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PEASANT PERCEPTIONS OF PROBLEMS AND POSSIBILITIES
FOR LOCAL-LEVEL MANAGEMENT OF TREES
IN NIGER AND UPPER VOLTA

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Introduction

This essay compares perceptions of woodstock* management possibilities held by peasants living in two widely separated sets of Sahelian villages, one located in south-central Niger, the other in northern Upper Volta. It assesses willingness to reforest as a function of (1) wood resource availability and (2) the working, or effective, rules of tree tenure. Working rules of tree tenure are structured, broadly, by (a) the character of local politico-judicial activity and (b) the nature and degree of forest service activities in the areas studied. The overriding concern of the essay is policy analysis: given wood resource scarcity, and thus need to manage the woodstock for sustained yield in a fragile environment, what tree tenure rules most effectively promote popular reforestation?

The analysis assumes successful, enduring woodstock management in these Sahelian areas depends upon sustained popular participation of villagers in reforestation efforts. Sahelian state forestry agencies have been traditionally understaffed and under-financed. There exists little likelihood that future national budget allocations, however generous, will transform these services into dynamic, powerful agencies capable of meeting the non-consumptive and consumptive wood needs of 20-plus million Sahelian residents by the efforts of forestry personnel alone. Forest services will continue to manage directly some small part of the total woodstock, in the form of state forest preserves,

*As used in this essay, the term "woodstock" refers to the total supply of ligneous material available in an area, i.e., deadwood, live trees and live shrubs.

plantations and urban green belts. But the main future task of Sahelian foresters must be extension work designed to increase the productivity of popular reforestation efforts. If the region is to be preserved as a viable ecosystem and environment inhabitable on the same or better terms by current and future generations, the bulk of the daily job of exploiting, reconstituting and maintaining Sahelian woodstocks will be undertaken by Sahelian citizens, primarily those residing in rural areas.

In-depth interviews provide the material upon which this essay is based. These were conducted during February-May, 1979, intensively in three villages in Mirriah Arrondissement, Département de Zinder, Niger² and, during November-December, 1979, in eleven others in Mirriah, Matameye and Magaria Arrondissements, Département de Zinder.³ Intensive interviews were conducted in two villages of Séguénéga Sous-Préfecture, Département du Nord, Upper Volta, during September-November, 1979,⁴ and in five other villages of the department during a brief visit in March, 1980.⁵ A survey instrument was administered in the five intensively-studied villages; results of that investigation will be presented elsewhere.

The analysis proceeds in the following fashion. First, pertinent aspects of the two village sets are reviewed. These include environment, local politico-judicial organizations, relevant formal Forestry Code regulations, forest service activities and local experience with reforestation efforts. Second, in-depth interview results concerning peasant interest in woodstock management are examined. Third, and in light of the revealed structure of incentives concerning popular participation in woodstock management, inadequacies and opportunities inherent in the current situation are discussed. A fourth section presents observations about potential Forestry Code reforms. A summary of findings concludes the paper.

The Village Contexts

The first set of villages, seven in number, lie in Upper Volta's Département du Nord, relatively close to the Malien-Voltaic border. Five (referred to below as "northern" villages) fall within a radius 20 kilometers east-south-west of Ouahigouya, the departmental seat. These communities were rapidly investigated in March, 1980. The two remaining communities (referred to below as "Séguénéga" villages), subjects of intensive study during September-November, 1979, are situated in Séguénéga Sous-Préfecture, forty-five kilometers south of Ouahigouya, in close proximity to each other.

The local environment may be characterized as sub-Sahelien.⁶ Rainfall averages 600-650mm/annum, beginning usually in June and continuing occasionally through the end of October. Rains are capricious. Hilly areas alternate with flat plains around the southern villages; further north around Ouahigouya the gently rolling terrain is broken only occasionally by rocky buttes. Laterite soils predominate around the study villages.

