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**“Traditions” of Forest Control in Java:
Implications for
Social Forestry and Sustainability**

by

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"Traditions" of Forest Control in Java: Implications for Social Forestry and Sustainability

ABSTRACT

Ideally, social forestry programs and philosophies are intended to involve local people in the management and distribution of forest resources. In practice, the structures of social forestry programs are influenced by political, economic, and cultural factors at national and local levels. When social forestry programs entail the reallocation of access to forest resources on state lands, power relations are particularly influential. As the case of the Java Social Forestry Program illustrates, powerful social forces that have historically shaped the national forest management agency and the social structures of forest-based villages have distorted social forestry ideals. When their traditional management tools are unable to curb deforestation and the social processes causing deforestation, forestry agencies may be persuaded to implement social forestry policies. The natures of changes in forestry programs and the orientation of social forestry are inevitably subject to local negotiation and renegotiation. The outcomes of negotiation, however, are dependent on the structures of power relations both before and after implementation of new policies.

* Professor Peluso teaches at the Yale School of Forestry and Environmental Studies. The research on which this paper is based was carried out in Java, Indonesia and in the Echols Collection at Cornell University from October 1984 through October 1986. Additional data were collected on a short trip to the Netherlands in November 1987 and during an evaluation of the social forestry program I conducted in January 1987. The study was supported by grants from the Ford Foundation and the Cornell Southeast Asia Program. Field research in Indonesia was sponsored by the Center for Environmental Research, Gadjah Mada University, Yogyakarta, Indonesia and the State Forestry Corporation of Java. I am particularly indebted to the latter, without whose cooperation research would have been impossible. Different versions of this paper were presented at the American Sociological Association's 1988 annual meeting and the Association of Asian Studies 1989 annual meeting. I am indebted to Stephen Bunker, Jeffrey Paige, Jesse Ribot, Mark Ritchie, and William Sunderlin for their comments on earlier drafts of this paper. Where I have not heeded their advice, of course, I am responsible for its shortcomings.

INTRODUCTION

Since the mid-1970s, social forestry has been a movement in international forestry development.¹ In the past decade, social forestry has been implemented on both private and state lands in many countries, with mixed results.² One of the objectives of social forestry is to empower local people by involving them in management decisions.³ Despite the increasing international concern with social forestry, however, state structures of traditional forest management have not facilitated the reallocation of power to forest communities through social forestry.

In general, national governments expect state foresters to produce marketable timber and other forest products. Professional foresters manage forests for timber and other products on a large scale for export or domestic luxury wood markets. Foresters in state-owned production forests have traditionally been reluctant to increase local people's access to or control over forest land and other resources unless the people are employed as forest laborers; they do not allow them to act as managers and use the forest for local needs.⁴ Foresters and other government officials have often assumed that reducing people's legal access to the forests would reduce their claims on forest resources. The contrary, however, has more frequently proven true: foresters who have fanatically applied 'scientific' production forestry methods to the exclusion of local people have been confronted by both organized and spontaneous forms of protest by forest-dependent people.⁵ The challenge of social forestry to state foresters, then, is to replace traditional concepts of 'scientific' professional management and state control with the more radical assumption that giving peasants more control is more likely to lead to sustainable forest management.

1. See, e.g., L. Fortmann, *Great Planting Disasters: Pitfalls in Technical Assistance in Forestry*, 1988 (Wint./Spring) *Agric. & Hum. Values* 49–50 (1988). See generally J. Westoby, *The Purpose of Forests: Follies of Development* (1987) (discussing the general evolution of forestry and social forestry policy since World War II).

2. See, e.g., V. Shiva, *Social Forestry—No Solution within the Market*, 2 *Ecologist* 158, 165, 167 (1982); N. Peluso & M. Poffenberger, *Social Forestry in Java: Reorienting the Bureaucracy*, 48 *Hum. Organization* 333–42 (1989); Fortmann, *supra* note 1, at 50, 52–58; Community and Forestry: Continuities in the Sociology of Natural Resources (R. Lee et al. eds, 1990).

3. For definitions of social forestry see, e.g., J. Romm, *Forest Policy and Development Policy*, 2 *J. World Forest Resource Mgmt* (1989); K. Freerk Wiersum, *Development Strategies for Social Forestry: A Conceptual Approach 1* (East-West Center Working Paper Series, 1984). See also Fortmann, *supra* note 1, at 50; and J. Kirschhoffer & E. Mercer, *Putting Social and Community Forestry in Perspective in the Asia Pacific Region* (East-West Center Working Paper Series, 1984) (outlining reasons for the emergence of social forestry in Asia).

4. N. Peluso, *Rich Forests, Poor People: Resource Control and Resistance in Java* 17, 18 (1992).

5. See, e.g., R. Guha, *The Unquiet Woods: Ecological Change and Resistance in the Indian Himalaya* chs. 3, 4, 5, and 7 (1990); E. Hong, *The Natives of Sarawak* ch.7 (1987); Peluso, *supra* note 4, at chs. 4, 6 and 7.

This paper explores Indonesia's effort to implement a social forestry program in Java, and the structural obstacles impeding implementation. Java is an important case study for two reasons. First, Java has a long history of state forest management based on exclusionary policies. Because of the high value of teak for export, the Dutch colonial government began the practice of excluding local people from access to forest land, to certain valuable species of trees, and to opportunities for converting forests to farm use.⁶ Today the Indonesian government owns most of Java's forests and manages them through the Java State Forestry Corporation (SFC).⁷ The SFC manages large areas of forest as plantations of teak, pine, or other species. Many of these plantations were first created by the Dutch.⁸ The environmentalist community has of late applauded teak plantation management in Java, largely because of its 'well-managed rotations' and because the SFC has initiated a social forestry program.⁹ Nonetheless, the SFC's control has been waning in some areas. Although various individuals and groups have evaluated the Java Social Forestry Program,¹⁰ no one has analyzed it in terms of the SFC's use of the program to renegotiate its control over land, trees, and people. Moreover, when the Java Social Forestry Program began as a pilot program in 1986, it received some positive reviews.¹¹ An updated analysis of the program is salient in light of cumulative changes in the program.

6. Peluso, *supra* note 4, at chs. 2, 3 (detailing the history of colonial and precolonial state controls on forests in Java).

7. The exceptions are the tribal forests owned under customary law by the Badui people in West Java, and the few nature reserves managed by the Ministry of Forestry's division of Nature Conservation and Forest Preservation.

8. See J.W.H Cordes, *De Djati-boschen op Java; hunne natuur, verspreiding, gescheidenis en exploitatie 204-68* (1881) (providing a detailed discussion of the history of teak forest exploitation and plantation establishment in Java). See also Peluso, *supra* note 4, at 50-60, 64-67 (summarizing the history of plantation establishment and its 'fit' within Dutch colonial policy).

9. See Rainforest Alliance, *The 'Smart Wood' Certification Program* (1991) (unpublished manuscript, on file with the Rainforest Alliance, New York). See also W. Reid et al., *Bank-rolling Successes: A Portfolio of Sustainable Development Projects* (1988).

10. See, e.g., C. Barber, *State, People and The Environment: The Genesis and Transformation of Social Forestry Policy in New Order Indonesia* (1989) (unpublished Ph.D. dissertation, University of California (Berkeley)); Peluso & Poffenberger, *supra* note 2; W. Sunderlin, *The Resistance of the Poor and the State's Call to Equity: A Perspective Through Social Forestry in Java* (1991) (unpublished manuscript, on file with the author); F. Seymour, *Social Forestry on Public Lands in Indonesia: A Blurring of Ends and Means?* (1990) (unpublished manuscript, on file with the Paul H. Nitze School of Advanced International Studies, Johns Hopkins University).

11. See, e.g., Reid et al., *supra* note 9; and Peluso & Poffenberger, *supra* note 2 (This paper relies on the same data reported by Peluso and Poffenberger for some of its field material. While the latter was generally a favorable reporting on the social forestry program in Java, this article is more critical. This is due partly to the current paper's placement of these issues in a broader political economic perspective vis-à-vis Indonesia's current forest policy and partly because of a change in my interpretation of the program over the past several years. The views expressed in this paper are my own.)

Analysis shows that SFC foresters are caught among the SFC's three, often contradictory, ideologies or mandates. The SFC, mandated to generate revenues, preserves future forest resources, and provides employment, broadly defined here as income-generating opportunities, particularly to forest villages, defined as all those villages enclosed by or adjacent to the state forest lands. Because the Indonesian government has emphasized revenue production, SFC foresters, in applying scientific forestry management practices, also have used coercive tactics to protect production forests from local people. On reforestation lands designated for social forestry under the Java Social Forestry Program, ideologies of rural development and people's participation, which are part of the social forestry philosophy,¹² have led the SFC to adopt a gentler form of forest stewardship. However, as shown below, historical forces embedded in the SFC's structure, and the foresters' custodial and police training, have undermined the participatory aspects of the Java Social Forestry Program.

The remainder of this paper is divided into two major sections, reflecting the two different approaches to forest management operative today in Java. The first section explores whether traditional plantation production of Javanese teak is sustainable, given the nature of the political-economic pressures on its production. To address this question, I discuss the forms of state resource control and then describe the political economy of teak in Java. I argue that social and political circumstances render the current management practices increasingly unsustainable, even on forestlands where social forestry has not yet been applied.

The second section compares traditional forms of state control over forest resources to the structure of the current social forestry program. This section illustrates, first, how social processes work to confound 'ideal types' of structural change, such as those implied by the social forestry philosophy, particularly when change originates outside national or regional boundaries. Second, this section illustrates how powerful institutional factors may try to redefine those changes to fit the traditional mold of state control over forest resources.

SUSTAINABILITY OF TEAK PRODUCTION FROM PLANTATIONS

Social Origins of Teak Production from Plantations

Overextraction of teak began with the restriction of access to the trees under two regimes of primarily Dutch colonial control.¹³ In the eighteenth and early nineteenth centuries, the United East India Company (*Verigdene Oost Indie Compagnie* or VOC), acting under the authority of the

12. See Fortmann, *supra* note 1, at 51.

13. See Peluso, *supra* note 4, at 36–78.

Dutch government, annexed the districts where teak grew best, claiming control of the timber as well as of the local laborers employed to harvest and deliver the timber. By the mid-nineteenth century, the Dutch colonial government controlled all of Java. By the end of that century, the nature of state control had shifted emphasis from controlling rights to cut timber and employ forest laborers to controlling forestland itself.¹⁴ Colonial land use maps defined certain territories as state forest, laying the basis for 'legitimate' state control of forestlands in the future.

