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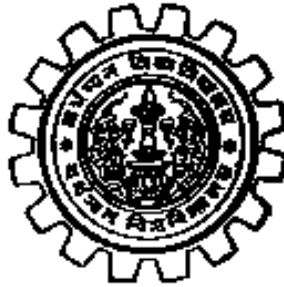
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**PROPERTY RIGHT, DYNAMICS OF SOCIO ECONOMIC
CAPABILITY AND PEOPLES' PERTICIPATION: IMPACT ON
COMMON PROPERTY OUTCOMES IN A REMOTE RURAL
REGION IN THE
BANKURA DISTRICT OF WEST BENGAL.**



FINAL REPORT

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Property Right, Dynamics Of Socio-Economic Capability And Peoples' Participation: Impact On Common Property Outcomes In A Remote Rural Region In The Bankura District Of West Bengal

Summary:

There is no doubt that proper management of forest resources is extremely important for providing sustainable means of livelihood to rural poor. In developing countries like India, improper property right, economic insecurity, regulation failure, increased commodification and heterogeneity in socio-economic features of stakeholders had often led to unsustainable management of CPR. In this backdrop an incisive study has been undertaken in the context of a tribal dominated forest region exposed to degradation. The study site includes selected villages in southern forest division of Bankura district in W.B.

Since the enunciation of forest protection act (1990), the traditional community access and control has been substantially wrested by the forest dept in W.B with only specific duties and functions reserved for the forest protection committee (FPC) formed of the villagers. However this has hardly reduced the poor people's dependence for collection of NTFPs that provide a substantial part of their livelihood in the study region. Further, enjoyment of CPR resources by non- poor households is also substantial.

According to food calendar in the region, during May – June there is extremely high threat to food security together with lack of job. Forest dependency is felt to be high with collection of Kendu leaves, fire wood, fruits & food from forest with hardly any vegetable available. Aug-Sept is the most difficult period when villagers have no other alternative than to depend solely on forest resources, with marginal improvement in their condition in Sept- Oct.

During lean periods, villagers have no other option than to take resort to illicit cutting of trees/branches, collecting various NTFPs together with grazing their cattle. The FPC members themselves often very poor, ignore mutual illegal collection from forest out of sheer necessity of survival. This sets forth the problem of tragedy of the commons with APL class people also somewhere preempting NTFP collection in order to be served first on first-come basis. The fact that species has declined in most of the sample villages together with forest degradation was reported by majority of the sample villagers on the basis of their observation and perception.

Despite the emergence of joint forest management system and villagers' forest-dependence, because of lack of co-ordination between forest dept and FPC, politicization of FPC activities, widespread illiteracy and negation of customary right to access the forest resources, villagers often do not feel motivated to protect the forest with a feeling of alienation of their traditional property right. As a result there has been observed a tendency towards breaking the rules of access, illegal felling, collection of different species at a rate beyond their survival capacity and reducing the forest base to prepare land for quick return yielding babui grass cultivation. Spread of commercial cultivation of babui grass in some villages badly affects the long run productivity of soil rendering it unsuitable for further growing of crops or plant species. The rate of exploitation of different trees, plants and shrubs had been often much higher than the flora's regeneration. The destructive impact of this rate of consumption is especially discernable in the case of less-frequent species. Again introduction of high yielding swarna paddy had an expansionary effect on peoples' attitude to establish tenurial right over more cultivable land with relative neglect of perennial herbs and other species of plants. The consequential increase in livestock and their grazing in the areas adjoining forest lands had a deleterious effect on the growth of young shoots and tender herbs of different species. Regeneration of various slow growing species was possibly curtailed as the green aerial parts were quickly devoured and growth stunted by the trampling of hooves. Apart from this, occasional man made fire- burning of specific areas of forest land to make room for clear collection of mahua and kendu seeds, leaves and fruits had possible damaging impact on the growth of some tender species of plants.

Sometimes the forest people completely uproot important medicinal herbs when these are found to have good commercial value and marketable scope within the village. As a result, due to lack of proper care and maintenance as well as deficiency in good management techniques, the number of species and availability of forest produce declined jeopardizing further the prospect of a rural forest based livelihood. The problem is accentuated with prevalent threat of eviction and high perceived rate of degradation. Binary logit regression results indicate that in all cases, fear of eviction from forest land induces significant insecurity of forest tenure and accentuates the probability of forest degradation. This suggests urgency in grant of secured forest right to arrest this.

In order to reduce extreme forest dependence and generate alternative income sources, the micro planning process should try to merge the activities of FPC with that of other Govt Depts. However despite the lofty goals expected to be achieved out of this institution, meaningful participation of communities in the micro-planning process is often short of the desired level, with greater heterogeneity across different rural groups and lack of adequacy in the determining factors conducive towards a better participatory attitude.

Micro planning and peoples' participation is also influenced by the level of social capital composed of mutual trust, cohesion and cooperation among village stakeholders. In this context social capital index for each village has also been computed.

The sample villages located in and around the considered forest ranges derive diverse benefits from it in the form of not only timber, fuel, fodder and leaves but also livelihood and job opportunities. It seems therefore imperative to assume that people in these villages indulge in participatory forest development activities which also cater to their livelihood to a very great extent. There is no universally accepted measure or index that can be used to address a developmental programme in terms of people's participation. In this context, the method used by Singh (1992) has been adopted to compute the people's participation (PPI) index.

It is observed that the correlation coefficient between the determinants' indices and participation indices for the respective villages is only 0.563. (significant at 18.8 percent). This is only a very moderate degree implying that the components in the determinants indices often do not assume desirable pattern of values and villagers' participatory responses sometimes transcend (in either way) what would conform to the computed value of index of determinants. It may be observed that the correlation between social capital indices and participation indices for the 17 villages together appears to be moderate at value 0.418 (sig. level 0.095). The positive value signifies that in general social capital directly influences the participatory efforts and thus supports the usual hypothesis. But the correlation value is rather on a lower side and not strongly significant implying weak impact of social capital on participation. Process of building of social capital involving holding frequent meeting of FPC members, ensuring voice and proper care to the opinion of every participant in the meeting, provision of extension services in forest preservation and plantation, imparting training in commercial agro-forestry activities, ensuring felling of mature trees at regular intervals and sharing of the revenue among FPC members might be supportive of preservation of forest resources.

Forest should also be utilized to generate cash livelihood of forest dwellers. The region is rich in multiple species of diverse NTFPs which have tremendous potential for commercial tapping if properly reared, harvested, processed and marketed. Although the responsibility of purchasing sal seed and kendu leaves from the adibasi people and its subsequent marketing lies with the Govt. controlled large agricultural multipurpose cooperative society (LAMPS), its efficacy is in question because of speculative activity by mahajans. In this context the role of LAMPS need be resuscitated for delivering the villagers from the clutches of middlemen. In order to induce self supportive role for villagers, the Govt. and forest Dept. should promote emergence of a strong producer organization for better marketing , processing and storing of forest products. There is no doubt that enhanced cohesion in the functioning of a number of stakeholder institutions like panchayats, communities, local forest office, processing industries, SHG as well as

grassroot NGOs would lead to better sustainable prospect of forest based commercial activities and thus arrest forest degradation.

Chapter 1

Introduction

1.2 Introductory view

There is no doubt that in recent years prudent management of local common pool resources /CPRs has assumed a great importance from the point of view of providing means of livelihood to a great number of rural poor. Wet land, fishery, forest resources, grazing land, ground water etc. constitute important common pool resources capable of providing wherewithal of life to a vast section of people. Among these most important appears to be forest land for its diverse type of timber and non timber benefit including environmental benefit. In India forest resources constitute the second largest land use after agriculture with a coverage of 641.13 sq km or 22% of total land mass. Apart from providing diverse benefits to the economy in general, forest resources provide part of the subsistence and cash livelihoods to about 275 million rural poor in the country. The gradual depletion of forest cover and increasing dependence of rural folk has given rise to sort of conflict of interest among diverse user groups and associated management problems. The primary stakeholders happen to be the forest communities or people living in and on the forest fringe areas earning substantial part of livelihood in the form of fuel wood, fodder, fruits, flowers, fencing materials etc. The secondary stakeholders happen to be state/district forest dept, NGOs , plantation companies etc. The traditional right and interest of forest communities, and their livelihood and primary stakeholder concern were hardly addressed to in the forest management policy before and immediately after independence.

In developing countries degradation of common property resources(CPR) has often been associated with high rate attached by the poor in discounting future flow of benefits, improper property right, economic insecurity, regulation failure and relative ability of local institutions that shape the degree of collective action. In regions where variations in local institutions do not exist, degree of difference in peoples' participation in

conjunction with differential in socio-economic factors determine the common property outcomes. Insecure property right and associated risk of eviction, poverty and poor access to insurance and credit market are often viewed as underlying factors responsible for degradation of common property resources. Again absence of motivation/monitoring often fail to enforce active participation thereby leading to degradation of the resource. Besides this class and gender conflict, agricultural intensification, population pressure and increasing commodification also leads to unsustainable management of the resource. Sometimes long term interest of the community happens to be sacrificed due to short run economic pursuits. The problem becomes grave when despite degradation and shrinking availability and restricted access, resource dependence of the poor does not diminish. In this backdrop the aspect of insecurity in property right, uncertain access to credit market, dynamics of socio-economic features, relative efficacy of peoples participation and trade off between short and long term interest of the community merit an integrated study in a highly CPR dependent region exposed to the risk of degradation. The problem gets added importance when studied in respect of a CPR region inhabited mostly by backward community who are usually supposed to be highly dependent on nature for their survival.

1.2 The present day Problems:

- (a) Poverty factor, (high rate of discounting of future environmental benefits) lack of alternative sources of income and employment and misdistribution of benefits and fruits of development have an untoward influence on the maintenance of forest resources. Despite the knowledge that overexploitation of forests hampers the long term interest, the poor forest village dwellers consisting of mainly tribals, landless labourers, marginal and small farmers and other backward economic and social classes (like SC and ST) can hardly refrain from such activity for satiating their immediate survival needs.
- (b) The existence of class and gender conflict and different political affiliations of the stakeholders often tend to centralize the decision making power in a few powerful hands. Accordingly there is often witnessed lack of commitment and

participation devoid of any real interest on the part of a segment of forest dwellers. Apart from this there is often found non-participation on the part of some FPC members, which is partially attributable to lack of proper motivation and lack of awareness of the benefits of joint conservative action.

- (c) Absence of alternative sources of income/employment in remote areas and dearth of Govt- sponsored micro planning activities using local resource often lead to illegal felling/mopping of forest for deriving some quick income.
- (d) Sometimes there is observed a threat of traditional forest lands being converted to other purposes resulting in virtual eviction of indigenous people from their rights to access to forest resources. This often tend to give rise to unsustainable practices in the forestry scenario in order gain quick profit in short time. Lack of powers and right of the FPC members commensurate with their duties and potential often lead to failure to contribute to good forest management activity.
- (e) Lack of proper co-ordination between the power, attitude, responsibility, functioning and monitoring by the forest dept staff and the interest , motivation and action by the FPC members, often results in wanton depletion of forest resources. .

1.3 Objectives:

Broad Objectives:

Overall goals are to assess the interaction and impact of type of property right, institutional elements, accessibility to market, other socio-economic factors, trade off between short and long term interest and people's participation on CPR outcomes.

Specific Objectives:

1.To study the relationship between tenurial status, poverty level, family size & other household variables and the level and pattern of household forest dependence.

2. To study the dynamics of formal versus informal arrangements influencing peoples' attitude to CPR. Both dimensions contribute to the understanding of perception –related and motivational elements of institutional effectiveness.

3.To study the dynamics of rural change in terms of class/gender conflict, demographic features, market forces, public intervention etc and their association/impact on peoples' participation for conservation.

4.To assess the inter-village differential in the relationship between degree of participation as well as other socio-economic variables and the level of forest degradation.

5. To identify the group of people responsible for specific type of use of resources and degradation and evolve proper regulatory measures and right kind of institutions.

6. To study the trade off between short term economic interest and long term environmental benefit from use of forest land.

7. To assess the extent of multi-level co-operation amongst government agencies, NGOs , research and extension teams, and co-operatives required for development of a sustainable CPR base.

1.4 Location of the study region:

The district of Bankura is situated on the south-western side of West Bengal bordering on the Jharkhand state. According to 2001 census, about 92% of the people in the district live in rural areas. Tribal people constitute about 10.33 % of the district population. Geographical area of the district spans over 6882 sq km. Forest cover in the district as per R.S. data was 1696.81 sq km in 1988 and it increased to 1815.22 sq km and 2193 sq km in 1991 and 2000 respectively. Accordingly there had been a rise in percentage of forest

cover (with respect to geographical area of the district) from 24.66% in 1988 to 26.38% and 29.3% respectively in the years in 1991 and 2000. According to state forest report 2005-06 the area under forests by legal status displays a coverage of 1311 sq km under protected forest, 80 sq km under reserved forest and 91 sq km under unclassified state forest. The corresponding figures in W.B. in 2005-06 had been 3772, 7054 and 1053 sq km respectively. Thus total forest area under legal status in Bankura stands as 1482 sq km (about 21.5%of the district) which is below the national average of 33% forest coverage. This forest area is broadly divided into two divisions, Bankura south (747 sq km) and Bankura north (735 sq km). Recently there has emerged a smaller third division called Panchet division. Land use patterns indicate that culturable wasteland stand as 11703 ha, fallow land other than current fallow at 11101 ha, current fallow at 16480 ha and 36692 ha of barren and uncultivable land. This land may be made suitable for taking up forestry/waste land development. Further on an average about 20% of the forests are barren or degraded. Forest–type area in Bankura (southern) division is given in the following table 1.

Table 1.1: Division and Type-wise Forest Area in Bankura

Division/Block	Type of Forest	Area (ha)
Bankura (N)		
Bankura (S)		56300.475
	Protected Forest	52914.920
	Reserved Forest	2042.420
	Unclassed Forest	1343.135

The following table reveals that in 1994 the number of FPCs as well as protected area in northern division were about 2.5 times compared to that in southern division. However this disparity almost leveled up in 2006. In terms of sex-wise as well as caste-wise FPC membership however, northern division surpassed far ahead of the southern division. If we compare average no of members per FPC, we find that in northern region there are about 264 members compared to 94 only in southern division while the absolute number of FPCs are greater in the latter compared to the former. This indirectly indicates that there are comparatively greater degree of heterogeneity in terms of geographical locations, economic status , social order as well as interest of the members in the southern

division and the formation of FPC had to be based keeping in mind the possible homogeneous elements in an otherwise heterogeneous scenario. Table 2 below depicts a comparative scenario of number of FPCs, protected area, gender and caste status of members in FPCs across two forest divisions in Bankura district and the state as a whole.

Table 1.2: Comparative Scenario of Number of FPCs, Protected Area, Gender and Caste Status of Members in FPCs in Bankura Forest Region and W.B.

Division		Bankura (N)	Bankura (S)	West Bengal	
Total no. of FPCs	Mar'94	609	256		
	Mar'06	547	593	4079	
Area Protected (ha)	Mar'94	60038	21941		
	Mar'06	43613.19	43191.16	542057.217	
No. of Members	Male	Mar'94			
		Mar'06	138990	51888	519551
	Female	Mar'94			
		Mar'06	5400	3946	43077
	SC	Mar'94			
		Mar'06	57304	13118	177812
	ST	Mar'94			
		Mar'06	21494	17906	134594
	Others	Mar'94			
		Mar'06	65592	24810	250222
	Total	Mar'94	60027	17689	
		Mar'06	144390	55834	562628

Usually comparatively economically weaker section and indigenous tribal people are highly dependent on forest resources and their FPC membership is about 54.5 % in northern division while 55% in southern division. Interestingly however there has been observed a tendency towards increased encroachment on forest land for agricultural purposes in southern division compared to a reversal in the northern division as is evident from the table 3 below. This indicates a tendency towards greater degradation of forest resources in southern part of the district compared to that in northern part.

Table 1.3: Forest Area Under Encroachment in Bankura District

Forest division	Area under encroachment (ha)	
	Dec.87	March 06
Bankura (N)	1516.00	1406.68
Bankura (S)	2112.00	2300.39
Panchet	N.A	1331.51
Bankura	N.A	5038.58

Based on this comparative scenario of northern and southern divisions, it seems imperative to focus on the southern part because of the greater number of FPCs operative in the region, supposedly higher degree of heterogeneity, increasing tendency of forest area encroachment among dwellers etc. Bankura south division is composed of 12 forest ranges, each forest range having a number of forest beat offices for administrative convenience as is evident from the following table 4.