Vegetation includes a range of grasses, shrubs and trees. Of the last, Tamerindus indica, Parkia biglobosa, Acacia albida and Adansonia digitata, for instance, remain fairly common. But they, like other species, have been substantially reduced in numbers by land clearing practices and fall-off in ground water levels associated with over-cultivation, laterization and drought. Bush areas are much reduced (although a large area of shrub bush remains ten kilometers east of the two Séguénéga villages). In any given year, a high percentage of available arable land is cultivated. Fallows have been dramatically shortened. Land shortages now prevent some farmers from following their fields.⁷

Dominant crops are sorghum, then millet, among the grains. Rice, maize, tobacco, cotton and vegetable crops are grown in varying amounts. Orchards ⁸⁾ are common throughout the region. Most households keep some livestock. Cows, sheep, goats, donkeys, chickens and guinea hens are commonly found in all study villages. Animal-traction farm implements are fairly widespread.

Residents of all communities are Mòré-speakers. However, the ethnic diversity characteristic of the Mossi kingdoms which controlled the central Voltaic plateau is reflected in these villages.⁸ Four, including one of the two Séguénéga communities, are typically Mossi (chiefly lineages of Ouedraogo, associated with non-royal lineages, e.g., Sawadogo). The other Séguénéga village includes both Mossi and Silmi-Mossi (Fulbe-Mossi) quarters. The remaining northern village is Fulbe^b in origin. Village populations range from 400-1,500 inhabitants.

Villages are composed of two to seven or more quarters, each comprising a series of dispersed, joint compound residences. Each quarter has a designated representative. These quarter notables assist the village chief. He is normally a Ouedraogo, locally elected and then confirmed by the sub-prefect exercising authority over the jurisdiction. Parallel to these traditional governmental structures function various other organizations, including youth groups, religious congregations (Roman Catholic, Protestant and Muslim) and often, a local section of the PDV-RDA, the political party which currently forms the governing majority in the Voltaic National Assembly. Primary school teachers reside in some villages. The Yatenga Regional Development Organization (Yatenga ORD), responsible for development activities throughout the Département du Nord, is represented in multi-village local sections by extension workers. They have created local village development

committees in all study communities. These rarely include all village householders and vary markedly in activity levels. Some are dynamic. Others are moribund.

Litigants first take disputes to their village chiefs. Appeals lie directly to the immediately superior echelon of the national administration network (arrondissement or subprefecture, as the case may be). Further appeals go to the prefecture in Ouahigouya, or to the lowest level of the national court system, also located in the departmental seat.

Litigation concerning tree tenure rights, of minor importance in terms of case volume, may be dealt with by village headmen, ORD extension workers, or roving Voltaic Forest Service agents. In practice, Forestry Code provisions are practically unknown, thus irrelevant, at the village level. The bulk of Forest Service enforcement activity focuses on poachers hunting out of season, not illegal wood cutters. Occasionally a peasant will be fined for starting a bush fire, but in general, Forest Service repressive measures are so minimal as to go unnoticed in the study villages.

Within these villages, working rules of tree tenure vest ownership of trees in those who plant them. Natural regeneration belongs in principle to owners of land on which it grows. Deadwood may be collected anywhere by local residents, but living trees must not be lopped or felled without owners' permission. Trees are viewed, locally, as private goods. Disputes over tree tenure rights are infrequent.

Six of the seven villages have experienced some reforestation effort. In the five northern communities, the forestry section of the Yatenga ORD and local extension workers have promoted village woodlots. Comparable small plots devoted to testing micro-catchment reforestation techniques have been

organized by an agent of a private voluntary organization, OXFAM-America.⁹ The Mossi Séguénéga community has tried woodlot projects at the urging of Yatenga ORD extension workers and Africare, another American non-profit development agency. Only the Mossi-Silmi-Mossi village has not undertaken any significant reforestation effort.

Many residents of the study villages have extensive experience with tree-raising as migrant workers on coffee and cocoa plantations in the Ivory Coast. Many also have developed their own orchards locally, in the moister bottomlands which dot the area.

Niger

The second set of villages, fourteen in all, are spread through Mirriah, Magaria and Matameye Arrondissements, the three southern counties of the Département de Zinder. The villages lie between Zinder, prefectural seat of the department, and the Nigerian border, 100 kilometers to the south. The three intensively-studied communities are grouped within a single canton of Mirriah Arrondissement. The others are distributed fairly evenly among the three arrondissements.

The environment of this region is drier than the comparative unit in Upper Volta.¹⁰ It averages 450-600 mm rainfall/annum, and is clearly sahelien in type. Irregular rains begin in late June and run through to September. The terrain is quite uniform: rolling plains, sandy in composition, are broken repeatedly by moist bottomlands where heavier soils predominate.