Through the late nineteenth and early twentieth centuries, a bureaucracy of professional, 'scientifically' trained foresters (with a strong dose of police training) laid the foundations of state forest management.¹⁵ After independence in 1945, Indonesian foresters assumed the role held by Dutch foresters. Forest laws were translated from Dutch into Indonesian without substantive change.¹⁶ The new Indonesian Forest Service took control of the same forest lands that the colonial forest service had claimed.¹⁷ The Indonesian Forest Service was the institutional predecessor to the SFC. Separate branches of a state teak enterprise, P.N. Perhutani, were formed in Central and East Java in 1961 and were joined in 1972. In 1978, West Java forests were added and a single Perum Perhutani, or State Forestry Corporation, was formed to manage Java's forests.¹⁸

Unlike the Dutch, the new Indonesian foresters faced the need to rehabilitate thousands of hectares of forest destroyed during the Japanese occupation, the subsequent revolution, and its aftermath.¹⁹ Competing pressures existed within the forest service and subsequent forestry agencies in the 1950s and 1960s. Foresters were also competing with forest villagers, and villagers with each other, to maintain or regain control over access to the forest. These pressures have never been resolved, as evidenced by the unsustainable management system currently practiced on most of Java's forest lands.

Figure 1 shows the cumulative effect of over-extraction on forest structure. Forty-seven percent of the politically designated teak forestlands (or 70 percent of the teak forestlands capable of production) is in the early stages of growth, known as 'non-economic' age-classes one through

14. See Peluso, *supra* note 4, at chs. 2, 3 (discussing the transformation of the forms of colonial control on forests in Java).

15. *Id.* at ch. 3.

16. See Bosordonansi Jawa Madura 1927; Bosverordening Jawa Madura 1932; Undang-undang No. 5 Tahun 1967, reprinted in Perum Perhutani, Publication No. 1.199.287 (1984) in Peluso, *supra* note 4, at 97. Cf. Departemen Kehutanan, 2 Sejarah Kehutanan Indonesia 43 (1986) (stating that only those Dutch forest laws which fit the goals of the Indonesian revolution were to be translated into Indonesian). See also Peluso, *supra* note 4, at 98-99 (discussing the attempts to make the new Forest Service more 'people-oriented' than production oriented).

17. See Peluso, *supra* note 4, at 109.

18. *Id.* at 126.

19. *Id.* at 109.

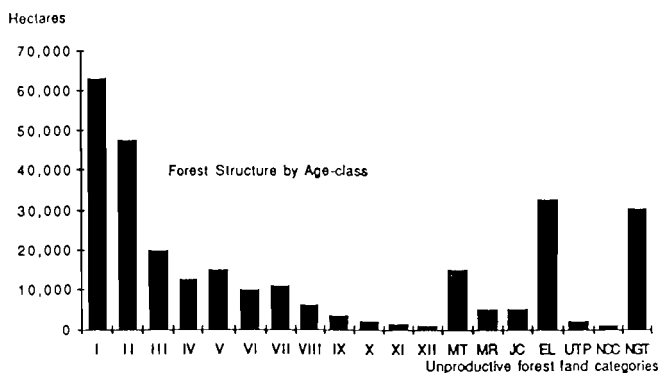


FIGURE 1. Teak Forest Age-classes and Unproductive Forest Land Categories, 1982, Central Java

four. (Trees routinely thinned in managing these forests have some economic value to the SFC but the costs of protecting and harvesting the trees offset their potential value.) The primary sources of income for the contemporary SFC are the Central and East Java forest plantations established by Dutch foresters in the late nineteenth and early twentieth centuries, and natural forests left uncut by the Dutch.²⁰ Tracts that can be clear-cut within the decade are those in later growth stages, represented by age classes eight through twelve.²¹ These tracts comprise only 6.5 percent²² of designated teak forests. The tremendous skew between the area of forestland under young, less productive forest and the area of forestland of high economic value (age-classes five and older) illustrates the unsustainable nature of teak production at current levels of teak extraction (and revenue) over the long-term (Figure 2). Moreover, the area of presently unproductive and non-teak producing teak forest²³ in need of rehabilitation greatly exceeds the area of mature forest to be clear cut within the next 40 years.

20. Interview with a provincial (Unit) official, in Java (Nov. 10, 1984).

21. Age-class, as used here, refers to the management system used for the aggregation of trees by age. Teak, for example, typically had an 80-year rotation period, and is divided into eight, ten-year age classes. Based on this system, every year one-eightieth of the teak forest is slated for harvest, or in every decade one-eighth of the forest is supposed to be cut and reforested. Age-classes 9-12 are either old growth plantations or natural growth. These tracts were not cut sooner because of remote location or other managerial considerations. In some areas, 40-60 year rotations are now planned, but these remain in the minority.

22. Figure includes the 'MR' category, an underproductive rather than unproductive teak production category.

23. As used in Figure 1, the unproductive forest land categories translate as: poor increment (MR), just cut (JC), empty land (EL), unproductive teak land (UTP), not good for clearcutting (NCC), and not good for teak (NGT).

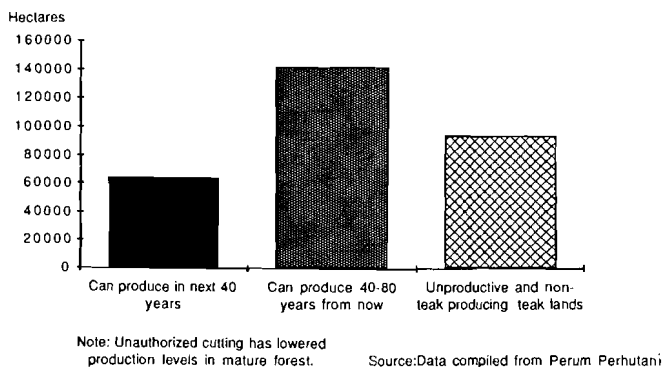


FIGURE 2. Production Schedule of Central Java Teak Forest, 1982

Current patterns of forest extraction are unsustainable for three reasons. First, state foresters overharvest teak to satisfy national political and economic pressures; second, forest farmers keep much of the forest under agriculture to maintain local control of the land; and third, forest thieves operating in regional and local networks reduce stocks available to state producers. These activities have evolved for historical reasons and should not be construed as recent developments.

PRESSURES BY THE STATE ON FORESTERS TO OVERCUT

State Control of Forest Resources

Teak is an important part of the Indonesian political economy. The luxury commodity is sold on domestic and world markets and its production is monopolized by a powerful parastatal. State bureaucracies or parastatal corporations that directly manage natural resources face different policymaking constraints than do resource management bureaucracies that lease exploitation rights to private firms. The state forest agency, like other state enterprises, must earn enough revenues to pay for its operations and provide a surplus for the government's other activities.²⁴ The surplus is invested in the state formally or informally through bribes and payoffs to the bureaucrats.²⁵ Thus, the agency must conserve the forest resource base implicitly for its own survival, as well as explicitly for the benefit of future generations. Similarly, it is in the professional forester's

24. R. Robison, *Indonesia: The Rise of Capital* 116 (1986).

25. See *id.* at 238-42. See also P. Blaikie, *The Political Economy of Soil Erosion in Developing Countries* 83-87 (1985); S. Bunker, *Underdeveloping the Amazon: The Failure of the Modern State* 180-82 (1985).

interest to retain control over forest lands and the distribution of the products of those lands.²⁶

The state forest agency's tasks of producing timber and conserving the forest base are complicated by its associated mandate to develop or improve the welfare of surrounding communities. In such cases, the government expects the forestry agency simultaneously to generate a surplus, to prevent environmental degradation, and to prevent or alleviate local poverty. Depending on the immediacy of each mandate at any given time, the state forestry agency will give one or more of the contradictory functions precedence over the others.²⁷

State foresters in Indonesia, as elsewhere, have traditionally controlled forest laborers and forest villagers by controlling these people's access to forest lands and products, and by adopting state and international forestry ideologies to buttress or legitimize these controls. Traditional forest controls, however, have failed to prevent forest conversion, tree theft, and land degradation. By the 1970s and early 1980s, state foresters were willing to restructure forestry programs to some degree. Nevertheless, the nature of early community forestry programs,²⁸ and the *de facto* negotiations between state foresters and forest-dependent people to redefine forest access in current social forestry programs, indicates that SFC foresters have been reluctant to relinquish their traditional controls over forest management.

The SFC's interpretation of forestry often resembles the Germanic-Prussian tradition of state forest management²⁹ of the early eighteenth century more than contemporary concepts of social forestry. For example, as in the Germanic-Prussian tradition, the colonial and then the independent government in Indonesia controlled access to state forestland, state-monopolized species, and forest employment.³⁰ In parallel types of industrial structuring, first the Dutch colonial forest service regu-

26. See Blaikie, *supra* note 25, at 84–85.

27. See Peluso, *supra* note 4, at 10; Bunker, *supra* note 25, at 105–8.

28. See S. Atmosoedarjo, *Memori Serah Terima Direksi Perum Perhutani 50–73 (1981)* (outlining various versions of the early "Prosperity Approach" programs).

29. The origins of forest management for the king, and later the state, lie in Germany and France. This type of forest management has been characterized by a militaristic style of control of strategic, land-based resources, and a regimented approach to the management of field foresters. See K. Mantel, *History of the International Science of Forestry with Special Consideration of Central Europe: Literature, Training, and Research from the Earliest Beginnings to the Nineteenth Century*, in 1 *Int'l Rev. Forestry Res.* 1, 4 (J. Romberger & P. Mikola eds., 1964). See also L. Fortmann & S. Fairfax, *American Forestry Professionalism in the Third World: Some Preliminary Observations on Effects*, in *Women Creating Wealth: Transforming Economic Development* 105–8 (R. Gallin & A. Spring eds., 1985) (arguing that American schools of forestry, fashioned in the Germanic tradition, educate contemporary foresters all over the world, just as the European schools educated and influenced colonial foresters worldwide). See generally Westoby, *supra* note 1, at 3–70 (discussing the politics, legitimacy, and appropriateness of industrial forestry for development in developing countries).

30. See Peluso, *supra* note 4, at 124, 130–40.

larized teak production in forest plantations³¹ and then the SFC integrated logging with industrial wood products conversion.³² Both transformations virtually ignored the potentially negative socio-political impacts of these 'technological' changes. As a result, plantation 'teak production' today is a politically and socially unsustainable mode of forest management.

THE POLITICAL ECONOMY OF TEAK IN JAVA³³

Political and Economic Pressures to Overharvest Teak

Forestry, Indonesia's second largest income-producing industry after oil, consistently contributed 12 to 14 percent of non-oil foreign exchange earnings in Indonesia through the early 1980s.³⁴ However, only 6.5 percent of Indonesia's timber comes from Java, and Java teak provides only some 2.5 percent of forestry's foreign exchange earnings.³⁵ Nonetheless, Java is one of the world's three largest teak producers.³⁶ Teak forest officially occupies only one-third of Java's three million hectares of state forestland³⁷ and one-half of Java's production forest, yet teak accounts for 85 percent of the SFC's total income.³⁸ The SFC supports itself and pays development taxes with revenues from teak.³⁹ To ensure profits, the SFC has a monopoly on the domestic harvesting, transport, and marketing of raw teak and controls most forest village development programs and all forest labor.⁴⁰ In essence, the SFC is a 'state within a state' like Pertamina, the Indonesian oil corporation.⁴¹

31. *Id.* at ch. 3.