Table 1.4: Names and Area of Forest Ranges in Bankura (South Division)
With the Number of Beats

Range	Area (ha)	No of beats
Bankura	5199.84	3
Indpur	6019.86	4
Kamalpur	2036.937	3
Khatra1	5303.13	4
Khatra2	2258.14	3
Ranibundh	6628.14	4
Jhilimili	3850.74	2
Motgoda	3823.57	2
Phulkusuma	4140.45	2
Pirrogari	4559.31	3
Sarenga	5510.96	3
Simlapal	5948.61	3

The present study area covers a segment of Ranibundh and Jhilimili ranges. Jhilimili is located 70 km away from Bankura town. A travel from Ranibundh to Jhilimili offers a wonderful sight of spectacular forest of varying height on both sides of the route. The sparkle of micaceous soil adds to the beauty of the environment.

The names of the beats, beat wise forest area and corresponding number of forest protection committees for the aforesaid two ranges are given below.

Table 1.5: Names of Beats, Area and Number of FPCs in Ranibundh and Jhilimili Range

	Names of beats	Beat Wise Forest Area (ha)	No of FPCs
Ranibundh range	Ranibundh Head Qr	2752.44	24
	Ambikanagar	1278.6	11
	Punshya	1929.56	20
	Banpukuria	667.54	Nil
Jhilimili Range	Jhilimili Head Qr.	660.10	11
	Muchikata	3190.64	13

1.5 Scheme of the study

With a view to putting analytical dimension to the objectives of the study, the project report is organized along the following chapters.

Introduction of the problem (as already stated)

(2) Review of literature

(3) Data and methodology

(4) Profile of the sample village- specific FPCs

Analytical and empirical findings of the study are captured in the following chapters/parts

(5) Determinants of forest dependence, and link with perceived forest degradation- A socio cultural analysis

- (6) Status of joint forest management :Issues in social capital and other factors influencing peoples' participation
- (7) Inter-village differential in the degree of participation, socio-economic issues and forest degradation.
- (8) Socio-institutional analysis for a sustainable forest management
- (9) Concluding observations and policy prescriptions

1.6 Sampling Design

The study is conducted by considering the case of two forest ranges in Bankura southern division. Two forest beats in each of these ranges have been selected. From each beat a number of villages have been chosen and from each such village 50% of the inhabitants have been selected by purposive random sampling. So altogether a total of 588 rural households have been selected for the study. The nature of sampling design is shown in the following table 1.6.

Table 1.6: Sampling Design of Study Region

Location	Forest Range	Forest Beat	Villages	Population Size	Sample Size	Type of sampling
1	Ranibundh	Ranibundh	Mahadevsinan-Barudi	40	20	Purposive random
			Bhurkura	70	35	
			Kelia pathar	116	58	
			Katiam	134	67	
			Buriam	94	47	
			Barapucha	72	36	
		Punshya	Janta Dumur	80	40	Purposive random
			Kotra	88	44	
			Dhankura	64	32	
		2	Jhilimili	Jhilimili	Vaishnabpur	50
Kasakendh	42				21	
Ramgarh	66				33	
Muchikata	Khata-am			72	36	Purposive random
	Dubukhana			42	21	
	Muchikata			56	28	
	Churku			52	26	

Chapter 2

Review of Literature

After the successful Arabari experiment of joint forest management (JFM) system in W.B (India) during the 1970s, it came to be institutionalized as a supposedly viable programme for forest conservation from 1990 onwards. Ever since then there has been a number of studies concerning the efficacy of the JFM institution in better conservation of forest resources and meeting the needs of the poor.

Mukherjee (1998) vehemently argues that success of joint forest management (JFM) institution in protecting the forest is preconditioned by satiation of survival needs of the poor people in the adjoining area. Referring to the case of Arjuni block, she finds that the poor people there were exposed to seasonal livelihood and increasing food insecurity. Earlier the locally grown wild food provided a safety net to people in distress times. The income earned through sale of these food items acted as a shield against fall in their real income. But with increasing commoditisation of farm related activities, blockade of access to such collection due to shrinking and degradation of CPR land, there has emerged increasing cases of illegal felling of immature trees by a section of the poor desperate to protect their real earnings. She also takes note of how the failure of JFM in the area has resulted in increased plight of women and children in the locality. They are found to go to other forest for collection of food and fuel items but face obstruction for the infringement of interest of the FPC of those forests. As a policy focus she mentions that functioning of a JFM is influenced by local socio-economic, political, cultural and ecological factors. For ensuring a sustainable management of CPR the interaction of the aforesaid aspects need to be reckoned with and prudent action need to be undertaken to integrate them in a coherent manner.

Beck (1994) in the context of a study on west Bengal has focused on the great role of CPR towards sustaining livelihood of the poor while emphasizing the issues of class and gender conflict in influencing CPR outcomes. He also noted with concern that the conflicts are likely to rise in future due to increasing commoditisation and restricted

access. Considering the sample case studies of three villages he showed that most important CPRs for the poor appeared to be plant, fuel, fish and gleaned grain. The access to these items were however differentiated on the basis of caste and gender. Apart from this rising agricultural development, commoditisation of formerly open access resources, and increased number of dependents on CPR have interactive impact in lessening the access of the poor to CPRs and their increased plight.

Chopra and Dasgupta(2008) in their study on the extraction of CPR in four states in India, observed that household dependency on forests may emerge either from freedom of choice in the presence of alternatives or lack of choice. It is found by them that asset rich people having opportunity of easy access to markets and closeness to forest collect NTFPs mainly for sale while the relatively poor living in close proximity to forests with less access to market depend on collection of NTFPs mainly for subsistence needs. This indicates that in the context of market oriented development forest collection activity emerges as supplementary source of income of relatively richer rural folk thus further intensifying the problem of poorer section.

Bon (2000) in a case study in the context of H.P considers the common property resources like grazing land, irrigation and forest resources. He found that large tracts of grazing land have been encroached upon for private farming and accordingly many poor pastoralists have been rather compelled to resort to grazing in forest and intensify green loping of certain species. A sample study meant to ascertain the factors responsible for encroachment led to the observation that economic power factor far dominated the caste group affiliation of the villagers. The class hierarchy on economic basis reigned supreme in allocation of encroached land and its size and resulted in a skewed distribution. According to him, community ownership and their regulations are the appropriate institutions to thwart further private intrusion to public uncultivated land. However, legal recognition of such rules and regulations are important to strengthen communal control and preservation of CPR.

Singh (2004) in his paper puts emphasis on the dynamics of institutional changes in transitional villages. With the onset of globalisation and influx of external information and market ideologies the fabric of rural society tends to undergo a change in terms of a blow on the identity of the community, increased heterogeneity and changes in social capital. He points to the vulnerability of the CPR management under conditions of increased socio-economic mobility, decreasing convergence of group interest, receding concern for conservation of resources in the wake of increasing preference for increased consumption. Village community rules and regulations as such seem to be inadequate to protect CPR under such circumstances. Increased role of the state as a co-partner of village communities, recognition of village laws and rules within the legal frame of the state and granting of property rights along with clear rules of sharing resources and responsibilities are likely to save the CPR from appropriation for private benefits and ensure their better conservation.

Heltberg (2001) in his study on the efficacy of management institutions in the context of a protected area commons in Rajasthan, uses an instrumental variable technique to explain the extent of forest dependence and forest outcomes through interactive impact of local institutions, demographic features and other related factors. He stresses that the local resources in the area are getting gradually depleted because of illegal land uses, pressure of fuel wood collection and grazing. The degradation is ascribed not only to the activities of the poor but also to the degrading land use practices of big owners who try to cash on good market potential. A forest degradation index is also constructed using the sum of coded form of three factors like forest damage, forest condition relative to earlier period and use penetration. He points out local resource dependency of the villagers is adversely affected by declining and ill-managed village commons. Better conservation and management strategies with improved technologies together with motivated stakeholders can somewhat reverse the condition of the commons for the better.

Chopra (1995) puts stress on the economic and ecological inter-linkage between forests and other sectors of the economy. She cites that Govt. policy parameters with respect to forest have a bearing on the type of interaction with other sectors. In this context she

focuses on three different forest policies enunciated in different times in pre and post independence era. According to her, the 1894 colonial forest policy appears to recognize the multiple ecological functions of forest resources, upholds the local user right to forest products, does not recommend augmentation of state revenue at the expense of restriction on local needs and rescinds agricultural extension to minimum area of forest required to supply the general forest needs of the economy. On the contrary the 1952 policy mostly based on the 1927 forest act nullifies local user right, encourages production of timber for industrial/commercial benefit in preference to the sale of minor forest products. This policy however met with demonstration and furore against it. The 1988 forest policy proclaimed by the Govt. emphasized decentralized and village centric control of forest resources in preference to central regulation. The environmental and conservation role of forest resources was recognized. Local people and voluntary agencies' role was stressed for better managing the degraded forests, triggering the advent of JFM institutions. However the autonomous role of local institutions was not recognized and several hopeful provisions of forest policy seemed to be belied by some contradictory provisions of newly amended forest conservation act.

Menon (1995) questions the efficacy of JFM institution in providing the right alternative for forest management purposes. According to him although it is better than earlier prevailing state control over forest resources, it is not an unmixed blessing despite its widespread adoption in the country since the Arabari experiment. Making an allusion to certain regions in T.Nadu he raises doubt about the potential of ensuring a decentralized and participatory type of forest management through JFM institutions. He is at one with the view that formation of FPC and providing them special overriding right to control over specified stretches of forest area might lead to exclusion of persons not in the FPC from hitherto enjoyed customary right. Again it might be so that the right given to FPCs might be at variance with the rights enjoyed by certain other local bodies like the panchayat. Again he argues that while JFM at one end might seem to be giving more power to the locals, at the other end the state through its forest dept exercises great control in organizing and monitoring the functions of FPCs. Accordingly the extent of autonomy enjoyed by the locals remains an enigma. This interference in the constitution

of FPCs often results in neglect of immediate interest and concern of the local group which it purports to represent. He concludes by stressing that apart from generation of employment through formation of FPCs and providing usufructuary right to them, protection of forest land needs more focused consideration of issues like security of land tenure and property right.

In a study of three selected villages in Karnataka, Pasha (1992) points out that around 10% to 6.2% of the gross income of the poor and non poor households respectively come from CPRs. Another study of 15 villages in Karnataka (Dadibhavi 2001) revealed that the proportion of income derived from CPR to rural poor households varies from 4% to 18% of their gross income. In a comprehensive study on CPRs (covering 82 villages from 7 states in dry regions) Jodha (1990) summarised his findings on the importance of CPRs especially for the rural poor. His findings indicate the extent of CPR dependence of the poor in terms of their collection of fuel, fodder and fencing material and income and employment generation during harder times. In a study of 25 villages in Gujrat, Iyengar (1989) showed that there was a decline of both quantity and quality of CPRs mainly due to encroachments as well as through legal privatisation. Nadkarni (1990) points out that many villages in Karnataka are now left without 'gomols' or village pastures and only a few left with adequate site of pastures. Hence village dwellers without any gomol try to graze their animals either in the state forest or in the gomols of neighbouring villages, which becomes a source of tension. Singh and Subramaniam (1984), Chopra et al(1989), Paul(1989) point out the importance of participation on the direction and execution of developmental activity. According to Chopra, Kadekodi and Murti(1989) participatory management of CPR on the basis of coordination and cooperative efforts of rural people has assumed increased importance for rural development. Again the important role played by Panchayat and N.G.Os in the context of rural development and CPR management has been pointed out by Behar(1998). He points out that in the wake of 73rd amendment the Panchayat system has generated great enthusiasm as a representative institution voicing the needs and aspirations of rural people. Some of the NGOs are acting complementary and supportive to the efforts of panchayats. Agarwal (1994),

Gadgil & Guha (1995), Singh et al(1996) found alternative use of CPR land by brick mill owners and jotdars , thus threatening poor peoples' livelihood.

In her writing based on the findings of the conflict of interest of forest dependent tribal people in Alirajpur tehsil in Jhabua district(M.P) with that of forest dept., Baviskar (1994) puts stress on issues like state denial of rights towards tribal people, interest in maintaining ownership status of forest resources by forest officials and waning of participatory attitude among tribal people for forest conservation. She questions the efficacy of draft forest act (enunciated during the early years of 1990s) that seeks to promote conservationist stand against forest degradation by severely curtaining people's right to access the forest land. According to her , the forest dept's drive to end the NEVAD (unlawful encroachment of forest land by tribal people) leading to environmental degradation is likely to be opposed by deluge of protests and resistance by the Adibasi people who view NEVAD as a means of their survival. The mandate of environmental conservation given to forest dept (which lives off the forest and Adibasi people) mostly motivated it to retain its control over the forest resources with various corrupt practices and unofficial transactions. She sternly says that perpetuation of insecurity of tenure, risk of eviction, absence of a guaranteed access to land on a regular basis and a feeling of being treated as intruders in their traditional customary land , have turned their eyes away from full participatory efforts. According to her grant of security of tenure, increased access to forest land, provision of adequate financial resources for investment in environmental conservation programmes, can resuscitate the lost trust between forest dept and tribal people , which is of utmost need for ensuring a whole hearted participation by forest people.

Pattanaik and Dutta (1997) in their article focus attention on the working of JFM institution in South-West Bengal. According to them the institution of JFM envisaging participation by forest community and a mutually co-operative role between FPC and forest dept(FD), emerged as a great reliever of the erstwhile autocratic hold of FD on forest resources. They point out to the fact that the positive fallout of the JFM experiment in Arabari was observed in a noticeably bigger scale in the form of formation of highest

no of FPCs in the forest region of South- West Bengal. Selecting a sample six villages they find a great response in most of those FPCs towards forest management, although issues of occasional intra-village conflict, gender and social inequity sometimes suspended a wave of tension in their participatory activity. The transparency in matters of decision of felling and marketing of wooden logs is also not always properly maintained with the FPC members often kept in the dark by the FD. According to them such unilateral decision by the FD , their power to dissolve the FPC any time with no legal status yet granted to them and right to have a larger chunk of forest product, need to be somewhat reversed without which there may be breach of mutual trust at the slightest provocation thus damaging the very objective of JFM institution.

Sierra (2001) analyses the causes of tropical deforestation and avenues for sustainable forest management in North West Ecuador. Tropical deforestation is ascribed to commercial logging .Based on data of forest cover change between 1983 to 1993 in N-W Ecuador an empirical link is established between deforestation and commercial logging and between commercial logging and export and domestic timber market. The study further reveals that domestic and not international trade exerts strong force towards deforestation in such region. Possible ways towards sustainable forest management (SFM) are visualized in the form of unrestricted trade , secured property right over forest land, promotion of merger of small isolated heterogenous producers to a larger unified group with homogenous interest conducive to SFM. Apart from this there needs to be a resuscitation of community based entrepreneurship based on mobilization of human and financial resources targeted towards sustainable extraction of timber and non timber forest products. He further advocated that local producers' access to international market be promoted with stress on certified schemes and better access to financial resources. For this local uses should be given legal authority to introduce efficient rules and regulations for ecological processes and monitoring the impact.