Vegetation includes many varieties of grasses and shrubs; various forms of Acacia, found usually in scattered, open stands, constitute the bulk of the tree population. Dense forests were found in the area as late as 1950. Since

then, cultivation and fuelwood demands have drastically thinned the woodstock. Hydraulic erosion poses a relatively minor problem. But sandy dune soils make wind erosion a serious and practically constant threat during the dry season. Soils, overcultivated, are now generally impoverished. Peanut cultivation has been given up in some areas because returns no longer justify investments. Millet is the cereal par excellence; sorghum is cultivated as a subsidiary crop. During the mid-Twentieth Century, peanuts were the cash crop. Recent poor groundnut harvests (occasioned by a combination of aphids and a plant viral disease) have led farmers to substitute cowpeas for peanuts in some local areas. Garden crops include squash, maize, tomatoes and condiments, often in association with fruit trees, particularly mangoes.

Livestock is commonly kept as an investment by peasant households. Hausa women in particular own small herds of goats and barnyard fowl. Some also own cows, as do many Bugaaje women. Cows are given over to the care of local herders in some villages; in others, cow owners allow their animals to roam unguarded during the dry season from November-June. Horses and donkeys are widely kept, the former as a prestigious form of transport, the latter as the work-a-day beast of burden. Transhumant pastoralists (Fulbe and Bugaaje) keep large herds of cattle, sheep and goats. In the post-drought years, Fulbe have largely avoided the area, with consequent reduction in abusive lopping of local trees. Bugaaje sheep herders continue to pasture their animals on local fields during the dry season, however.

Animal traction equipment, despite twenty years of propagation effort by state agencies, remains a comparative rarity in most villages.

The communities studied are all Hausaphone; two are Bugaaje (ex-slaves of the Twareg) in ethnic origin. The remainder are ethnically either Hausa or ^{Bura?}

Beriberi (Kanuri), but practically indistinguishable from one another in economic patterns, customs and behavior. Of the intensively-studied villages, one is Hausa, one Beriberi and one Bugaaje.¹¹ Village size varies from 400-1,000.

Hausa villages are subdivided into compact residential quarters, grouped in a single permanent village center. During the growing season, some families establish temporary residences on their fields. Fields surround village centers; proprietors often own a bottomland garden plot in addition to one or more fields on the high dune lands.

Villages all have a designated headman, chosen by householders from among a list of candidates informally approved by the canton chief and installed upon authorization of the sub-prefect. Village notables act as informal advisors on local decisions. The system of quarter representatives is less clearly articulated than among the Voltaic villages. Village youth groups are common everywhere. Headmen report to a canton chief, usually through the intermediary of an official designated by the canton chief from among his entourage. Villagers are now almost exclusively Muslim; most belong to small congregations headed by local Muslim clerics. Political parties have been banned in Niger by the current military regime. Primary school teachers are present in some communities. A variety of technical agencies (cooperatives and agricultural credit, agriculture, livestock, forestry, extension, and adult literacy services) share responsibility for promoting rural development under the umbrella control of the "Projet 3M," a regional agricultural productivity project based in Zinder. Service representatives rarely reside in the villages. The cooperative agency has created an infrastructure of village, sectional and multi-sectional cooperative assemblies, but in general

these units function only at the behest of the development service personnel who created them.

Litigation is heard first either by village headmen or canton chiefs. Appeals from village moots lie to the canton chief or his *cadi*, first, and then to the sub-prefect at the arrondissement administrative center. Some litigants prefer to have their disputes heard by independent Muslim clerics resident in the neighborhood. Appeals from these administrative court structures may be taken to the Justice of the Peace in Zinder, and so through higher levels of the national court system.

Tree tenure rights are defined by the Forest Service. Roving forest guards enforce national Forestry Code regulations, often with less than strict regard to the letter of the law. Allegations of corrupt practice are frequent in some areas. Cases are frequent enough so that every village has a history of judicial contact with forest guards.

In villagers' eyes, shrubs and some tree species are common property goods, but the more valuable species, commonly recognized as protected under the Forestry Code are considered foresters' property. Legally living specimens of such trees can be lopped or felled only upon purchase of a permit from a forestry agent. However, a great deal of unauthorized, covert cutting goes on, reflecting local demand for wood indispensable in house, silo and fence construction.

