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Implementation of Participatory Forest Management and responses of local people in Kerala state, India

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1. Introduction

There are strong correlations between the locations of high-poverty areas and forests in India. Population and poverty are the main two causes of destructive pressure on forests (Ahmed, 1997). Almost one fifth of the Indian population is considered to be partially or wholly dependent on forest resources for its livelihoods. The people living in and around the forests are consuming the forest products in terms of firewood, fodder and timber to fulfill their basic needs of livelihood. Nevertheless, Indian forest cover was almost stable from 63.93 million ha (19.5% to the total land area) in 1991 to 63.73 million ha (19.4%) in 1999 (Forest Survey of India, 2001), and according to Global Forest Resources Assessment 2000 by FAO, it slightly increased compared to 1990 (FAO, 2001).

In the past, most of the forest policies of India had been guided by the principle of meeting industrial and commercial demands for producing and maximizing revenue while ignoring local needs (Sarin, 1996). Though most of the recorded forests were national forests, each state government had the say in forest management and collected the revenue. However, the 42nd amendment of the constitution in 1976 changed the forest and wildlife issues from the state matters to one of the concurrent matters between the Union and the states (Nagamine, 2002). The latest Forest Policy issued in 1988 admitted that excluding local communities in forest management, use of forest lands for non forestry purposes without ensuring compensatory treatments, and the tendency to look forests as revenue earning resources were the major reasons contributing to the failure of the forest management practices in the past. This second Forest Policy proclaimed after the independence is called the New Forest Policy, and it strongly emphasized the necessity to meet the requirements of 350 million people living in and around the forests (Bahuguna, 2002). As one of the measures, Joint Forest Management (JFM) has become imperative to change the conventional approach to environmental stability and welfare of local communities (Pari, 1998).

JFM was formally circulated to all state governments and union territories in 1990 as a resolution of the central government, and sixteen state governments have immediately issued their acceptance of the JFM resolution (Sarin, 1996). As it was expected, positive results also found after implementation of JFM programs because people have a stake in the outputs (Hill et al, 1998). After a decade of field experiences and feedbacks from the stakeholders concerned, the JFM guidelines 2000 and 2002 have been prepared and

issued for further betterment of forests and in order to institutionalize local communities in the forest management activities. The JFM Cell and the JFM Unit were created under the Ministry of Environment and Forests (MoEF) at national level to monitor and coordinate the JFM activities respectively.

The area covered by JFM has increased favorably, reaching 10,250,000 ha in 2000, 14,095,360 ha in 2002 (Damodaran, 2003), and 17,331,955 ha in 2003 (MoEF, 2004). The JFM area in 2003 accounted for 22.6 % of the total recorded forests in 2001 (Forest Survey of India, 2001), but at the state level there was a large difference in the progress. While the forest area managed under JFM accounted for 57.8 % of the total recorded forests in Madhya Pradesh, 50.9 % in West Bengal, and 48.0 % in Chhattisgarh, there were five states with less than 5 % and Meghalaya had not yet adapted JFM in 2003.

2. Objectives and Methods

In contrast to Southeast Asia where community based forest management (CBFM) programs are still under trial and error, the already matured experiences of JFM in India allow the studies aiming at generalization of the mechanisms of JFM implementation, and the difference in implementation of JFM among the states seems to have challenged the researchers. Kumar and Kant (2005) included JFM into a category of CBFM, and tried to find the limiting factors for CBFM in the performance of forest agencies. Based on the analysis of the questionnaires distributed to foresters of four selected states in India, they concluded that there was a negative correlation between organizational bureaucracy and acceptability of CBFM systems.

On the other hand, Misra and Kant (2004) studied the economic, social, and biological output of JFM using explanatory variables, such as heterogeneity and dependency of the user groups, gender issues, and village leaderships for their case study in Gujarat state. In the discussion, they admitted a limitation in generalization of the results to apply to the regions with different conditions, so far as taking the so-called non-conventional factors into consideration.

These two discussions suggest the necessity of studies at different levels. In the case of India, whether JFM is introduced or not is primarily determined by the political decision at the state government level, though the achievement is shown in the local-level indicators, such as the area and the number of participants. The study of Kumar and Kant (2005) focused on the interactive relation between the Indian Forest Service (IFS) of MoEF and the forest departments of the state governments, which are relatively homogeneous organizations controlled by IFS. The focal point of the latter is the performance of JFM at the local level, and they found the difficulty to make economic output and social output compatible.

Our concern derived from the situation in Southeast Asia is rather on the process of the initial stage after the state government accepts JFM. The study site Kerala is located in the southwestern tip of India. The

reason we selected Kerala is its humid climate similar to Southeast Asia and its relatively late start of JFM in 1998 with a synonym of Participatory Forestry Management (PFM). Hereafter the term of JFM is applied to the national level discussions and PFM is used under the context of Kerala. To find the factors that have supported the penetration of PFM, first we focused on how the guidelines of the central government were modified at the state level to meet a locality of diverse conditions, and duly interviewed the key informants of Kerala Forest and Wildlife Department (KFD). Next, we selected a practice of PFM in Randukai due to the longer period of implementation compared to others. From the list of participants, 45 households were randomly extracted, whose details are described subsequently. Interviews to these respondents were carried out by structured questionnaires prepared in English and interpreted to Malayalam, the official language of Kerala state. As the focal point of the local-level interviews was to find the difference in responses derived from socio-economic heterogeneity, we applied structural analysis and compared the difference of dependency on forest resources and motivations. The primary data collection was carried out by Mishiba from September to November 2002 and a supplemental visit was made by Dhakal in February 2004. Arrangement of the study and data analysis was conducted by Masuda.