32. *Id.* at 140.

33. This section draws heavily from Peluso, *supra* note 4, at 141-49.

34. Government of Indonesia-International Institute of Environment and Development, III Report on Phase I of "A Review of Policies Affecting the Sustainable Development of Forest Lands in Indonesia" 111 (1985); J. Tarrant et al., *Natural Resources and Environmental Management in Indonesia* 1-20 (1987).

35. Government of Indonesia-International Institute of Environment and Development, *supra* note 34, at 95; Tarrant, *supra* note 34, at 1-20.

36. Burma and Thailand are the others in the top three.

37. Forestland is a political, not a biological, category. Some 25 percent (10 percent publicly) of Java's forest lands are recognized as 'empty land'; for Central Java, some 31 percent of the teak forest is either unproductive entirely or does not produce teak. See H. Prastowo, *Peningkatan Manfaat Hutan dan Pembangunan Masyarakat Lingkungan* 6 (1983) (unpublished manuscript, on file with Perum Perhutani Unit I, Semarang).

38. Persatuan Sarjana Kehutanan Indonesia Cabang Jawa Tengah, *Suatu Tinjauan Tentang Daur Jati di Jawa*, in *Proceedings Seminar Daur Jati* 39 (Persatuan Sarjana Kehutanan Indonesia eds., 1985).

39. See Perum Perhutani, *Perum Perhutani 1981-85*, at 14-16 (1985) (presenting illustrations of the percentage and absolute amounts of taxes paid to the state by the State Forestry Corporation).

40. See Peluso, *supra* note 4, at 135.

41. See Robison, *supra* note 24, at 244.

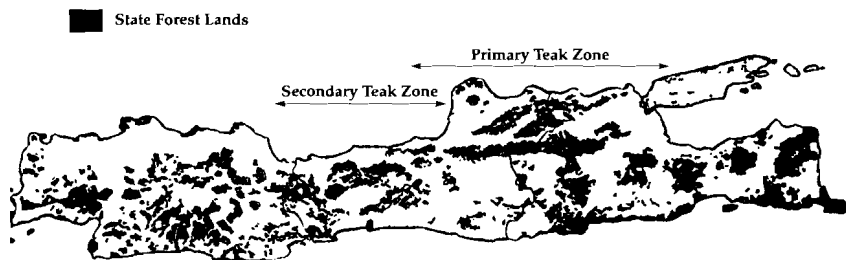


FIGURE 3. Forested Area of Java

Secondary teak zone includes some area under teak (shaded areas), but of lower commercial value to the State Forestry Corporation. White areas surrounding both primary and secondary teak zones were teak forest before arrival of the United States East India Company.

In many parts of the teak forest, teak trees are more valuable than the land they grow on, because the soils supporting the best teak forest are ill-suited to intensive agriculture.⁴² Teak thrives on sites characterized by well-drained soils containing some calcium (lime), little rain, and a distinct dry season lasting at least three months.⁴³ In the limestone hills of Central and East Java, the thin soils and porous bedrock are notoriously poor for agriculture and support few trees other than teak. Little water is available through irrigation or natural sources. Agricultural land in this zone is generally worth less than on the alluvial plains and volcanic hill-sides of Java.

Teak is highly valued, both domestically and on export markets. It is expensive, whether in the form of raw logs or sawn wood, and it is consistently subject to theft. On a volume basis, on the official domestic market teak logs sold for approximately US \$68 per m³ in 1985 and sawn teak sold for approximately US \$97.⁴⁴ On the export market, teak lumber sold for an average of US \$574 per m³ in 1984.⁴⁵ Given an average wastage in the sawmilling process of approximately sixty percent,⁴⁶ the value of the raw logs sawn for export was approximately US \$225 per m³. On the black market, average prices are somewhat lower because the wood is generally

42. *But see* Government of Indonesia-International Institute of Environment and Development, *supra* note 34, at 36 ("It is estimated that at least 50 percent of the teak and other forests are situated on land which is highly suitable for agriculture." *Id.* The report's subsequent discussion of this issue does not clarify what percent of the teak forest is on "land which is highly suitable for agriculture." It could be argued that the best forestland for agriculture is that on the lower slopes of the island's many volcanos and where forest occupies alluvial plains. An estimate of this area is not possible given available data.)

43. C. van Steenis et al., *Flora: Untuk Sekolah di Indonesia* 360, 361 (Moeso Surjowinoto et al. trans., 3d ed. 1981).

44. Perum Perhutani, *Buku Saku Statistik Tahun 1982-1986* at 42 (1987).

45. Perum Perhutani, *I Proceeding Rapat Paripurna Perum Perhutani Tahun 1984: Materi Rapat* 17 (1985).

46. *Id.* at 30.

illegally obtained and thus smaller in diameter to facilitate easy transport.⁴⁷ Black market teak is generally converted into lumber manually, further increasing wastage, and painted or stored underground for several months.⁴⁸

Foresters claim that teak theft from state plantations is a problem common to virtually every forest district. Few, if any, undisturbed hectares of teak forest remain.⁴⁹ On a per hectare basis, mature trees in undisturbed forest on high quality sites, if sold as logs on the domestic market, might be valued at US \$9,000 per hectare.⁵⁰ An upper-echelon SFC official estimated that the average value per hectare in Central Java's teak forest is one-quarter of its potential value; in East Java, he estimated that the average value per hectare is one-fifth its potential (potential being determined by scientifically planned thinning and harvesting).⁵¹ Foresters acknowledge that the thinnings are now done (unscientifically) by local people. Where many trees have been stolen, foresters thin fewer trees.⁵² In addition, mature teak is becoming increasingly rare because older plantation trees are being removed without being replaced, losses due to war damages have not been recovered for reasons which are discussed below, and reforestation efforts have failed.⁵³

From 1980 to 1983, Indonesia began to phase in a ban on log exports in order to stimulate domestic industry. Today, all wood exports must be processed into sawn timber, plywood, veneer, or other conversions.⁵⁴ The purposes of the ban on raw log exports were to correct rapid deforestation problems, increase employment, and add value to forest products prior to export. These problems had primarily afflicted forestry in the Outer Islands (i.e., islands outside the Java-Bali-Madura group, such as Kalimantan, Sumatra, and Irian Jaya).⁵⁵

47. Interviews with forest police and forest district managers, in Java (Sept. 1985; Jan.-Feb. 1986) (notes on file with the author).

48. Interviews with forest villagers and forest police, in Java (May-Sept. 1985 and Jan.-Feb. 1986) (notes on file with the author).

49. Interviews with H. Simon, in East Java (Jan. 1986) and with M. Bratamiharja, in Jakarta (May 1985) (notes on file with the author).

50. Calculated from H. Simon, *Analisa "Interrelationship" Antara Pembangunan Kehutanan Dengan Pembangunan Masyarakat Desa* 83 (1983) (unpublished Masters Thesis, Gadjah Mada University (Yogyakarta, Indonesia)). Divided over 80 years, of course, the value per hectare is far less.

51. Interview with M. Bratamihardja, in Java (May 15, 1985) (notes on file with the author).

52. Interviews with forest district managers, in Java (Apr.-May 1985) (notes on file with the author).

53. See N. Peluso, *Report on Social Forestry Field Research in West and Central Java* 20-22 (1986). See generally Tim Peneliti Social Forestry Indonesia, *Summary Report Studi Kasus Social Forestry Di Jawa Tengah, Jawa Barat dan Tana Toraja* 9 (1985); Peluso, *supra* note 4, at chs. 5, 7.

54. Tarrant et al., *supra* note 34, at 7.

55. See generally R. Repetto, *The Forest for the Trees?: Government Policies and the Misuse of Forest Resources* 43-51 (1988).

The ban on raw log exports has affected the SFC's production and marketing strategies for teak.⁵⁶ Only the best quality timber can be used for export products; however, the quantity of high quality teak is limited.⁵⁷ The SFC began to cut back on exporting raw logs as early as 1974.⁵⁸ Most Java teak has been sold domestically because of the high domestic demand and the high cost of producing wood products of export quality.⁵⁹ However, although less than eight percent of the *volume* cut was processed and exported by the SFC in 1984, these exports contributed some 24 percent of the SFC's *income*.⁶⁰

Although in the medium or long-term the SFC can increase its profits by exporting finished teak products, teak processing operations benefit few of the millions of people living in villages adjacent to the teak forest. Forest policy precludes private conversion of teak into furniture or boards within nine miles of the forest borders and never in villages enclosed by the forest boundaries. This policy is aimed at discouraging unauthorized forest cutting and has been in effect since the establishment of the SFC in its most recent institutional form (1972). As a result, in forest-edge villages, private (non-licensed) sawmills or wood production only exist as clandestine operations that do not benefit forest villagers. Further, much teak furniture for the domestic luxury market is produced by private entrepreneurs in cities, such as Surakarta, Semarang, Jepara, and Surabaya, which border the teak zone but are far from the source regions and thus rarely provide employment for forest villagers.

Those employed by the SFC to log teak earn relatively good wages; however, opportunities are limited and seasonal.⁶¹ Logging activities are rotated around a district from block to block, thus logging jobs are rarely available to people in a single village in consecutive years. Logging in a teak production block (16 to 24 hectares) generally proceeds for one or two years, employing temporary labor from nearby and distant villages primarily during the dry season. The SFC does not retain any loggers on a permanent basis. A rough calculation shows employment opportunities in one district to be about 339 per year, compared to approximately 131,000 men aged 15 to 50 in the labor force in that area.⁶² Some of the poorest, forest-dependent families follow the logging trail to reforestation sites near new logging blocks. They construct dwellings of teak leaves and bark or apply to occupy tiny wooden houses constructed by the SFC as

56. Interviews with State Forestry Corporation officials, in Java (Apr.-May 1985) (notes on file with the author).

57. See, e.g., Perum Perhutani *supra* note 44, at 8.

58. Atmosoedarjo, *supra* note 28, at 73.

59. Interview with M. Bratamihardja, in Jakarta (May 15, 1985) (notes on file with the author).

60. Calculated from Perum Perhutani, *supra* note 44, at 37-38, 90.

61. Interviews in Cepu Forest District (June 1985) (notes on file with the author).

62. See Peluso, *supra* note 4, at 210-11.

part of their forest village welfare programs.⁶³ Other men follow logging operations as work moves to new blocks. These seasonal or shorter-term laborers migrate from their villages for a few weeks at a time. Sometimes they bring their own rice, but usually they purchase food at local food-stalls. Sometimes they buy rice from the forest foremen and bear their own subsistence and migration costs.⁶⁴ As the production of teak becomes more 'efficient' for the SFC, forest laborers bear more of the costs.

Except for being allowed to gather small-diameter branches from felled teak trees, forest villagers who are not employed in cutting or hauling timber generally do not benefit from logging activities. Logging indirectly benefits those who can follow the logging, such as the few foodstall operators who set up shop in the forest, traders who sell snacks there daily, and itinerant gamblers and prostitutes.

