social and other nonmonetized values, thus distorting the allocation of government resources.
- *Enforcement.* Conventional custodial roles (patrolling of forests and fisheries, control of range fires and overgrazing, etc.) continue to be undermined by low salaries, inadequate operating budgets, low mobility, low morale, political pressures, lack of local cooperation, etc. Weak extension services do not enforce technical standards.
- *Research.* Research in direct support of resource management (sustainable yields, carrying capacities, site-specific technical packages, etc.) remains weak. The capacity to conduct economic analyses of resource use is almost nonexistent. At the same time, governments may be conducting research that could be delegated or left to the private sector or educational institutions.
- *Infrastructure.* Some public infrastructure (e.g., forest roads) has had a detrimental impact on NRM.
- *Social ownership.* In some cases, the public sector owns resources (e.g., Madagascar forest reserves) that it does not need (in terms of the model) and that it cannot control or manage.
- *Recurrent costs.* Despite some partial solutions (see Convergence above), the problem of inadequate nonsalary operating budgets remains one of the most intractable constraints on the functioning of public NRM agencies.
- *Programming and budgeting.* Rational budgeting based on adequate planning and programming of activities and on evaluations of actual expenditures in relation to outputs remains the exception rather than the rule.
- *Salaries and allowances.* Most public-sector salaries (as well as allowances and their administration) remain grossly inadequate. Salaries are often not living wages. Adjustments do not keep pace with inflation (especially in Madagascar).
- *Policies.* Most sectoral resource policies still fall short of the standard set by the framework.
- *Public procurement systems.* There are no known attempts to remedy this serious blockage to the efficient operation of public NRM agencies.
- *Management or organizational weakness.* This is one of the most intractable problems in the public sector, and no substantial improvements can be reported. The problem is mainly of a cultural nature and is therefore not likely to be solved by conventional insti-

tution-building projects.

- *Planning for sustainable use.* Most conventional NRM agencies (unlike new environmental agencies) still lack the ability to translate data into management parameters needed for policy, management, or regulatory purposes (allowable cuts, quotas, carrying capacity, optimum rotations, regulatory standards). Devolution of control over resources based on legally binding management plans is creating pressure to strengthen this ability.
- *Jurisdictional clarity and completeness.* Despite the progress made in connection with NEAPs (see Convergence above), most conventional NRM agencies retain narrow and rigid sectoral mandates (e.g., emphasis on custodial role of forest services), and many intersectoral resource issues or innovations fall between institutional mandates.

In general, the NEAP process, NPA conditionalities, and projects that involve the devolution of custodial and management responsibility over resources have been the main sources of reforms that conform to the norms set forth in this report. Sectoral institution-building projects have been less effective in this respect.

On the other hand, even the more reformist interventions mentioned above have had little impact on the more intractable problems such as recurrent costs, inadequate salaries, inefficient and corrupt procurement systems, and especially chronic, deep-seated organizational or management weakness. These are evidently issues that affect the entire public sector and that are rooted in the economic and cultural (mainly the lag between social development and the rate of change imposed from the outside) problems of developing countries. Analyzing—let alone addressing—the root causes of some of these issues will require a different set of analytical tools and remedies.

It is emphasized again that the framework presented in this report, although it rests inevitably on a number of value judgments influenced by experience, is not necessarily a prescriptive model of the roles that public NRM institutions should perform or of how these institutions should function. The framework was used primarily to organize seemingly divergent data and as a "baseline" with which to judge the direction of recent NRM reforms in selected African countries, mainly Madagascar and The Gambia. As such, the framework can be used for the same purpose in other countries.

Further application of the framework would no doubt improve it through the addition, modification, or omission of elements, or perhaps through a major restructuring. In time, as experience with institutional reforms accumulates, it may even be possible to transform the framework into a set of guidelines for the design of effective public NRM agencies.

