

Social Forestry in Java: Reorienting Management Systems

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In Java, as in many developing nations, forestry bureaucracies control vast land areas. Many such agencies were formed during the colonial era to generate revenues for the government and protect "state" forest resources. As population and state controls on forest land have expanded, conflict between forestry agencies and local communities over land access has increased. This paper examines how social scientists worked with foresters in Java to evolve new management systems responsive to both national objectives and the needs of the rural poor. It explores the historical relations of the agency and the people to state forests. The authors describe the process used and problems encountered in assisting the agency shift from a paramilitary, technical orientation to a community organizing approach. Their experience indicates the important role social scientists can play in facilitating cooperation between natural resource bureaucracies and rural communities.

Key words: social forestry, bureaucratic reorientation, land conflict, rural development, Indonesia

FOREST RESOURCES in developing countries are under immense pressures from state institutions charged with their profitable management and from rural people seeking access to forest products and land for subsistence. Changing demographic, political-economic, and environmental circumstances require forestry bureaucracies to adjust to the new contexts in which they operate, or risk obsolescence and failure. As a result, the management of forest resources not only presents technical challenges to policy makers and planners, but increasingly requires creative sociological thinking on the nature and objectives of forest management. This paper details the initial phases of a fundamental change in a conservative, Third World forestry bureaucracy. As the context in which the organization functions changed, the organization itself has been forced to change. We describe the strategies used to facilitate the process.

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Java (Indonesia) provides a textbook example of the anomaly of traditional forest management in contemporary circumstances. Although 23 percent of the island is designated state forest land, millions of rural people seek access to the forest for fuel or temporary cultivation rights during reforestation. Some 21 million people live in Java's 6,123 forest villages, i.e., villages adjacent to or enclosed by the state forest lands (Darmosoehardjo 1985). Over 85 percent of fuel needs in rural areas come from firewood (GOI/IIED 1985:84), with some forest villages taking 100 percent of their fuelwood from the state forest (Kartasubrata and Syafi'i 1985). Most production forest is kept under 80-year rotation teak and 20-30-year rotation pine plantations,² despite these systems' low labor absorption and the growing population of land-hungry rural people (GOI/IIED 1985:98). The 1981 census showed that 55 percent of rural households own less than one-quarter hectare of land. The skewed distribution of private lands has increased the pressures on state lands.

The State Forestry Corporation manages all production forest and most protection forest on Java. The State Forestry Corporation (hereafter SFC) is a para-statal organization mandated to protect forest cover and watersheds, to generate state revenues through forest production, and to stimulate improvements in rural welfare through forest-related earning opportunities (GOI 1985). Until recently, most of their efforts to improve the welfare of people in forest communities have met with little success.

The current structure, formal-legal basis, and ideology of the SFC are deeply rooted in colonial conceptions of land management and control (Blaikie 1985). Organizational elements have always mitigated against change in forestry and present major obstacles to future forestry development programs (Kaufman 1971; Korten and Uphoff 1981). Thus, in order to understand the nature of the forestry agency and its

contemporary conflicts with rural people over access, it is useful to review the history of state forestry in Java. The process of reorienting established management traditions is threatening to an established, conservative bureaucracy, but offers answers to serious problems. In Java, such change could revitalize the island's deteriorating watersheds and generate income for the poorest rural people.

Following the historical discussion, we will discuss general notions of organizational change and stagnation. The program described in the second half of this paper helped the SFC identify and analyze administrative and field-level management problems and to develop an operational style more responsive to rural needs.³

The Background of Conflict: Struggles for Forest Control

Pre-colonial Java was sparsely populated, and much of the island was under dense forest cover. As late as 1815, it is estimated that the population of Java was under 5 million (Nitisastro 1970:5). Forest lands were nominally under the control of the kings or sultans, whose concepts of property differed greatly from those of the arriving Europeans.⁴ In many outlying forest areas the court had little influence over actual land use and tenure systems, concerning itself primarily with the periodic exaction of tributes and labor services (Onghokham 1975; Moertono 1981; Adas 1981). Thus, in much of Java, rural communities developed their own systems for allocating rights to clear and cultivate forest lands.⁵ The early Europeans made agreements with Javanese kings⁶ and nobles to gain access to teak trees and rural labor to cut and haul it. This forced forest labor, known as the *blandongdiensten*, persisted through the first half of the colonial period (until 1796), when much of Java was under the VOC, through more than a half-century under the Dutch colonial state (until 1865).⁷

As the Dutch state gained control of all Java in the early nineteenth century, the meaning of forest management changed from control of people and timber cutting rights to land management for tree production. Large tracts of land were removed from public access and classified as state forests. The *Domeinverklaring* of 1870 declared that all land that could not be proven to be privately owned was state property. A forestry bureaucracy was formed to manage the teak forests, which had until then been haphazardly cleared by contractors and local people.

Forest management by a bureaucracy is a concept that originated and was developed in the Germanic states in the eighteenth century (Fernow 1911; Mantel 1964). The colonial services in Asia began to establish their forestry bureaucracies in the nineteenth century and sent promising young foresters to German schools, hiring German consultants to organize or advise them on proper forest management for sustainable extraction (Mantel 1964:399; Lugt 1933:41).

In the early part of the twentieth century, a reforestation system called *taungya* (or *tumpang sari* in Javanese) was introduced in some districts. *Taungya* is a reforestation system where farmers plant tree seedlings and cultivate agricultural crops between the rows of reforested timber species for one or two years.⁸ *Tumpang sari* plantation establishment was favored by foresters because it significantly reduced their costs. Some also lauded *tumpang sari* as a way to relieve

rural land-hunger (Doorn 1932). The system, though successful in establishing teak plantations where labor had previously been a problem, took advantage of land-poor farmers whose poverty had been aggravated partially by the state's bounding of the forest lands and by other colonial policies (Onghokham 1975). It was most successful where land was in shortage and labor in surplus.