Naik (1997) points to the importance of peoples' participation in the success of the implementation of JFM. Using a theoretical model he suggests that the extent of participation depends on a host of factors like expected levels and changes in net earnings

to labour from JFM and alternative enterprises, their degree of co-variation, expected share of profit from JFM activities, prevalent interest rate, the degree of risk aversion of the households and total household labour endowment. As determining constituents of these factors, he focused on the quantity of forest land, yield from forest, development of market including processing facility, good leadership and collective action in the village, provision of sharing of forest produce etc relating to profit prospects from forest land. Again low income are likely to induce higher participation in JFM if there is high risk associated with agriculture. Apart from this, the quantity and quality aspect of resource endowment are likely to be major factors influencing participation in JFM. Gupte (2004) finds that cultural plurality, existing caste systems and gender dimensions in India really cause a great uncertainty for the success of participatory mode of policies. Strict hierarchical social stratification in traditional rural societies, differences in value system, extreme socio-economic disparity exposed in the form of existence of pockets of affluence amid abysmal poverty and lack of awareness of specific rights and opportunities of different stakeholder groups often result in alienation of some marginalized, weaker section of population from the participatory institutions. Based on an empirical study in Indian villages she contends that gendered structure in local institutions often stifle the ability of women to effectively participate in policy making and their implementation. While elaborating on the concept of participation, Narayanan(2003) questions the efficacy of this approach in reflecting the degree of interest of marginalized section of people amid the existing skewed type of power relations. He refers to the idea of authentic participation that ensures the effective heeding to the voice and expectations of hitherto excluded group of people for developmental programmes. In order to dismantle the existing power relations detrimental to empowerment of poorer section, the importance of PRA in evolving a truly participatory, non discriminating and empowering status among the stakeholders is addressed to. However he points out the naivety of PRA tools being universal and neutral to technology, society and polity, that leads to the under-estimation of the complexity and deep-rootedness of local power relations. Apart from the existing mal-distributive power structure caused by the prevalent sharp socio-economic disparity, the complex web of power-relationship amongst the policy makers, administrators, implementers and the

community also exacerbates the malfunctioning in the process of participation. JFM institution if intended to be implemented sincerely, needs to be preceded by nurturing community participation with a proper reckoning of the socio-economic, political, cultural and ecological variables that influence the JFM (Mukherjee, 1998). Participation by villagers across all income classes is conditioned by initiation, motivation and facilitating efforts on the part of forest dept officials and a community friendly attitude on their part, tact , broad vision and long experience of work involving the different segments in the community. Household's willingness to effectively participate in forest management in the context of Burkina Faso, is analysed by Brannlund et al (2009) through consideration of a multinomial choice model. Participation (or non-participation) in forest management is supposed to be influenced by different household characteristics, perceived security about land use-right and proximity to forest. The variables that emerge important are listed as membership in community based forest management institutions, security of land use right and training. Furthermore the results indicate that improving secured land use right would increase villager's willingness to participate in forest management activities such as community work and forest surveillance. In a study analyzing the factors influencing villagers' motivation for participation in social forestry in west Mazandaran in Iran, Faham et al (2008) observed that level of literacy, extent of participation in extension –education courses, use of mass communication media and attitude towards participation and social interaction have a significant correlation with motivation towards forest participation. Empirical findings in the context of Ludhi-Damgade district in Nepal reveal that participation in community forest management is influenced by socio-economic factors, which in turn determine the level of benefits obtained from forest resources (Maskey et al , 2005). Accordingly disadvantaged groups who suffer from lack of participation, remain basically excluded from decision making in product distribution and get less benefits. Hence at policy level focus should be made on empowering lower strata people and promoting their participation so as to ensure equal distribution of community forest benefits.

Chapter 3

Data and Methodology

3.1 Sources of Data

Since this analysis is mostly based on peoples' intervention and perception in forest resources, most of the data used in this analysis has been collected by using constructed questionnaires for doing the primary field survey in the respective villages under study. Apart from this, field interview with forest Dept staff, villagers and beat level functionaries has also been carried on to elicit information pertaining to the state of forest extraction. Secondary data have been collected from District Forest Report.

3.2 Broad Methodology of the Study

The forest dwellers have been classified according to ethnic groups inhabiting the respective villages. They have also been stratified into APL and BPL classes according to 33 cut off mark for identifying people in these two groups.

Social status-wise dependence of the villagers on forest resources, the degree of their dependence and the variety of forest products catering to their self consumption have been analysed through tabular presentation. Further the extent of self dependence (consisting of self consumption) on forest products is assessed by regressing individual self consumption values on local employment days(LED) respective family size(FS), Income from sources other than forest (OI), size of livestock (LS), Number of items collected (NI) and status (S) in APL/BPL category. Perceived degradation of forest areas on the part of respondents has been assessed by yes/no type answer with assignment of one and zero binary values. This binary response perceptions considered as dependent variables, have been subjected to a logit regression with supposed influence by fear of eviction, sale value, level of poverty, other income, family size, local employment days and mutual trust. Further the degradation of forest resources is supposed to be accentuated by a trade off between short run economic returns and long run sustainability

issues. For better comprehension of this tradeoff problem between short run economic gains and long run environmental cost a dynamic optimization model has been framed with suitable assumptions regarding control and state variables.

The issue of participation in the joint forest management need to be analysed from two aspects, determinants of participation and actual level of participation. Determinants in case of each village help focus on the index of requirements realized for participation and index of participation reflects the actual level of participation. The socio-economic determinants of participation are conceptually developed on the basis of derivations of a dynamic optimization model. These determinants are classified into low, medium and high quality categories. The most desirable quality of a determinant is assigned weight value 1, the least desirable is put value 0 while the medium assigned a value of 0.5. On the basis of surveyed data the frequencies of the observed quality categories are first expressed in terms of its corresponding percentage which is multiplied by its corresponding weight value and then summed together. The sum divided by the number of determinants yields the determinants index. In the absence of any universal measure of participation index, Intensity of peoples' participation in forest protection activities had been captured by adopting Singh's (1992) approach. A set of eight questions were framed as to have an always (1), sometimes (0.5) or never (0) answer. Out of eight questions, four followed a particular pattern and the remaining four another pattern. On the basis of discussion with the officials of forest dept and some members of FPCs, each of the questions was assigned a weight showing its relative importance as a measure of participation. The sum of the weights added up to 100. Following this method, we computed a participation score for each of the sample respondents and all the score thus computed were added and then divided by the number of sample respondents in each of the sample villages to compute a PPI for each village

In our calculation, sources of income are divided in the following way (i) Agricultural income (ii) Income from fodder sold (iii) Income from daily labour (iv) Occupational income (v) Income from livestock (vi) Income from forest.

The methods of calculating this income are discussed below:

1) **Agricultural income:** These incomes are divided into two parts (a) Self consumption valuation and (b) income from sale. For ascertaining agricultural income, information is collected as to total land size and level of fertility. Usually three crops are cultivated in case the land is fertile. Rice, Mustard oil and wheat with mix of some vegetables are produced while in case of single crop only rice is produced. The production of rice per bigha depends on production cost; if any one expends Rs.800/- per bigha they can produce 8-10 mond /bigha, while expense of 1000/-per bigha can yield 12 mond per bigha and even greater for higher expenditure, (1 mond = 40 kg). The market price of paddy is Rs700/- per quintal. The farmers sell the surplus amount of paddy in market.

Here we consider two types of income of a farmer. First kind of income arise from the sale of surplus amount of paddy in the market and the other type of income is derived by adding up with self consumption of paddy because this is one kind of opportunity cost. In this way we can find the total agricultural income also.

Here we calculate the consumption of rice on the basis of the observation that individuals greater than or equal to 15 years of age consume on an average 15 kg of rice per day while children less than 15 year of age on an average consume 500-800 grm rice per day. In this way we can find out the total consumption in a year. So where number of family members is high, consumption is also accordingly high. If the consumption amount is subtracted from the total production then marketable surplus will be obtained.

Sabar people collect rice from rat holes also. Rats collect rice and store in their hole (under ground) and sabar open the hole and collect it from such holes. But its value is not calculated since nobody keeps the measure of such collected grains.

In case of mustard oil production 1 quintal is produced per bigha. The farmer sells mustard at Rs. 2400/- per quintal. Here also the valuations of mustard are to be constructed in two ways (i) Self consumption valuation and (ii) Income from sale.

The consumption pattern is same as described before in case of paddy production. Here a small family and large family are supposed to consume 1 quintal and 5 quintal mustard respectively. Generally 40 kg oil is produced from 1 qt. mustard seeds and hence this production is profitable for a farmer, but very little population of the village can produce it. Tribals also extract oil from mahua fruits, so their consumption of mustard oil is less compared to general cast people. Hence a very small section of tribal people are engaged in this production.

Here we collect the data on how much land they use to utilize for mustard production. Then we find out the total production according to our observation and transform it into monetary value.

In the same way we constructed the valuation of vegetables and wheat. Generally it is found that they produce vegetables like potato, onion, cauliflower, spinach and wheat for their own consumption.

(2) Income from fodder : According to the villagers, production of of swarna rice leads to decreased generation of fodder . One kahan fodder is found from 1 qt rice production. Here we consider only the income coming from sale of it. Usually poor people hardly sell fodder having multiple uses. Roofs of their huts are often covered with fodder. Again fodder serves the livestock. Only a few large producers /people having pucca house types can sell fodder, the price of 1 kahan fodder being Rs.400/-.

Fodder collected from forest and meant for feeding goat is considered in our study. Some people sell this fodder in summer when there is extreme job scarcity. One tari of fodder can be sold at Rs 20. Value of this collected fodder used as food of domestic livestock is taken into account. Fodder use varies from household to household because of difference in size of livestock.

Income from daily labour: In the tribal area or poor area income from daily labour is an important source of earning. They get only 6 -7 days to 20-30 days work from 100 days guarantee work program. They also go to Burdwan for working as agricultural worker for 2 to 4 months, because now-a-days crop are produced here 4 times from a single tract of land. During this period they can earn little more and try to save money informally. The wage rate in Burdwan is Rs 70 per day or Rs 50+2kg rice per day, at this time they get job every day for this working season. So it is easy to calculate the total earning from migratory work. From the no. of family members attached with this migratory work we can find out the family income from this section.

Again these persons are engaged in different kind of work, road construction, local agricultural work, working in any house etc in Ranibandh and Khatra region. But different people are engaged in different types of work. So some people get job 8-10 days in a month and some people find job 20 days per month. This engagement depends on mentality of the people and economic condition also. Here the wages are different for different jobs, for example some one gets Rs 30 per day but in the same village we found somebody getting Rs 50 per day. From the number of family members engaged in local employment we can calculate the total earning of a family in local earning sector.

Another kind of daily labour income is income from forest department work. People get Rs 80 per day for working under forest department. Generally in case of felling of trees villagers get some job but availability of such job is uncertain.. But forest department is not able to offer job in every village. This kind of work depends on density of forest. Only those FPCs actively participate in this work for which the density of forest is relatively higher. So sometimes people are motivated for maintaining sustainability of forest. Forest department offers job to one member per family.

Again when forest department sells trees and earn money then 25% revenue is given to the FPC members. Forest department undertakes plantation activity in the area where they felling and at that time also people again get job.

Some people get job as daily labour for making babui rope from babui grass. The daily wage rate for cutting babui grass is Rs 50 per day. In some villages people are engaged for stone breaking work and earn Rs 10 per bag. In one day they can break 3-5 bags. In such cases they earn Rs 30-50 per day.

Occupational Income: This includes income from monthly salary, be it in any government service sector or private sector. Here doctors' income and income from business is also included. If a person has an earning based on business in forest produce, it is not considered as an occupational income; it is better considered as an income from forest.

Income from Live Stock: In Ranibandh region every tribal as well as every villager has live stock like Cow, Cattle, Hen, Goat, Sheep and pig. Among them Pig and Sheep are to be found very little.

A large portion of income may be attainable from rearing live stock like cow, goat etc if the milk can be sold. But we rarely found income from milk. Villagers generally bought cattle for use in agricultural production. Sometimes villagers engage their cattle in rent. This practice also yields them some income. Hens are sold at Rs 40 per Kg. Here also an interesting source of income is found. Villagers play gambling in hen fighting. Sometimes they earn above their expectation. In such cases a hen can make money greater than Rs 200. It totally depends on chance, so it is not included in income.

In case of goat valuation; the price of small size goat is Rs 600 to 700. The aged goats are sold at Rs 800 to 900 and the matured fleshy goats are sold at Rs 1200 to 1500. Villagers use the goat to repay their loans. Villagers sell their goats proportionate to their stock of goats.

Sheep and Pig are sold at Rs 800. So villagers have very little initiative to cultivate Sheep and Pig. The food of the live stock emerge from the forest or agricultural land, so there is no cost borne by the villagers for cultivating livestock.

Income from Forest: This is the most important source of earning of the forest dwellers in the Ranibandh and Jhilimili region. In different villages different types of species dependency is found. The Minor Forest Produce (MFP) from which the villagers can earn money mostly constitute of sal leaves, kendu leaves, food, fuel wood, fodder, babui grass, fruits and medicinal herbs etc. Here also the earning of the people is divided into two parts.

- 1) Valuation of self consumption and
- 2) Income from selling of Minor Forest Produce

Almost all the villagers can make earning (direct /indirect) from the forest resources.

Sal Leaves: Villagers can earn money by selling sal leaves; they do not use it for self consumption. The local rate of sal leaves is Rs 8 to Rs 10 per hundred plates. Except the summer season collection of sal leaves is possible (10 months) throughout the year. The collection do not happen every day, people generally collect only 2-4 days per week. A young man or woman can collect 600 to 800 leaves per day while an old man or woman can collect 300- 400 leaves per day. Children also can collect 300-400 leaves per day. After collecting the leaves they are engaged in making plates. We have documented the data relating to the number of people engaged in collecting leaves, their age distribution and the number of days a month they do this job. In this way we calculate total family income emerging from sal leaves.

Kendu leaves: Kendu is a very important and valuable tree for the villagers. They can collect kendu leaves only for 2 months. April and May is the season of collection. The quantity of kendu leaves is measured with the help of a unit called Chata. 20 leaves make a bundle and 100 bundle is equal to 1 chata. 1 chata is sold at Rs 35. 1 person can collect 1 chata of leaves per day. The income of a family from kendu leaves can be constructed on the basis of the number of persons in a family engaged to collect such

leaves. So if we multiply number of family members with days engaged for such collection with unit price, then we can get the family income from Kendu leaves.

Food: In the case of food collection villagers get different food like susuni sak, sojne sak, notesak, mushrooms etc. They earn very little from food which are generally used for self consumption purpose. If number of family members is 1 or 2 then value of forest based food consumption is approximately Rs.600/- per year. We calculate this by the following method. Family collect food for about 15 days per month and the average collection value of food is Rs.10/-. They collect it near about 4 months a year. In the same way a family of 3-5 members consume food worth of Rs.900/- . Again a family constituted of 6-8 members consume food worth of Rs.1000/- and greater than 8 family members consume Rs.1440/-. There is also variation in deriving benefit in terms of food across different socio- economic groups.

Fire wood: Fire wood is the most important element of the poor people; villagers are mostly dependent on fire wood. In every day life they use it for self consumption and some times they sell it when they fall in financial distress. A bunch of fire wood is called 'tara'. The price of 1 tara fire wood is Rs.15/- to20/-. APL as well as BPL, both kind of people use it according to their demand which depends on the family size. On an average it is found that if number of family members is 1 – 2, then 1 tara of fire wood meets up 3 days self consumption demand; if number of family members is 3-5 then 1 tara fire wood is used in only in 2 days for self consumption. Again a family of 6-8 members use 1 tara of fire wood in 1.5 days, so they require 15 tara fire wood in a month. So monthly they consume Rs.300/- as fire wood only. Therefore yearly they consume Rs.3600/-. Again above 8 family members use 1 tara of fire wood in just 1 day, so their annual self consumption value of fire wood is Rs.5400/-.

Fodder: Fodder accumulation is also one kind of minor forest produce. Fodder generally accumulates for self consumption. It meets up the demand for food of livestock and their own consumption. They do not sell it. Some leaves also are considered as fodder. Since this kind of product is not marketed, it is very difficult to find out the valuation of this

fodder. Therefore the opportunity cost is considered for valuation by considering its market price.

Babui grass: Babui grass is a very interesting forest product. Babui production prevents the growth of other plants. Villagers cultivate babui for making profit. This grass is used for making rope. The vendors come in the market for buying it. This is sold at Rs.350/- per quintal. 3 to 4 quintal grass is produced per bigha. This is not used for self consumption purposes.

Some people also depend on babui grass cultivation indirectly. They buy babui grass at Rs 300 per Kg and after making rope it is sold at Rs 1200 per Kg. So they earn profit @Rs 900 per Kg. This is also included as an income from forest.

Again there is some other way to earn money from babui grass cultivation. Labour earns Rs 50 per Kg for babui grass cutting. So in the month of November labourers earn money from babui grass cultivation.

Fruits: Fruit collection is usually done for self consumption. But sometimes villagers earn money from selling “Bel”, “Mango”, “Khejur”, “Kendh”, “Bhurru” etc. This also depends on the number of family members. A bigger family can collect more fruit. But all the villagers do not engage in collecting fruits, it depends on economic status. Generally the poor people collect fruit and sell in the market. If the number of family members is 1 – 2, then from fruit collection they can earn Rs 200 per year on an average. If family members is 3 - 5 then they earn Rs 230 per year. 6 - 8 family members earn Rs 250 per year. Family with 8 or more members earn Rs 300 per year on an average.

Here villagers admit that “Mahua” is an important economic tree to them. Every element of this tree can be sold. From fruits oil is extracted. Alcohol also is produced from it. The solid waste is used as food of livestock. So every villager cherish more of Mahua tree.

Somewhere the villagers earn from “Arjun” tree because “Tasar” cultivation can be done on it. So villagers earn Rs 1000 per year from this tree.

Medicinal herbs: Medicinal herbs are very important source of earning for forest people. Sabars generally collect the medicine herbs. The price list of medicine herbs is Kalmagh- Rs 2 per Kg, Bhaluk sakti, Rahara fruits, Bara gutur, Haritaki, Rerimakha, Bel, etc are sold at Rs 4 per Kg.