Dead trees are legally at the disposal of local villagers. In some communities, peasants are uncertain whether they have primary rights to such wood, or whether it belongs to itinerant woodcutters who appear with Forest Service permits authorizing them to harvest deadwood for commercial sale. In fact, foresters enjoin woodcutters from felling timber without permission on

villagers' fields. It may be indicative of poor communications between peasants and forestry agents that so many of the former remain ignorant of their rights concerning deadwood on their fields. On the other hand the failure to press claims against unauthorized woodcutters may reflect peasants' fear of any contact with foresters. Significantly, in some villages studied, a common law of tree tenure is beginning to emerge. Field owners are asserting control over unprotected trees, shrubs and deadwood located on their fields. This evolution, still in its initial stages, closely parallels common law developments concerning crop residues. Prior to the 1970's drought, these were common property goods. Since the drought, local-level litigation has begun to accord to field owners' rights in crop residues through a period extending well beyond the harvest end. Given increasing scarcity of fuelwood and construction timber, similar working rules creating private rights in trees will probably arise, where this is possible within terms of the current Forestry Code as locally enforced.

All but two of the fourteen villages have undertaken reforestation projects (the exceptions include two of the three intensively studied Mirriah Arrondissement communities). All these projects were initiated and administered by the Arrondissement foresters. Project financing was supplied by the Canadian International Development Research Centre (IDRC). Peasants provided labor and, working under foresters' direction, created in each village a single woodlot ranging in size from one to four hectares. Neem trees (Azadirachta indica) composed the bulk of the seedlings planted, but a few local species also went into some lots. Woodlots will in principle help meet local wood demand. Results have been unimpressive: even in the most promising plantations, tree growth appears stunted. Villagers, who

consider woodlot trees "belong to the foresters," at best mildly approve the project.

Peasant Interest in
Woodstock Management

Upper Volta

Informants in the seven Voltaic villages expressed concern about environmental degradation. Particularly in the two Séguénéga villages, respondents remarked on the number of large trees dead since the drought. Some respondents have lost orchards through bottomland dessication. Most informants indicated interest in reforestation. Almost all took part in the local reforestation projects mentioned above, and expect to continue with woodlot efforts and experimental micro-catchment reforestation. Some individuals report having planted a few trees on their own lands, in isolated attempts to provide shade or local tree crops in future years. Some quite elaborate attempts to protect seedlings from livestock damage - long, basket-like cylinders which encircle saplings' trunks - are visible in each village.

While wood supplies are unquestionably dwindling in the region, they have not yet been exhausted in rural areas. People devote more time to collecting fuelwood, but the problem has not yet become critical.

Individuals actively involved in experimenting with reforestation techniques (participants in the micro-catchment efforts) and in village woodlots express various viewpoints about appropriate organizational formats for continuation of these efforts. Many accept a collective format during the initial stages, even when the technique involved (micro-catchments) lends itself to individual enterprise because of the small labor and minimal

equipment investment required to start a tree. However, assuming the experimental stage is successfully passed,* viewpoints diverge. Variation here appears to reflect inter-village, not intra-village differences.¹² For instance, one northern Mossi village refused to continue with the collective experimental stage unless remunerated for their work, but group members indicated willingness to adopt the technique as individuals on their own fields if it proved successful. Two other northern Mossi villages were prepared to pursue the experiment as a collective enterprise until the value of the technique had been established. However, they saw future application only by individuals working with family labor on their own fields. The northern Fulse villagers declared themselves prepared to see the experiment through as a collective body. Assuming success, they then expected to plant trees on individual fields belonging to group members through labor exchange among members within a single year. Each participant would receive an equal amount of labor input on his land in any given year. Finally, the last northern Mossi village expected to continue reforestation, once the experimental stage was completed, on a collective basis. They planned both joint plots and labor exchanges to construct micro-catchments on some members' fields in one year, on others the next, and so on. Cohesion in this one group, among the five, was sufficient to provide a framework for long-term collective action in the area of reforestation.