After revisions were made in the first 1865 forest laws, the forest laws valid in Java today were finalized and approved in 1927 and 1932 (Perum Perhutani 1984). By 1937, the Dutch controlled over 3 million hectares of land classified as state forest, having closed a quarter of Java's land to peasant agriculture. By the end of effective Dutch rule (1942), the whole structure and nature of forest management had changed in Java. Responding to the changing demands and whims of the colonial state, a single forestry bureaucracy trained in the tenets of sustained yield teak production and police methods controlled the fortunes and well-being of nearly one-fourth the island's land and people.

The Japanese occupation of Java (1942–1945) was characterized by a sharp reversal in forest policy. Reforestation was all but eliminated. The Japanese wanted to exploit timber and convert forest lands to agricultural production for their war effort. Forced laborers (*romusha*), and, in some areas, peasant colonists, were put to work in the forests to clear timber and cultivate the land. In other forest sites, landless and land-poor villagers moved onto forest lands to escape the hardships of the occupation (Soepardi 1974).

During the two decades of revolution and national consolidation that followed the occupation, more peasants settled on forest lands, believing that independence would mean less restricted access to forest land. The beliefs of land-poor peasants were fueled by political groups competing for power in the new state. Between 1948 and 1962, an Islamic political movement and its military wing (*Darul Islam/Tentara Islam Indonesia*) used western Java's forest lands as bases for their revolutionary activities.⁹ Between 1960 and 1965 the Indonesian Communist Party encouraged forest laborers and other villagers to occupy forest lands and convert them to agriculture (Mortimer 1974). Yet politics alone did not account for the destruction of the forests during this turbulent period. Survivors explained that the ubiquitous economic hardship forced people of every religious or political persuasion to seek sustenance from the forests.

Tough economic conditions and competing ideologies thwarted Indonesian officials who had inherited the task of forest management from the Dutch. Trained in Germanic-Dutch methods of forest management, certain Indonesian forest administrators believed that a return to pre-Japanese forest policies was the only way to restore the forests. The political climate and the dominance of populist and communist sentiments prevented the conservative elements in forestry from implementing their philosophy until the fall of the Soekarno regime in 1965–1966. With the rise of the New Order,¹⁰ the conservative element took hold of the bureaucratic reins in forestry. The elimination of both ideological opposition and action by competing political parties facilitated the conservatives' return to a pre-Japanese style of forest management.

Structurally and ideologically, the contemporary SFC differs minimally from its colonial predecessor. The organization is comprised of technical forestry specialists, forest po-

lice, and administrators whose primary objective is the production of teak and other forest products to generate revenues for its own reproduction and the national development budget. Teak provides 92 percent of the SFC's total income (Radite 1985). Decision-making is highly centralized and rigid, and field staff have no authorization to develop appropriate management strategies in the field. Foresters remain skeptical of outside studies showing the ecological stability and productivity of indigenous agroforestry technologies (Soemarwoto et al. 1975; Wiersum 1982; Iskandar and Christianity 1984).

Rural people perceived the SFC's efforts to reestablish central state control over the forest as threatening to their survival. These differing interests, exacerbated by the confrontational tactics used by the forest police, created tense relations in rural areas. The tension is reflected in the figures on teak theft, forest damage, and other forest "crimes" (Simon 1983; Peluso 1988b). As recently as 1986, it was reported that wood theft on SFC land had risen 50 percent from the previous year, leading the Minister of Forestry to call for a 17,000-man police operation to help guard state forest lands. Local response was swift. In March 1986, an SFC forest ranger was killed by a gang of angry forest villagers (Kompas 1986). Such violent reaction has been virtually unheard of since the dawn of the New Order and its strict paramilitary modes of control.

In seeming contradiction of its police tactics and control ideology, as early as 1973 the SFC had initiated a community development program aiming to increase forest-based employment opportunities and benefits for people living near state forest lands. While these pilot projects marked a shift in management rhetoric, they had little impact on the vast majority of forest villagers. Villagers were excluded from decisions regarding forest management and from participation in the decision-making process for projects supposed to benefit them. Expansion beyond pilot projects never took place, and pilot programs fell short of their stated objectives. The forest management agency had a limited capacity and will to plan or implement community-based programs. SFC managers refused to relax the traditional controls they had held over the lands, species, and the rhetoric of development.¹¹

Established forestry policies were not supportive of community-oriented management systems. After decades of mistrust, forestry professionals were reluctant to consider allowing communities to participate in planning reforestation efforts. Similarly, villagers were suspicious of foresters attempting to approach them. While talking of community development, the SFC mechanized logging operations in some labor surplus districts, displacing laborers who depended on logging income (Simon 1983; Djuwadi 1985). Intensified forest policing operations were integrated with the other armed services to "sweep" village homes and fields where teak theft was suspected. As a result, conflicts between foresters and villagers grew more strident, further confounding the meager attempts to establish forest village development programs.

Problem Solving Strategies: A Learning Process Approach

The reorientation of the forestry bureaucracy on Java faced two formidable cultural-structural obstacles. When the In-

donesian forestry bureaucracy took over the structures and roles previously played by the Dutch colonials, a new dimension was added to the notion of bureaucratic control. Javanese¹² notions of patronage and patrimonialism were superimposed on the rational-legal structures of Dutch bureaucratic management. While foresters of Javanese ethnicity had long been employed at the lower levels of the Dutch bureaucracy, their relative benevolence as traditional patrons (in providing employment opportunities, community services, and so on) was tempered by their concurrent roles as forest police and their limited financial resources. They could not act as freely in the traditional patron's role of extending earning opportunities, despite the community's expectations of them as elites (Lugt 1933; Scott 1972; Adas 1981; Simon 1983). As the social and political environments of Java changed, the foresters' opportunities to exert patrimonial and economic controls on the forest laborers and other forest dependent people multiplied.