Indonesia's recent focus on the development of non-oil resources has caused the SFC to aggressively pursue a target of four percent annual real growth.⁶⁵ Normally, a teak forest or plantation is managed on an 80-year rotation, that is, 1/80 of a teak forest district must be logged annually. The SFC determines wood quotas based on expected incremental tree growth. District managers must meet the quotas set down in ten, five, or two year plans. Supplementary logging tracts are often added to the detailed one-year plans to compensate for losses due to theft or damage to standing stock caused by illegal grazing, forest fires, or vandalism. The additional cuts come from forests that would not normally be logged that year.⁶⁶

Both field and administrative foresters talk about the difficulties of meeting quotas from certain tracts and the necessity of adding supplemental cuts year after year. In speaking of the sustainability of a management plan based on rotational planting and harvest, there can be no such thing as a 'supplemental' tract in a forest. Cutting into a future tract means depleting future stocks and reducing future income. In some districts where trees older than 80 years remain, local foresters have somewhat more leeway for supplemental cutting; nevertheless, a glance at Figure 1 will show that the proportion of trees in these mature classes compared to

63. These 30 m² houses, called *magersaren* and translated by the SFC as 'basecamps', were constructed near selected reforestation sites in clusters of 12. When reforestation activities were finished in a particular block (after a maximum time of five years), the wooden walls were broken down for reconstruction elsewhere. As of 1986, the SFC began phasing out *magersarens*. Whereas the occupants were initially expected to protect the reforestation site and the surrounding forest, the sites were viewed later as security risks.

64. On rare occasions, there is a shortage of logging labor in a district and a forest district manager will pay the transportation costs of laborers from another district.

65. Perum Perhutani, *supra* note 44, at 7.

66. Interviews with foresters and field observations (Nov. 1984–Sept. 1985) (notes on file with the author).

the volume in all classes is quite small and that over-mature tracts are not evenly distributed throughout the teak districts.

To meet quotas, mechanized means of extraction, usually chainsaws, are used in some teak districts to accelerate production, even though rural labor is available and site conditions are suited to manual logging.⁶⁷ Manual logging is accomplished by pairs of men using nonmechanized saws or by individuals using axes. Because fewer laborers are required to operate chainsaws than hand saws, the labor foreman's task of supervision is easier. The practice, however, has a negative impact on labor.⁶⁸ Ironically, SFC officials in Jakarta and in several forest districts have stated that the SFC has been encouraged by the government to use labor-intensive methods of exploitation where labor is in surplus, because industry, the service sector, and agriculture cannot absorb all of the island's growing labor force. In practice, the SFC justifies using mechanized logging techniques based on the foresters' concerns about wood theft by loggers and many foresters' contentions that labor is scarce.⁶⁹

De Facto Forest Conversion to Agriculture

The different types of land and resource management that occur during the different stages in the 60- to 80-year rotation cycles of teak plantations also affect the social and political sustainability of current forest management. Reforestation is by the *taungya* system, which a Dutch forester introduced to Java in the latter years of the nineteenth century.⁷⁰ In exchange for the workers' labor in reforestation (including brush-clearing, planting, weeding, maintenance, and the application of any inputs to their crops and thus to the trees), the SFC grants laborers access to a forest plot to grow agricultural crops for one to three years.⁷¹

Taungya agroforestry is dominated by its agricultural components for the first one to three years after logging and then by its silvicultural components for the long-term (up to 78 years or more with teak). During the first period, the forest farmer largely controls the land and his or her daily activities determine the health of the trees. After the agricultural portion of the taungya period, *de jure* control returns to the foresters. Because of their residential proximity to the forest, however, villagers retain a great deal of *de facto* control over the trees, particularly over whether the trees successfully mature. Because of the density of human settlement in villages scattered throughout the teak forest, most taungya farmers cannot move into freshly logged blocks after successfully reforest-

67. Interview with H. Simon (Nov. 25, 1984) (notes on file with the author).

68. Simon, *supra* note 50, at 91-93.

69. *Id.* at 68.

70. C. Lugt, *Het Boschbeheer in Nederlandsche Indie* 44 (1933); Peluso, *supra* note 4.

71. Interviews and observations, in Central Java (Nov. 1984-Sept. 1985) (notes on file with the author).

ing others. Thus, to retain farmland, they must keep the land in the first stages of reforestation, that is, prevent successful reforestation.⁷²

In taungya agroforestry, much of the forest land categorized as age-class one is planted in a mixture of agricultural and tree crops, while land categorized as age-classes two-twelve is usually dominated by teak monocultures. The large amount of land in age-class one, shown in Figure 1,⁷³ is a crude indicator of repeated reforestation failures. A 'normal' teak forest structure should be evenly divided among age-classes. Some of the skewed distribution of teak across the 10-year age-classes in an 80-year rotation is a result of damage to the forest during wars and subsequent political upheaval, as mentioned above. Most of the skew is due to reforestation efforts that have been purposely undermined by forest villagers. Like the state, the peasants' goal has been to retain control over forest land and their own labor. Peasants may keep forest plantations perpetually in agriculture by clipping tree roots, pulling up seedlings, or burning down the trees. The result of this conflict over control is that reforestation laborers or forest farmers have in effect taken control of nine percent of state forest lands in Central Java.⁷⁴

Village social systems also influence forest-based relations of production. Research in 1985 showed that the organization of labor on taungya lands resembled that of adjacent agricultural lands. In many forest villages, including SFC community development villages, sharecropping, selling access rights to land to be reforested, and selling of taungya agricultural crops in advance (*ijon*) were common.⁷⁵ In these ways, powerful villagers who informally control the distribution of reforestation land and forest-produced agricultural products intervene in the official structure of control between foresters and reforestation laborers. These patterns of controlling access to forest land have implications not only for the nature of state forest management, but also for the future roles of the field foresters who have traditionally controlled access to the forests. Thus, village internal politics and state-peasant relations are significantly affecting the sustainability of Java's forests and forest management system.

72. For a more detailed discussion of this process in a village in Java, see Peluso, *supra* note 4, at 192–200, 146–47.

73. Reprinted with permission from the University of California Press.

74. See also Peluso, *supra* note 4, at 146. If forest land is kept under taungya for two–three years, and 27–30 percent of productive teak land is in age-class one, then approximately nine percent of productive teak forest land is controlled by reforestation laborers.

75. See, e.g., Tim Peneliti Social Forestry Indonesia, *supra* note 53, at 5; N. Peluso, *Forest and People in Kalinusu Central Java or "Border Issues": A Social Forestry Case Study 9* (1985). See also Peluso, *supra* note 4, at 173–77, 199, 200.

"Timber Theft"

Timber theft, like the practices of overharvesting and interfering with reforestation, threatens sustainable management. 'Timber theft' includes a variety of diverse activities. Forest criminals include individuals who cut young trees for fuelwood, 'bandit' groups who work together out of a village, and whole villages organized to feed wood into the black market. Also included in this group are big-time black marketeers who supply small-to medium-diameter logs to furniture makers and small industries. These latter marketeers supply the teak furniture industry with an estimated 40 to 50 percent of their raw wood needs.⁷⁶

Teak theft is a form of resistance that has long been a crucial element of many villagers' survival strategies. Today, however, much stolen teak finds its way into underground networks headed by criminals who are not involved for the sake of household subsistence. The nature and intentions of various actors are discussed elsewhere and go beyond the scope of the present discussion.⁷⁷ Whatever the motive, however, teak appropriation undermines state controls and eventually degrades the forest. Patches of forestland where trees have been stolen may regenerate, but after the remaining trees are logged, long-term exposure of the forest floor increases soil damage and reduces the potential productivity of teak on that land. On sites where removal of trees by theft or soil compaction from cattle grazing on reforestation tracts are recurrent problems, either gnarly, deformed teak trees characterize the regrowth, the vegetative cover has been removed, or the bedrock is exposed.⁷⁸ Though the contemporary political climate generally precludes overt opposition to state forest policies, the evidence of village resistance to state control is reflected in the figures on teak theft and forest damage. As shown by Table 1, high levels of local resistance have characterized forest use since at least the turn of the twentieth century.⁷⁹

While consistent accuracy of reporting of forest crimes is questionable, crimes may be under-reported given the political implications of timber theft. Note the progressive rise in the number of forest crimes recorded during the Depression years (1929–1939) and the continued high rates of theft through the 1960s, 1970s, and 1980s. A sharp drop was noted in 1966, the year when many forest squatters and laborers organized by communist groups were killed in the agrarian war.⁸⁰ In 1968, after the

76. Interviews with foresters, in Java (Oct.–Dec. 1984).

77. See Peluso, *supra* note 4, at 147–49 & ch. 7.

78. Interviews with field foresters, in Central Java (May–June 1985) (notes on file with author).

79. See also Peluso, *supra* note 4, at 148.

80. *Id.* at 147. See generally D. Hindley, *The Communist Party of Indonesia* (1967); R. Mortimer, *The Indonesian Communist Party and Land Reform* (1972) (discussing the agrarian war in Java).

government formed smaller forest districts in some forests, the government also tightened security measures, but the effectiveness of these measures did not last. The 1969 and 1970 figures are for Central Java only. Incidents of theft in 1984 dropped substantially, which the SFC credits to the acceleration of repressive swat-team operations. However, by 1986, the rate of theft had risen again.⁸¹

Overt opposition to the SFC surfaced more violently, albeit sporadically, between 1987 and 1989. Field foresters were killed by angry groups of villagers using agricultural implements or machete-like knives called *parang*.⁸² Such violent anti-government action has been rare in rural Java since the New Order regime took power in 1967; it has been rarer still where forest and civil control, through diverse arms of the state, are as powerful as in the forest districts. Despite the differences between the colonial and contemporary contexts of forest management (see below), the violence against foresters indicates that rural people still view the SFC's controls over the forest as a threat to their survival. The conflicting interests of foresters and forest villagers have been exacerbated by the use of confrontational tactics by the forest police.⁸³

CONTEMPORARY TRADITIONS OF ACCESS CONTROL

In some ways, the SFC differs significantly from its colonial predecessors. Among foresters, an ideology of pervasive nationalism has combined with the broader, traditional forestry mandate to preserve and protect state forests for production and conservation. In the past the Dutch (and a few German advisors) served as managers, while Javanese employees were forest police and labor supervisors called *boschgangers*. Today, all forest managers are Indonesian. During the colonial period and most of the Sukarno period,⁸⁴ Forestry was a department within the Ministry of Agriculture and the government administered the Forest Service's budget.⁸⁵ In the early 1980s, Forestry was elevated to ministry status. Today, the SFC is a non-stock public state enterprise mandated by statute to contribute revenues to the state's development budget.⁸⁶

81. Peluso, *supra* note 4, at 147.

82. Interviews with foresters, in Java (Jan. 1987 and Aug. 1989) (notes on file with the author). See also, 5 Suara Merdeka, 25 March 1986.