In the Séguénéga Mossi community, a shade tree plantation in the local market and a woodlot project have been initiated as joint enterprises. The woodlot, for technical reasons, was an abysmal failure, but group members

*The micro-catchment seedlings had not completed a full year prior to the termination of the research period. The value of the technique thus remains problematic, pending further information about results of the experiments. Initial survival rates were however promising.

indicated future projects would also be undertaken by common effort. They were reluctant to consider individual operations, although many have planted their own orchards. The Séguénéga Mossi/Silmi-Mossi village has not attempted any reforestation projects. Possible formats for future action are therefore problematic at this point.

Significantly, the consensus in all villages concerning ownership was that planted trees did or would belong to the peasants, individually or collectively, depending upon project organizational format. Furthermore, tree tenure rights were viewed as a matter of local control, about which outsiders might well have opinions but not controlling authority. Participation in reforestation was thus seen as something which local individuals or groups might undertake as they wished, in light of local realities.

Niger

Peasants interviewed in the fourteen villages of the Département de Zinder expressed clear awareness of woodstock depletion, in the context of broader environmental deterioration. Some communities worry drought will lower water tables, preventing truck gardening in the moist bottomlands. Informants in twelve of the fourteen villages had experience with reforestation efforts through the IDRC-financed village woodlot projects. Scattered, individual attempts at reforestation were reported in a number of villages. Many informants indicated they systematically preserve a few trees in their fields when they prepare for cultivation. Far rarer are those who plant trees as an individual matter, if one excepts the neem (Azadirachta indica) raised for shade, storage space and wood supply within the mat or mud walls of many compounds.

Wood availability varied as a function of distance from local population centers, i.e., Zinder, Mirriah, Matameye and Magaria. Perceptions of wood scarcity were intense in the immediate environs of these centers. Even in more remote villages, gathering firewood and construction materials have become increasingly onerous chores. Active local markets have sprung up in both these commodities.

Reforestation, as an abstract concept, is viewed everywhere as desirable. Feasibility is another matter. Technical problems of irrigating seedlings until they establish themselves have discouraged some peasants from trying to reforest their own fields. But to date, little real effort has been made anywhere in the Nigerien village set to explore possibilities of consistently managing natural regeneration. In light of expressed interest in reforestation, and the comparative technical ease of promoting natural regeneration, especially of highly desirable, fast-growing species such as Acacia albida, this failure is striking.

Informants consistently argued reforestation is not their affair. Rather, in their eyes, it is the concern of the Government, and specifically, of the Forest Service. This is carried through to the extent that IDRC-financed "village" woodlots are considered foresters' property, strictly controlled by them, in a clear majority of study villages which participated in the project. With the exception of a single village, the communities involved indicated they wanted no further collective woodlots. And there was virtually no self-help to maintain the woodlots once the foresters had completed their series of visits. Peasants declared themselves reluctant to take any action for fear foresters would consider it the wrong action and hold them liable.

Peasants express little interest in individual efforts at reforestation so long as they see themselves unable to establish clear title to trees they raise. This difficulty was repeatedly cited by informants. It is a particularly telling constraint because much of the natural regeneration which still occurs in local fields involves protected species: many unprotected species have been harvested to the point of no return, at least as far as unaided natural processes over the short run are concerned.

On the other hand, when queried about the format they perceive as appropriate for future reforestation efforts, informants in all but one village insisted they wanted no further collective woodlot projects. This pronounced preference for individualistic approaches is hardly remarkable in light of the extent to which lineage and extended family structures have eroded in the Zinder region. Moreover, village government structures are extremely weak. By comparison with the Voltaic communities, almost nothing of significance in terms of collective action is accomplished except at the behest of and under surveillance of sub-prefectoral or cantonal administrators. Thus peasants expect locally-initiated woodlot projects to fail, simply because the tree-tenure enforcement mechanisms are inadequate.

Another factor at work here is shortage of land in most villages. Land for traditional woodlots has to come from someone's fields (or fallows). Many peasants feel they can ill-afford to lose land particularly when so many can now no longer properly fallow fields for lack of adequate acreage.