The eight-fold increase in population from 1860 to 1965 (Simon 1983:21), for example, combined with minimal industrialization, the appropriation of lands by the colonial state, the passing of these lands to the central Indonesian state after independence, and the progressive consolidation of private lands by a minority of the population, created a tremendous labor surplus in rural areas. More and more people were eager for opportunities to work on the forest lands for wages (in logging or day labor tasks) or to gain access to small plots of reforestation land. Taking over the highest ranks of the Dutch bureaucratic legacy gave the former lowest level land managers control over goods (forest products) and services (allocation of access) which fit traditional patterns of Javanese power and patronage (Anderson 1963). Moreover, the Indonesian state in general adopted the stance of a patron to all its people, particularly those in rural areas (Hart 1988).

In the contemporary context of forest management, Indonesian administrators adopted Western notions and mechanisms of bureaucratic control and ownership of land. Thus a powerful marriage between traditional and modern, Javanese and European notions of domination and control took place.¹³ The spoils of this power included control over a significant portion of Java's land and the monopoly of the single most valuable species growing there.

Reorienting this bureaucracy, so strongly grounded within Western bureaucratic traditions and indigenous Javanese power structures, required an identification of the structures through which power and control were exerted, the decision-making processes, the key people who held formal and informal power, and the ideologies which were used to legitimize these other three components (Kaufman 1960, 1971; Korten and Uphoff 1981; Chambers 1983). To induce change, program staff needed to understand the nature of the forestry agency and to identify where traditional controls failed to serve their intended purposes (Chambers 1983:212). In this case, structural and procedural changes would have been difficult to implement unless decision-makers could be convinced that the old system was not protecting the forest and could eventually lead to a depletion of the organization's revenue base (teak). The history of chronic conflict on forest lands, despite increased paramilitary and military presence, provided the basic evidence for these premises.

Initial discussions between Ford Foundation staff and a

few concerned SFC planners and administrators indicated a willingness, though hesitant, to try to reorient the agency (Korten and Uphoff 1981). Chambers has called such reorientation “reversals” in management (1983:210–215). The nature of the traditionally powerful agency, exerting control from its central urban offices to the reaches of remote villages and forest enclaves, did not easily lend itself to such a reversal. This organizational power grew stronger in the 1980s due to increasing SFC profits and increasing state emphasis on non-oil sources of revenue (Robison 1986; Peluso 1988b). Indeed, as the case history will illustrate, the program’s general aim to decentralize would face structural obstacles in achieving the most desirable form of decentralization.

By setting in motion a learning process within the agency (Korten 1980), it was hoped that a process of change could be effected, allowing all SFC staff to understand sources of and solutions to contemporary problems. Senior staff needed to understand better the causes of conflict with rural communities. They required a chance to review their attitudes about the roles of foresters and state forestry institutions, and the positions of villagers. To do so, they had to address with greater objectivity a host of procedural and structural issues both within the SFC and at the village level. Forest planners and policy makers needed opportunities for open exchanges with their subordinates and rural people, and to experiment with decentralized community management systems.

How would such reorganization work? Seeing the bureaucracy itself as the primary obstacle to change, Korten and Uphoff (1981:15) advise developing a “centrally-guided bottom-up process of building new approaches to field operations based on field experience.” Some of the decision-making power and capacity shifts to the lower levels of the bureaucracy and is intended to involve those served by (and outside of) the bureaucracy in the decision-making process (Korten and Uphoff 1981:6; 15). In a powerful specialized organization, as many forest agencies are, involving lower levels of the bureaucracy—both the district offices and the field foresters—is easier (but not easy) than actually involving villagers. It is not enough simply to aim at reorienting such a bureaucracy; different forms of decentralization may compete. In a specialist organization, reorientation may involve either “devolution” (of power to the district offices) or “deconcentration” (of authority to the field agents) (Leonard 1982:28).

The change process described by Korten and Uphoff (1981) involves analyzing local factors related to field level management problems and how they are affected by organizational conditions. In effect, the process applies the philosophy and procedures of “action research” to bureaucracies, which are supposed to serve as agents of change. In the case of forestry on Java, though the ultimate goal of the social forestry program was to involve forest villagers in management decisions, contextual circumstances required participation of SFC foresters at all levels of planning and transaction.

Korten and Uphoff recommend that a working group be established to meet regularly and oversee the involvement of lower-level officials and program beneficiaries/participants. The working group would comprise key players “who devote major portions of their time to working on the problem at hand” (1981:15). This group is preferably funded from the outside—independently of the usual bureaucratic bud-

get—in order to give them maximum flexibility and empower them to make decisions or support programs that might otherwise be lost in the organization’s regular routine.

Clearly there are both conceptual and operational problems with this approach. Critical analysis and alteration of both organizational procedure and power structures requires going against the top-down nature of the bureaucratic structure and process, a problem that Korten and Uphoff admit (1981:6). To be successful, organizational change strategies require the continued commitment of highly-placed officials. Because the working group is part of the target bureaucracy, and not an autonomous, external, mediating group, ‘top-down’ effort is needed to elicit and sustain ‘bottom-up’ activities (Korten and Uphoff 1981). This “internal” nature of the working group is simultaneously a weakness and a strength. Many high-level officials are reluctant to devote major portions of their time to time-consuming analyses of management problems and alternatives that threaten to erode their authority. Moreover, convincing others of the center’s change in approach becomes a time-consuming aspect of the program. Credibility—and fear of misunderstanding and reproach—becomes a concern for lower-level officials as well as forest villagers. At the upper levels where change is initiated, outside funding may allow the working group greater flexibility in developing alternative management systems. However, special funds may also lead to internal jealousies and resistance from other members of the organization, or create dependence on outside funding sources. Unless the host agency is willing to commit its own financial resources to the new program, a key pillar of the program falls away when the external funding source pulls out. Internal power struggles could prevent program integration at either early or later stages, causing local level or procedural changes to break down. Such relapses or reversion to former patterns of authority and decision-making would threaten further the center’s credibility and obstruct future attempts at organizational change.