83. See Barber, *supra* note 10, at 228; Peluso, *supra* note 4, at 132–35.

84. In 1964, the Directorate General of Forestry was elevated to Ministerial status for a brief period. In the initial years of Suharto's government, it was 'demoted' to a directorate general. In 1981, it again became a ministry.

85. See Peluso, *supra* note 4, at 66 (explaining that from approximately 1930 to 1938, the colonial foresters organized the teak forests under an autonomous "Teak Enterprise" (*Djati-bedrijf*)).

86. Peluso, *supra* note 4, at 125.

TABLE 1. Number of Recorded Forest “Crimes,” 1918–1984^a

Year	Total cases (all forests) ^b	Tree theft only (cases/trees) ^c	No. of hectares damaged ^d
1918	27,218	18,910	n/a
1923	17,154	12,372	n/a
1924	16,248	12,178	n/a
1925	29,028	14,244	n/a
1926	26,407	12,854	n/a
1927	26,372	18,093	n/a
1928	74,928	11,892	n/a
1929	28,255	n/a	n/a
1930	30,782	n/a	n/a
1931	37,571	n/a	n/a
1932	41,627	n/a	n/a
1933	45,507	n/a	n/a
1934	52,388	n/a	n/a
1935	59,830	43,130	n/a
1936	58,393	41,009	n/a
1937	54,469	38,779 ^e	n/a
1938	52,528	37,189 ^e	n/a
1939	55,362	39,087 ^e	n/a
1962	41,102	263,699	12,945
1963	49,147	165,662	25,433
1964	35,200	177,257	13,069
1965	36,809	221,470	24,844
1966	21,311	109,258	6,663
1967	28,447	157,837	38,865
1968	22,170	97,553	3,851
1969	10,596	n/a	12,682
1970	14,641	41,826	7,741

TABLE 1, continued

Year	Total cases (all forests) ^b	Tree theft only (cases/trees) ^c	No. of hectares damaged ^d
1974	n/a	153,838	9,461
1975	n/a	142,622	9,733
1976	n/a	132,738	44,908
1977	n/a	127,806	43,269
1978 ^f	n/a	156,806	6,225
1979	n/a	203,702	28,451
1980 ^g	n/a	196,245	733
1981	n/a	179,030	15,927
1982	n/a	245,217	70,428
1983	n/a	130,788	41,721
1984	n/a	64,727	7,700
1985	n/a	72,816	10,496
1986	n/a	126,419	6,679
1987 ^g	n/a	70,428	899

a. Table published in N. Peluso, *Rich Forests, Poor People: Resource Control and Resistance in the Forests of Java* (1992).

b. All types of crimes are combined here, including tree theft, damage to standing stock, illegal grazing, charcoal manufacture and transport, wood transport without a permit, forest conversion to agriculture, and collection of forest stones.

c. Figures from 1918 to 1932 indicate number of cases reported; from 1962 on, figures indicate number of trees taken.

d. Damages include forest fires, unauthorized grazing and forest conversion to agriculture. They do not include damages by natural disasters such as uprooting of trees during typhoons, etc.

e. Some early reports gave separate figures for teak and non-teak trees or cases. Most crimes were recorded for teak forests although in the years that disaggregated statistics were available, the crimes in non-teak forest accounted for as much as 25 percent of the total.

f. Prior to 1978, figures do not include West Java.

g. Figures for 1980 and 1987 through third quarter only.

SOURCES

Verslagen van den dienst van het Boschwezen in Nederlandsche-Indie over het jaar 1921–22, 1927, 1929, 1930, 1931, 1933–36, 1937, 1938–39, Batavia: Landsdrukkerij; Direktorat Djendral Kehutanan, *Perusahaan Kehutanan Negara, Perhutani, Statistik 1968*, Djakarta; Direski Perhutani Jateng, *Laporan Tahunan 1970*, Semarang; Perhutani, 1970; Perum Perhutani, *Memori Serah Terima Direksi Perum Perhutani*, Jakarta: Perum Perhutani, 1981; Perum Perhutani, *Proceeding Rapat Paripurna Perum Perhutani tahun 1984, Buku 1: Materi Rapat*, Jakarta: Perum Perhutani, 1985. *Memori Serah Terima Direksi Perum Perhutani, 1981–1987*, Jakarta: Perum Perhutani, 1987.

Similarly, the political economy of teak today differs significantly from that of prior periods. Raw logs now must be processed domestically prior to export. The teak industry of Java has become integrated and the relative quantity of teak exported has decreased.⁸⁷ The biophysical condition of the forest also differs from its condition under the Dutch. The SFC inherited one fourth of Java's land area from the Dutch colonial foresters and Sukarno's Forest Service. These lands and the trees had been damaged during a sequence of political upheavals, including the Japanese occupation, the Indonesian Revolution, the Darul Islam uprising, Communist party unilateral actions, military tactics against political opponents, and individual 'attacks' on forest resources for subsistence. While the government manages most of the forest as plantations, large areas have still not been rehabilitated.

Despite the significant changes just discussed, the contemporary SFC and its foresters still strongly resemble their colonial predecessors. The SFC, like the colonial forest agency, is comprised of technical forestry specialists, forest police, and administrators. As mentioned earlier, the SFC and its historic counterparts are primarily concerned with the production of teak and other forest products. The SFC, like the colonial forest service, is a business guided by principles of capitalist production for the sake of the state.

In addition to the government's strong emphasis on revenues, the SFC, like its predecessor, has been mandated to use ecologically sound methods to produce forest products and protecting forests, known as scientific forest management, to market forest products, to allocate forest labor, and to sponsor forest village development activities.⁸⁸ But also like their colonial counterparts, contemporary foresters who implement forest policy disdain local people's ecological knowledge and paternalistically control all forestry and development activities. Both colonial and contemporary foresters have claimed that indigenous forest users are backward and ignorant of 'the meaning and function of the forest.' They disregard the political sophistication of forest-dwellers who recognize the nature of the power struggle over forest control taking place. Foresters do not allow the local people to participate in decisionmaking. Thus, structurally, the relationship between contemporary foresters and forest villagers is in many ways similar to their relationship during the colonial period.⁸⁹

The state's mandates to promote development and provide for social welfare presently have the potential to alter those forestry practices which adversely affect forest villagers. Unfortunately, in their implemen-

87. However, increasing exports of processed teak is currently a goal of forest planning.

88. Peluso, *supra* note 4, at 125; Barber, *supra* note 10, at 155-56.

89. Interviews with numerous contemporary foresters, in Java; and several former colonial foresters, in the Netherlands (Oct. 1984 - Jan. 1986) (notes on file with the author.)

tation the SFC's mandates are themselves contradictory. The first, often dominant, component of the corporation's mandate, territorial development, may easily confound the second, development of the people:

- a. As a state corporation, the SFC is required to manage the forest using the most efficient forestry techniques in order to achieve optimal productivity, emphasizing the efficiency of production, industry, and marketing of forest products.
- b. [To provide] service to the public interest which is manifested in the conduct of territorial control duties which include the tasks of territorial development and the development of the people.⁹⁰

These two clauses become contradictory when the government interprets the 'public interest' in (b) as balancing the needs of the 'greater good' against the needs of local communities and uses efficient forest management techniques, as required in (a) to further its own interpretation of 'greater good' and 'public interest.' The Indonesian government has consistently held that the needs of society at large are best met through powerful, centralized management. The SFC, in particular, has not emphasized local well-being or 'development of forest people,' partly because local development requires diffusion or decentralization of management. Decentralization would require the SFC to release some of the controls over the forests, which it has amassed historically.

Several factors have indirectly led the SFC to soften its own resistance to more 'social' approaches to forest management since the mid-1980s. First, the peasants' resistance to SFC control threatens the future productivity of the forests. Second, the Indonesian debt burden has increased,⁹¹ and consequently the government has become more susceptible to outside influences on internal policy. Because the present regime has had a substantial ideological and financial commitment to development, revenue losses due to declining oil prices have forced greater dependence on outside sources to fund development. These outside sources have brought with them a new international predilection for 'social forestry.' This preference has influenced official policy and caused the SFC to rethink its forest management and socio-economic development mandates.⁹²

90. D. Darmosoehardjo, *Penguasaan Teritorial oleh Jajaran Perum Perhutani*. PHT 50—Seri Umum 23 at 1 (1986). See also Peluso, *supra* note 4, at 152; Barber, *supra* note 10 (providing more extensive analyses of the origins of these mandates and their manifestation in the Java social forestry program).

91. Tarrant et al., *supra* note 34, at 2. See also Barber, *supra* note 10, at 238.

92. See Peluso, *supra* note 4, at ch. 4. See also M. Poffenberger, *Keepers of the Forest: Land Management Alternatives for Southeast Asia* (1990) (comparing the case of Java to other Indonesian cases and to Southeast Asian Social Forestry programs in general).

CONTROLLING SOCIAL FORESTRY

Social forestry did not emerge on the Indonesian forestry scene in a vacuum; it was preceded by 'community forestry' and what the Indonesian foresters called "the Prosperity Approach."⁹³ Both of these approaches were meant to increase the income farmers could earn from state-controlled forest lands and from their own lands. "Forests for People," which emphasized the importance of using forests to serve the needs of rural people worldwide, was the theme of the Eighth World Forestry Congress, held in 1978 in Jakarta. A great deal of discussion at the congress centered around the importance of forests in meeting rural people's basic needs for fuel, fodder, food, building materials, fiber, and income producing non-timber products.⁹⁴

Until 1984, the SFC had implemented forest community development projects largely on its own.⁹⁵ In the most recent of these programs, called the PMDH,⁹⁶ the SFC annually invested some five percent of the corporation's net earnings in its own projects.⁹⁷ Despite these rather substantial financial supports, the projects rarely went beyond the pilot project stage in most villages, and most failed to either alleviate poverty or ameliorate degraded forest lands as had been intended. Some failures were clearly attributable to the isolation of projects. Some failures were due to structural flaws which prevented the projects from addressing both short and long-term needs of the village poor.⁹⁸ More importantly, the projects failed to change the nature of SFC control and the terms of forest access for local people.

The 'problem,' as Indonesian foresters see it, with implementing 'true' social forestry is involving local people in management decision-making. The involvement of local people in forest management decisions goes against the grain of traditional, top-down forestry practiced by pro-

93. See, e.g., S. Atmosoedarjo, *The Community Development Program in the Forests of Central and East Java, An Evaluation of its Merits and Prospects* (1977) (unpublished manuscript, on file with the State Forestry Corporation, Jakarta). See also Barber, *supra* note 10, at 229-37 (explaining in detail the origins of the Prosperity Approach and its relations to subsequent community or social forestry programs in Indonesia).

94. See, e.g., Westoby, *supra* note 1, at 3-70 (discussing the history of 'forestry for development' approaches, particularly within the United Nations Food and Agriculture Organization).

