TENURE AND NATURAL RESOURCE MANAGEMENT IN AND AROUND PROTECTED AREAS
with special reference to Madagascar

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This paper is based on the author's previous conceptual work (Bloch 1991) and participation in the design of projects to promote the conservation of biodiversity in Madagascar. It addresses four subjects: (1) the National Environmental Action Plan (NEAP) approach and its application in Madagascar; (2) the theoretical link between resource tenure and the management of natural resources; (3) the means by which NEAPs are implemented for the conservation of biodiversity: the Integrated Conservation and Development Project (ICDP); and (4) the way resource tenure research and interventions can improve the prospects for successful implementation of ICDPs.

(1) The NEAP

Madagascar's NEAP, like those of other countries, grew out of national and international concern about the sustainability of the natural resource base. Championed by the Environment Department of the World Bank, its development was a collaborative effort between Malagasy officials and researchers on one hand, and the donor community on the other. Using Piers Blaikie's categorization of development paradigms (1992), one can say that the Madagascar NEAP was a "classic paternalistic" diagnosis, but with a "neo-populist" implementation strategy. In other words, the design of the program was not participatory, but the people are assumed to

be sufficiently in agreement with the program to be willing to participate in its execution.

The Madagascar NEAP has four components:

a) The conservation of biodiversity. This component focuses on the establishment and protection of national parks and nature reserves via ICDPs and other, smaller interventions by non-government organizations (NGOs). USAID has taken the financial lead.

b) Soil conservation. Here the focus is on the reduction of on-farm soil erosion and improved watershed management. The Swiss Cooperation has taken the lead on this component.

c) Mapping and cadastral land registration. In an effort to improve land-use planning and to increase tenure security, the NEAP intends to give farmers individual title to the land surrounding protected areas, and eventually to land everywhere on the island. The German KfW is financing the mapping, and the World Bank the cadastral work.

d) Environmental education. Environmental NGOs, both international and national, are responsible for increasing environmental consciousness in a variety of ways, in formal school programs as well as through more general approaches.

This paper will focus on the first and third components, as the title suggests. The cadastral program is the only place in the NEAP in which tenure issues are addressed directly, but as shown below they have a strong role in the program to conserve biodiversity as well.

(2) Tenure and Natural Resource Management

The third component of the NEAP looks somewhat out of place, at least on the surface. Why conduct a cadastre? The NEAP justifies it as follows:

[The purpose of the land titling program is] to increase land tenure security, to help farmers to sedentarize and to incite them to invest in the medium term in soil conservation, agroforestry and reforestation ... To discourage shifting cultivation and other forms of deforestation, via integrated development in the zones surrounding protected areas and still-extant natural forests. (EAP 1988)

The working hypothesis behind this program comes out of the agricultural economics literature (see Feder et al. 1988): the possession of a land title increases security of tenure, which will increase incentives to increase land productivity via two mechanisms: a) the longer planning horizon that land ownership permits, and b) better access to credit and other inputs. This tendency towards intensification in turn reduces the pressure on land, and hence on biodiversity.

The hypothesis is presented by its proponents as if it is self-evident, but it is far from being so. To see this, consider the following decomposition of its steps:

Title increases security. Title can, in fact, increase insecurity through the operation of the land market and credit market. Crop failures (or imprudence) can lead to the need to sell land to cover debts. Furthermore, titling increases the possibility that the government can impose land taxation, which can also lead to the need to sell land in order to pay the tax bill.

Security increases productivity. The key assumption here is that profitable intensification technologies exist and are available to farmers. The evidence from Francophone Africa (World Bank 1990) suggests that this is rarely the case.

Increased productivity reduces pressure on land, thus on biodiversity. There is no empirical evidence that this component of the

hypothesis is true, from anywhere in the world. The beneficiaries of increased productivity are likely to be a subset of the population, and not necessarily those who put the greatest pressure on protected areas. Landowners are generally senior men, but women and younger men are frequently those who expand the cultivation, tree-cutting and gathering frontier.
Thus there are several areas of concern to address before formulating policy based on the title-security-productivity-conservation hypothesis. Overall, research results show that even if title is necessary to increase security and thereby increase productivity, it is not sufficient; complementary conditions must be satisfied simultaneously. Also, it is unclear how community land, as opposed to individual or family land, could easily be titled.