Despite these problems, the approach offers a means of beginning to improve the effectiveness of development programs where some commitment to their implementation has already been shown. Success apparently depends on establishing and maintaining a momentum (e.g., through funding and support) and transferring this impetus to the organization itself. Giving the organization a stake in success as well as a responsibility to perpetuate change seems to be a crucial factor in the program’s potential longevity. In the Indonesian case, where patronage is both part of the Indonesian state ideology and a tradition of Javanese officialdom, it was desirable to quell rural unrest and to check unauthorized forest cutting by direct action by the center. Though lip service had been paid to preventive forms of territorial and resource control, the SFC lacked effective village development strategies. Reorientation was posited as a prospective solution.

Phase 1: Diagnostic Research

In May 1984, a meeting was arranged between Indonesian ecologists, social scientists, forestry planners and policy makers, and foreign consultants to review major forest management problem areas, analyze past efforts to overcome them,

and develop plans to address them. Meeting participants agreed that a working group should be established to study forest resource conflicts. Field work would be conducted by an interdisciplinary team of graduate students¹⁴ who would work with senior scientists and report to key policy makers. Research participants represented a range of disciplines including forestry, ecology, and rural sociology, although most were foresters by training. Most of the team members were already employed as junior staff in their respective universities or as researchers and policy consultants to the natural resource bureaucracies. As a consequence, their social forestry research was expected to have an immediate, widespread impact on their other teaching and research agendas. The team research was to focus on analyzing the history of human-forest interaction patterns, relationships between foresters and local people, the perceptions of villagers and field foresters towards the forest and forest policy, and the influence of village social structure on patterns of forest access (Vayda et al. 1980; Wiersum 1984; Romm 1985; Dove 1986).

Each team member was responsible for studying a particular forest community. Twelve sites were selected to represent a range of natural and socio-economic environments and management systems. These included production forests under coastal mangrove, lowland teak, upland pine, and protection forests in West and Central Java. The sites had varied cultural histories and histories of conflict with the forestry agency.

A major consideration in the research design was the fact that most team members, trained in forestry and other biological sciences, had never systematically examined the reasons for patterns of village forest use from local people's perspectives. As a result, the team spent nine months living in the case study communities. Long-term residence in the study village helped researchers overcome their assumptions or biases towards particular sites or management issues. It also allowed the researchers to build rapport with forest villagers, most of whom tended to be suspicious of outsiders. Given the nearly ubiquitous history of forest conflict, individuals associated with forestry were particularly distrusted.

Throughout the course of the study the research team met every three to six weeks to discuss methods and interim findings. Senior scientists and planners from the working group periodically joined these discussions. As the research progressed, the research design emerged and expanded, often in different ways according to a site's characteristics or the experience of the fieldworker. In this way, site-specific problems and issues could be explored in depth and "contextualized progressively" (Vayda 1983). Nevertheless, baseline data were collected for comparison across all cases.

The team's rural sociologist taught a variety of methods of collecting sociological data. Oral histories provided a basis for understanding the evolution of forest and private land use systems, as well as villagers' relationships with the forestry agency. Recording local beliefs about village and forest origins contributed to the working group's understanding of community perceptions of the forest and their relationship to it. In-depth interviews with local agency staff, village and religious leaders, and community members of all classes, sexes, and age groups provided insights into the different perspectives of villagers involved with the forest in particular ways. Data on household income and time allocation studies

were compiled to examine the ways in which access to and dependence on forest lands varied within communities according to socio-economic status. To better understand agroforestry systems, field maps were drawn. In-depth interviews about land and tree tenure and cropping patterns on private and forest lands illuminated different production strategies and priorities.

The researcher's common new experience, and their expectation that their research would benefit both the forest and the rural poor, led to strong feelings of solidarity among the researchers and, in many instances, to a positive identification with the people they studied. This spirit soon influenced agency planners in the working group and set the tone for the second phase pilot projects.

Phase 1 Findings

The diagnostic research found that most conflicts could be attributed to three factors. These were: long-standing disputes between forest villagers and state foresters over forest lands and tree tenure; a history of bureaucratic misbehavior among many field foresters, including corruption, exploitation, and involvement in teak theft; and the failure of the highly centralized SFC to adapt its forest management policies to diverse ecological and socio-economic circumstances in forest villages. These are discussed briefly below.

In all of the research sites where *tumpang sari* reforestation was in progress, the two- or three-year tenure period provided no incentive to forest farmers to invest the extra labor needed for ecologically sound farming practices such as terracing, contour planting, and the application of organic or chemical fertilizers. While both the primary timber and the annual crops generally did well during the initial two years, once the plots were closed to *tumpang sari* the forest farmers had no interest in protecting young forest species from grazing cattle, fires, and undesirable secondary growth.

In some forest districts the SFC repeatedly planted deforested areas, and each time the young trees would be burnt by villagers or trampled by cattle once the *tumpang sari* period was over. In one Central Java site, forest farmers set nearly 75 fires over a five-year period, destroying the reforestation area and requiring the SFC to open a new plot (Peluso 1986). Though the methods of resistance differed, sabotage of closed reforestation areas was found to be common in many of the study sites throughout Central and West Java. Unable to demand change openly, the forest farmers and other forest villagers felt forced to express their opposition in anonymous, clandestine ways (Hay 1975; Scott 1985). The failure of such reforestation efforts became a victory for the forest farmers—soon the lands were reallocated for *tumpang sari* reforestation.