3. General Settings of Kerala State

Kerala is a long, narrow state with a great north-south length up to 580 km. It can be divided to three topographical features: lowland along the long stretch of coastal line, adjoining upland, and the Western Ghat Mountains that form the natural boundary with Tamil Nadu and Karnataka state. Randukai is located on the hilly upland in the middle part of the state (Figure 7.1).

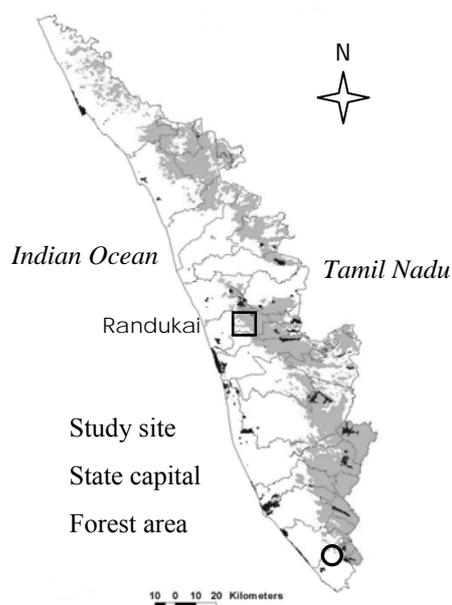


Figure 7.1. Distribution of forests in Kerala and location of the study site based on the map provided by the Kerala Forest and Wildlife Department, 2004.

The average annual rainfall from 1984 to 1993 is 2181 mm (Kerala State Land Use Board, 1995). It reaches nearly 5000 mm along the coast and western border of the Wayalad Plateau, but gradually declines toward the inland, around 1500 mm or even less (French Institute of Pondicherry, 2003). A variety of forest vegetation from wet to semi-arid types is derived from such difference in rainfall, and Kerala is particularly famous for evergreen forests, bamboos and palms (Chundamannil, 1993).

The population density is 819 persons km⁻², which is more than two times greater than the national average of 324

persons km⁻² in 2001 (Datta *et al*, 2004). Around 74 % of the population still lives in rural areas (Forest Survey of India, 2001). Most of the population speaks Malayalam, which is employed as the official language of the state. Tribal people, 1.1 % of the total population in 2001 (*ibid.*), are mainly living in forested regions and some are still inside forest reserves.

Before the independence, most of the southern part was out of the direct rule of the colonial government and controlled by the Maharaja of Travancore-Cochin United Kingdom, while the northern part formed Malabar district under the Madras Presidency. When the Forest Act was first enforced in 1878, the Madras Presidency objected it due to the potentiality of plantation development particularly in the Western Ghat. It was finally settled with establishment of its own Madras Forest Act in 1882 but forestland demarcation did not get moving (Ribbentrop, 1900). In addition, the long existence of princely states and separated administration after the independence caused a delay in establishment of any uniformed forest administration and management system in Kerala. These areas were transferred to Travancore state, Cochin state, and Malabar district of Madras state after the independence (Kerala Gazetteers Department, 1989; Vasudevan and Sujatha, 2001).

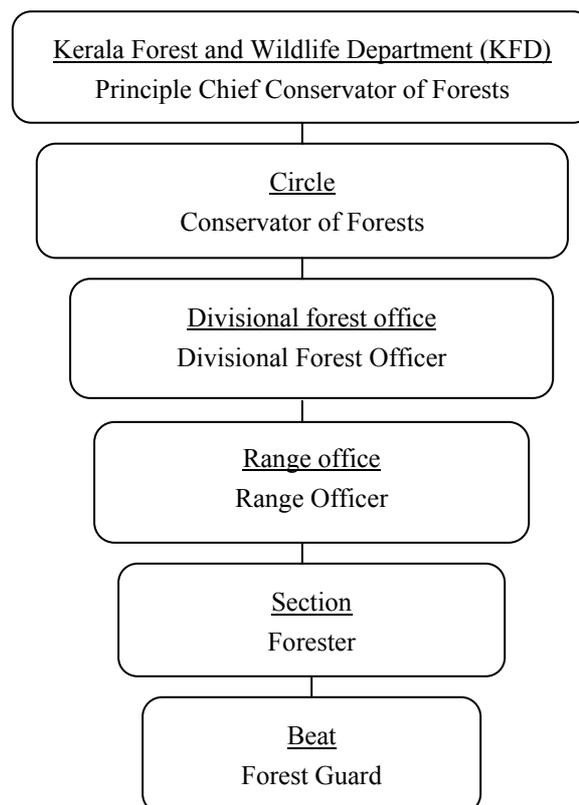


Figure 7.2. Forest management organization in Kerala (KFD, 2002)