95. The Prosperity Approach, under the SFC's first president director, lasted from 1973 through 1981, while the Forest Community Development Program (*Pembangunan Masyarakat Desa Hutan* or PMDH) began in 1982. The current social forestry program was subsumed under the Forest Community Development Program in 1985. See Hartono Wirjodarmodjo, *Perum Perhutani, Memori Serah Terima Direksi Perum Perhutani 1981-1987* at 59-60 (1987). See generally Peluso & Poffenberger, *supra* note 2, at 333-43; Barber, *supra* note 10, at 224-37 (discussing the early history of the social forestry program in Java).

96. PMDH translates as "Forest Village Community Development."

97. Interview with M. Bratamihardja, in Jakarta (Sept. 25, 1985) (notes on file with the author).

98. Peluso & Poffenberger, *supra* note 2, at 335.

professionals.⁹⁹ To include local people in decisionmaking, the SFC would have to change not only the rules for forest access and use, but also its own view of the forest villagers' capacity to participate in forest management. Changing the patterns of people's uses of the forest, e.g., by allowing them to plant fruit trees or medicinal plants, requires allowing them greater access and thus control. Fruit trees require longer production periods. To implement this type of social forestry program, the SFC would have to adjust its use of large-scale, single-species production of timber and other forest products for the benefit of the state and the state's narrowly defined 'public interest.'

Like foresters in general, the SFC has resisted the social forestry philosophy, although the SFC rarely reveals its resistance openly. In contemporary social forestry programs, sponsored jointly by the Ford Foundation and the SFC, the SFC has relinquished some control and given forest farmers access to the forest in the form of tree and crop usufruct rights. Officially allowing taungya farmers to plant fruit trees on state forest lands and to retain access to the products of those trees throughout the life of the trees is an unprecedented policy change in nearly 200 years of state forestry in Java. Forest farmers may now plant horticultural crops on forest lands, retain longer tenure over the produce of fruit and fodder trees, and retain access for planting different crops under agroforestry regimes.¹⁰⁰ In general, however, the SFC has relinquished decisionmaking control on paper only and in many sites has implemented the new program merely as a more humane form of the taungya system.

The SFC began to implement the current social forestry program in 1986 after a year of diagnostic research on the forestry-related problems faced by forest villagers.¹⁰¹ Social forestry farmers have greater incentives to participate in the program because the rights of land and tree access that they gain are extended over longer periods. For example, under the original taungya system, as discussed, farmers used the land for two to three years. Ideally, under the new program, the farmers can lease forest land for two to five years, depending on the site, and if organized in groups called KTH (*Kelompok Tani Hutan*, literally, "Forest Farmers' Groups"), they can extend their access rights for 15 to 60 years. The length of extended access depends on the rotation cycle of the principal forest species, such as teak, mahogany, or pine. Continued access to forest land also depends on the farmers' willingness to adapt annual and perennial crops to the changing light and space regimes determined by the primary

99. See Fortmann & Fairfax, *supra* note 29, at 106; Fortmann, *supra* note 1, at 49–50.

100. See Peluso & Poffenberger, *supra* note 2; Barber, *supra* note 10; Seymour, *supra* note 10 (all discussing various parts of the initial social forestry project, the preceding diagnostic research, and the expansion of the pilot projects).

101. See Tim Peneliti Social Forestry Indonesia, *supra* note 53, at 1–49; Peluso, *supra* note 53, at 1059 (reporting on the results of the diagnostic research).

forest crop. At the same time farmers are supposed to have a major role in deciding what horticultural and shade tolerant species to plant.¹⁰²

The SFC and forest farmer groups entered into contracts, indicating the location of each farmer's plot and the mix of crops to be grown. As part of the agreement, farmers had no rights to transfer these lands or the perennial trees through sale or inheritance. The SFC defined access as usufruct rights (to the trees' non-timber products) so that notions of farmer ownership of trees or land, unacceptable to the SFC, would not complicate the agency's long-term plans for the forest plantation. Similarly, the SFC retained the power to veto any horticultural species that would threaten the survival of the primary tree crop species. In the early stages, the local foresters predetermined acceptable alternating crops; the foresters did not permit many of the more expensive fruits, such as mango, because the mango's broad canopy would shade out desired forest species such as teak.¹⁰³ Moreover, the SFC, not the farmer or the forest farmer group, determined the placement of horticultural and fuelwood trees. In this way, the SFC retained control over both the forest and horticultural species planted on forest land.

Usufruct rights are a key element of the contracts. The people were primarily interested in retaining ownership of their horticultural trees. However, traditionally in some Javanese villages, planting trees indicated that the planter claimed the land. Therefore, the SFC insisted on providing the seedlings for horticultural tree crops planted on state lands. By providing the seedlings, the SFC could retain control of the woody parts of the commercial tree species. In other words, the farmers plant the trees but the state technically owns them. The products harvested from the tree for the life of the tree belong to the farmers. Because the SFC owns the tree, when the SFC harvests its timber, an entire tract, including the social forestry species, could be clearcut. The farmers' rights to the horticultural products are literally cut off. Implicit in this agreement was the idea that if forest farmers successfully cared for a tract of forest, the SFC would award the forest farmer group first options on newly opened reforestation land.¹⁰⁴

As a result of social forestry, the role of the field forester is changing in two ways. The field forester (*mantri*) traditionally acted as a forest guard and as the lowest-level manager of territory in the corporate hierarchy. Now the field forester must also act as a community organizer, helping the forest farmers to form management groups to plan for certain

102. Peluso & Poffenberger, *supra* note 2, at 340.

103. Carol Stoney is completing research on appropriate agroforestry crops for use in social forestry areas.

104. This is apparently still being negotiated, with ideas of selective cutting of primary species being considered by SFC planners. Interview with C. Stoney (Oct. 10, 1991) (notes on file with the author).

tracts of reforestation land.¹⁰⁵ Conversely, the new community-based programs in turn have increased the field foresters' power by increasing the value of access to forestland.¹⁰⁶

The initial conception of the social forestry alternative did not suppose this expanded role for field foresters. The original plan called for the deployment of neutral community organizers recruited from outside the SFC apparatus.¹⁰⁷ However, neutral community organizers cost money—more than the SFC was willing to spend to place community organizers in every forest village.¹⁰⁸ In negotiating the future of the program, the state substituted SFC foresters as community organizers in the permanent program configuration to reduce the SFC's costs.

Two different types of impacts have resulted from using SFC foresters as community organizers. First, in many forest areas, the program has resulted in successful tree-planting.¹⁰⁹ Second, field foresters now play contradictory roles: as forest police and as community organizers. In spite of the obvious difficulties with such an arrangement, the use of field foresters as village development agents has substantially improved the negative image of the SFC among villagers.¹¹⁰ Many forest farmers at social forestry sites perceive SFC foresters as helping rather than thwarting the farmers' use of the forest. Field foresters most directly feel the changes in community relations.¹¹¹ The change in the field foresters' roles from full-time custodial antagonists to part-time community organizers has the potential to stimulate the foresters' continued support and optimism in the face of practical difficulties. Moreover, district managers who view the new social forestry program as a cure for the problem sites in their district, have eagerly sought to be included, increasing the program's vertical support system.

Despite the growing enthusiasm for social forestry within certain divisions of the SFC, the SFC has had some problems in implementing social forestry programs. These problems are largely due to the difficulties mainstream foresters have had in giving up traditional forms of power discussed earlier. The first problem in implementation occurred when the SFC chose the most degraded lands for the program and selected maize as

105. Barber, *supra* note 10, at 281; Peluso & Poffenberger, *supra* note 2, at 340.

106. Peluso, *supra* note 4, at 239, 247.

107. See Peluso & Poffenberger, *supra* note 2, at 338–39.

108. Interviews with Perum Perhutani officials (Jan.–Feb. 1987) (notes on file with the author).

109. Many observers interviewed by the author in October 1992 concur that the most successful aspect of the 'new' social forestry program is in the production of forest species for the SFC.

110. See, e.g., M. Bratamihardja, Laporan Pelaksanaan Program Perhutani Sosial Forestry Tahap 1 Tahun 1986 at 39–40 (1987).

111. Interviews with field foresters, in Java (Jan. 1987 and Oct. 1991) (notes on file with the author).

the most appropriate agroforestry species. The second and most difficult problem in implementing the program occurred when wealthy villagers displace subsistence farmers in the program. These processes are discussed in the following section.

TECHNICAL CONSIDERATIONS: CHOICES OF LAND AND SPECIES

Initially, optimistic forestry officials attempted to convince their more skeptical counterparts that social forestry could benefit the SFC. They targeted the most degraded lands for the pilot projects and early expansion stages. On degraded lands, the SFC had the least to lose: many of these lands did not produce commercially valuable species for the SFC and had not for years. The SFC's definition of degraded lands included, for example, sites with severely eroded or leached soils and sites prone to landslides. It also included forest lands under peasant agriculture which had been repeatedly targeted for reforestation because earlier reforestation efforts had failed.

In the case of physically degraded land, the SFC's problems stemmed from the false hope that a collaborative management approach alone could solve difficult biophysical problems. The choice of physically degraded lands imposed enormous silvicultural constraints on the social forestry program which was meant to experiment with new forms of social organization in forest production. Nevertheless, even after consultants raised the issue in evaluative reports and internal planning meetings, more degraded lands were selected as sites for expansion.¹¹²

For example, in May 1988, a year after the program began to expand, a field worker wrote that some forty percent of the new sites visited had extremely degraded soils or else were located too far from villages. In addition, four out of five of the original pilot sites visited were plagued by depleted soils, erosion, landslides, and failed harvests. Some sites consisted of little more than exposed bedrock. At other sites, where the growth of the forest species had significantly improved, the farmers' agricultural crops failed.¹¹³ Foresters had difficulty recruiting farmers to work such degraded lands, despite the promises of extended tenure. Poor farmers could ill afford the extensive labor inputs and expensive fertilizers; middle-class and elite farmers had little incentive to participate.

112. See, e.g., N. Peluso, *Social Forestry in Java, An Evaluation* (1987) (unpublished manuscript, on file with the Ford Foundation, Jakarta); Tim Peneliti Social Forestry Indonesia, *supra* note 53; V. Read, *Reflections on Selected Pilot Sites of the Java Social Forestry Program* (1988) (unpublished manuscript, on file with the Ford Foundation, Jakarta) (giving specific examples of the problems experienced by these pilot projects).