How does this hypothesis relate to natural-resource management and therefore to the conservation of biodiversity? In fact, all the "niches" identified by the Land Tenure Center as having fairly distinct tenure issues must be explored, depending on the type of subsectoral activities are practiced there. The LTC classifies the niches as shown in the following table:

On the Farmer's Holding	Common-Property/ Open Access	Government Reserves
Farming	Community forestry	None
Agroforestry	Pasture	
Irrigation	Irrigation works	
	Watershed management	

The central idea in current fashion is to devolve as much responsibility as possible to individuals and communities, in order to ensure better management of natural resources. On the holding, this means granting title or another type of guarantee to the farmer that his or her managemen decisions will result in benefits to him or her. In community property situations, this means endowing the local community -- however defined -- with the powers necessary to manage the resources sustainably and, again, for their benefit. In reserves, on the other hand, devolution is harder to accomplish because the resources are to be protected, not only from outsiders as is true on the holding or in common property, but also from community

members themselves. The link between responsibility and benefits is considerably more tenuous here. This will be evident as we discuss the specific issues of tenure involved in the implementation of ICDPs.

(3) The ICDP

The world community is interested in conservation of biodiversity, while local people are interested in development in order to increase incomes. Yet until recently these two sets of concerns were treated as if they were contradictory; development was anti-conservation, and conservation was anti-development. The premise of ICDPs is that the apparent tradeoff between human needs and the conservation of biodiversity is not inevitable, and that proper planning can even make them mutually reinforcing (see Brown and Wyckoff-Baird 1992).

The implementation of ICDPs has, however, not differed very much from that of more traditional conservation projects. It still follows the same initial steps: 1) declare the existence of a protected area; 2) delimit it and materialize the boundaries; and 3) restrict access to its resources, and perhaps also establish a buffer zone. ICDPs add one, and possibly two steps: 4) conduct socioeconomic studies and needs assessments of the area's population (increasingly frequently with participatory techniques); and 5) under the assumption that time and funds remain, "do something for the people." (The word "integrated" in ICDPs is all too often a misnomer; the process is usually sequential rather than simultaneous.)

Even if the project is truly integrated, it is difficult to identify appropriate things "to do for the people" to reduce their need to use protected-area resources. Apart from tourism support services, which can never give employment to a large proportion of the local population, nearly all income-generating activities that projects could promote involve the intensification of agriculture, livestock, forestry and fishing activities. It is widely recognized that intensification is input-intensive, so ICDPs routinely provide inputs, or subsidize them, in order to induce people to adopt the intensification techniques.

What is less widely recognized is that intensification is frequently also labor-intensive compared to traditional practices. Shifting cultivation, one of the principal causes of deforestation in countries like Madagascar, is characterized by a very low use of labor, either per hectare or per kilogram of yield. By contrast, agroforestry and irrigation, the usual substitutes, require considerably higher labor input, over longer seasons or even throughout the year. The situation is similar for livestock, traditional fishing compared to aquaculture, and so on. Projects certainly cannot provide or subsidize labor. No thought has yet been given to this problem, which may render the standard approach to intensification inapplicable.

(4) Resource Tenure and ICDPs

In spite of its prominence in the Madagascar NEAP, there has been little attention given to resource tenure issues in the ICDPs that fall under the NEAP. The cadastral component is proceeding independently of the biodiversity component. The socioeconomic studies conducted on protected-area populations has highlighted land and tree tenure as important concerns, but thus far there has been little effort to resolve tenure issues within the ICDPs.

That will hopefully change in the next year or two. Tenure research and reform figured prominently in the design of USAID's Sustainable Approaches to Viable Environmental Management (SAVEM) project and its companion non-project assistance program, Knowledge and Effective Policies for Environmental Management (KEPEM). In 1993, the Land Tenure Center expects to begin an intensive applied research program, in collaboration with another USAID project, Decentralization: Finance and Management, on resource tenure, local government and conflict resolution mechanisms in the peripheral zones of several major protected areas in Madagascar.

The research program will study existing tenure and governance rules in place at the local level, examine their compatibility with existing national laws and formal institutions, identify rules that work, conduct dialogues between local people and national officials, and propose a set of changes in formal institutions and laws. Once the latter are

adopted, a monitoring effort will enable modifications as needed to reflect local conditions.

In conclusion, the link between tenure and the conservation of biodiversity has yet to be made clear enough for implementation of ICDPs. That the link exists is questioned by nobody, but the simplistic prescription of granting land titles to eliminate tenure problems will clearly be insufficient. Research is needed, but research alone is inadequate: real resources will have to be devoted to the implementation of the Development component of ICDPs.

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