The current jurisdiction of Kerala state was created in 1956 with amalgamation of these three regions. Nevertheless, the enforcement of a series of land and forest related acts, Kerala Forest Act in 1961, Kerala

Land Reform Act in 1963, and Kerala Private Forests (Vesting and Assignment) Act in 1971 brought about great progress in the establishment of the state forest (Masuda and Mishiba, 2003). Now all of the state forests in Kerala have already been classed to 1,103,800 ha of reserved forests and 18,300 ha of protected forests. The total forestland of 1,122,100 ha accounts for 28.9 % of the state land (Forest Survey of India, 2001). These forest reserves in Kerala are managed under a highly stratified organization of the KFD (Figure 7.2). A total of 8,500 persons are employed under the KFD to support this complicated organization (KFD, 2002); where a staff member takes care around 130 ha of forest land on a simple average.

4. Development of PFM in Kerala

4.1. Outline of the PFM Programs

While JFM has expanded in many states during the 1990s, the PFM guideline was established later in 1998 in Kerala. The reasons behind the delay could not be specified in this study, but the financial support by the World Bank triggered the rapid progress. After the proclamation of the PFM guideline, it is recorded that positive changes have been brought in the livelihood of local people and in the forest conditions (French Institute of Pondicherry, 2003).

According to an internal document provided by the KFD in 2002, the PFM program in Kerala consists of three models, namely, Fringe model, Non-Timber Forest Products (NTFP) model, and a separate model for the Cardamom Hills Reserve. The difference between the Fringe and NTFP models is that the former involves the population outside forests, while the latter is applied to the tribal minorities still living inside the forests and making their livelihood by NTFP collection (Figure 7.3).

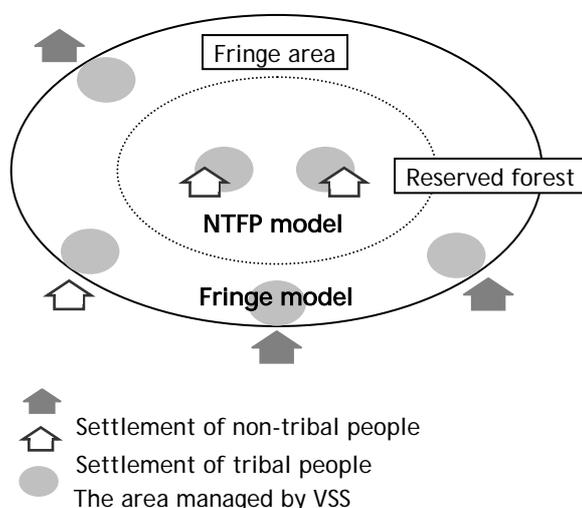


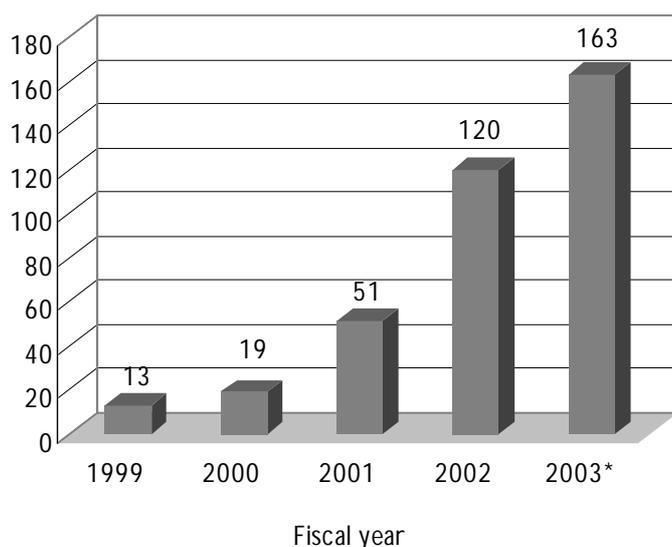
Figure 7.3. Scheme of Fringe model and NTFP model

The implementation body of PFM is called Vana Samrakshana Samithi (VSS), which means forest conservation committee in Sanskrit. The development of PFM process consists of five stages: initial (2 months), preparation (2 months), planning (4 months), implementation (40 months), and monitoring stage (60 months). During the initial stage, local people are organized to a VSS by the KFD. The VSS is expected to establish a micro-plan under its own initiatives, and after approval of the plan, it makes a contract with the KFD to maintain and manage a certain area of forest. The outline of the Fringe model is as follows:

- The maximum area to be transferred to a VSS is 300 hectares of reserve forests.
- Each VSS has the charge of the core fund, credibility fund for office works, and operational fund for activities, which are provided by the KFD based on the allocated forest area and the number of VSS members, in the custody of forest officers at a divisional level.
- Each VSS can sell NTFP from the allocated reserve forest or fine forest offenders, and can add the revenue to the core fund together with other subsidies.

As per the guidelines of JFM program, 33% of the total executive members of the VSS must be women. A VSS is led by a locally nominated president and an officially appointed secretary who is generally the forester of the section concerned. These president and secretary are expected to coordinate the government programs for local communities through VSS members. To keep the records of revenue and expenditures of the VSS, a separate post called treasurer is appointed. The executive members of VSS are normally selected from different parts of the society considering gender, castes, tribal groups, geographical representation and so on.