On an Average families with 1-2 members earn Rs 120 per year. 3 to 5 member families earn Rs 240 per year. If number of family members is 6 to 8, then they earn Rs 240 per year. 8 and above family member earn Rs 300 per year.

Others : In Kelia Pathar villagers earn from Bamboo. They earn Rs 700 to Rs 1000 per year. From Bamboo different kind of products can be produced. In Churku village Sabars are totally dependent on Bamboo product. They earn Rs 6000 to Rs 8000 per year.

Chapter 4

Profile of the Sample Village- Specific FPCs

4.1 Introduction

The rural people in general and tribal people in particular living in forest fringe areas have for a long period of time maintained a symbiotic relationship with forest resources. However maintenance of their customary user right and access to forest has not been smooth over time. For instance the 1952 forest policy had a deliberate state controlled objective of maximizing state revenue from commercial use of forests to the neglect of poor people's traditional user right and conservation needs of forest resources. This was however tried to be reversed by the enunciation of 1988 state forest policy act and its implementation in 1990, through the evolving of joint forest management institution in which peoples' participation in forest management was recognized under the supervision of state forest departments. In each village or group of villages constitution of one FPC(forest protection committee) was recommended with representation of members from each family. The primary objectives of this policy were

- (1) to restore villagers' customary user rights and access to the forest
- (2) to recognize access to NTFPs, fuel wood, fodder, fencing and construction materials on the basis of the priority needs
- (3) to engender peoples' income and employment by ensuring enhanced production and conservation of NTFPs through their participation.

However in this institution also the state retained supremacy in regard to decision making over forest regulations and use rules, monitoring, harvesting and sale of commercial timber and sharing of the revenue with forest protection committee members. In essence JFM in West Bengal allows participating villagers in FPC free access to specified NTFPs and 25% share of revenue of final timber harvest. The forest dept officer is usually assigned the role of member secretary in conducting the functioning of FPC with support from FD. Despite the lofty intentions and steps envisaged in the devolution strategy and local programme based initiatives of JFM institution, field level interaction in study area have revealed that forest dwellers and specifically tribal people

often feel distanced from their traditional institutions and rights and ignored of their unique characteristics. Many tribal communities in particular tend to view JFM as imposing rules external and contradictory to their native system, unsupportive to incorporation of local wisdom and cultural stints in hitherto existing management institutions. Although JFM is often viewed as synonymous with participatory management, in practice its management rules and regulations happen to be pre-structured and non-negotiable by the Govt. agency with little room left for forest dwellers to alter them to their advantage. Most often the practiced form of ‘participation’ has been in the form of FPC members providing their labour for protecting and regenerating the degraded forests to be subsequently felled by the FD officials. In order to ensure a percentage share in the revenue of felled forest, the villagers had to wait for a minimum of 15-20 years. In the process, lawfully they had to forsake much of their current benefits from forest available in the form of collecting firewood from lopped bushes, branches or stems, tree leaf fodder through lopping, supporting livestock from grazing, while mostly entitled to only dead, dry and fallen twigs and branches for firewood collection purposes. On the contrary the larger farmers and rich rural folk usually having little dependence on forest become new stakeholders by gaining rights within the forest through the new revenue sharing arrangement from timber sale. Unlike the poor FPC members these people do not have to bear significant opportunity cost of forsaking current consumption. This type of sensed deprivation and closure of traditional access to forest resources without region-specific consideration of existing forest use pattern, often stand in the way of full fledged participatory efforts by members of FPC towards forest management and conservation activities. In this backdrop, it seems imperative to have an analytical focus on the feelings, hardships and opportunities of village specific FPC members in eking out a livelihood, involved in their constant interaction with forest resources and FD officials.

4.2 Case of Villages in Ranibundh beat

First, we provide a tabular view of the sample FPC members in the selected villages of Ranibundh beat in terms of ethnic group composition and extent of forest dependence.

Table 4.1: Basic Features of Surveyed Households in Ranibundh Beat

Name of the village	Total inhabiting household	Total house hold surveyed	No of ethnic group	Dependency on forest		
				High	Medium	low
Maha-Barudi	40	20	2(Santal,Mahato)	13	7	0
Bhurkura	70	35	2(Sardar, Santal)	18	10	7
Kelia pathar	116	58	3(Santal,Bhumiz,General)	6	35	17
Katiam	134	67	3(Sardar,Sabbar,Santal)	41	19	7
Buriam	94	47	3(Dolui,Santal,General)	18	14	15
Barapucha	72	36	3(Santal,Mahato)	20	15	1
Jamdaha	38	19	2(Santal,Mahato)	19	0	0

High dependence appears to be dominant empirical outcome excepting in village Keliapathar.

Mahadevsinan and Barudi are two adjacent villages having a common FPC. The executive committee of the FPC consists of 8 members, having 4 from each of the villages. The combined FPC membership here is around 40. In both the villages mature Kendu plant comes to use for various purposes. Apart from its leaf, fruit and flower, its stem is cut after a little growth and used for making cot-support leg. Kendu plant is deprived of adequate sunshine when other surrounding plants grow fast and accordingly there arises shortage of its leaves. So sometimes fire is deliberately set in to clear the forest of unwanted plant growth. Various types of edible plants leaves are collected from inside the houses, forest or even from water sides. Water needs are met by making a chua (small hole in the rivulet bed) or from small fountains. The chua is used for conserving water. The villagers have the knowledge of using many traditional plants for medicinal purposes. It was observed that most of the members in both of these village were not pleased with forest dept. as the 25% share of Sal tree felling revenue due to them for the last 2 years has not yet been distributed to them. FPC members from both of the villages usually have the responsibility of guarding the forest in turn.

In **Mahadevsinan** it was found that a part of the forest felling fund distributable amongst the members is set aside for contributing to LIC premium of the FPC members. Any fatal casualty is compensated to the tune of Rs 1 lakh per family. Fuel wood need is fully met by the forest. Some of the members are involved in cultivating babui grass which experiences ups and downs every two years. It was revealed through interaction that the FPC members got enthusiastically involved in the conservation of the forest when it was first formed in 1989. But now-a-days that fervour is thinly observed as many of them have been disillusioned of the implementation of forest protection activity. It was found from conversation that now-a-days the entry restrictions are somewhat relaxed compared to before. But some of the members in this village exuded their displeasure and non-trust with the members from the other village Barudi regarding lack of co-operation in forest conservation activity. There is hardly any FPC meeting amongst members across these 2 villages. Further the members here have recently been scared about possible dislocation from their traditional sites because of a likely ecotourism-cum sanctuary unit that might turn up in the forest area adjoining this village. This may lead to their reduced access to forest resources.

The sample members at **Barudi** feel that forest area has risen due to the emergence of FPC. Further according to them forest can be protected without the support of forest department. There is some sort of complacency regarding the efforts put forth by them. However they feel concerned and revealed their displeasure against the illegal felling of trees by forest dwellers coming from nearby Ambikanagar range. There is a tacit conflict of interest and attitude of Barudi people against people from the aforesaid region. Twelve households have got electricity connection here, cost of which is Rs 80/- quarterly. People here do not feel the want of fuel-wood which can be collected by the women in 1-1.5 hour from near-by forest. However they do not depend much on forest for getting the fodder. Despite the information of the likelihood of a sanctuary People at Barudi did not seem to be much concerned like people in the other village, since it is not likely to happen in the forest adjoining their village area.

In the **Bhurkura** village there are two categories of people namely Bhumij and santal. Bhumij are mostly APL while sandals are mostly BPL. Earlier there were dense forest

here which later grew thinner because of random cutting. Forest were cut for various purposes. Sal trees were cut indiscriminately to make space for plantation of eucalyptus tree by the forest dept. Its growth however hinders the flourish of different fruit trees. Hence sal leaf , kendu leaf and other fruit trees are hardly available here. People have to go far to collect these .now-a-days. Apart from kendu different fruit plants like parashi, bahera, amlaki, piyal, jam, etc have turned scarce species. Grass fodder is also not available from the forest. However some amount of cashew nut is available from the region. There evolved a type of creeper locally known as military lata in the region after a storm in the year 1985. This has a high growth rate and even in summer it remains green. It also hampers the growth of other plants including paddy if once it flourishes in paddy fields. There is no dearth of fire wood which might be supplied by the forest. Water is usually collected from well which however dries up in summer. Water has to be brought from 1 km distance at that time. People here usually do not have great direct dependence on forest resources which is gradually on a dwindling swing. They rather cut stone from the small hill situated at some distance from their locality. Generally a person can cut 10 bags of stone a day , which sells @ 3 Rs per bag . Govt. car come to collect this stone chips directly from these people. Cultivation of swarna paddy has rendered an improvement in the standard of living of the villagers. However during autumn there is felt want of food around the locality. The scarcity of forest based food resources has brought a degree of problem in maintaining livelihood of people during this period.

In **keliapathar** village the FPC is composed of inhabitants in two paras keliapathar and Hethiapathar. There are a great deal of heterogeneity in this area. The villagers are divided into three categories viz. Santal, Bhumiz and general. Many of them expressed their dissatisfaction over political favouritism and unequal access to FPC activity. Despite having Rs 2800/- per family in recent times as their share of forest revenue from the forest Dept., they do not feel encouraged to participate in FPC activity. There is lack of mutual trust and social cohesion among the villagers. The Forest dept. has taken the initiative to plant mango, bamboo and arjun tree in **keliapathar**. The revenues earned from felling arjun tree every 2-3 years is deposited in the village fund and part of it is

used for giving interest free loan to people in misfortune. Despite this good gesture there is severe discontent among the villagers many of whom suffer from want of adequate work, water problem in summer, feel neglected because of partial disposition among segments of FPC members, political influence and involvement of Forest dept with some intermediaries in joint business in timber. Forest dept has undertaken plantation of eucalyptus and palash tree in **Hethiathar**. Lac is made from palash tree and marketed in Khatra. But despite this here also people are discontented in the activities of FPC. They do not co-operate in activities of FPC. Sometimes they graze their cattle in newly planted land for feeding in order to get new jobs in the deplanted land. Often land is encroached for babui cultivation. In a word there is strong sense of resentment among the villagers in both paras.

Katium village is characterized by a great deal of economic imbalance among its inhabitants. It is divided into 3 paras according to three resident tribes santal, bhumij and sabars. Average literacy in the first two paras is rather high compared to others. But there is found great lack of common interest and mutual trust and co-operation amongst the FPC members and villagers. Heterogeneity amongst the members is rather high. Everybody has a lurking disbelief in others. Electricity connection is officially rationed among BPL and antyodaya card holders. But political factor does supposedly have a role in the distribution of APL and BPL cards. Bhumij people do not mix with sabars. Some people in village especially the sabars feel neglected and do not participate in the meeting of FPCs. Many of the villagers again don't have good relation with forest dept and deliberately deplete the forest resources. Despite increase in mango, jackfruit and blackberry trees, village forest area on the whole has substantially declined because of increasing rate of illegal felling and stealing. These activities have increased with the perceived threat of eviction from their traditional abodes at the spread of the news of a proposed sanctuary by the Govt. in their village forest area. Big sal trees, pial, kendu and neem trees have declined in abundance. Cutting of sal trees has been strictly prohibited. In case of defaulters, punishment is given by snatching the axes, spades or sickles used. Apart from this edible vegetables from the forest has also been short in supply. Some part of the forest is rich in medicinal herbs. A godown has been set up here by Ramkrishna mission acting as an NGO and they collect the medicinal herbs from the villagers before

supplying it to Calcutta. Shortage of food is in general felt during bhadra,aswin and kartik months. However after the onset of swarna paddy cultivation average standard of living has somewhat improved in the village.

Discrimination based on tribal types is sharply visible here as evinced in the treatment of sabars by others. These people are not allowed to collect kendu leaves, neither are they allowed to cultivate in waste lands. Electricity connection is a far cry for them. They also do not have any say in the FPC activities. Great divide exists among the sabars themselves regarding felling /conserving the forest. Even if babui grass is cultivated by some they tend to hide it from public out of suppressed fear. People in these three paras are almost always embroiled in some kind of faction amongst themselves.

The FPC at **Burium** village is composed of inhabitants in two paras, Burium and Doluibasa. The inhabitants are divided into two types, general caste and STs. Average literacy in both these sites is rather high. General caste people in Burium nourish some tacit grudge regarding their treatment in terms of facilities which they think, are enjoyed mostly by economically better off ST people. General people also feel deprived in terms of allotment of BPL antodaya card . Apart from this general people have an apathy to collect CPR resources from the forest as well as to participate in 100 days job scheme as dictated by their society. In Doluibasa people do not have good relation with FD members. General want of people has led to cutting of forest to which there is open support by forest management committee members who feel dissatisfied at the indifference of the forest dept towards conservation. Interestingly after the formation of FPC here, volume of forest has degraded compounded with factors like apathy of leading stakeholder group like forest dept, rise in population and poverty. Supply of kendu leaves which once catered to a great extent towards poor peoples' livelihood here have now-a-days been scarce in terms of general availability. This has happened due to institutionalized collection of kendu leaves by large multipurpose co-operative societies funded by Tribal Development Co-operative Corporation(TDCC). Apart from this, good prices cannot be earned for the same as these leaves can be sold only through TDCC and are prohibited for sale in open market. Similarly existence of intermediaries in sal leaves market result in reduced earning of the poor from sal leaf collection. Thus the interest of

the poor is perceived to be somewhat neglected despite distribution of share of revenue from tree felling which involves a rather big time interval.

In **Barapucha** village there are two categories of people namely Santal and Mahato with majority of the villagers belonging to santal category. Mahato are mostly APL while Santals are BPL. The FPC at Barapucha village is composed of inhabitants in three paras. Educationally also they are mostly backward. There is found high level of mutual trust and co-operation among the FPC members and villagers. The job availability in this village is quite high compared to other villages but they are seasonally unemployed and for this reason their livelihood intensely depends on forest resource. According to the villagers, forest is degraded here and illegal felling is the main cause behind the degradation. In essence JFM in West Bengal allows participating villagers in FPC free access to specified NTFPs and 25% share of revenue of final timber harvest. In this regard last felling occurred in 2008 and every FPC member got Rs 1000/-.

The FPC in **Jamdaha** village is well coordinated with the FD. Despite the shrink of forest area before 1989, there has occurred an expansion after the formation of FPC here. Forest felling here occurs at regular interval and the FPC members are assured of the stipulated percentage of forest revenue. Apart from that the FD has successfully implemented here the projects relating to plant felling, replantation, cleaning their roots, construction of roads, installation of tube wells etc. Every year the tribal people are provided with a program 2 months' job by the FD. So the conservation activity here is based on complementary roles played by both FPC and FD. The villagers here are well tied in the knot of mutual trust and cohesion. There is observed an intense level of forest dependence here, which is mostly reflected in the form of collection of NTFPs from Mahua plants the flower of which is used for extracting liquor while the fruit is used for extracting oil. Babui grass is cultivated here but not on a massive commercial scale. The attachment of the villagers with the forest and their intense dependence on forest resources have motivated them to take active drive in forest conservation activities. Most of the villagers here have bank accounts and they are aware of the importance of

education for their children. However they often have a tendency to conceal their education for fear of being marked as APL status people.

4.3 Case of Villages in Punshya Beat

Three villages viz Janta Dumur, Kotra and Dhankura have been selected for survey in the Punshya beat under Ranibundh range. The corresponding tabular view of sample FPC members appear as below with dominance of high forest dependence excepting Janta Dumur.

Table 4.2: Basic Features of Surveyed Households in Punshya Beat

Name of the village	Total inhabiting household	Total house hold surveyed	No of ethnic group	Dependency on forest (%)		
				High	Medium	Low
Janta Dumur	80	40	3(Santal,Mahato.Gen)	15	42.5	42.5
Kotra	88	44	4(Santal,Mahato.Gen,Sabar)	59.09	34.09	6.82
Dhankura	64	32	3(Santal,Mahato.Gen)	62.5	25	12.5

Both tribal and general caste people co- habit the **Janta dumur** village with mutual trust and cohesion amongst themselves. Tribal people depend on forest for both self consumption and sale. Collection of sal and kendu leaves is their primary forest based activity. General people however depend mainly for satisfying self consumption needs. There is general recognition that forest protection committee as well as forest dept has not been active here resulting in continuous degradation of forest. Despite this villagers have a coordinative relation with forest dept. This is perhaps due to the generation of govt employment among a segment of villagers due to construction of an embankment and initiation of multi cropping system. Cultivation of a number of crops viz. paddy , wheat, maize, potato, onion, mustard and other vegetables as well as collection from forest reduce the need for direct expenditure of people. As a result the severity of impact of forest degradation on livelihood arising from apathy of forest dept, is not perceptively felt and people do not think badly about the F.D. Apart from that 15 self help groups have developed in this village. Good communication facilities need to be developed for their further flourishing and marketing arrangement. A lurking fear of being declared APL

in case educational level is enriched in the family is observed to prevail amongst most of the villagers.