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Annex:

Additional Project Activities in Sub-Saharan Africa with Institutional Reform Components

The Forestry and Parks Sector

Project:	Addis Ababa, Ethiopia	1986–93 + possible extension
Source:	Chris Keil, Task Manager, World Bank	**Phone:** (202) 458-1918
General objectives:	Redefine forestry program orientation and usufruct rights regarding trees.	
Reform issues:	Facilitate transition from state-controlled forestry operations to private plantation forestry, to meet fuelwood needs.	
Further contacts:	**Host:** Ato Woldekidan Neri	**Phone:** 251-1-610263/611034
	Field: Paul Ryan	**Phone:** 254-2-228477 x283
	World Bank: Dr. Vidaeus, AF2AG	**Phone:** (202) 473-2417

Project:	Global Environment Facility Grant, Ghana	1992–present
Source:	Peter Viet, World Resources Institute	**Phone:** (202) 662-2586
General objectives:	Integrate environmental concerns into economic and agriculture policy development process.	
Reform issues:	Establish institutional niche for Environmental Protection Commission (EPC).	
Further contacts:	**Host:** Dr. Clement Dorm Adzabu, Dirrector, EPC	
	Telex: 2609 ENVRONG H	
	World Bank: Ian Hill, Ghana Desk	
	World Bank: Cynthia Cook, AFTEN	

Project:	Forestry IV, Kenya	1992–present
Source:	Chris Keil, Task Manager, World Bank	**Phone:** (202) 458-1918
General objectives:	Strengthen public-sector institutions.	
Reform issues:	Develop integrated cost-effective approach to managing national forests.	
Further contacts:	**Host:** Director of Forestry, Kenya	
	Field: Paul Ryan	**Phone:** 254-2-228477 x283
	Field: J. Mutie, Project Manager	**Phone:** 254-2-762195

Project:	Forestry Master Plan, Kenya	1991–94
Source:	Peter Dewees, Oxford Forestry Institute	**Phone:** 44-865-270261
General objectives:	Strengthen long-term planning capabilities within Forestry Department.	
Reform issues:	Develop institutional capabilities through training exercises, workshops, seminars, and technical assistance.	
Further contacts:	**Host:** Mr. Nyagah, Chief Conservator of Forests, Kenya **Donor:** Forestry Advisor, Helsinki **Field:** Team leader—Helsinki	

Project:	National Environmental Action Plan, Madagascar	1988–present
Source:	Claude Heimo, Task Manager, World Bank	**Phone:** (202) 473-4127
General objectives:	Establish framework for more effective environmental management.	
Reform issues:	Create new institutional structure to coordinate environmental efforts, aid in conservation, and combat extreme deforestation.	
Further contacts:	**Host:** Director, Office National de l'Environnement	
	World Bank: Luciano Mosele	**Phone:** (202) 473-4253
	World Bank: Albert Greve, Multi-Donor Secretariat	**Phone:** (202) 473-4428

Project:	National Environmental Action Plan, Stage II (Implementation), Madagascar	1992–
Source:	David Gow, World Resources Institute	**Phone:** (202) 662-2578
General objectives:	Provide institutional structure and framework to integrate environmental considerations into economic and social development, across sectoral lines.	
Reform issues:	Create Office National de l'Environnement (ONE), and Association National pour la Gestion des Aires Protegee, with complimentary mandates to coordinate aspects of NEAP implementation.	
Further contacts:	**World Bank:** Albert Greve	**Phone:** (202) 473-4428
	WRI: Jennifer Green	**Phone:** (202) 662-3081
	Field: Lisa Gaylord, USAID	**Phone:** 261-2-25489

Project:	Mali Forestry II, Mali	1985–92
Source:	Claude Heimo, Task Manager, World Bank	**Phone:** (202) 473-4127
General objectives:	Combat desertification by reducing consumption of fuelwood and establishing fast-growing plantations.	
Reform issues:	Restructure costs to discourage consumption of fuelwood.	
Further contacts:	**Host:** Mr. Kone, DG, Eauz et Forêts	**Phone:** Mali 224199

Project:	Babin Rafi Natural Forest, Niger	
Source:	Tom Painter, CARE NY	**Phone:** (212) 686-3110
General objectives:	Decentralize natural resources management and operationalize concept of a classified (restricted-use) forest.	
Reform issues:	Develop integrated approach to forest management, with methods for obtaining unambiguous support for Forestry Corporation, private-sector merchants, wood collectors, et al.	
Further contacts:	**CARE NY:** Peter Hazelwood	**Phone:** (212) 686-3110
	Field: Charles Tapp, CARE Country Dir.	**Phone:** (227-740370/741830
	Field: Mana Diakite, CARE Regional Technical Advisor	