Number of VSS



Source: Kerala Forest and Wildlife Department, 2003.

Figure 7.4. Yearly increase of Fringe VSS in Kerala state. The data of 2003 is up to October.

Since the beginning of PFM in Kerala, the formation and implementation of VSS has continuously increased (Figure 7.4). As of October 2003, 366 Fringe VSS were already formed, covering around 187,504 people of 46,033 households. On an average 126 households are organized into a VSS.

4.2. Organization and Activities of the Randukai VSS

Randukai does not refer to a particular administrative jurisdiction. The area consists of a ward and a part of another ward of the Thrissur district. According to the oral history of the respondents, the area around Randukai had been covered by forests until the 1940's and almost uninhabited except a few tribal people. Most of the current population was gradually migrated from different parts of the state, first as logging workers employed by the government. Now the area is developing towards a suburb, and it is easy to access by bus or other means of land transportation. The nearest city Challakudi is located around 100 km from Kochi, the 'business center' of Kerala.

The Randukai VSS was formed in 2000 and started the activities in 2001 after their five-year micro plan had been approved by the KFD. Altogether, 373 people from 223 households were organized into the VSS, and 193 hectares out of a forest reserve of around 500 ha were allocated to the VSS. The settlement where the VSS members reside is located in between this forest reserve and another 1,630 ha of teak (*Tectona grandis*) plantation established by the KFD from 1953 to 1982. The forest land has already been demarcated and stone-built signs called jhanda are arranged on the main corners of the boundary. According to the guideline, an NGO or NGI (non-governmental individual) should be appointed and employed by the KFD as an intermediary between a VSS and the KFD. In the case of Randukai, a university student was employed as an NGI, and the president of VSS, also one of the local people, had a master's degree. Though the population of Randukai consisted of both tribal and non-tribal people, no tribal people were organized to the Randukai VSS. They utilized another part of forest reserves and were allowed to sell the NTFP.

Main activities of the Randukai VSS were: construction of sheeting against soil erosion, enrichment tree planting on patches of open land inside the allocated area, and patrolling. At the time of our primary data collection in 2002, construction and planting works had already been completed, and the remaining routine activities were just patrolling and meeting. The former was carried out by the group of the Forest Protection Gang whose members were appointed by the VSS. The works were compensated at the beginning but later left unpaid due to lack of fund. The routine meeting of the executive body was held every month and the general meeting of all VSS members was to be held twice a year.

5. Details of Sample Households

5.1. Sampling Method and an Outline of Sample Households

The members of the Randukai VSS were categorized into four socio-economic groups by wealth ranking, which was accomplished by a local NGO on the initiative of the KFD in 2001. To categorize the members, they adopted following indicators representing socio-economic conditions and gave a point to each:

- Houselessness including roofless
- Latrine
- Absence of drinking water facilities, or any type of water facilities farther than 150 m from the house
- More than two daughters under 18 years of age
- Without dependence
- Illiterate
- Mal-nutrition, less than two meals a day
- Only one household earner
- Alcoholic
- Scheduled caste or scheduled tribe

Based on the sum of points, the 223 member households were ranked to wealthy (0-1), ordinary (2-3), poor (4), and below poverty line (5 points and above). For our study, around 20 % on an average were randomly selected from each rank, which is hereafter represented as rich, middle, poor, and very poor. Of the 45 sample households thus chosen, 5 were finally omitted due to their frequent or long absence. Though the average land area of each rank well corresponds to the wealthiness, 2.03 ha for the rich, 0.67 for the middle, 0.15 ha for the poor, and 0.03 ha for the very poor, there were two samples with prominent data in land tenure. Consequently one sample of the rich group with the land area below the average of the middle group was reallocated to the middle group, vice versa, and finally obtained 3 sample households for the rich, 19 for the middle, 13 for the poor, and 5 for the very poor group (Table 7.1).

There is no significant difference in the average age of the household heads ($p=0.86$ by variance analysis). However, it does not always mean that there was no bias of the life cycle, as a significant difference is observed in the average number of household members. It can be explained by the historical background of this area, where the clearance of forests took place relatively recently, after the Grow More Food Campaign in 1943. In regard to the origin of the land, 16 households were migrated from adjacent regions and acquired the land by clearance, while 22 were from outside the district and acquired the land by purchase. The people of the rich group belong to the former pioneers and have maintained an extended family system on their plantations. The relatively small average size of the very poor group is derived from a widow without children.

Table 7.1. Total number of the sample households, and averages of age, household members, and land area by wealth ranking (Oct. 2002). Five sample households of the middle rank (*) could not be interviewed due to their absence at every time of visit.