Research also showed that closing *tumpang sari* had the greatest impact on the household economies of landless or land-poor farmers who depended on access to reforestation plots for survival. If new blocks were not opened in their vicinity, they lost a major source of livelihood. Some field foresters manipulated the high demand for access to *tumpang sari* by auctioning off access rights, transferring cultivation rights to wealthy farmers in the community, or requiring that forest laborers perform extensive voluntary labor. In one

case, entrepreneurial foresters auctioned off land which had not been slated for reforestation (Purwanto 1985, personal communication).

Much of the antipathy between forest police and community members stemmed from the people's beliefs that the foresters misused their authority. Field foresters reportedly extracted illegal fees and accepted bribes (for access to land or "purchase" of seedlings), underpaid forest laborers, and used strong-arm tactics with villagers. Because the agency did not systematically monitor their field staff's relations with forest villages, and because the agency's own goals were not couched in social but in physical terms—i.e., growing trees—field foresters could exploit forest laborers provided they created no major administrative problems. Transgressors were rarely fired for accepting bribes or otherwise cheating the SFC; they were "contained" by being demoted to desk jobs.

Interviews with foresters at all levels indicated that they placed all the blame for reforestation failures on the villagers. During the early 1980s, for example, when a great deal of national attention was focused on the waste of money spent on failed reforestation projects, senior and junior officials alike pointed at "backward" rural people as the reason, despite considerable evidence that poor planning and widespread corruption were equally, if not more, significant factors. The foresters' conceptualization of rural people as ignorant of "the meanings and functions of the forest" was deeply ingrained and widespread throughout the agency.¹⁵

Complex agroforestry systems developed by forest villagers on their private lands showed that they were far from ignorant of the hydrological functions of forests. In a number of cases farmers elaborated reasons why the timber species selected by the foresters were inappropriate to the local environment, illustrating their knowledge of local micro-climatic and soil conditions. Yet the foresters had been taught the superiority of their "expert" knowledge to indigenous knowledge and these teachings were reinforced by forestry decision-making policy (see also Kaufman 1960; Brokensha et al. 1980). Ultimately, the difference in perceptions—or representation of those perceptions—could be attributed to differences over what perennial species should be planted and who benefited from the cultivation of forest lands. Foresters' negative attitudes toward forest farmers had been institutionalized within the agency, and represented major constraints to potential program success.

The process of decision-making was structurally reinforced by SFC procedures and planning. Twenty-five-, ten-, and one-year plans had to be made for each district and adhered to as closely as possible. District management plans were written far from the field, based on theoretical tenets of forestry instead of on the unique social and environmental conditions of each field site. Technical goals were never adjusted to the practical needs of particular forest villages. While high-level officials made frequent field trips, they focused their attention on technical problems, and endorsed the use of police methods to handle conflicts stemming from inadequate or irrelevant management policy. Field foresters often made heavy demands on forest laborers, but rarely listened to their problems.

While rigidity and centralization characterized the official system, the case studies revealed that much local adaptation did occur in the ways SFC policies are implemented. Many

field foresters desired smooth relations with the community and overlooked small transgressions, such as subsistence fuelwood collection, in order to maintain reasonable working relations with local villagers. Yet while local forest managers acknowledged the inappropriateness of certain policies and procedures, they were well aware of their inability to influence them.

Although some foresters' informal agreements with the community resulted in successful compromise, informal systems of forest access control also led to the misuses of power described above. The frequent reliance on informal arrangements between foresters and villagers reflected both the inappropriateness of applying macro-forestry policies across Java and the considerable diversity of circumstance and interaction between forest villages and state forests.

One year after the working group first met, a meeting was held to review the case study findings. The major objective of the research had been achieved: the research team and their advisors in the working group now had a common understanding and documentation of the field context. Arguments could now be formulated to encourage agency planners and policy makers to look beyond the technical management issues to the economic, socio-political, and organizational problems at the root of many forest conflicts in Java.

The principal recommendation at the close of the diagnostic research was that the State Forestry Corporation cooperate with forest villages to manage the forests. By making the forest lands more productive for everyone—farmers as well as the SFC—greater benefits would accrue to all.

Structural changes in access controls were to give people longer rights of tenure on reforestation lands and greater involvement in the selection of alternate crop species to which they would also have firmer rights. At the community level, forest farmer organizations would be formed to give the farmers a greater sense of power and a common direction. Finally, the roles of the field foresters would have to be transformed from roles as police to roles as community organizers and technical assistants. Given the context of Java's forest history, such extreme changes were expected to face credibility problems with both the bastions of the bureaucracy and the forest villagers.

Phase 2: Pilot Projects

The SFC needed to develop the capacity to communicate with rural families and offer land management systems that provided security and income. Based on the findings of the diagnostic research, pilot projects were designed to utilize community organizers (COs) to facilitate negotiations between the SFC and 13 selected pilot villages; extend the tenure period for *tumpang sari*; plan for new annual crops as the forest composition (and light regimes, etc., changed); allow farmers to plant and retain access to certain perennial species; and strengthen village and SFC organizational capacity to manage forest lands collaboratively. A major challenge was still to be faced, however: the SFC's most degraded forest lands were given priority for proposed pilot project sites.

At first, community organizers external to the SFC were

enlisted for the pilot projects. In addition, some field foresters were selected for CO training. By selecting different types of community organizers, the working group wanted to compare their effectiveness in generating better relations between forest communities and the agency. During the selection process, they tried to prioritize the applicants' empathy for the circumstances of forest villagers and their communications and problem-solving skills. These factors were easier to monitor in choosing outside organizers than organizers (field foresters) from within the SFC. Outside organizers could be judged by their previous activities and jobs (e.g., as students or NGO members), while field foresters had had to conform to SFC standard procedures in their community dealings.