The village **Kotra** is inhabited by ST, SC and OBC people. The sabars are however a bit segregated from other groups. What is striking here is that despite the existence of political difference people have strong mutual faith and cooperation amongst themselves. Forest dependence is mostly observed among sabar people. These people greatly depend on forest for collection of Sal leaves and to some extent medicinal plants for sale. While the volume of Sal trees has increased that of other species has decreased. Forest Protection Committee however has not been instrumental in the development and growth of forest resources in general. Extreme poverty among the sabars goad them to eke out a livelihood based on intense toil, patience and indigenous ingenuity. In summer there is felt severe shortage of food. Excavation of waist deep hole in some areas of the forest and collection of some species of tasteful potato supplement their livelihood this time. Apart from forest collection, gleaning of paddy from rat –holes is their regular practice. Average literacy in the entire village is extremely low. People here are moderately satisfied with the activities of Forest Protection Committee and Forest Dept.

Dhankura village is characterized by great economic and political imbalance among the members. Educationally also they are mostly backward. Tribals usually on the average get work for 10 days from the forest dept, which hardly can sustain their life. Most of the villagers being rather poor are compelled to cut forest wood for sale in the market. Again forest clearance by some is marked by demonstration effect on the part of others. Tribal people are mostly dependent on collection of various leaves from the forest. The practice of triple cropping is pursued for agricultural purposes.

4.4 Case of Villages in Jhilimili Beat

Three villages viz Vaishnabpur, Kasakendh, and Ramagarh have been selected for survey in the Jhilimili beat under Jhilimili range. Sample FPC members are represented as follows with dominance of medium forest dependence for all the considered villages.

Table 4.3: Basic Features of Surveyed Households in Jhilimili Beat

Name of the village	Total inhabiting household	House holds surveyed	No of ethnic group	Dependency on forest (%)		
				High	Medium	Low
Vaishnabpur	50	25	Santal (Tudu, Mandi, Murmu, Soren)	32	52	16
Kasakendh	42	21	Santal, (Tudu, Hansdan, Mandi, Murmu, Mondal, Baski)	28.57	52.38	19.05
Ramgarh	66	33	Santal (Hembram, Murmu, Tudu, Mandi)	27.27	66.67	6.06

The village **Vaishnabpur** is in general characterized by severe poverty and lack of job opportunities. As a sequel there is great dependence of people on forest resources for their livelihood and they are goaded to adopt commercial cultivation of babui grass for earning quick income. On an average 50% of income of the villagers emerge from this cultivation. Babui grass is sold @ of Rs 300 /qt while babui rope is sold @ Rs 1000/qt. Paddy crop is hardly cultivated here more than once and villagers often have to migrate to far-off agricultural districts to work as daily wage labour to supplement their meager income. There is perceived dearth of food during the end of rainy season and at the onset of autumn while water scarcity is felt during summer. Villagers face the hazards of going to Ranibundh for health care purposes as there is no unit here. The impact of conflict of village politics is reflected in the corrupt practices in rationing system when in specific cases people with antyodaya card are denied cereals at lower prices. There is a prevalent false sense of deprivation amongst villagers in the form of non- payment by the FPC despite their participation in forest protection activity. So villagers do not spontaneously participate in forest preservation and forest get degraded with the multiple impact of poverty, illegal filling and babui grass cultivation.

Like that of **Vaishnabpur** The inhabitants in **Kasakendh** village are mostly dependent on babui grass cultivation for livelihood and seasonally migrate to other districts for earning income. Due to this quick earning motive forest has been cleared here mercilessly for babui cultivation and the FPC here has proved largely ineffective in preventing the forest from its dwindling trend. Apart from this illegal felling and theft of forest

resources has aggravated the forest condition. In times of food scarcity people here earn income by collecting fodder from forest and selling it. All these have contributed to shrinking of forest here. People here have formed a co-operative where they keep their saving throughout the year and are entitled to have a loan once in the year.

Forest resources in **Ramgarh** village is however not so degraded as in the other two sample villages in this beat. This is because although babui grass cultivation is in vogue, people here earn substantially from local dependence on Sal leaves. So relative importance is given to Sal leaf collection and somewhat of its protection and proliferation. There is great dearth of employment opportunities here as the 100 days work project has hardly taken place in this location. Whatever paddy is cultivated once a year, is used for self consumption with hardly any residue for marketable surplus.

4.5 Case of Villages in Muchikata beat

For purposes of analysis four villages viz. Khata-am, Dubukhala, Muchikata, and Churku have been selected for analysis from the Muchikata beat in Jhilimili range.

Table 4.4: Basic Features of Surveyed Households in Muchikata Beat

Name of the village	Total inhabiting household	House holds surveyed	No of ethnic group	Dependency on forest (%)		
				High	Medium	Low
Khata-am	72	36	Mahato(Kurmi),santal	63.89	36.11	0
Dubukhana	42	21	Santal,Mahato	47.62	47.62	4.76
Muchikata	56	28	Santal,Mahato,Sabar	53.57	42.86	3.57
Churku	52	26	Santal,Mahato,General,Mahali (Tudu,Kisku,Mandi,Hembram,Basra)	50	50	0

The village **Khata-am** is situated in a dense forested region with little road communication facility and having great scarcity of water during summer. Main source of water here is chua. Despite an active FPC a section of people here are prone to illegal felling of trees and often people from outside furtively collect away haritaki and kalmegh plants and fruits. Average duration of employment here is very small , @ average 7-8 days a month. During the end of winter and onset of spring some

employment is generated by the range office with the wage rate of Rs. 50 –60 a day. So on an average four times every year, villagers here migrate to Burdwan and adjoining localities for work as agricultural labourer and stay there for one and half months each time. This also has an indirect effect on the upkeep of density of forest resources here. During off -agricultural season sal and kendu leaves provide main source of income. On an average a person makes 100-150 sal plates a day. Apart from this some income is also earned from babui grass cultivation. Here each villager/family is entitled to have a loan from the samiti to the tune of 20000/- once a year at the rate of 2% interest per month. A maximum of 7 years is allowed for repayment of such loans.

The village **Dubukhana** is characterized by gradual shrinkage of forest resources, Apart from the problem of elephant intrusion villagers here deliberately destroy forest by burning in order to make room for babui cultivation. Rope making from 1 qt of babui grass earns a profit of Rs 600/-. The species of trees like kend, pial etc and hence profit therefrom are gradually diminishing day by day. Earlier the availability of bhurru fruit solved the problem of breakfast. This is no longer possible now-a- days. People are mostly very poor here suffering from severe lack of employment opportunities. So on an average four times a year they migrate to Burdwan for working as agr labourer. However a number of sources of loan are found there in the form of club, samiti, friends and relatives, mahajan , shops etc. This indirectly implies that mutual help, co-operation and trust to certain degree exist in this locality. Electricity provision has been made in both of the aforesaid villages through Rajiv Gandhi electricity extension project

Muchikata village is located in a remote region without having any road communication. Because of socio-political influence and strong economic imbalance there is lack of unity and trust among the villagers many of whom belong to the sabar sect. The sabar people because of their extreme poverty are totally dependent on forest resources for their livelihood. They also wrongly believe that as members of FPC they are entitled to have some remuneration for forest guarding activity. But without having this they do not take part in protection activity. The FPC is almost inactive here as mutual stake in forest guarding hardly exists. There is also glaring lack of employment opportunities here as

evinced in the reported complete failure of 100 days work programme. So all these factors induce sort of unhindered access to forest resources. There is a great demand here for mahul plantation which is deemed as economically productive. Apart from this, sabars take to making brooms from bamboo for earning some income. A thick bamboo costing Rs. 30-40 helps produce 7-8 brooms. Some villagers have transformed mono-cropped land to double cropped by purchasing motors. Their want of employment has also been somewhat reduced at the advent of quadrupled cultivation at Burdwan instead of triple. However this is not sufficient to meet their need. The villagers strongly feel that increased scope of employment would substantially reduce illegal felling and forest dependence.

The first FPC in Muchikata beat was formed in the **Churku** village which is inhabited by extremely poverty stricken people. General cast people are not entered in the BPL list. Here also due to lack of employment opportunities and reduced availability of forested land, villagers use to migrate to Burdwan and adjoining agricultural districts four times a year. Income based on forest resources arise mostly through kendu and Sal leaf collection. Sometimes poor villagers are employed for babui grass harvesting and rope making for sale by others and they are entitled to only wages for it after handing over the surplus revenue to the owners. Some villagers also supplement their income by making bamboo basket or breaking stones. A truckload of stones earns Rs 1200/-. Pursuit of agriculture is very difficult here due to lack of perennial water source despite having a dam in the locality. Apart from this, trampling of crops by elephants occurs frequently here and villagers usually get only a small part of their demanded compensation for this from the forest dept.

Chapter –5

Determinants of Forest Dependence and Link with Perceived Forest Degradation: A Socio-Cultural Analysis

5.6 General View of Forest Dependence

Since the enunciation of forest protection act (1990), the traditional community access and control has been substantially wrested by the forest dept in W.B with only specific duties and functions reserved for the forest protection committee (FPC) formed of the villagers. However this has hardly reduced the poor people's dependence for collection of non –timber forest products (NTFPs) that provide a substantial part of their livelihood in the study regions that are less agriculturally intensified. Apart from this, the enjoyment of CPR resources by non- poor households is not at all negligible. It is often held that since poor people depend more on forest resources they are likely to have a stake in its preservation. This is again synchronous with the view that the poor people tend to discount the future in order to earn their immediate livelihood from forest resources. Both of these views are in accord with high nature and forest dependence of poor people due to lack of access to alternative livelihood avenues. But it cannot be generalized that at all time and places the poor (represented by BPL class) have a far greater dependence and hence exploitation of all sorts of natural resources than that by the relatively richer APL class. Village wise and item –wise variation in dominant -dependence level across BPL and APL classes is often visible in reality. This is evident from the following tables depicting inter-village BPL-APL differential in percentage dependence across various categories of NTFPs. Non- timber forest dependence of local people in the adjoining region is observed in the form of collection of sal and kendu leaves, food, fodder, fuel wood, medicinal herbs, bamboo etc. Table 5.1 depicts the scenario in Ranibundh beat.

Table 5.1: BPL/APL Dependence on Major NTFPs (figures in %), Ranibundh Beat

Village Name	Status	Sal	Kendu	Fuel wood	Food	Medicine	fodder	GM	AM
Katiam	BPL	86.21	48.27	100	93.10	37.93	3.45	42.32	41.69
	APL	76.31	73.68	100	55.26	7.89	0	24.58	21.74
Buriam	BPL	83.33	72.22	100	50	16.67	16.67	23.01	18.46
	APL	58.62	62.07	100	44.83	17.24	3.45	20.14	21.74
Kelia Pathar	BPL	5	5	100	25	0	0	25.48	25.77
	APL	7.89	2.63	100	34.21	0	2.63	17.73	15.56
Bhurkura	BPL	42.10	31.58	100	73.68	0	10.53	40.05	43.36
	APL	62.50	56.25	100	56.25	0	0	37.90	35.82
Barapocha	BPL	92	96	100	52	60	76	38.75	34.59
	APL	90.91	90.91	100	72.72	72.72	63.63	26.19	17.05
Mahadebsinan & Barudi	BPL	91.67	83.33	100	91.67	16.67	41.67	60.22	61.88
	APL	87.50	87.50	100	87.50	50	62.5	35.09	24.82
Jamdaha	BPL	100	100	100	100	100	100	59.57	58.36
	APL	0	0	0	0	0	0	NIL	NIL

Source: Field Survey

Considering Jamdaha as an outlier with extreme 100 % BPL dependence on all types of forest items while zero dependence by the APL class and noticing dominant BPL forest dependence for almost all items in Katium and Burium, it is observed that in the rest four villages percentage-wise APL dependence for some items exceed that of BPL class. So it cannot be generalized that poverty is always associated with high degree of forest dependence and hence related in some way to degradation.

In case of Punshya beat although percentage wise BPL dominance is found in case of sal leaf collection, this is reversed for kendu in case of two villages like Janta dumur and Dhankura. Interestingly, percentage of APL people collecting food is observed to be on a higher side relative to BPL class in Jantadumur and Kotra while for fuel and fodder,

on an average there is observed bit of BPL dominance. APL people are found to dominate BPL in terms of medicinal dependence on forest products in case of Janta Dumur. This reveals that for almost all items, APL have a greater dependence on NTFPs in the first village of the table 5.2.

Table 5.2: BPL/APL Dependence on Major NTFPs (figures in %), Punshya Beat

Village Name	Status	Sal	Kendu	Fuel wood	Food	Medicine	fodder	GM	AM
Janta Dumur	BPL	42.86	42.86	100	0	7.14	7.14	14.24	16.07
	APL	42.31	61.54	100	3.85	38.46	7.69	11.34	9.71
Kotra	BPL	100	100	100	35	50	65	35.16	35.26
	APL	83.33	83.33	100	41.67	20.83	50	19.34	17.88
Dhankura	BPL	92.31	80.77	100	0	76.92	65.38	34.51	41.01
	APL	83.33	83.33	83.33	0	66.67	50	8.97	10.52

In case of Jhilimili beat as depicted in table 5.3, Ramgarh happens to be a village where percentage-wise, upper strata people outweigh the poorer class in terms of their NTFP collection activity. In Kasakendh sal, kendu leaf and plant-medicine collection is highly dominated by activities of APL people compared to poorer counterparts. Contrary to general expectation, a great richer section dependence on forest items is likely to point to the lack of means, power, awareness and alienation of poorer people from collection of NTFPs as well as migration of BPL class people outside on regular basis due to dearth of native employment potential.

Table 5.3: BPL/APL Dependence on Major NTFPs (figures in %), Jhilimili Beat

Village Name	Status	Sal	Kendu	Fuel wood	Food	Medicine	fodder	GM	AM
Kasakendh	BPL	73.64	63.64	100	27.27	18.18	18.18	23.96	25.31
	APL	90	100	100	20	20	0	21.24	22.09
Baisnavpur	BPL	69.23	69.23	100	7.69	0	30.77	25.74	26.24
	APL	50	66.67	100	0	0	33.33	30.80	32.37
Ramgarh	BPL	95.65	78.28	100	0	0	43.48	29.55	30.47
	APL	100	100	100	0	0	60	26.81	26.46

Muchikata beat happens to be one where poorer people have on an average a greater percentage-wise dependence on NTFPs compared to APL class. Only in Dubukhana, kendu and fodder collection is done by a greater proportion of relatively richer people.

Table 5.4: BPL/APL Dependence on Major NTFPs (figures in %), Muchikata Beat

Village Name	Status	Sal	Kendu	Fuel wood	Food	Medicine	fodder	GM	AM
Muchikata	BPL	100	100	100	10	0	20	36.60	37.56
	APL	94.44	94.44	94.44	0	0	33.33	25.19	16.22
Dubukhana	BPL	100	83.33	100	16.67	0	0	44.16	44.50
	APL	93.33	93.33	100	13.33	0	26.67	27.64	28.01
Khata Am	BPL	100	100	100	46.15	0	61.54	39.56	38.34
	APL	100	100	100	17.39	0	17.39	34.68	34.73
Churku	BPL	100	100	100	0	5.88	0	29.87	30.32
	APL	77.78	88.89	100	0	0	0	20.99	20.56

Considering all the beats, it is observed that there is 100% BPL dependence on fuel wood while nearly the same for APL class. This implies the tremendous importance of forest for providing cooking input. Sometimes social inhibition against poor lower caste people (like sabars) results in lesser percentage dependence of BPL class on sal /kendu/fodder collection compared to richer upper class neighbours. The implication of the tabular data is that generalization of universal greater percentage of BPL dependence on NTFPs is a misnomer as richer class people also happen to be dominant exploiters in case-specific circumstances.

5.7 Food Calendar in the Study Region

Food calendar provides a summary view about agricultural output available at different seasons and also throws light on the associated work opportunities. The food calendar of the region is depicted in terms of the following table 5.5. The work and food calendar suggests that during Jan – Feb and Feb- March the working condition is conducive to earning a livelihood with opportunities of local work and forest based work and good vegetable growing conditions. During this period, rice and vegetable are available while credit requirements wither away. People collect only firewood for fuel and sal leaves for making marketable plates to supplement income. The condition of people begins to worsen during March-April. Work opportunities completely vanishes in local areas and some people are compelled to resort to migration for earning an income. Threat of insecure food begins to be felt with access being limited to only low quality food like rice and sak. Income earning opportunities virtually become nil during April-May when people have to depend mainly on kendu leaf and other forest collection activities.