Contemporary Woodstock Management:
Inadequacies and Opportunities

Upper Volta

Within villages studied, a range of preferences has been expressed concerning appropriate organizational formats for reforestation efforts. Essentially, villagers see some way or ways through which reforestation can be fostered, assuming successful resolution of technical problems bearing on seedling survival. Given the range of local preferences, it seems clear final choices should remain matters of local option. Individuals who want to reforest would thus enjoy leeway to work out appropriate organizational approaches in terms of local village contexts. It may well be that individualistic efforts will predominate throughout the set, with the exceptions of the Séguénéga Mossi community and one northern Mossi village. This may pose certain difficulties, if and when collective projects, e.g., windbreaks extending across or bordering holdings of several different landowners, are envisaged. Windbreaks, hedgerows, and other forms of reforestation for basically non-consumptive uses are advantageous even on an individual level. But many times their contribution to environmental preservation may be enhanced by joint enterprises developing systematized sets of defenses against wind and water erosion, coordinated efforts at watershed management, etc. In the Voltaic communities, local government may be sufficiently effective even in the "individualistic" villages, that coordination can be achieved as necessary.

Niger

The Hausa and Bugaaaje villages appear condemned, at least for the immediate future, to approach environmental management, including reforestation, solely through individual efforts. Whatever coordination is achieved will occur on a strictly voluntary basis, as neighboring landowners perceive opportunities to tacitly cooperate with each other (or perhaps even actively, in the context of mutual labor exchanges) in structuring patterns of natural regeneration management. Any effort which depends upon sustained collective action must, under current conditions, be foregone as infeasible: local governments at the village level simply cannot muster the enforcement powers to maintain collective action of their own initiative.

Potential Reforms

Upper Volta

Assuming continued minimal impact of Forest Service enforcement activity in the study villages, local working rules will govern the development and allocation of tree tenure rights. "Benign neglect" by the Forest Service permits elaboration of local responses to perceived woodstock management problems. If the problem becomes serious enough to warrant peasant attention and autonomous investment of peasant time and effort in remedying it, prospects appear good that requisite activity will be forthcoming. At present, factors governing response to the problem are largely under control of local residents.

The Upper Volta Forestry Code is currently being amended to strengthen tree ownership claims of individuals and/or groups who plant trees, in whatever

form. However, new Code provisions on the subject will assert residual Forest Service authority to regulate cutting in individual and communal plantations, to promote approved silvicultural practices.¹³ This assertion of authority is justified on grounds that most plantations will rely on Forest Service-produced seedlings and other forms of agency support.

Technical advice, appropriately adapted to highly variable local ecological, social and organizational conditions, is currently the priority need in the Voltaic villages. Whatever funds and personnel the national Forest Service can muster should be devoted to improved extension work. Conditions for positive reactions to useful technical knowledge are extremely favorable, given a worsening wood supply-demand imbalance, growing interest in reforestation, and an interesting repertory of organizational forms within which to undertake action on the issue.

A note of caution is in order: physical inputs (fencing, materials, seedlings and particularly payment for work on reforestation projects) should be kept to a minimum and eliminated as quickly as possible. Forest Service agents are often tempted to use physical and monetary inducements to promote at least the beginnings of woodstock management. In so doing, they risk creating expectations on the part of peasants that such inputs should be provided in future, and thus encourage villagers to bargain over the amount and character of inputs and inducements, as conditions of participation, rather than devoting their efforts to finding locally feasible solutions. Prolonging supply of materials which peasants can themselves provide, and which they will provide once the need is perceived with sufficient intensity, only invites unnecessary and unproductive dependence on outside sources of supply and on the decision makers who control those sources.

Niger

Contemporary Forestry Code enforcement proceedings represent an enormous barrier to sustained interest by Hausa and Bugaaje peasants in woodstock management. Each peasant fined or arrested for illegal woodcutting reinforces villagers' convictions that reforestation is out of their hands: the state, through the Forest Service, has asserted authority over the question of woodstock management. Therefore, peasants have no role to play in the matter. They thus concern themselves solely with the problem of finding wood to meet today's needs. For them, like it or not, tomorrow's wood supply is the province of the Forest Service.

Thus a first step towards promoting sustained local participation in woodstock management appears to be revision of the Forestry Code.

The essential character of such modifications must be to shift responsibility and opportunity for woodstock management' from foresters to peasants. A simple rule, easily communicated, must be adopted. The most obvious one would be to vest tree ownership in those currently holding dominant title to land on which trees grown. An alternative might be to make tree tenure rules a matter of local option, although this would clearly risk overstraining current self-government capabilities in some of the study villages. The advantage of this latter proposal lies in the facility with which intra-village arrangements could be structured to take account of current maldistribution of trees on village fields.