Household	Rich	Middle	Poor	Very poor	Total
Total no. of households	14	120	67	22	223
No. of sample households	3	19 <24*	13	5	40 <45
(% to total)	(21.4)	(15.8)	(19.4)	(22.7)	(17.9)
Average age of HH heads	46.0	43.6	46.0	42.8	44.5
Average no. of HH members	6.0	4.8	3.8	3.0	4.4
Average land area (ha)	2.53	0.59	0.15	0.03	0.53

Source: Randukai VSS and field survey in 2002

5.2. Farming System

Kerala is one of the major cash crop producing states in India. The trend of decreasing farm sizes and fragmentation, however, resulted in a declining importance of the agricultural sector. Together with urbanization along the coastal line, a shift from annual staple crops to perennial non-staple crops had increased considerably (FAO, 1985). Once expanded area of food crops such as rice and cassava under the Grow More Food Campaign after the famine in 1943 decreased again and were replaced with perennial crops such as coconut, rubber, and banana (George, 2001).

The land use pattern in Randukai also reflects these tendencies. According to the oral history of the sample households, wet paddy was once cultivated in Randukai. Those paddy fields have already been converted to dry fields and the main crops are perennial, such as rubber, coconut, areca nut, and banana. Under or in between the rows of perennial crops, annual cash crops, such as beans, ginger, turmeric, cassava, and pineapples, are arranged. Such agroforestry practices are commonly found all over the state.

Despite the small size of land tenancy, income from spice crops is adequate in Randukai. People look attracted to cultivation of spices, and sell them at the local markets for quick returns.

5.3. Source of Income

Of the sample households, 15 % made their living by farming only, and 85 % of households more or less had other sources of income such as physical wage works, carpentry, tailoring, shopkeeping, and migrant works. At the time of our interviews, there were three household members working abroad in Sri Lanka, Saudi Arabia, and Mauritania.

Due to the larger area of the land, importance of agricultural income was higher among the richer people. The correlation coefficient is 0.83 for the land area and agricultural net income, and 0.71 for the land and total income. The ratio of the average net agricultural income to the total income is 85.3 % for the rich, 54.4 % for the middle, and 49.5 % for the poor group. The relatively high dependency of the very poor group on agricultural income, 68.8 %, was derived from agricultural wage works, tenantry, and cattle rearing. The household heads of this group had various disadvantages, such as bad physical condition and background of the scheduled caste. One was relatively recently migrated from Tamil Nadu. The average income of each group also well corresponds to the result of wealth ranking (Table 7.2).

Table 7.2. Average of annual net cash income (Oct. 2001-Sep. 2002). One sample household of very poor group (*), a widow who gained her living by supports of relatives, is excluded.

Average	Rich	Middle	Poor	Very poor*	Total
Land area (ha)	2.53	0.59	0.15	0.03	0.53
Agricultural income	92,697	20,956	12,090	11,888	22,024
(%)	(85.3)	(54.4)	(49.5)	(68.8)	(61.0)
Non-agric. income	16,000	17,589	12,338	5,400	14,105
(%)	(14.7)	(45.6)	(50.5)	(31.2)	(39.0)
Total	108,697	38,545	24,429	17,288	36,129
(%)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Source: Field survey in 2002

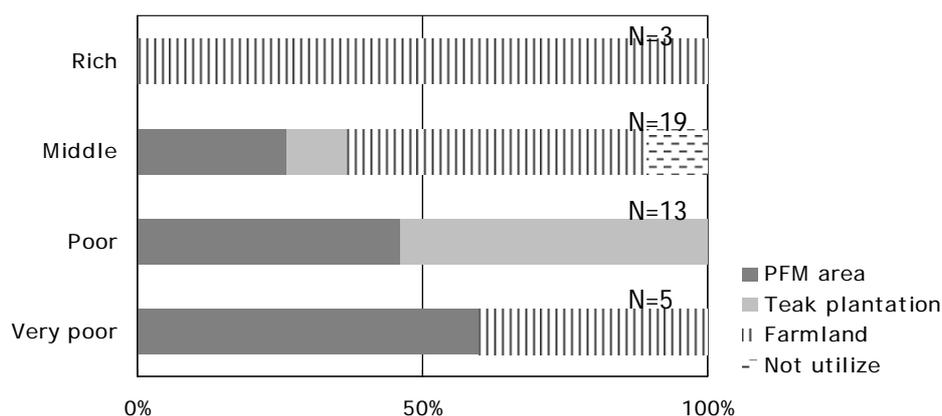
6. Dependency of Local Community on Forest Resources and the Role of PFM

6.1. Utilization of Forest Resources

There was no change in NTFP collection before and after participation in PFM. Almost one third of the total sample households obtained their firewood mainly from the farmland outside forests and 2 households used no firewood in the preceding year. When every temporary use of firewood is taken into consideration, dependency on forest resources was highest among the people of the poor group. In regard to the very poor group, 2 sample households acquired firewood from the farmland owned by the relatives or where they engaged in agricultural wage works. In addition to the natural forest allocated to the VSS, the teak plantation could also be a good source of firewood (Figure 7.5).