Table 5.5: Work and Food Calendar in the Forest Beats in Southern Forest Division of Bankura District

Time period	Work opportunities	Food insecurity status	Credit condition	Food availability	NTFP collection
JAN-FEB	100 day work	Nil	Nil	Rice And Veg	Sal & fire wood
	Veg production				
	Local work available				
	Migration of some people				
FEB-MAR	Forest work available	Nil	Nil	Rice And Veg	Sal & fire wood
	Veg production				
	Local work available				
MAR-APR	Migration of some people	Medium	Small no of persons	Rice and sak	Sal & fire wood & food.
	No availability of local work				
APR-MAY	Kendu leaves collection	High	Medium no of persons	Rice and sak	Kendu leaves & Fire wood & food
MAY-JUN	100 day work	High	Small no of persons	Fruits & ground potato & rice	Kendu leaves & Fire wood & food
	Local work available				
JUN-JUL	Working in own field	Nil	Large no of persons	Rice, Veg, Sak & fruits	Sal, Fire wood, Fruits, Medicinal herbs
	Local work available				
	Income from forest				
	Migration of some people				
JUL-AUG	local work available	Low	Large no of persons	Rice, Veg, Fruits	Sal, Fire wood, Fruits, Medicinal herbs
	Migration of some people				
AUG-SEP	Income from forest only	High	Medium no of persons	Fruits & small amt of rice, maize	Sal, Fire wood, Fruits, Medicinal herbs
SEP-OCT	Local work available at the end of the month	Medium	Nil	Rice	Sal, Fire wood, Medicinal herb
	Income from forest				

OCT-NOV	Local work available	Nil	Nil	Rice and vegetable	Sal, Fire wood, Medicinal herb
NOV-DEC	Local work available	Nil	Nil	Rice and vegetable	Sal, Fire wood, Medicinal herb
	Migration of some people				
DEC-JAN	Local work available	Nil	Nil	Rice and vegetable	Sal, Fire wood

Purchasing power almost dwindles with consequent insecurity of food. During may – June to July-August work is however available for both men and women with 100 days work and own farm employment and forest activities supporting work opportunities. Threat to food security during may-june is of course extremely high and people work hard to eke out a livelihood. Most of the people find it rather risky to take to credit with rather little savings to repay. Forest dependency is felt to be high with collection of Kendu leaves , Fire wood, fruits & food from forest with hardly any vegetable available.

During June – July and July- Aug there is buoyancy in farming activities because of the onset of monsoon with people working in own field as well as sometimes migrating to work in others' land. Credit facilities are adopted by a large number of people to strengthen farming activities with purchase of necessary inputs and other requirements. Food scarcity is on lower side. Aug-sept is the most difficult period when villagers have no other alternative than to depend solely on forest resources. Food insecurity and livelihood become extremely acute with little availability of rice to the families. Forest dependency for diverse NTFPs is vividly visible. In sept- oct the condition is marginally better with a bit of income earning opportunities towards the end of the month and medium food scarcity but still high dependence on forest income. Although rice is available, consumption of vegetable remains however a far cry. During Oct-Nov to Dec – Jan the condition gradually improves with availability of local work facilities, end of food scarcity and dependence on forest for just fuelwood and sal leaf collection.

In general when the season does not allow any production and people do not find any job locally, the villagers are left with no other option than to migrate or suffer from food insecurity. They borrow money from informal credit sector. People also resort to collecting food and fruits from forest at that time, with maximum portion of earning coming from forest. Intensity of forest dependence is observed during April –June while again in Aug-Sept and somewhat in Sept-Oct. The bite of food insecurity is mostly felt during Aug-Sept. Availability of little amount of rice in this period often coerces many families to resort to illegal felling and earn a meagre income for sustenance from sale of forest resources. The forest dept. and FPC members largely have to connive at such illegal acts in order to enable people to survive. Following table 5.6 provides a view of the sowing season and productivity condition of different types of paddy and maize in the study region.

Table 5.6: Production Condition and Period of Different Staple Food Items

Rice Production	Time Required for crop ripening	Season	Price (per qt)	Yield (mond)
Aush Rice (Khandagiri, high land)	90-100 days	June-July to Sep-Oct	600-650	20-25
Lalat (low land, locally known as “Tara”)	125-130 days	June-July to Oct-Nov	680	27
Aaman (Swarna variety)	150 days	June-July to Nov-Dec	700	35
Maize (only for self consumption)		May-June to Aug-Sep		

From the above table we find that June –July is the period when different types of paddy begin to be sown with ample employment opportunities for the village people. Since ripening of paddy takes on an average 3-4 months before it becomes ready for consumption, the villagers face a harrowing time in Aug– Sept when the previous reserve of rice gets dwindled simultaneous with choking of farming activities and lack of local work opportunities. Availability of maize to some extent serves their food.

5.8 Explanation of Observed Forest Dependence for Self Consumption

The following table 5.7 provides a village-wise (for Ranibundh beat) view of the level of forest dependence (represented by self-consumption values) as explained by several explanatory variables. Extent of self dependence on forest products in each village is assessed by regressing the individual self dependence values on local employment days (LED), poverty status (S), respective family size (FS), income other than agriculture (OI), number of items (NI) collected from forest land and livestock (LS). As LED rises, there is expected to be less time available for forest collection activity and accordingly an inverse relation. Poverty status (S) may have either + ve or – ve influence on forest collection since as depicted above, APL people also in many cases reveal high dependence on NTFPs relative to BPL class. Family size (FS) is likely to have positive influence on the level of forest collection for self consumption. This is because as the members in the family increases, the requirements of subsistence also rises. With emergence of alternative job prospects and hence other income sources , the dependence on forest for subsistence and other requirements is likely to fall and there is assumed to be a negative relation of OI with forest collection activity. Further with a rise in available NI and LS there is supposed to be a positive pressure on forest resources for meeting domestic requirements.

In case of Ranibundh beat overall regression is significant in all cases as evident from the following R^2 values. Major significant variables appear to be OI, FS and NI and their signs also are in the expected direction. As family size increases, villagers also increasingly depend on CPR for livelihood. With increase in income from other sources there is an expected decline in the degree of forest dependence on the part of the villagers. Further the participatory labour in alternate activities lessens the time available for forest collection activities.

Table 5.7: Least Square Parameter Estimates of Variables Influencing Self Consumption in Ranibundh Beat

Var	Katium	Burium	Keliapathar	Bhurkura	Maha - barudi	Barapocha	Jamdaha
LED	0.88 (0.44)	2.23* (0.07)	-0.05 (0.92)	0.16 (0.89)	2.84 (0.51)	-1.54 (0.32)	8.47* (0.01)
S	-126.08 (0.66)	-451.14* (0.09)	140.6 (0.38)	55.02 (0.76)	-39.95 (0.89)	182.01 (0.44)	–
F S	489.16* (0.00)	431.12* (0.00)	411.13* (0.00)	265.35* (0.00)	457.02* (0.03)	500.49* (0.00)	504.98* (0.00)
O I	-0.0065* (0.05)	-0.0039* (0.06)	-0.0043 (0.31)	-0.0024 (0.67)	-0.0089 (0.41)	-0.0058* (0.00)	-0.04* (0.04)
NI	251.59 (0.12)	587.94* (0.00)	670.54* (0.00)	570.71* (0.00)	348.10 (0.28)	674.74* (0.00)	1643.70* (0.00)
LS	-3.7 (0.86)	5.81 (0.71)	-18.91 (0.31)	13.32 (0.36)	-7.81 (0.79)	-60.96* (0.02)	51.65 (0.26)
R ²	0.59	0.62	0.69	0.61	0.53	0.81	.80
F	14.86* (0.00)	11.26* (0.00)	19.19* (0.00)	7.47* (0.00)	2.52* (0.07)	20.84* (0.00)	10.73* (0.00)

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis) (in Jamdaha there is no APL family, hence variation in status(S) is absent and it is not considered) (Mahadebsinan- Barudi written as Maha-barudi)

Again peoples' absolute dependence level also varies directly with the number of items consumed. Poverty status (although mostly insignificant) however does not show any definite direction of variation with the level of forest dependence. This finding accords well with the previous view that poverty does not necessarily accentuate level of forest dependence. The overall regression although good fit for the three considered villages in case of Punshya beat, only two variables viz. family size and number of items available

for collection significantly explain the variation in forest dependence, as evident from table 5.8.

Table 5.8: Least Square Parameter Estimates of Variables Influencing Self Consumption in Punshya Beat

Var	Jantadumur	Kotra	Dhankura
LED	-1.02 (0.55)	0.55 (0.78)	0.20 (0.95)
S	-231.59 (0.54)	158.94 (0.28)	-432.74 (0.56)
F S	486.76* (0.00)	442.38* (0.00)	168.90 (0.47)
O I	0.001 (0.89)	-0.01 (0.19)	0.01 (0.52)
NI	452.10* (0.02)	218.48* (0.03)	1034.83* (0.00)
LS	-12.79 (0.55)	6.72 (0.48)	11.28 (0.64)
R ²	0.61	0.61	0.59
F	8.74* (0.00)	9.47* (0.00)	6.03* (0.00)

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis)

In case of Muchikata and Jhilimili beat high degree of variation was observed among sample village respondents with respect to their education level. So education (E) has been incorporated here as another additional variable with possible inverse impact on forest dependence.

The following table 5.9 reveals the results of forest dependence for Muchikata beat. In this case also the regressions for all the considered villages, are highly significant. Family size (FS) emerges to be the only variable significantly driving the move towards forest collection for self consumption in all the study villages here. Apart from that, in some cases NI, OI appears to be significant. Moderate significant impact is observed to

occur in specific cases from the side of status (S) in case of Dubukhana while from livestock (LS) and education (E) in Muchikata village.

Table 5.9: Least Square Parameter Estimates of Variables Influencing Self Consumption in Muchikata Beat

Var	Muchikata	Dubukhana	Khata-am	Churku
LED	-1.015086 (0.41)	-0.986988 (0.67)	-1.291875 (0.32)	1.080335 (0.18)
S	358.2016* (0.05)	229.3982 (0.17)	-54.43572 (0.82)	239.1410 (0.34)
F S	471.3788* (0.00)	222.8388* (0.00)	567.5199* (0.00)	463.6051* (0.00)
O I	-0.008746* (0.00)	0.007594 (0.59)	-0.009291 (0.20)	-0.006545 (0.27)
NI	61.17439 (0.67)	367.2472* (0.04)	162.3401 (0.17)	-
LS	23.02089 (0.14)	2.977880 (0.81)	-17.30657 (0.46)	26.99102 (0.27)
E	-43.37730 (0.14)	40.38568 (0.34)	22.68584 (0.45)	18.02695 (0.56)
R ²	0.87	0.87	0.82	0.88
F	19.79* (0.00)	12.73* (0.00)	18.25* (0.00)	23.38* (0.00)

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis)

In case of Jhilimili beat, all the regressions are significant as evident from the R² values. However individual variables excepting family size differ with respect to their significance and intensity of impact on the self dependence values. Family size seems to be the most important significant determinant of the intensity of forest dependence in all cases. In case of Baisnavpur, excepting OI and E, all the other variables are found to be significant. In case of Kasakendh, only FS, OI and NI appear to be significant. Major

significant variables in case of Ramgarh are FS, NI, OI, LS and E although sign of E is opposite to what is usually expected. It is usually expected that with rise in average level of education dependence on forest is likely to decline. However it might often be so that with rise in average children education, families have to depend more on forest resource to replenish the lost transfer earning of possible child labour.

Table 5.10: Least Square Parameter Estimates of Variables Influencing Self Consumption in Jhilimili Beat

Var	Kasakendh	Baisnavpur	Ramgarh
LED	1.87 (.38)	3.11* (.05)	-0.81 (.59)
S	204.14 (.58)	431.82* (.01)	-17.86 (.86)
F S	470.08* (.00)	494.37* (.00)	337.89* (.00)
O I	-0.036* (.09)	0.02 (.29)	-0.009* (.04)
NI	457.70* (.01)	261.22* (.07)	319.41* (.00)
LS	23.62 (.49)	49.47* (.04)	59.09* (.01)
E	-41.77 (.33)	-9.24 (.59)	63.15* (.00)
R ²	0.84	0.94	0.87
F	9.64* (.00)	35.31* (.00)	23.08* (.00)

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis)

5.9 Species Variety and Plausible Reasons for Forest Degradation

However despite the emergence of joint forest management system and villagers' forest-dependence, because of lack of co-ordination between forest dept and FPC, politicization of FPC activities, widespread illiteracy and negation of customary right to access the forest resources, villagers often do not feel motivated to protect the forest with a feeling of alienation of their traditional property right. As a result there has been observed a tendency towards breaking the rules of access, illegal felling, collection of different species at a rate beyond their survival capacity and reducing the forest base to prepare land for quick return yielding babui grass cultivation. The rate of exploitation of different trees, plants and shrubs had been often much higher than the flora's regeneration. The destructive impact of this rate of consumption is especially discernable in the case of less-frequent species. Again introduction of high yielding swarna paddy had an expansionary effect on peoples' attitude to establish tenurial right over more cultivable land with relative neglect of perennial herbs and other species of plants. The consequential increase in livestock and their grazing in the areas adjoining forest lands had a deleterious effect on the growth of young shoots and tender herbs of different species. Regeneration of various slow growing species was possibly curtailed as the green aerial parts were quickly devoured and growth stunted by the trampling of hooves. Apart from this, occasional man made fire- burning of specific areas of forest land to make room for clear collection of mahua and kendu seeds, leaves and fruits had possible damaging impact on the growth of some tender species of plants. The diversity of species that contribute in many ways to the earning of livelihood and medical benefits of the indigenous people in the study area is depicted in the following table (no 5.11)form.

Table 5.11: Different Plant Species and Their Uses

Species	Uses
1. Sal	The leaves are used to make plates; It is also used as construction of their house, furniture, fence, posts
2.Kendu	The leaves are used for making beedies; plants used as firewood also.
3.Bamboo	From selling bamboo people can earn money directly, it is used to make utensils like basket, handicraft goods and broom.

4.Arjun	It is used to cultivate tasar that is sold at a high price in the market, the liquid extract from the tree is used as gala, the bark is used as a medicinal herb.
5.Eucaliptas	It is used for fire wood collection (it is high yielding and has high growth); the stem is used for construction of their house.
6.Mahua	Berries are eaten, made into local alcoholic beverage, people sell alcohol and earn money, from its berries oil can be extracted (collected) which is used in cooking, the dry refuse of fruits is used as fodder
7.Kendh	Berries are eaten, from selling fruits people can earn money, used as fire wood also
8.Bhur-ru	Edible Sweet fruits.
9. Mango	Edible sweet fruits.
10.Khejur	Edible sweet fruit and exudation also extracted from it.
11.Susuni sak	Edible green plant leaf.
12.Sojne/ sak	Edible green vegetable/plant leaf.
13.Neem	It is often used in construction, a twig used as a toothbrush; the leaves are used as medicinal food.
14.Bel	Edible sweet fruit, it is used as a medicine herb also.
15.Kalmegh	Used as a medicinal herb.
16. Bhaluk sakti	Used as a medicinal herb.
17.Rahara	Fruits of this plant are used as medicinal herb.
18.Bara gutur	Used as a medicinal herb.
19.Haritaki	Used as a medicinal herb.
20.Rerimakha	Used as a medicinal herb.
21.Aloevera (100 type species; according to villagers)	Used as a medicinal herb. Especially it helps increase the strength of life. (Locally it is known as Ghritokumari)
22.Satmul	Medicinal tea made from root of this plant.
23.Anata mul	Medicinal tea made from root of this plant.

5.10 Extent of Perceived Forest Degradation and Decline in Species

The fact that species has declined in most of the sample villages together with reported forest degradation, is revealed from the following tables 5.12, 5.13 etc. During lean periods marked by privation and physical stress, villagers are left with no other alternative than to fall back upon forest more out of compulsion than choice. Apart from illicit felling and cutting of trees/branches, poor households continue to access forests for collecting various NTFPs together with grazing their cattle. The FPC members themselves often very poor, ignore mutual illegal collection from forest out of sheer necessity of survival. This sets forth the problem of tragedy of the commons with APL

class people also somewhere preempting NTFP collection in order to be served first on first-come basis. Apart from this, females are very thinly represented in the elected boards of most of the FPCs. They also hardly participate in the FPC meetings and are rather weakly motivated to protect the forest resources. Most of the NTFP collection activities are done by the females while spending a lot of time after it. Again spread of commercial cultivation of babui grass by clearing forest as well as illicit rapport between forest contractors and FD staff often led to withering away of huge chunk of high value forest resources endowed with a multiple variety of species. Sometimes the forest people completely uproot important medicinal herbs when these are found to have good commercial value and marketable scope within the village. As a result, due to lack of proper care and maintenance as well as deficiency in awareness of good management techniques, the number of species and availability of forest produce declined jeopardizing further the prospect of a rural forest based livelihood. The problem is accentuated with prevalent threat of eviction and high perceived rate of degradation. Most of the villages in Ranibundh beat fit into this kind of scenario as given in table 5.12.