Project:	Plan Nationale de Lutte Contre Desertification, Niger	1991–
Source:	Fred Sowers, CDIE	**Phone:** (703) 875-4810
General objectives:	Decentralize decision making; restructure top-down approach, and improve communications between agencies.	
Reform issues:	Create single framework for implementing NRM at local level, and assist government to prepare for integrated resource management across agency lines.	
Further contacts:	**Host:** Mr. Amadou, Deputy Director of Forestry Department	
	UNSO: Josepina Massa	**Phone:** (212) 906-5975

Project:	Programme Integre de Gestion des Ressources Naturelles, Niger	1990–92
Source:	Fred Sowers, CDIE	**Phone:** (703) 875-4810
General objectives:	Address institutional constraints of earlier sectoral livestock project.	
Reform issues:	Same as for Plan National de Lutte Contre Desertification; two efforts combined by Presidential decree.	
Further contacts:	**Host:** Ministry of Agriculture	
	World Bank: Karim Oka, Task Manager	**Phone:** (202) 473-4749
	Field: Francis Mody, World Bank	

Project:	National Environmental Action Plan, Rwanda	1987–present
Source:	David Gow, World Resources Institute	**Phone:** (202) 662-2578
General objectives:	Improve process of environmental planning and assure incorporation of environmental issues into overall national economic planning.	
Reform issues:	Institutional reorganization and strengthening.	
Further contacts:	**World Bank:** Albert Greve	**Phone:** (202) 473-4428
	Field: Bob Winterbottom	**Phone:** 250-72281

Project:	Forestry I, Sudan	
Source:	John Evans, Task Manager, World Bank	**Phone:** (202) 473-4165
General objectives:	Establish efficient agency for managing forests.	
Reform issues:	Transform Forestry Department into parastatal agency to administer national forest program.	
Further contacts:	Host: Prof. Hassan Osman A/Nour, General Manager, Forest National Corporation	

Project:	Forestry Rehabilitation Project, Uganda	1988–present
Source:	Chris Keil, Task Manager, World Bank	**Phone:** (202) 458-1918
General objectives:	Strengthen institutional and operational capacity in forestry sector in Uganda.	
Reform issues:	Decentralize structure, improve programming and budgeting system, and provide greater wage incentive.	
Further contacts:	**Host:** Dick Olet, Deputy Commissioner for Forests	**Phone:** 256261/259626 Kampala
	Field: Paul Ryan	**Phone:** 254-2-228477 x283

Project:	ADMADE, Zambia	1985–present
Source:	Barbara Wyckoff-Baird, World Wildlife Fund	**Phone:** (202) 778-9691
General objectives:	Restructure general conservation programs in game management areas (GMAs)	
Reform issues:	Restructure Parks Department and financial / revenue systems.	
Further contacts:	**Host:** Ackim Mwenya, Director of Parks	**Phone:** 260-1-278524
	WWF: Patty Larson	**Phone:** (202) 861-8315
	WWF: Ted Dardani	**Phone:** (202) 778-9771
	Field: Richard Jeffrey	**Phone:** 260-1-253649 WWF Lusaka

Project:	CAMPFIRE, Zimbabwe	1984–present
Source:	Barbara Wyckoff-Baird, World Wildlife	**Phone:** (202) 778-9691
General objectives:	Analysis and reorganization of Ministry of Environment and Tourism.	
Reform issues:	Structural reform for Department of National Parks and Wildlife Management.	
Further contacts:	Field: Michael Dyer	**Phone:** 263-4-730599
	Host: Derrick de la Harpe	**Phone:** 263-4-738601

Project:	Forestry Sector Review, Zimbabwe	1991–
Source:	Peter Dewees, Oxford Forestry Institute	**Phone:** 44-865-270261
General objectives:	Identify institution constraints and opportunities to private sector development.	
Reform issues:	Implement a participatory model of research and extension, open participation in forest sector to entities outside the public institutions.	
Further contacts:	**World Bank:** Kathleen McNamara **Host:** Yemi Katerere, Managing Director, Forest Commission of Zimbabwe	