The factor that determines the place to collect firewood was distance. As the settlement and farmland are located in between the PFM allotment and the teak plantation, people selected the nearest one, either the

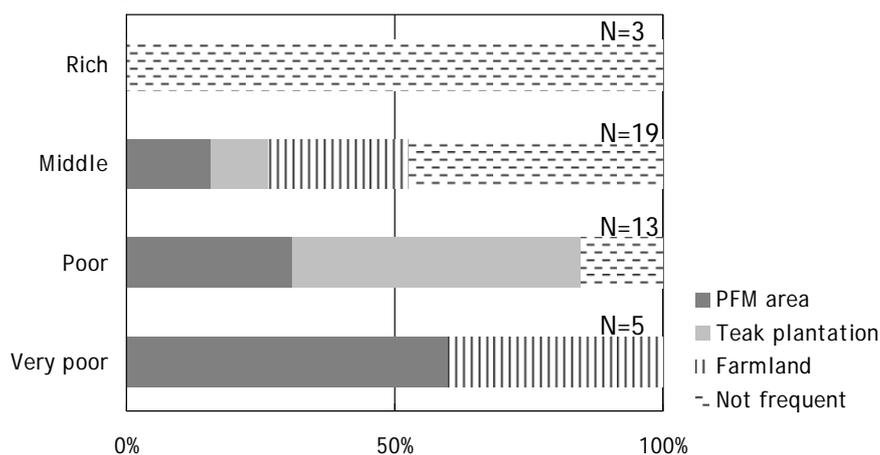
PFM forest or the plantation, and no household utilized both of them for firewood collection. It seems the first priority is given to the farmland, and the PFM allotment and teak plantation supports the landless people. The average area of their farmland is 1.01 ha for those who mainly collected firewood from the farmland (15 households excluding 2 tenants of the very poor group), while 0.25 ha for those collected from the PFM allotment and teak plantation (23 households). Propane gas and kerosene were used as supplements to firewood.



Source: Field survey in 2002.

Figure 7.5. Main localities of firewood collection (Oct. 2001-Sep. 2002)

Among the 26 households who engaged in firewood collection more than once a week, 19 households (73.1 %) mainly collected it from the PFM allotment or teak plantation, while 7 (26.9 %) from private farmland (Figure 7.6).



Source: Field survey in 2002.

Figure 7.6. Main localities of routine firewood collection (Oct. 2001-Sep. 2002). Fewer than once a week on the average is categorized to 'not frequent'.

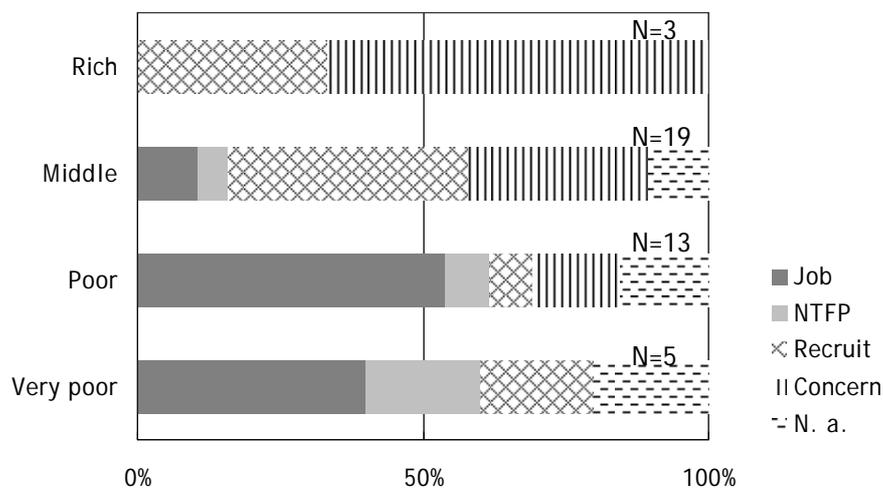
The buying and selling of firewood was found between a sample of the middle group and the very poor group, but it was not common in this area and according to the regulations only tribal people were allowed to sell firewood. One of the reasons for low dependency on firewood among the rich group is that they can obtain it easily from their homestead. Such a light work may not be separated from other daily activities. Another reason was that firewood collection was done not by the family members themselves but by their housekeeping servants instead.

The utilization of forests for fodder was less than firewood because not all the households raised cattle. Among the 40 sample households, 19 (47.5 %) were not in need of fodder and 11 (27.5 %) mainly utilized farmland. Grazing inside forest reserves was prohibited but actually occurred. However, this practice was just occasionally reported at the meetings but not regarded as an offence by the VSS members.

Other necessities collected from the forest were medicinal plants, edible fruits, green manure, and poles. While almost all the households utilized various medicinal plants, only two households answered that they occasionally engaged in wild fruits collection during the preceding year.