Table 5.12: Percentage of Respondents Perceiving Species Decline, Forest Degradation and Sensing Eviction (Ranibundh Beat)

Village	Species declined (%)		Village forest degradation (%)		Perceived threat of eviction (%)	
	Yes	No	High	Low	High	Low
Katiam	91.04	8.95	85.07	14.93	80.60	19.40
Buriam	95.74	4.26	80.85	19.15	68.08	31.92
Kelia- pathar	53.45	46.55	48.28	51.72	43.10	56.90
Bhurkura	94.28	5.72	80	20	80	20
Barapocha	83	17	81	19	75	25
Maha-Barudi	85	15	80	20	80	20
Jamdaha	0	100	0	100	31	69

Source: Field Survey

Major percentage of people in all the villages except Jamdaha reported a decline in the species. This percentage is observed to be highly in accordance with that of perceived high degradation of forest on the part of the respondents. Again excepting Keliapathar and Jamdaha, majority of the villagers in other areas are observed to be reeling under the threat of eviction and hence insecurity of their forest right. This is likely to be accentuating the process of degradation. Apart from that, there are certain village specific factors that accentuate the process of depletion and degradation and these emerge mostly due to lack of villagers' commitment and sensibility to consider forest as their own property and traditional means of survival. For instance, in Katium, illegal plundering and cutting of tress has been rising day by day according to the villagers, leading to gradual depletion of forest. The sabar people here are generally treated with neglect in FPC meeting and accordingly they find little incentive to put labour in forest protection and preservation. In case of Bhurkura, forest dept often undertake cutting sal trees and FPC people burn their shoot in order to plant quick return yielding eucalyptus trees which also reduce the availability of sal leaves. The spread of eucalyptus tree has thinned the forest of other species since this plant impedes the growth of other trees. Non availability of sal leaves here drive poor villagers in this locality to collect sal leaves/other twigs, often illegally from near-by forest under control of different FPCs. In Mahadevsinan-Barudi village some forest people undertake quick felling of kendu plant at the stage of their less than moderate growth in order to produce lasting cot support legs. Again in case of growth of other plant species, kendu plant leaves suffer from lack of adequate sunlight leading to its gradual non-availability. Since kendu leaves are economically productive, villagers often resort to clear cutting of other plants in order to support kendu leaf generation. Lack of regular monitoring and improper imposition of punitive measures have led FPC members in the aforesaid region to take to unrestricted degradation of forest without coordinating much with FD activities. Again, with the spread of the news of a possible inroad of sanctuary here, villagers have started to panic with a gradual loss of sense of belonging to the traditional forest area. Lack of adequate agricultural credit also often deter the forest people from generating subsistence level of crop in their land. The consequent alternative for village people is to heavily

deplete the forest often out of desperate attempts by flouting and transgressing the forest protection rules, even at the risk of being caught. The villages in Ranibundh had been very richly endowed in terms of various types of medicinal plants like Satmul, Anata mul, Ghritakumari, kalmegh etc. In recent times, marketing channel of these species has been greatly improved here through the inroad of two agencies who are engaged in collecting them for commercial uses. This has enhanced the rate of depletion of these species which are cut by the village people at their earlier stages in order to reap quick profit by selling them to these agents almost at their doorsteps. As a result there is an adverse stunting impact on the regeneration of these medicinal plants and loss of rich biodiversity.

Table 5.13: Percentage of Respondents Perceiving Species Decline, Forest Degradation and Sensing Eviction (Punshya Beat)

Village	Species declined		Village forest degradation (%)		Perceived threat of eviction (%)	
	Yes	No	High	Low	High	Low
Janta Dumur	100	0	100	0	100	0
Kotra	100	0	100	0	100	0
Dhankura	93.75	6.25	93.75	6.25	93.75	6.25

Source: Field Survey

In case of Punshya beat, from table 5.13 it is observed that for the first two villages all the sampled households unwaveringly declared high degradation of forest together with species decline as well as a lurking threat of insecurity of their status in forest land. There is slight unconsensus in case of Dhankura where excepting a meagre 6.25% all the other households pointed towards high degradation, eviction threat and reduced species variety. Earlier availability of locally grown wild food provided a hedge to poor villagers to sustain their real income against seasonal adverse economic conditions. With restricted access to forest areas, encroachment of forest region for babui plantation, illegal felling of forest resources, unsecured land right and population pressure, wild food variety declined to a great extent thus pushing the poor to further economic stress. With little expansion of alternative steady livelihood opportunities, they were compelled either to reduce their consumption or purchasing them (or substitutes) in the market. Hardly

any alternative existed than to derive the necessary purchasing power by illegal felling and sale of JFM forest resulting in further degradation of forest land.

In the villages of Jhilimili beat also the view of the FPC members is heavily tilted towards reduced species and perception of high degradation and eviction threat as evident from the table 5.14. Deficiency of adequate credit and often small size of holding cripple the villagers from sustaining their livelihood from even subsistence agricultural pursuits. The consequent alternative for village people is to heavily deplete the forest for eking out a livelihood. In many villages like Baishnavpara, Kasakendh etc. it is a common knowledge among FPC members that villagers often resort to illegal felling without which their basic wants remain unmet. But FPC members also often having same type of miserable condition largely ignore such intrusion out of the dire necessity of mutual benefit. In Baishnavpur, FPC members often suffer from a tacit wrong view that protection of forest is associated with earning labour charges which they are denied to. So villagers here do not feel the spontaneous zeal of offering their labour for saving the forest from degradation. Again in general, the villagers being mostly poor often do not feel inspired to offer free labour, transfer earnings of which is very high. As a result the very purpose of forming the FPC is often baffled as the members do not fulfill their responsibility. Often there is also observed lack of motivation and little urge for participation among FPC members in the absence of repeated general meeting and continuous process of discussion, monitoring, and knowledge sharing. While the centralized board meeting is held several times, general meeting involving all members, is usually held once a year. Apart from this, irregular felling and absence of systematic re-plantation of forest often deprive the members from a stable and steady source of income at regular intervals. This stunts their motivation for participation for forest conservation. Illegal felling by some, is instead of being protested, followed and encouraged by others in a group accentuating the phenomenon of tragedy of commons, as was specifically observed in Dhankura village of Punshya beat.

Table 5.14: Percentage of Respondents Perceiving Species Decline, Forest Degradation and Sensing Eviction (Jhilimili Beat)

Village	Species declined		Village forest degradation (%)		Perceived threat of eviction (%)	
	Yes	No	High	Low	High	Low
Kasakendh	80.95	19.05	80.95	19.05	90.48	9.52
Baisnavpur	84	16	84	16	92	8
Ramgarh	84.84	15.15	84.84	15.15	78.79	21.21

Source: Field Survey

The same kind of responses tilted in respect of degraded species, fear of eviction etc. is revealed in case of villages of Muchikata beat. However here some of the responses (in some cases about one fourth or one third of the respondents) expressed opposite views as well. Possible reasons for this might be explained in terms of infrequent entry into forest areas, casual and unconcerned view of the respondents about the status of forest land or perhaps inbuilt stubborn opposition against any eviction possibility. However the fact that forest has degraded to some extent (whether it be high or low) was conceded by all. Sometimes, as was found in village Khata-am, lack of proper care in cleaning and nursing the roots of felled trees and lack of peoples' commitment and motivation to regenerate such trees as part of their own property, results in gradual degradation of forest land. Tribal forest dwellers often discriminated against by upper castes and having only minor rights to forest based items consider such nursing as the onus of FD having manpower and better ingredients required for such job. While the FD often actually understaffed and having belief in villager's efforts and knowledge to undertake such job, refrain from their participatory involvement with the consequent undernourishment of the felled tree and its gradual degraded status. Apart from this guarding is also sometimes weakened due to lack of adequate FD staff while FPC members often colluding among themselves get a free hold of unauthorized access to forest resources beyond what is permitted in JFM institution, resulting in its wanton degradation. This is visibly evident in the Doluibasa region in Dubukhana village. Cultivation of babui grass for generating quick returns also leads to depletion of forest land as observed in the village Kasakendh in Jhilimili beat.

Table 5.15: Percentage of Respondents Perceiving Species Decline, Forest Degradation and Sensing Eviction (Muchikata Beat)

Village	Species declined		Village forest degradation (%)		Perceived threat of eviction (%)	
	Yes	No	High	Low	High	Low
Muchikata	78.57	21.43	82.14	17.86	75	25
Dubukhana	85.71	14.29	85.71	14.29	76.19	23.81
Khata Am	69.44	30.56	66.67	33.33	55.56	44.44
Churku	84.62	15.38	84.62	15.38	76.92	23.08

Source: Field Survey

Spread of commercial cultivation of babui grass has an untoward impact on the health of forest resources. Babui grass is a quick growing species , used for making ropes and have a good market . Therefore from economic point of view, in order to derive short run gains villagers often resort to illegal cultivation of this grass by encroaching on forest land which have a very deleterious effect on the long run productivity of soil as the land can never be used for growing crops or any other plant species. Due to illegal colluding connection between some forest dwellers, forest contractors and connivance of forest dept staff as well as lack of concern for long-run availability of forest resources, the number of species and intensity of NTFPs declined endangering further the forest based livelihood potential. Unchecked depletion of forest resources for deriving short run benefits is thus associated with reduced species diversity as well as reduced efficacy of forest as a carbon sink leading to long-term diverse uncertain environmental consequences. The problem of tradeoff between short run economic gains and long run environmental cost is discernible from the following dynamic optimization model.

5.6 Tradeoff between Short- run and Long -run Benefit /Cost Effects of Forest Extraction

To describe the nexus between short term benefit and long term effect, the following model seems to suit the situation of forest depletion in the study region. Short run benefit is assumed to be influenced by the amount of collection from and extraction of forest

resource (f), the stock of different type of species (s) inclusive of animal and plant as well as the level of ambient environment ($\underline{c} - c$). Here \underline{c} is the environmental carrying capacity while c is the stock of carbon. So the forest benefit function can be written as

$$B = \int_0^{\infty} u [f_t, s_t, (\underline{c} - c_t)] e^{-rt} dt, \quad \text{Let } \underline{c} - c_t = c'_t$$

Here change in carrying capacity net of carbon stock is a continuous inverse function of extracted forest. i.e.

$$dc'_t/dt = g(f_t) \text{ where } g_f < 0$$

Change of species stock is assumed to be a function of extracted forest where increased deforestation (forest extraction) has the impact of reducing the stock of species (biodiversity). Hence species stock growth is negatively related with extracted forest. Following this we have.

$$ds_t/dt = h(f_t) \text{ where } h_f < 0$$

Now our aim is to establish the relationship between short-term benefit which is coming from extracted forest and the long-term effect based on the impact of change in stock of species and carbon dioxide. This follows from maximising benefit function subject to the constraints.

$$\text{Max } B = \int_0^{\infty} u (f_t, s_t, \underline{c} - c_t) e^{-rt} dt$$

Subject to

$$ds_t/dt = h(f_t) \text{ where } h_f < 0$$

$$dc'_t/dt = g(f_t) \text{ where } g_f < 0$$

This corresponding current value Hamiltonian stands as

$$H_c = U[f_t, s_t, (c - c_t)] + \lambda_{1t}h(f_t) + \lambda_{2t}g(f_t)$$

By optimal control condition

$$\begin{aligned} \delta H_c / \delta f_t &= U_f + \lambda_{1t}h_f + \lambda_{2t}g_f = 0 \\ \text{or } U_f &= -\lambda_{1t}h_f - \lambda_{2t}g_f \text{ -----(A)} \end{aligned}$$

$$\text{and } d\lambda_{1t}/dt = r\lambda_{1t} - \delta H_c / \delta s_t \text{ ----- (B)}$$

$$d\lambda_{2t}/dt = r\lambda_{2t} - \delta H_c / \delta c'_t \text{ -----(C)}$$

Where U_f represents marginal benefits from extracted forest . It is positive.

$\lambda_{1t}h_f$ represent shadow value of marginal change or loss in species due to forest cutting or extracted forest. Since $h_f < 0$, the 1st term (with sign) on RHS in (A) is positive.

$\lambda_{2t}g_f$ represent shadow value of marginal change or worsening of ambient environment due to

increase in carbon emission resulting from extracted forest. Since $g_f < 0$, the 2nd term(with sign) on

RHS in (A) is also positive.

At steady state optimal depletion condition both $d\lambda_{1t}/dt$ and $d\lambda_{2t}/dt$ are equal to value zero.

Therefore from (B) $r\lambda_{1t} = \delta H_c / \delta s_t$ as well as from (C) $r\lambda_{2t} = \delta H_c / \delta c'_t$

Or we get $\lambda_{1t} = (\delta H_c / \delta s_t) / r$ and $\lambda_{2t} = (\delta H_c / \delta c'_t) / r$

So putting these values in (A) we get $U_f = - [(\delta H_c / \delta s_t) / r] \cdot h_f - [(\delta H_c / \delta c'_t) / r] \cdot g_f$

The implication is that at steady state optimality situation discounted marginal loss of utility due to species reduction resulting from deforestation together with discounted marginal loss of utility due to damage to ambient environment due to deforestation must be equal to the gain in marginal utility due to increased deforestation. It further implies that at equilibrium due to gain in immediate benefits from deforestation there is a strong cost aspect in terms of reduced species stock along with reduced efficacy of forest resource as a carbon sink in the longer run. The negative environmental implications of reduced species stock and reduced quality of ambient environment are really alarming from the point of view of sustenance of the resource community.

5.7 The Determinants of Perceived Forest Degradation

To assess the impact of sense of fear of eviction any time by the higher authority and some other relevant variables on the attitude towards status of degradation of the forest resources, a logit regression has been undertaken. In each village, as already stated, 50% of the village forest dwellers were selected as the respective sample size. Degradation or no degradation is considered as dependent dummy, linearly related with explanatory variables in the form

$$\ln [P / (1 - P)] = \alpha + \beta_1 SV + \beta_2 FF + \beta_3 FS + \beta_4 OI + \beta_5 PL + \beta_6 DE + \beta_7 SD + \beta_8 MT$$

Where P is the probability of degradation of natural resource, sale value = SV, fear of eviction in future = FF(dummy, with perceived threat of eviction assigned value 1 and its absence assigned value 0), family size = FS, other income = OI, poverty level = PL, days employed = DE, level of forest dependence = FD (dummy, with annual income from forest greater than Rs.8000/- being imputed value 1 and income less than this imputed value 0), mutual trust= MT (dummy, with perceived existence of mutual trust assigned value 1 and its absence assigned value 0). One village is not considered in this analysis as no degradation was recorded there. Binary-Logit regression gives the following results in table 5.16.

It is observed that fear of eviction appears to be the most significant variable responsible for the attitude towards forest degradation in all the villages except Katium. Poverty and

mutual trust though significant in some cases, vary in sign. The implication is that poverty level may not always be linked directly with forest degradation. Similarly as absence of mutual trust may lead to predation of the resource without any mood of conservation, its presence often expedites it when everybody can bank on others' mutual sympathy for similar depletion. Count R^2 values are rather high in all cases implying that considered variables amply influence perceived attitude towards degradation. Jamdaha village is not considered in the above regression as there is no reported forest degradation.