To provide support for the community organizers in the field, a provincial social forestry coordinator was positioned in the SFC's East, Central, and West Java regional offices. The coordinator made monthly visits to each field site, organized the monthly meeting of community organizers and SFC provincial staff, and facilitated the processing of Forest Farmer Group land use agreements. The coordinators also acted as liaisons between the central SFC office and the field staff.

An Indonesian non-governmental organization was contracted to help the SFC create a training curriculum in social forestry. The curriculum included rapid analysis of the sources of forest-based conflict in pilot sites and the new social forestry management system. For six weeks, participants and trainers defined the methods they would apply in the coming year to assist communities in establishing agroforestry management systems. The training utilized lectures, role-playing, field exercises, and team planning. They were also trained in the use of diagnostic methods for identifying appropriate agroforestry systems, methods for stimulating group discussions and exchange, and the new administrative procedures that would be required by the SFC.

COs entered the villages in March, and over the next two months had to identify land-poor households interested in managing agroforestry plots. "Land-poor" was generally defined as households controlling 0.25 hectares of land or less. Where land was severely degraded, controllers of up to 0.50 hectares of land could be included in the "land-poor" category.

The CO was to help these households organize a Forest Farmer Group (FFG) that would formulate a management plan indicating the desired perennial and annual species to be planted. The CO would assist the FFG in taking the proposal to the SFC district office for discussions and possible modifications. Once approved by both the local FFG and SFC, the joint management plan was to be formalized, and a certificate of use rights given to the forest farmer group entitling them to utilize the land until the time of harvest of the primary timber species, provided they conformed to the agreement. While the initial lease was for two to five years, farmer groups were supposed to have the option of extending their tenure for 15 to 40 years, depending on the rotation cycle of the primary forest species.

This procedure was unique in a number of ways. First, it put the SFC in a position of approaching the community in a cooperative manner and eliciting their opinions on the types of crops most suited to the environment. As mentioned above, though farmers were usually willing to talk to foresters (and

other officials) about agroforestry combinations growing successfully on their private lands, foresters typically did not listen. Not only were they bound by district or central policy on allowable alternative tree and field crops, they also believed their technical training surpassed farmers' accumulated knowledge and experience. Second, farmers legally planted trees (SFC-approved species) on state forest lands for the first time, and were given the rights to harvest the fruits from these trees under the long-term tenure agreement. Having provided or paid for the seedlings, the SFC retained control of the woody parts of the fruit tree and of the primary forest species.

Enthusiasm increased as the CO's village rapport grew and the terms of the project became more widely known in the 13 pilot project villages. There was a growing belief among farmers in many of the pilot project areas that the SFC was changing, so that more people were willing to participate in the program. Some field foresters who had been afraid to enter forest villages at night now found they were greeted with friendliness. In sites where wood theft had been common, the incidence of such infractions began to fall.

By late May, most participating communities had formulated their FFGs and had been allocated 10- to 25-hectare blocks of land, divided into 0.25- to 0.50-hectare plots for each household. Clearing these lands took place from June through August. Most groups decided to plant combinations of familiar local staple crops such as maize, cassava, dry rice, and groundnut. While the SFC agreed to these crops initially, they later required farmers in most sites to plant hybrid varieties of maize, using chemical fertilizers and pesticides. The SFC loaned participants the HYV maize seeds and fertilizer, and provided fruit tree seedlings at no cost in September, just prior to the onset of the rainy season.

Generally, farmers requested fruit tree seedlings, such as mangoes, guava, and durian, that produced well in their area and generated income. Also popular were banana, pineapple, and a variety of fodder and fuelwood species. By January, farmers were beginning to harvest their staple crops. Yields varied widely. In some areas farmers harvested four to five tons of hybrid maize per hectare, two to three times what they had achieved with local varieties on surrounding private farmlands. However, in areas with poor soils, i.e., most of the pilot sites, the hybrid maize did poorly. The change in the attitudes and approach of the foresters, however, seemed to bolster community support for the program in most villages, even where harvests were poor.

Problems Encountered in Implementing the Pilot Project

The first year pilot project was meant to design and implement on a limited basis forest management systems that gave local communities economic incentives to manage degraded forest areas in productive and sustainable ways. Field activities were to be structured so that participants could learn while implementing these participatory management systems, rather than trying to maximize success in pilot sites themselves. Hoping for visible evidence of their success, for-

esters at both the field and management levels focused largely on the successful planting of forest species.

The program was also confounded by a new national agricultural program to promote self-sufficiency in maize production. In order to show solidarity with their counterparts in the Ministry of Agriculture, the SFC required participating farmers to plant hybrid maize, rather than allowing them to negotiate for the annual species they desired. In keeping with numerous technical restrictions on admissible perennial species, field foresters often required FFGs to choose from just a few species. The presentation of an FFG's management proposal to the district office was not a negotiation, but a reflection of SFC social forestry policy. The "new" social forestry program thus reflected the traditional, top-down, paternalism of foresters to forest villages, and reinforced farmers' long-held beliefs about the nature of state forest management. Future training seminars had to stress the need for open discussions with farmers and for receptiveness to the farmers' experience and preferences.

Another, more serious problem generated by the technical orientation was the manner in which some forester COs selected farmers to participate. Under great time pressure to identify and persuade farmers to participate in the program, many foresters did not select land-poor farmers, but rather farmers they felt "could do the job"—generally a euphemism for the better-off farmers.

Landless families lacked the resources to invest in tree crops, which only began generating income after four to seven years. Waiting six months without remuneration during the land clearing and three-month growing periods for annual crops was also difficult for low-income households. The SFC did not want to extend subsistence credit or credit to pay labor, and only provided credit on HYV maize packages (seeds, fertilizer, and pesticide) that they obtained from the Department of Agriculture. This put poor households, especially those headed by females, at a disadvantage from the start. To no one's surprise, transfers of tree tenure and program participation rights were reported within the first year. Many poor farmers who tried to participate transferred their plots to farmers able to hire labor to farm their own fields while they worked the pilot forest plots. Using hired labor was not discouraged if the farmer paid for it himself,¹⁶ but the program would not provide financial support to others. Access to independent capital to finance labor or to reproduce the household through the first six months thus became an unstated prerequisite to participation. As a result, one of the key goals of the program—to improve rural income distribution and decrease poor rural people's forest dependence—was greatly hindered.