113. Read, *supra* note 112, at 1.

Where physical degradation had been caused by socioeconomic pressures and SFC-village conflict, the SFC's choice of such poor sites was viewed with disdain by the villagers.¹¹⁴

Farmers did not participate as actively in selecting agroforestry species as project designers had intended. A national government program to become self-sufficient in maize superseded the participation components of social forestry as discussed earlier. Agriculture officials pressured SFC officials to support the maize self-sufficiency program. Foresters also felt obligated to support the maize production program because they depended on agricultural extension agents to assist in other aspects of social forestry. Thus, although the SFC had decided to let farmers choose their field crops, they subsequently required farmers in most sites to plant hybrid varieties of maize (high yielding varieties, or HYV), using chemical fertilizers and pesticides. If farmers did not comply, the SFC excluded them from participating in some sites.¹¹⁵

Through established state programs for HYV inputs and credit, the SFC loaned participants the HYV maize seeds, chemical fertilizers, and pesticides just prior to the onset of the rainy season. Yields varied widely. In a few areas, a few 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, most of the pilot sites, the hybrid maize did poorly. Some district managers permitted farmers to choose their crops the next season, but most managers bowed to the pressures of their colleagues in the Ministry of Agriculture and the provincial government, and required farmers to plant HYV maize for several subsequent seasons.¹¹⁶ Thus, the broader political imperatives of national food production strategies superseded the participatory principles of social forestry.

Technical considerations also restricted the farmers' choice of perennials. Thus, when a forest farmer group presented its management proposal to the district office, the proposal was not the result of negotiation. The plans reflected local foresters' suggestions, based on evolving SFC social forestry policy, as discussed earlier. Moreover, the SFC had imposed a schedule for completing plans that did not allow time for significant negotiations. The field forester had to prepare local management plans for every reforestation tract, indicating the species to be planted, the method, and so on, as quickly as possible. In social forestry tracts, the forest plan had to indicate the species of fruit trees and their placement on a map of the tract. These plans were generally due in at the district office

114. Peluso, *supra* note 112, at 19.

115. Interviews with farmers and foresters, in Java (Jan. 1987 and Oct. 1991) (notes on file with the author).

116. Read, *supra* note 112, at 2.

months or weeks before the field forester met with the forest farmer group to discuss the upcoming social forestry plans. As a result, the planning done by forest farmers in the group often amounted to no more than agreeing to plant what the local forester had planned.¹¹⁷ Consequently, many forest villagers see the 'new' social forestry program as simply an extension of the SFC's traditional, top-down approach to forest management. The program has, in fact, reinforced some forest villagers' convictions that the latter's overriding interest in maintaining forest control ultimately limits the potential for change in the SFC.¹¹⁸

SOCIAL PROCESSES AT THE LOCAL LEVEL

Prior to the new social forestry program, the lands kept under *taungya* by the resistance of forest farmers to state control of the forests were a constant source of anxiety for SFC foresters.¹¹⁹ These lands often produced good agricultural yields for the farmers.¹²⁰ However, because timber-producing trees or other forest species (such as resin-producing trees) would not grow there, the SFC had classified these lands as 'critical lands.' The social forestry program gave hope to foresters that such lands would soon be reforested. In fact, compared to the failed attempts to get farmers to reforest physically degraded sites, recent evaluations of the sites by the author, as well as by program observers at the Bogor Agricultural University, found that reforestation of the lands over which the foresters had lost control was the single greatest success of the social forestry program. This illustrates the foresters' success in renegotiating or reestablishing their own control over forest lands.

Traditionally, both cultural and professional constraints drove many field foresters to allocate reforestation land to willing middle-class and wealthy peasants. These constraints included the class connections of the field forester with wealthier and more powerful forest villagers and the pressure on each forester, imposed by his superiors, to reforest the territory he controlled.¹²¹ As in agricultural development projects, the patron-client relations that evolve between the state and wealthy peasants in forest development projects differ from those that evolve between the state and poorer rural people.¹²² In forest development projects, the poor

117. Interviews with foresters (Oct. 1991) (notes on file with the author).

118. Interviews with members of Indonesian non-governmental organizations (Oct. 1991) (notes on file with the author).

119. See Peluso, *supra* note 4, at ch. 6 (demonstrating the various rationales and motives for peasants of different classes to sabotage reforestation efforts and keep land under *taungya*).

120. *Id.* at 168.

121. *Id.* at 242.

122. *Id.* at 240. See also G. Hart, Power, Labor, and Livelihood 38–42 (1986) (discussing the ways in which the state has co-opted the loyalties of village leaders, particularly by structurally integrating them into the civil service).

become direct clients of both the state and its agents, the field foresters. The poor in forest regions are often relatively powerless. Being dependent on the forest for both formal and informal sources of income, they are more susceptible to individual exploitation by either local foresters or local elites. Because of the consummate power of the field forester over the forest, the poor are largely dependent on the goodwill of the field forester for obtaining access to land and labor opportunities. So far, the SFC, like other arms of the state, refuses either to take responsibility for the exploitation of poor forest villagers or to try to prevent it by structuring the social forestry program in a manner that favors poor farmers over elites.

Local people of different classes, who were active resisters, have been co-opted into being laborers for the state.¹²³ The high returns possible from the conversion of forest land to agriculture and from the sale of both trees and other products on that land make access rights to the forest a valuable commodity, and thus more attractive to better-off farmers. Better-off farmers can take control of social forestry or other *taungya* lands: either directly through allocations by local foresters as mentioned or indirectly through the farmers' existing social relationships with the poorer forest farmers. As a result, when the state is relaxing its control over land and species, the structure of the labor force will become more of an issue. Middle and upper-income farmers often become more entrenched in the system, and have much to gain both on and off the forest lands by maintaining their position. Poor villagers, on the other hand, may remain dependent on better-off villagers for access to reforestation lands through sharecropping or leasing, or become more dependent on the patronage of local foresters.

Evaluations held two years and seven years after the onset of the pilot program found that the social forestry program has not entirely alleviated the professional pressures on field foresters.¹²⁴ On some sites, the SFC district officer has imposed a condition limiting project participation to households controlling less than a quarter-hectare of private agricultural land. This condition effectively precludes from participation most farmers with sufficient land of their own. On other sites, however, the SFC has stressed the need to rapidly reforest the sites but has not provided adequate structural supports for poor farmers. Under these conditions, some local foresters have fallen back on their traditional practice of selecting farmers they label as 'more diligent.' These farmers, very frequently, are the better-off farmers.

Foresters often select better-off farmers to replace poor farmers who drop out of the program.¹²⁵ Better-off farmers, who have some sav-

123. See Peluso, *supra* note 4, at 239–41.

124. Peluso, *supra* note 112; N. Peluso, Excerpts from the Evaluation of the Java Social Forestry Program 8 (1991) (unpublished manuscript, on file with the Ford Foundation, New York).

125. Interviews with foresters (Jan. 1987 and Oct. 1991) (notes on file with the author).

ings or access to credit (to pay labor), can participate in the program even though income is delayed, whereas poorer villagers need daily wages to survive.¹²⁶ In 1989, the SFC introduced a new subsidy program to support participants through the six months from first clearing to harvest.¹²⁷ Despite the subsidy, once the tree canopy has closed, blocking the area for growing field crops, better-off farmers still have the advantage over poorer farmers. Because the SFC strictly limits the number and placement of fruit trees on a social forestry plot, farmers can not earn enough money from their fruit trees to subsist or contribute substantially to the household budget. The income, though perhaps an important addition to the household economy, is supplemental, not basic. Poor farmers, who depend on crops from the forest land for subsistence must seek labor opportunities elsewhere and often are willing to sell their social forestry plots for quick cash.¹²⁸ Thus, even where poor farmers are selected for participation, they are weeded out by either the economic burden of cultivating the land or the low yields from the poor quality sites.

Though plots are not legally supposed to be transferred, foresters do not prevent transfer. Foresters are interested in assuring that the trees grow, whoever plants them.¹²⁹ Many forest farmers transfer their rights of tenure to other village farmers within the first year; the same pattern continues in subsequent years. In one site, only five or slightly more than 20 percent of the original 18 participants did not drop out by the end of the second year; in another, only 20 percent of the original families remained through the first two years.¹³⁰ These transfers are reminiscent of the same types of transfer prevailing under the traditional *taungya* system.¹³¹

For example, many sites designated as social forestry sites require very high labor inputs. At a fertile, but overgrown, site visited in 1987, farmers and the field forester had monitored their labor inputs and found that as many as 114-person days were required to prepare a quarter-hectare plot for planting.¹³² Elite farmers, who could hire laborers to work the farmers' privately owned fields, could work the forest plots. Many poor farmers who tried to participate eventually transferred their plots to farm-

126. Interviews with forest farmers and field foresters, in Java (Jan. 1987 and Oct. 1991) (notes on file with the author).

127. Interview with F. Seymour, Ford Foundation Program Officer, in Jakarta (Oct. 7, 1991) (notes on file with the author).

128. Interviews with forest farmers and field foresters, in Central Java, East Java and Jakarta (Jan. 1987 and Oct. 1991) (notes on file with the author).

129. Cf. Peluso, *supra* note 4, at 195-99 (relating a similar attitude among Javanese field foresters prior to the implementation of the social forestry program). See also Fortmann, *supra* note 2, at 51 (arguing that social forestry requires foresters "to expand their technical repertoire[s] by planting 'strange' trees in 'strange' places for 'strange' purposes. . . ." *Id.*)

130. Read, *supra* note 112, at 3.

131. See, e.g., Tim Peneliti Social Forestry Indonesia, *supra* note 53, at 5; Peluso, *supra* note 4, at 174-75.

132. See Peluso, *supra* note 112, at 44-46.

ers who could afford to hire labor. The SFC did not discourage hired labor if the farmer paid for it, but the SFC would not subsidize labor.¹³³ The unacknowledged prerequisite to participation in the social forestry program, thus, was access to independent capital to pay laborers or to support the household through the first six months.

In some instances, participation for the poor was possible only through a great deal of risk and sacrifice. For example, one landless farmer sold his only cow and took a loan at 10 percent monthly interest to pay laborers to help him clear the thick brush on the plots. He was fortunate to be working where the forest soils were conducive to growing the hybrid maize such that he earned enough to finance a second crop that year without credit. Other farmers worked mornings for wages on private agricultural lands or in a nearby town. They cleared their taungya plots in the afternoons and evenings.¹³⁴ SFC officials held up as the norm rather than the exception these few poor farmers who were successful despite difficulties. Foresters said those who could not bear the burden or dropped out of the program were lazy or misinformed.¹³⁵ In this manner, the foresters turned two of the key goals of the program—higher rural income and lower forest dependence—into qualifications for access to opportunities to work social forestry plots.¹³⁶

After seven years' implementation, familiar patterns of both labor displacement, even where foresters were enthusiastic about the program, and isolated incidents of exploitation, were evident. For many foresters in the SFC, the objective of the social forestry program is to organize a group of forest farmers to grow trees on SFC land. When poorer participants lose their access to forest land and revert to wage labor for subsistence the foresters are not concerned. It does not matter to the foresters who grows the trees. It does not matter that a village-based collective approach to forest management and rural resource management develops within forest farmer groups. What matters is the number of trees planted and the number that survive.¹³⁷ The state's traditional orientation toward forest production for national development has thus overpowered the institutional changes which form the heart of social forestry.¹³⁸

133. There are new subsidies available to remunerate the labor in terracing (interview with C. Stoney, October 7, 1991), but these do not cover the kinds of costs mentioned here, i.e., those costs that might be considered routine such as forest clearing, deep hoeing to extract deeply rooted imperata grass, etc.