6.2. Incentives to Participating in PFM

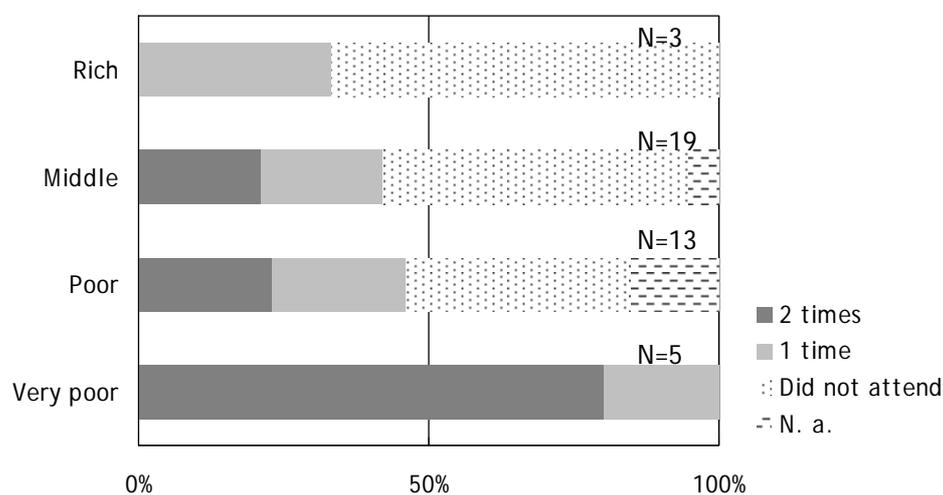
Among the 40 sample households, 11 and 3 household heads answered that the working opportunity provided by PFM and the authorized right to collect NTFP were the main reasons for them to take part in PFM, respectively. Besides these households (35.0 % of the total), 10 households (25.0 %) showed their concern for forest conservation and 11 (27.5 %) answered that they were prompted to participate. While those who showed their concern about forest issues were markedly found among richer groups, the working opportunity provided by PFM was more important among the poorer groups (Figure 7.7).



Source: Field survey in 2002.

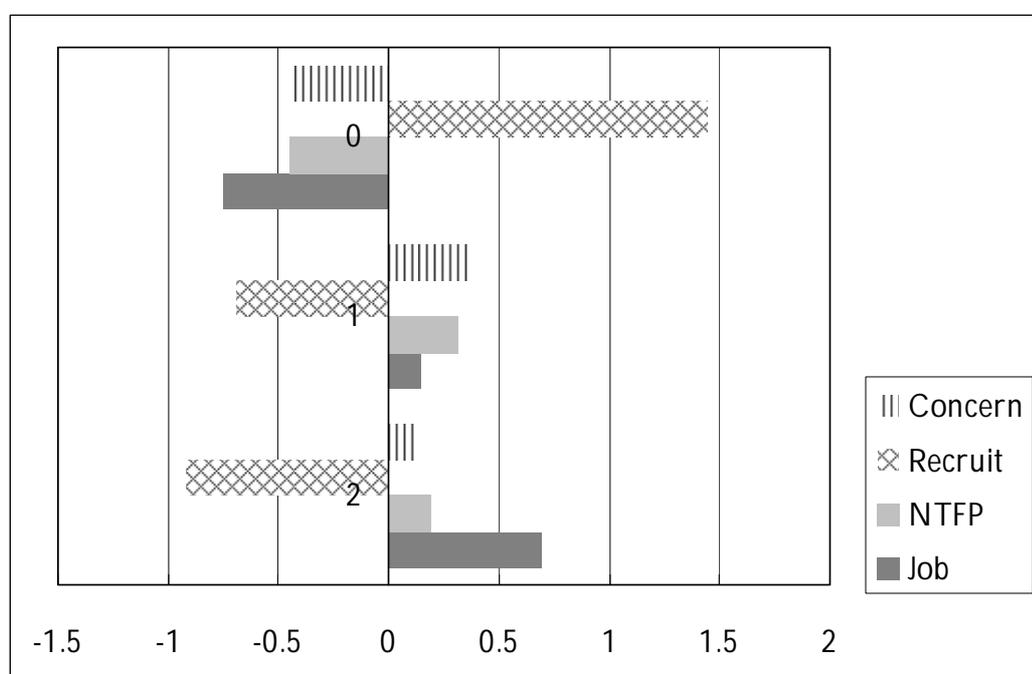
Figure 7.7. Main reasons for participating in PFM

The frequency of attendance at the general meeting, which had been held twice since the Randukai VSS started the activities until the time of interviews, was highest among the households from the very poor (Figure 7.8).



Source: Field survey in 2002.

Figure 7.8. Frequency of attending the general meeting



Source: Field survey in 2002

Figure 7.9. Adjusted residuals of the frequency of attending the meetings and the reasons for participating in the VSS

According to the Chi Square Test, no relation is found between the reasons for participating in and the frequency of attending at the meeting [$\chi^2 = 2.2279 < \chi^2(6, 0.05) = 12.5916$]. However, a tendency can be found that those who did not have positive reasons for participating in PFM were not so earnest about the meetings (Figure 7.9).

7. Discussions and Conclusion

Unlike the recent political change took place in Indonesia, which realized partial devolution of forest administration from the central to local governments, JFM aims at devolution from the state governments directly to the communities inside and outside forests under the strong initiative of the central government. After the trials at regional levels, the central government incorporated this new idea into the forest policy and has encouraged the state governments to adopt it. To what extent the New Forest Policy and JFM guidelines can come into force at the state level is another subject to be studied, but yet we can learn an effective combination of top-down and bottom-up approaches from the outline of the process.

Though Kerala state accepted JFM later than in other states, a laggard according to Bahuguna (2002), the KFD immediately took various measures like trainings and study tours to advanced areas and discussed the ideas of participatory approaches, two of which were embodied as the Fringe model and NTFP model. The area under PFM rapidly expanded and reached 15.2 % of the total recorded forests in 2003.