As a means of retaining control over the trees planted on forest lands, the SFC provided the seedlings. The plan to increase village employment and involvement would be best served, it was decided, if the seedlings were purchased by the SFC from village nurseries. However, the SFC's rapid agreement to the proposed pilot program resulted in tremendous time pressures near the imminent planting season, with difficult deadlines to meet. As a result, the SFC purchased fruit tree seedlings from the open market, rather than waiting for the villagers to establish fruit tree nurseries.

Organizational and financial constraints were also observed in the first year. While outside COs were actually more

successful in gaining community trust and negotiating between the foresters and the villagers, the SFC decided they could not afford to use outsiders if the program were eventually expanded to the more than 6,000 forest villages. As a result, the new role of the field forester as CO was brought into sharper focus. His self-perceptions and the perceptions of his constituency toward him would be critical factors in the project's success. This emphasis also meant that all new COs would be male, although two of the first cohort of non-SFC COs were women—who were extremely successful not only in organizing the FFGs but also in establishing rapport with other sectors of the community.

Another managerial problem arose as a result of the project's aim at the bottom of the organization pyramid, i.e., the deconcentration strategy described by Leonard (1982:28). While a number of social forestry orientation seminars were held for SFC provincial, district, and sub-district staff, considerable suspicion and misunderstanding initially existed among middle-level SFC administrators. In some cases, mid-level SFC staff were annoyed at being by-passed by senior SFC planners working with field staff. As a result, in the second year these mid-level staff were trained and integrated into the program. More direct roles for district and provincial level staff were planned, in the hope that the program would benefit simultaneously from devolution and deconcentration.¹⁷

The program's orientation in terms of FFG membership and the system of allocating rights of tree tenure systematically excluded women, although three were able to obtain plots in one pilot site. In the first pilot stage, each of the 13 pilot sites allocated 10–25 hectares of forest land for the trial program. Each forest farmer was allocated a one-quarter to one-half hectare plot. At least 1,000 farmers were involved in all sites—meaning less than one percent were women. Foresters tended not to select women for the new project, saying they feared the project's failure because women were not strong enough. Most women were embarrassed to come forward and ask for plots in the new program. Yet the diagnostic research had shown that women often worked as much as their husbands or sons on their forest or privately held agricultural plots (SFT 1985a, 1985b). Female heads of households also complained that they were not given the same opportunities as the men. Moreover, when contracts for access to the fruits and leaves of trees planted on the state forest lands were available, only the men signed. The SFC would not allocate rights to the trees' products to the household, but only to individual household heads. If the husband died, moved, or lost interest in the project, his wife had no claims to the fruits, even if she had been the trees' planter and primary caretaker. The SFC feared the development of local systems to transfer tree tenure from one household member to another. Such transfers would pose particular problems when the mature forest species were slated for logging. Again, this attitude was partially a product of traditional cultural and bureaucratic controls on forest access and indicated a need for specific changes in the terms of the tree tenure contracts.

Finally, the insistence of SFC staff that the most degraded lands be treated first proved an insurmountable obstacle in some sites. In some of these sites enthusiasm among village participants and field foresters remained surprisingly high.

Nevertheless, this experience accentuated the need to avoid "testing" new organizational forms where physical conditions precluded normal environmental amelioration.

Phase 3: Expansion

From the start it had been assumed that the first year pilot project would lead into a long-term expansion phase that would build on the successes and failures of the pilot phase. Throughout the pilot phase, planners assessed how the program would need to be changed to become part of the mainstream management system. Midway through the first year, senior administrators in the SFC indicated that some 250,000 hectares of degraded forest lands could be made available for social forestry management systems over the next five years, representing approximately 9 percent of the state-controlled forest lands on Java. Program planners were caught between an encouraging growth of political support for decentralized, participatory forest management systems and the fear that a rapid expansion could undermine the quality and integrity of the new effort. The administrative burden of adding so much land seemed certain to doom efforts to improve the initial design.

After some deliberation it was agreed that expansion be confined to 12 forest districts, from which intensive program development would expand. Expansion districts were to have large areas of degraded forest lands, surplus labor markets, and regional SFC staff supportive of the new program. To enhance supervision, each district was allocated a social forestry coordinator. In addition, an NGO community organizer position was created at the provincial level to backstop district-level training.

Of particular importance in the second phase was the socialization of mid-level staff to the attitudes and procedural aspects of the new program and their participation. Planners felt that if a high level of integration between the field, the district, and the center could be achieved in the selected concentration districts, transfer to other districts would be facilitated. At the same time, national-level attention was placed on more detailed assessments of the economic and ecological viability of the new agroforestry systems. A new group of university-based scientists and agency staff was formed to evaluate ongoing and potential systems. The economic assessment was particularly important for analyses of possible future shifts away from some traditional species towards more fruit trees, medicinal plants, and fast-growing fuel, fodder, and timber species. Typologies of agro-ecological zones were to be developed and "menus" or "lists" of annual and perennial species appropriate to these zones were to be compiled to assist community organizers and communities with their discussions. Trials were initiated with community and FFG leaders to assess the effectiveness of simple land use sketch mapping and group meetings to discuss local land capability and community needs. It was hoped that such a process would lead to long-term agreements between forest villages and the SFC for the development of all degraded forest lands.