134. These two examples come from interviews conducted by the author with foresters, in East Java (Jan.–Feb. 1987) (notes on file with the author).

135. Interviews with foresters, in Java (Feb. 1987) (notes on file with the author).

136. See Blaikie, *supra* note 25, at 110 (defining "access qualifications").

137. Cf. Barber, *supra* note 10, at 385 (arguing that trees are not important to foresters charged with social forestry, but the reporting process is the key).

138. Conclusion based on author's interviews in Jakarta and West Java, October 1991 (notes on file with author).

The foresters' predominant interest in growing trees also has afflicted women's formal access to the program. The SFC's system of allocating tenure rights to household heads—always defined as the male in a two parent family—systematically excludes their wives. Only the household head signs contracts granting long-term rights to the products of the trees in the agroforestry program. These rights are personal to the household head and do not create household tenure.¹³⁹ The government does not formally permit inheritance rights, like other forms of transfer. The husband cannot transfer his rights to the trees during his life or by will after he dies. Thus, the terms of individual tenure mean that if the husband dies, moves, or loses interest in the project, his wife has no formal claims to the tree products, even if she has planted the tree and is its primary caretaker.

The SFC's hesitance to grant tree rights to the household as an entity stems from the SFC's old fears of challenges to its control.¹⁴⁰ The SFC particularly worries about potential conflicts in property claims which could arise when the SFC schedules the main forest crop for logging. If the farmers' fruit trees are still producing at that time, the farmers may oppose logging. By terms of the contract, if the husband loses or relinquishes his rights to fruit trees, these rights to fruit trees revert to the forest farmer group which reallocates the trees as it sees fit. Recent reports from the field indicate that forest farmer groups have tended to allocate a husband's rights to his wife, should the husband leave the project or die.¹⁴¹ Thus, social pressures at the village level may supersede the formal structures of the state-controlled project. Nevertheless, though the group is likely to allocate rights to the wife or a child, they are not legally bound to do so. For the long-term, therefore, security of tree tenure for the household, not just the household head, remains an unresolved issue.

Social pressures have not prevented field foresters from systematically excluding female-headed households at the time members of the forest farmer groups are selected. Sometimes, if a female-headed household includes a teenage boy who the forester regards as capable of brush clearing, then the field forester will give the household's tree rights nominally to the female head of household. Field foresters remain reluctant to risk situations that they perceive to be at risk of failure. The myth that 'women can not do the job' persists, even in sites where women have clearly participated in traditional taungya and have consistently participated in or dominated agricultural labor. The myth, however, is less a product of reality among poor forest villagers than a projection of the for-

139. Interviews with foresters, in Java (Jan.-Feb. 1987 and Oct. 1991) (notes on file with the author).

140. See, e.g., Peluso, *supra* note 4, at chs. 2, 3, 4 (describing the evolution of the state's institutional controls on the forest and its products).

141. Interviews with foresters (Oct. 1991) (notes on file with the author).

esters' own experience. Most foresters' wives are middle or upper class (albeit usually of rural origins) themselves, and do not engage in manual labor. Moreover, under the present regime, a woman's economic role is presumed to be secondary to her husband's.¹⁴²

The SFC has not sufficiently considered the potential value, from the peasant's point of view, of maintaining the status quo under certain circumstances. For example, the peasants often have more to gain by maintaining the status quo in areas where reforestation has repeatedly failed but agriculture is viable.¹⁴³ For both short-term and long-term subsistence needs, field crops such as dry rice, maize, groundnut, and cassava are more appealing than tree crops to local people. Food yields are more critical to the forest-dependent farmer in many forest villages, which suffer from uncertain economic climates and insufficient sources of off-farm income. Other contradictions concern the field foresters' ability to recruit better-off peasant farmers. As mentioned above, better-off villagers do not depend on forestland for subsistence. Thus, they are better positioned economically to participate in social forestry programs with agroforestry regimes that involve longer periods between planting and realizing profits. At the same time, these better-off peasants, already more powerful in terms of private resource control, are the most capable of working against the program and retaining their controls on increasingly valuable forest resources. Not only can the better-off farmers generate resentment among the poorer villagers towards the foresters, better-off villages can also sabotage SFC efforts to reforest, where it is in the better-off farmers' interest to keep those lands under (their) control for agricultural uses.¹⁴⁴ Therefore, unless local foresters successfully involve the poor, the social forestry program will fail to reduce the dependence of the poor on the forest, and thus increase the income gaps between village elites and the village poor.¹⁴⁵

Despite difficulties of implementation, the traditional tensions between forest villagers and state foresters have relaxed considerably where the SFC has begun social forestry programs.¹⁴⁶ It remains to be seen whether the economic benefits, particularly the desired equity effects of social forestry, will reinforce this trend, overcome bureaucratic resistance

142. Thus, the tendency on the census to mark the husband's occupation as 'farmer' while the wife's occupation is 'housewife' or 'farmer's wife,' no matter what percentage of the actual farm labor is done by either.

143. This situation was documented in many forest villages even before the current social forestry program started. See, e.g., Peluso, *supra* note 53, at 11.

144. See Peluso, *supra* note 4, at ch. 6.

145. Again, these trends were found in taungya sites studied during the diagnostic research. See Tim Peneliti Social Forestry Indonesia, *supra* note 53; Peluso, *supra* note 53, at 14-15.

146. Author's interviews and observations (Jan.-Feb. 1987 and Oct. 1991). See also Seymour, *supra* note 10, at 10; Barber, *supra* note 10, at 398-99; J. Kartasubrata, Review of Community Forestry Programs in Indonesia (1988) (unpublished manuscript, on file with Ford Foundation, Jakarta).

to the social forestry program, and succeed in including targeted villages as real partners in the development process. The alternative scenario bodes ill for the future of 'truly social' forestry in Java. If social forestry does not serve the needs of poor forest farmers, poor peasants will have no incentive to stop sabotaging reforestation sites and stealing teak to survive. In effect, in order to gain control on a broad scale, the foresters must release more of their traditional controls on land, labor, and the reforestation process at the local level.

Indonesia's social forestry program has not altered established patterns of timber extraction and forest management on those millions of hectares of forest not programmed for social forestry. Traditional relations of production and coercive forms of forest protection remain in middle-aged to mature tracts of forest. The contradiction between the new social forestry and the old custodial forestry in Java's forest management structure may represent the most serious threat to social forestry. Admittedly, it is far more difficult for international pressure to transform the entire structure of state forestry than to add and subsidize a social forestry component.¹⁴⁷ Moreover, Indonesia's national development priorities continue to strongly influence the SFC's decisionmaking processes, despite the participation goals of the social forestry program.¹⁴⁸ Specific national priorities include developing non-oil resources, establishing food self-sufficiency, and ensuring that the SFC finances its own costs and pays taxes into Indonesia's Development Budget. Given these priorities, the SFC will probably resist change most in the more valuable forests, if not in all of them.

CONCLUSION

In this paper I have shown how local and national processes already have limited the intended objectives of international institutions and philosophies of social forestry. Social forestry programs in Java have, in effect, resulted in little more than new configurations of old state controls. I have shown how forest-based peasants have responded to these new configurations. This analysis provides a backdrop against which analysts and others can view the future outcomes of this and other social forestry programs.

Although this paper has presented a case study of social forestry programs in Java from 1986 to 1991, it has illuminated several issues relevant to forest management elsewhere in the world. These issues include: the cultural, political, and economic unsustainability of current plantation

147. Fortmann, *supra* note 1, at 51.

148. See Barber, *supra* note 10, at 398; Seymour, *supra* note 10, at 22.

forestry practices, the reasons for and means of distorting the concept of social forestry, the roles played by social institutions in determining access to finite renewable resources, and the reasons for the success or failure of social forestry programs.

Current forestry practices are unsustainable largely due to factors external to the plantation planning procedure. Foresters in Java apply the principles of sustained yield much more seriously in plans for forest plantations than do foresters in the United States for private timber land. However, these technical principles are confounded by political factors outside the forest, particularly high population pressure and extreme inequality in rural income and employment distribution. Social forestry, the new *taungya* as it were, has not sufficiently addressed the equity issues. As a result, forest villagers, many of whom are plagued by persistent poverty, continue to compete with each other and village elites for authorized and unauthorized access to valuable forest resources. Poor forest villagers are vulnerable to exploitation by local foresters and better-off villagers, while foresters and elite villagers, in effect, have become even stronger rural patrons.

The development ethic of the state, when conceived in terms of short-term economic growth, has also rendered real sustained yield in forestry a shadow value. Foresters are forced to overextract their raw materials, drawing from future supplies to meet the demand for growth in the forestry sector. Secondary processing cannot add enough value fast enough to reduce the need for large quantities of raw logs. Perhaps here the economic growth demands of the state impose most viciously on the scientific professionalism of the state forester. Combined with the demands of the 'forest-dependent villager,' the demands of a regional and national 'forestry-dependent political economy' batter the state forestry agency's multipurpose mandates for forest protection.

Powerful social and environmental forces operating at national and local levels everywhere will inevitably distort the international social forestry ideal of involving or empowering local people in forest management. Social foresters must analyze the forces governing a state forestry agency's policies, whether a parastatal like the SFC or a forest service, in conjunction with the forces governing the interactions between forest communities and field foresters and those operating within the villages themselves. Only then can they develop means for accommodating these forces in forest policy and programs.

As social forestry programs evolve, two processes are likely to occur: First, both the objectives and processes of change in social forestry programs are likely to be renegotiated within existing social structures by local actors, such as the field forester, the better-off farmer, and the poor farmers. This process is most likely to occur where social forestry pro-

grams do not or cannot change power relations sufficiently to include forest-dependent people in decisionmaking or where these programs, by changing power relations, exclude powerful actors.

Second, forestry professionals will resist new institutional and power relations, focusing instead on new technologies and species mixes. Resistance will most often occur where a new generation of field and administrative foresters trained in social forestry has yet to receive authority. The current generation of foresters was chosen for their jobs and, indeed, may have gravitated to forestry for reasons other than community organizing and social reform. Social foresters are still in the minority, with very few in positions of power. Professional praises and promotions for field foresters still center on whether a forester was successful in planting trees, increasing productivity, or saving money, not on whether he was successful in organizing groups of farmers and improving their welfare. As social forestry programs expand, both the social and the ecological aspects of the foresters' role in forest management will need to be redefined.

The environmental, socio-political, and economic sustainability of teak and other forest species in state production forests depends on the kinds and distribution of benefits derived from various species. Until recently, the state, the SFC, and field foresters have made these decisions in favor of large-scale production of high-quality forest products to sell on export and domestic markets. Given the opportunity to participate, forest farmer groups are likely to make decisions in favor of local needs. In the long run, therefore, social forestry promises not only to transform the social institutions involved in managing the forest, but also to transform the forest itself in favor of long-term production of trees and tree products for local survival and a different kind of regional development.