One of the factors that brought such a rapid expansion can be found in absence of serious deforestation problems. Despite the high population density, the land use pattern outside forests contributed to reduction of the dependency on forest resources. From the top of hills, indeed, bare lands could be observed only along roads and residential areas. Almost all parts of the state were covered with tree crops, and Kerala, the name of the state, means the land of coconut itself. Such common practices of agroforestry on the farmland in Kerala brought about decrease in the daily pressure on forest resources. It suggests that the potentiality of agroforestry could be an alternative to the deforestation caused by subsistence activities. In the case of Randukai, various sources of non-agricultural income also contribute to reduce the pressure on forests.

As per the instructions of PFM, different stakeholders at the local level were well organized into the VSS. One of the households ranked as the rich comes of a landlord family that once reigned before the Kerala Land Reform Act was enforced in 1963. However, effects derived from such involvement of the relatively wealthy class were not clear. They joined the VSS because they were recruited or interested in environmental issues, but they looked reluctant to be concerned in actively.

By contrast, expectations on income generation through participation in the VSS were more apparent among poorer people. However, it did not always come up to their expectations, and the respondents often

complained of it at our interviews. Only one sample household could earn some by patrolling in the last one year. The arrearage of the financial support from the KFD also discouraged the people and may deaden the enthusiasm at the beginning.

Although such technical problems were observed, they do not seem to affect forest resources. The existence of more valuable teak plantations in good conditions without PFM tells its own tale that the forest department has maintained the resources using a sufficient number of professional staff by so-called conventional forestry. If the goal of PFM is an absolute transfer of forest management to local communities, how to entrust the management of plantations can also be taken into considerations. In any case, it seems necessary to take measures of income generation based on forest resources. Otherwise, the organization of VSS may become an empty formality.

References

- Ahmed, M. F., 1997. *In-depth country study: India*. FAO Regional Office for Asia and the Pacific, Bangkok.
- Bahuguna, V. K., 2002. Forest policy initiatives in India over the last few years. In *Proceeding of the Forest Policy Workshop 22-24 January, 2002*. Kula Lumpur.
- Chundamannil, M., 1993. *The history of forest management in Kerala*. Kerala Forest Research Institute, Peechi.
- Damodaran, D., 2003. *Joint Forest Management in India: assessment of performance and evaluation of impacts*. N. p., Bangalore.
- Datta, R. and K. P. M. Sundaram, 2004. *Indian economy*. S. Chand, New Delhi.
- FAO, 1985. *Intensive multiple-use forest management in the tropics: analysis of case studies from India, Africa, Latin America and the Caribbean*. FAO, Rome.
- FAO, 2001. *Global forest resources assessment: main report*. FAO, Rome.
- Forest Survey of India, 2001. *State of forest report 2001*. Forest Survey of India, Dehra Dun.
- French Institute of Pondicherry, 2003. *A brief outline of biodiversity conservation strategy and action plan for Kerala*. KFD, Thiruvananthapuram.
- George, P. S. 2001. Population and land use in Kerala. In Indian National Science Academy et al (eds.), *Growing populations, changing landscapes: studies from India, China and the United States*. Washington D. C.
- Hill, I. and D. Shields, 1998. *Incentives for Joint Forest Management in India: analytical methods and case studies*. World Bank, Washington D.C.
- KFD, 2002. *Green citadel: an interactive CD-ROM on forests of Kerala*. KFD, Thiruvananthapuram.
- Kerala Gazetteers Department, 1989. *Kerala Government gazetteers*, vol. 3. Government of Kerala, Trivandrum.
- Kerala State Land Use Board, 1995. *Land resources of Kerala State*. Kerala State Land Use Board, Thiruvananthapuram.
- Kumar, S. and S. Kant, 2005. Bureaucracy and new management paradigms: modeling foresters' perceptions regarding community-based forest management in India. *Forest Policy and Economics* 7: 651-669.
- Masuda, M. and J. Mishiba, 2003. Creation of forest reserves and change of the role in India (in Japanese). *Bulletin of Tsukuba University Forests* 19: 1-40.
- MoEF, 2004. *Annual report 2003-2004*. MoEF, New Delhi.
- Misra, D. and S. Kant, 2004. Production analysis of collaborative forest management using an example of joint forest management from Gujarat, India. *Forest Policy and Economics* 6: 301-320.
- Nagamine, R., 2002. Forest policy after the independence (in Japanese). In H. Yanagisawa (ed.), *Modern South Asia: development and environment*. University of Tokyo Press, Tokyo.
- Pari, B., 1998. The persistence of population in Indian forest policy. *The Journal of Peasant Studies* 5 (4): 96-123.
- Ribbentrop, B., 1900. *Forestry in British India*. Government Printing, Calcutta.
- Sarin, M., 1996. *Joint Forest Management: the Himalayan experience*. Centre for Environment Education, Ahmedabad.
- Vasudevan, C. V. and V. Sujatha, 2001. *Forest laws of Kerala*. Ganesh Publications, Cochi.