Code modifications along these lines could be introduced on a trial basis within restricted areas. Effects could be ascertained, and further modifications introduced in light of empirical results, if changes appeared to promote popular participation in woodstock management.

Once changes have been undertaken, foresters could move to meet the potential demand for improved technical information about appropriate reforestation techniques. Forest Service projects are already afoot to establish small village nurseries capable of supplying local demand for various kinds of seedlings. Further efforts and initiative will have to be devoted to technical and political problems of propagation, including development of a system of livestock management where animals demonstrably threaten natural and/or planted seedlings. (It is not self-evident, despite many official assertions to the contrary, that livestock pressure threatens all reforestation efforts regardless of species, in the absence of enclosure.)

Summary

In the area of woodstock management, Upper Volta is in position to make a virtue of poverty. Peasants indicate growing awareness of environmental degradation. They have demonstrated interest in reforestation by voluntarily participating in risky projects (the micro-catchment program in its experimental stages) without any material inducements. Lack of forestry personnel prevents enforcement of the Forestry Code in communities studied. Therefore it neither structures nor biases in any way development of locally-recognized working rules of tree tenure, or responses to perceived wood scarcity.

In the Nigerien communities, the predominant fact concerning woodstock management is assertion of Forest Service authority to govern access to trees. By frustrating peasant reforestation initiatives, it promotes anti-conservationist behavior among villagers, in the face of growing wood shortages. Code modifications vesting control over local woodstocks in local people offer a first step towards facilitating more active peasant participation. Technical advice may be required as an indispensable second step in some areas.

Footnotes

1. The author would like to thank the Governments of Upper Volta and Niger for permission to conduct research during 1979-80, and the personnel of I.R.S.H. in Niger and C.G.R.S.T. in Upper Volta for facilitating research activities. Nigeriens and Voltaics who provided information upon which this study is based are numerous; they here go unnamed, but not unremembered. Funding for field research was provided by the Rockefeller Foundation, in the form of an International Relations Fellowship, and by Lafayette College, which granted the researcher a Junior Faculty Leave. Consultancies with the Canadian International Development Research Centre and with OXFAM-America provided additional opportunities during the period January 1979-March 1980 to gather information in village sites which would not otherwise have been visited.
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5. James T. Thomson, "Preliminary Evaluation: OXFAM Micro-Catchment Project, Ouahigouya, Upper Volta." Unpublished report submitted to OXFAM; Ouahigouya, Upper Volta, March 15, 1980.
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8. For a description of the traditional Mossi political system as it functioned in the Yatenga kingdom, see Peter B. Hammoná, Yatenga: Technology in the Culture of a West African Kingdom (New York: Macmillan/Free Press, 1966). Elliot P. Skinner, The Mossi of the Upper Volta: The Political Development of a Sudanese People (Stanford, Cal.: Stanford University Press, 1964), provides useful comparative materials on the central Ouagadougou Mossi kingdom. Jean Marie Kohler, Activités agricoles et changements sociaux dans l'Ouest Mossi (Haute Volta) (Paris: ORSTOM, 1971) gives details about local organizations in an area bordering on the Séguénéga Subprefecture.

9. Thomson, "Preliminary Evaluation...," pp. 2-8.
10. Pierre Donaint et François Lancrenon, Le Niger, 2nd. ed. (Series "Que Sais-Je;" Paris: Presses Universitaires de France, 1976), pp. 30-44. See also John E. Crow et. al., "La Planification des ressources naturelles au Niger; L'Environnement économique, social, et physique du département de Zinder, La République du Niger," (Unpublished report, University of Arizona, Tucson, Arizona; December 31, 1977), pp. 19-33.
11. For details about the three intensively studied villages, see James T. Thomson, "Law, Legal Process and Development at the Local Level in Hausa-Speaking Niger: A Trouble Case Analysis of Rural Institutional Inertia," (Unpublished Ph.D. dissertation, Department of Political Science, Indiana University, 1976), esp. pp. 90-136.
12. Thomson, "Preliminary Evaluation...," pp. 21-22.
13. Interview with Monsieur Sylvestre OUEDRAOGO, Chef de l'Environnement, Upper Volta; Ouagadougou, Upper Volta, October 24. 1979.