Enthusiasm for the project since its expansion phase has created additional pressures to address its weaknesses. The combination of more progressive new leaders in the top posts

of the SFC and the Ministry of Forestry and the increased involvement of provincial and district level officials led to the doubling of program size in 1988. Expansion emphasized but was not limited to the twelve target districts. Problems with this rapid expansion have arisen not only from the sheer volume of administrative and planning tasks, but also in the siting of new social forestry areas in the kinds of locations which had had the least success, such as mangrove forests and national park buffer zones (Read 1988). Nevertheless, the aggressive style with which the new leadership has pursued the social forestry alternative has ensured the construction of a solid program foundation by integrating the new ideas into the mainstream of the SFC's efforts to rehabilitate degraded forest lands (Frances Seymour 1988, personal communication).

Reflections

Why did this program succeed in influencing a conservative, forest management agency/forest enterprise, despite numerous problems encountered in the first year's implementation? First, the timing was right. The agency had been under increasing pressure to become more responsive to the needs of rural communities. The project identified concerned planners and provided them with a means to take action. Second, the research team was strategically placed and made responsible to the working group, allowing them to effectively channel their findings to the SFC's planners and policy makers. Finally, the donor agency's commitment to follow up the diagnostic research with pilot projects and support into an expansion period made continuation a reality. Planners were encouraged to consider the direction of the pilot projects during the diagnostic research phase. Later, during the pilot projects, they thought about expanding the social forestry strategies into a national program.

Most of the successes and the failures of the new program can be attributed to the dynamics of the bureaucracy and the social context within which it was placed. That the agency agreed to give up some of its traditional power base by lengthening tenure periods on reforestation plots and allowing non-forest species to be controlled by FFGs was a great step forward. Nevertheless, the tendency to impose traditional top-down controls at critical points quickly reappeared whenever potential conflicts presented themselves, as in the selection of the farmers' annual and perennial crops. In addition, though devolution and deconcentration came to be institutionalized in the bureaucratic structure, villagers were not yet truly empowered to make decisions about forest lands. The participatory concept differs from traditional notions of extension by focusing more on the development of local capacities and bureaucratic willingness to enact change from the field level. While some villagers, field foresters, and forest administrators understood this difference, others continued to be influenced by their former conceptions of extension—as a familiar, top-down institution related to state patronage and the roles of the client-farmer. External agencies (in this case the Ford Foundation) thus tend to remain involved as program funders and advisors, in the hope that issues of empowerment and equity will be given due attention.

The story of this ongoing program should make devel-

opment professionals stop and think about notions of top-down social forestry—which is, after all, foreign in origin and based on certain assumptions of Western philosophy. Indonesian foresters are well aware of the incongruence in foreign donors' required implementation of particular policies as a prerequisite to aid (whether loans or grants), while they are encouraged to change their own top-down strategies and methods. The question becomes not only one of methods, therefore, but of philosophy as well: how to establish fruitful linkages between rural forest users, field foresters, the central management bureaucracy, and the international funding agencies? At what level is it possible to reorient the structure of international aid? And how long are centrally guided bottom-up strategies to retain control over the processes of change?

While supportive policies can be enacted with the stroke of a pen, the development of organizational capacity and attitudinal change are gradual and require long-term internal and external support. The Java experience indicates that bureaucratic change is possible in a conservative bureaucracy in a developing nation, provided individuals at top levels are supportive, that mechanisms for opening communication are established, and that staff are given opportunities to learn and experiment with management alternatives. These are not trivial conditions for success, and we have described the structural and ideological obstacles encountered by a relatively successful program. The authors recommend that social scientists assisting bureaucracies to reorient their resource management systems consider the needs for linking historical and diagnostic research with problem-solving field activities. In doing so, they may ensure some continuity and internalization of social science perspectives beyond the stages at which external stimulation is required.

NOTES

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² Two-thirds of Java's forest land is classified production forest, comprised of teak (*Tectona grandis*), pine (*Pinus merkusii*), dammar (*Agathis* spp.), and rasamala (*Altinggia excelsia*) plantations. The rest are protection forests and national park lands.

³ The program was begun by the Ford Foundation in 1984 and continues to receive funding and technical support from Ford.

⁴ European agents of the United East India Company (*Vereenigde Oost-Indische Compagnie* = VOC) began arriving in Java in the late seventeenth century. Peluso (1988a:40–255) describes the changes in structures and notions of forest access control from the early colonial period until the present.

⁵ Bergsma (1880) reported much of the variation in land and tree tenure systems, and their historical development, documented by a government survey conducted in 1867–1869.

⁶ The term "king" was used prior to Islamic influence in Java (ca. the early sixteenth century). Later, the title was changed to "sultan," but it has remained common practice to refer to Javanese rulers as "kings."

⁷ The term "*blandong*" is still used to mean "logger."

⁸ Since then, the time that the farmer is allowed to cultivate ag-

ricultural crops has been extended. In 1984, when field research was conducted, *tumpang sari* land was open for 2–3 years in most sites. This procedure is discussed further below.

⁹ "Western Java" includes the province of West Java and the western part of Central Java.

¹⁰ The New Order is the term used by Suharto to describe his regime.

¹¹ See also Barber (1989) on the rhetoric of development in Indonesian forestry.

¹² For simplicity's sake, we use the term "Javanese" to refer to both Sundanese and Javanese ethnic groups. Sunda is an older term for the area now politically classified as West Java.

¹³ For an excellent analysis of this process in the general administration of Java, see Sutherland (1979).

¹⁴ Ten Indonesians and one American.

¹⁵ Blaikie (1985) calls this attitude "the colonial conception of land management."

¹⁶ Except for three cases, all the forest farmers selected for the pilot program by field foresters were men. See discussion below.

¹⁷ Leonard (1982:28) says these two strategies tend to conflict.

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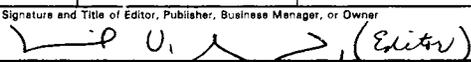
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