Table 5.16: Village-wise Results of Parameter Estimates of the Logit Regression in Ranibundh Beat

Village Variable	Katium	Burium	Keliapathar	Bhurkura	Maha - barudi	Barapucha
SV	7.31E-05 (0.6425)	5.29E-05 (0.5821)	-0.00076* (0.0147)	0.000895* (0.0633)	-0.000229 (0.5901)	9.99E-05 (0.7991)
FF (dummy)	1.249227 (0.2400)	1.343494* (0.0140)	2.907517* (0.0003)	6.526283* (0.0000)	7.434957* (0.0469)	2.829670* (0.0339)
FS	-0.197113 (0.3271)	0.164863 (0.2870)	0.594966* (0.0779)	0.346688 (0.6612)	2.878819 (0.1068)	-0.433390 (0.2522)
OI	-2.43E-05* (0.0032)	2.14E-06 (0.7466)	2.21E-06 (0.8939)	4.05E-05 (0.4881)	-0.00104* (0.0310)	1.38E-05 (0.4579)
PL	0.18083* (0.0010)	0.04632 (0.1832)	-0.12670* (0.0168)	-0.34763* (0.0246)	-0.63239 (0.2267)	-0.11386 (0.3442)
LED	-0.01560* (0.0174)	0.004172 (0.2420)	-0.005384 (0.1211)	0.013653 (0.4332)	-0.26903* (0.0041)	0.014663 (0.3345)
FD (dummy)	-0.458888 (0.6679)	-1.67302* (0.0620)	-27.8303* (0.0000)	-9.836224* (0.0857)	-17.5724* (0.0080)	-0.908153 (0.7586)
MT (dummy)	-1.646296 (.2834)	-0.249410 (0.7243)	1.673467* (0.0705)	0.747460 (0.6113)	-12.2142* (0.0129)	1.129541 (0.4347)

Log likelihood	-22.31674	-15.91467	-22.82487	-7.871171	-5.733786	-12.04792
Mc-fadden R ²	0.209597	0.306660	0.431765	0.550580	0.427083	0.320621
Count R ²	.8806	.8936	.7931	.9143	.8000	.8337

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis)

In all the sample villages in Punshya beat as revealed in table 5.17, logit regression seems good fit in terms of count R² value. However the signs of the significant variables in some cases deviate from what is expected. In case of Jantadumur SV, FF, FS, PL as well as LED appear to be significant. While the signs of FF, PL and LED match with expectation, that of SV and FS do not coincide with the desired direction. Plausible reasons might be that with rise in SV, people get concerned about the sustainability of the flow of economic benefits in future and preservation related efforts are likely to increase in stead of degradation. Similarly with rise in FS there is likely to be more income generating hands in alternative activities and hence less pressure on forest resources with consequent reversal of degradation. In case of Kotra SV, FF, OI, PL and LED emerge to be significant with only the sign of OI deviating from what is expected. This might be due to insufficient rise in OI compared to time devoted and to replenish that gap villagers might be falling back on forest more intensively in their residual time. In case of Dhankura SV, FF and FS appear to be significant with only SV mismatching expected sign. It is interesting to observe that FF i.e. fear of eviction significantly affects degradation status in all regions.

Table 5.17: Village-wise Results of Parameter Estimates of the Logit Regression in Punshya Beat

Village Variable	Janta Dumur	Kotra	Dhankura
SV	-0.000975* (0.0831)	0.001500** (0.1454)	-0.000545* (0.0010)
FF (dummy)	3.326127** (0.1148)	7.562888** (0.1175)	4.094900* (0.0005)
FS	-0.581693* (0.0999)	-0.663829 (0.6077)	0.731513* (0.0362)
OI	-5.50E-05 (0.2357)	0.000157** (0.1361)	-9.31E-06 (0.7084)
PL	0.735186** (0.1807)	1.103187** (0.1476)	0.024193 (0.8976)
LED	-0.071870* (0.0224)	-0.011263** (0.1335)	0.030282 (0.3491)
Log likelihood	-5.191917	-5.267842	-6.331758
Mc- fadden R ²	0.512742	0.519009	0.474832
Count R ²	0.9500	0.931818	0.9375

Source: Field Survey

(* value of parameter estimates are significant at respective levels given in the parenthesis)

Logit regression also appears to be significant in terms of count R² in all the villages in Muchikata beat. Mc- fadden R² is also high excepting the case of Khata- Am. Significant variables with expected signs are found to be FF, PL , LED and FD in case of Muchikata village. In case of Dubukhana only FF and OI significantly influence the regression with the sign of OI going against expectation the plausible explanation of which has already been stated. In case of Khata-Am, FF and LED significantly explain the logit regression with the sign in desired direction. In case of Churku village SV , FF , OI and PL emerge to be significant.

Here also eviction threat has a significant sway with regard to degradation status in all the four cases. Similar results are visible from table 5.19 depicting the case of Jhilimili beat.

Table 5.18: Village-wise Results of Parameter Estimates of Logit Regression in Muchikata

Village Variable	Muchikata	Dubukhana	Khata Am	Churku
SV	-0.000920 (0.3104)	0.000338* (0.0478)	-2.16E-05 (0.9489)	0.000976* (0.0001)
FF (dummy)	5.348566* (0.0559)	7.073539* (0.0040)	2.046065* (0.0275)	5.450143* (0.0011)
FS	1.172686 (0.3498)	-1.166273 (0.4320)	0.173936 (0.6210)	-0.195015 (0.5415)
OI	-2.14E-05 (0.2217)	0.000354* (0.0959)	-8.81E-06 (0.8251)	0.000105* (0.0265)
PL	0.372220** (0.1846)	-0.087480 (0.5671)	0.105810 (0.2630)	-0.101780* (0.0409)
LED	-0.031200* (0.0640)	-0.001658 (0.9355)	-0.017443** (0.1895)	0.003276 (0.3485)
FD (dummy)	2.157958** (0.1941)	-	-0.118592 (0.9241)	-
MT (dummy)	-0.817834 (0.5868)	-	-	-
Log likelihood	-5.171323	-4.877293	-17.38651	-3.999118
Mc- fadden R ²	0.606389	0.433692	0.241244	0.641733
Count R ²	0.89285	0.90476	0.75000	0.96154

Source: Field Survey

“-“ Symbol indicates no variability in the corresponding variable and so not considered. (*value of parameter estimates are significant at respective levels given in the parenthesis)

Table 5.19: Village-wise Results of Parameter Estimates of Logit Regression in Jhilimili Beat

Village Variable	Kasakendh	Baisnavpur	Ramgarh
SV	0.000736** (0.1309)	0.000986 (0.2113)	-0.000488** (0.1837)
FF (dummy)	4.725178* (0.0706)	4.218397* (0.0500)	3.846777* (0.0106)
FS	-3.429755* (0.0144)	-1.132069** (0.1170)	0.350323 (0.4609)
OI	0.000512* (0.0674)	-0.000216* (0.0771)	0.000157 (0.2564)
PL	0.342670 (0.2388)	-0.153882 (0.5255)	0.062525 (0.3968)
LED	-0.019871 (0.2166)	-0.075192* (0.0068)	0.040432* (0.0351)
FD (dummy)	3.039746 (0.2474)	-	4.236966* (0.0408)
Log likeli hood	-6.540063	-7.771526	-6.425075
Mc- fadden R ²	0.479446	0.435906	0.542238
Count R ²	0.80952	0.8000	0.93939

Source: Field Survey

“-“ Symbol indicates no variability in the corresponding variable and so not considered.

(* value of parameter estimates are significant at levels given in the parenthesis)

The fact that degradation has been greatly influenced by the threat of eviction from forest land is evident from the regression results. Most of the villagers are very poor, have little land of their own and feel insecure at the slightest indication of eviction from their traditionally accessed land or spread of the idea of potential developmental projects through clear cutting of forest lands. In such circumstances the available forest resources

tend to be treated as open access resources for preempting the corresponding benefits while the forest is pushed to the state of depletion and degradation. Most of the villagers are very poor in terms of land ownership(both in quantitative and qualitative sense) and hence are likely to add to their plot and thus try to establish their right at the slightest indication of future eviction from their land. For categorizing the villagers in terms of ownership of different quality of agricultural land and size of land holding , some basis of classification was adopted. As an example focus is put on Ranibundh beat. If the productivity of land appears as 16 quintal rice per bigha, it is considered as low quality, land yielding production in the range of 16 to 20 quintal per bigha is considered as average while greater than 20 quintal per bigha is

Table 5.20: Characteristics of Agricultural Land in Sample Villages in Ranibundh Beat

Determinants	Katiam (%)			Buriam (%)			Kelia Pathar (%)		
	Low	Average	High	Low	Average	High	Low	Average	High
Quality of agricultural land	100	0	0	100	0	0	98.27	1.73	0
Size of agricultural land holding	89.55	7.46	2.98	87.23	10.64	2.12	98.27	1.73	0

Determinants	Bhurkura (%)			Mahadebsinan & Barudi (%)			Barapucha (%)		
	Low	Average	High	Low	Average	High	Low	Average	High
Quality of agricultural land	100	0	0	100	0	0	100	0	0
Size of agricultural land holding	97.14	2.86	0	95	5	0	100	0	0

Source: Field Survey

classified as high quality. In case of land size, ownership less than 10 bigha is classified as low, 10 to 16 bigha as average while greater than 16 bigha classified in

high group. As an instance, the data in the table 5.20 accords with the view that major percentage of the villagers in all the considered villages, having ownership of small pieces of poor quality agricultural land feel very insecure in their existing status and hardly bother about forest enhancement strategies requiring increased investment of efforts and inputs. Instead, any impending threat of eviction goads them to extract more from forest lands for guarding against their uncertain future livelihood prospects.

The above analysis clarifies that although poverty alleviation is a declared objective of the government, it itself does not necessarily imply reduced dependence and containment of degradation of all sorts of non-timber forest products. Mere grant of user right while non-recognition of their secured access and customary-right to control of forest resources is unlikely to induce the stakeholders to use their rights to sustainable ends. What emerges as most important is that conferment of a land title and remission of fear of eviction may induce a more controlled exploitation of the forest resources. Apart from this, generation of income opportunities from other sources is also likely to reduce dependence and hence degradation of forest. Illegal felling is often associated with seasonal livelihood and food insecurity that lead to conditions of semi starvation among the rural poor. This is mostly due to fall in employment opportunities of poor folk, the void of which cannot be plugged through immediate reversal. These findings are in line with that of Arabari experience which demonstrated that people can take active role in saving forest from degradation if they are provided exclusive right to non-wood forest products, secured wage employment and assured cash benefit from final harvest. So extension of education and commensurate farm and non-farm employment opportunities as well as regularity in financial support by forest department can no more be neglected for the greater purpose of saving the forest.

Chapter – 6

Status of Joint Forest Management: Issues in Social Capital and Other Factors Influencing Peoples' Participation

6.1 Introduction

There is no doubt that forest resources in India usually identifiable with the features of common property resources, offer multiple benefits to people in general and rural people in particular, as evident from various market and non market values associated with its diverse economic, ecological, social and environmental benefits. So it is all the more desirable that such a kind of resource is well managed in a sustainable manner as it is organically linked to contribution towards a substantial volume of rural livelihood, eradication of poverty and inequality, maintenance of ecological stability and biodiversity and promotion of socio-cultural cohesion in rural community. The importance of finding a better management option of forest resources further emanates from the fact that many of its services are irretrievably lost, once they are degraded by untoward human intervention. The search for an ideal management structure of forest resources shorn of its abuses, has undergone evolutionary changes as evinced in the dismantling of erstwhile state and private management regime of such resources. State management is nowadays viewed as beset with several weaknesses as manifest in its failure to contain degradation of about 41% of India's forest. Apart from this, requirements of maintaining a complex chain of bureaucratic link at different stages, emergence of corrupt practices, difficulty in gathering information from forest localities and proclivity of forest guards to take bribes etc. often stand in the way of smooth and efficient state control of forest. Private management is also not warranted as this would engender inequity and social instability in forest society by depriving the marginalized section of forest dwellers of their hitherto enjoyed right to access to forests. So the recent focus has been on the cooperative management of forest based on coordination of actions between forest department and forest dependent communities having the traditional knowledge of forest conservation.

Earlier in the immediate post independence time, forest management in India evolved centering commercial plantation thus relegating the development and conservation needs of forest communities. It was first in 1972 that the success of the alternative model based on Arabari experience triggered the Govt. of West Bengal to launch on an ambitious programme of regeneration of some 259000 ha of Sal forests in the Western Circle of the state with the involvement of local people under the institution of joint forest management (Singh, 1994). Throughout the 1980s there was a strong wind of forest conservation initiated by the forest conservation act. In West Bengal and in some progressive states, the respective Govts. pursued with the experimental design of allocating a specific area of forest together with participatory management responsibilities to local communities while pledging a share in the forest revenues and access to non timber forest products(NTFPs). The phenomenal success of Arabari experience and its replication in W.B goaded the Ministry of Environment and Forest (GOI) to propagate a policy circular in 1990 in pursuance of the National Forest Policy of 1988, that recognized the need to involve local people in the management of forest. Accordingly in a number of states like West Bengal, Haryana and Gujrat, forest dept. introduced the practice of joint forest management (JFM) by bringing the forest people into collaborative participation in matters of sustainable management of forest instead of the erstwhile practice of regulating their actions. JFM has now emerged as the most pervading institution of conserving forests throughout India with its operation spread over 27 states, 85000 forest protection/village committees and having a coverage of about 17.3 million ha of forest resources. Its objective is to ensure protection and preservation of forested land with possible positive impacts on enhancing rural livelihood. It is devised to serve as an ideal mode of participatory development in developing forestry and watershed in India. Its impact is supposed to be felt in promoting environmental sustainability, economic betterment and socio-political empowerment of the poor rural masses inhabiting in forest fringe areas.

The genesis of the idea of JFM lies in the realization that this new management institution needs to relieve the people in forest region of the hitherto existing authoritative and restrictive role of the state forest department and bring them in its confidence by

acting together. JFM involves sharing of responsibilities and rights of local communities and forest department (FD) as primary stakeholders in forest management system. It is also supposed to invoke active participation of local people and application of their traditional wisdom and knowledge in countering ecological and economic vulnerabilities in the form of soil erosion, drought condition, loss of soil productivity and scarcity of timber, fuel wood and NTFPs like food, fodder, plant leaves etc. which are very likely to have a worsening impact on rural peoples' livelihood including the tribal folk. Micro planning of various dimensions in arresting fast depletion of forest land, regeneration of degraded forest and development of watersheds, ensuring conservation of valuable and important species of forest timber and products seem to be of utmost importance in sustaining forest based livelihood. These may be well served in the structure of JFM through community's active involvement coordinated by the efforts of FD.

Institutionally there is a sharp difference between JFM and CFM (community-based forest management). The former can be visualized as an institution of supposedly mutual collaboration between the FD as owners and the forest community represented by FPC (forest protection committee) as the users of the forest. The FD plays the role of a facilitator with shared responsibilities and accountabilities and a provision of revenue sharing between them. In the latter system the community is the sole controller and user of the forest with preservation concerns while the state assumes the role of a tacit observer with a moral support. The provision of cost sharing, mutual monitoring and provision of inputs for forest regeneration by the FD in the JFM makes it more risk spreading and cost efficient compared to CFM which entails little financial stake of the Govt. and the onus of all sorts of burden involving managerial, financial and conservational, rests with the community. Although peculiarities of local conditions influence the success of either of these options, an ideally served JFM with flexible and negotiable conditions between the two parties is likely to make forest management system more resilient compared to CFM where FD is relegated to a minimal role. However despite the lofty goals expected to be achieved out of this institution, meaningful participation of communities in the micro-planning process is often short of the desired level, with greater heterogeneity across different rural groups and lack of

adequacy in the determining factors conducive towards a better participatory attitude. In many cases forest communities still tend to use forests mainly as a safety net during difficult economic condition or for meeting seasonal subsistence needs (such as fuel wood and fodder) rather than tapping the potential of forests as a perennial source of improving rural livelihood through its forward and backward linkages to non-farm occupations. Understanding of the factors influencing the participatory involvement of local people for sustainable forest management seems to be of great importance. In this context it seems imperative to analyse the determinants of the participatory status of the forest dwellers in a locality dominated by the tribal population most of whom are supposed to be having an organic relation with forest for maintaining their livelihood. Further the social capital issues in the form of mutual trust, cooperation, absence of conflict and animosity, absence of free riding etc. which are likely to have an impact on the intensity of forest participation activities, are also given specific attention in this context.

6.2 Determinants of Participation

Functioning of the JFM institution in an efficient manner requires the whole-hearted participation of the village households in the management and sustenance of forest resources. Involvement of the locals in regenerating the forest is governed by many socio-economic factors identified in the extent of their dependence on forest resources for subsistence, attention paid to the needs and voices of all sections of forest dwellers in the general meetings, absence of any top-down dictatorial interference in the decision making power of FPCs, mutual trust and social cohesion among the villagers and a good relation between the FPC and forest department officials. Allocation of participatory labour by villagers in different modes are identified for successful establishment of JFM institutions. First, villagers need to invest their labour for forest guarding and monitoring activities. Second, added labour may have to be spent for collecting fuel, food, fodder and other minor forest products from a larger area of the forest in the observance of restrained access to nearby specific patches of forest in conformity with JFM rules. Third, importance of participatory labour is perceived in plantation and regeneration of high value forest associated with generating increased economic gains

on a long term sustained basis. At the poor household level, there arises the problem of trading off forest participatory labour with that of allocating to agricultural operation. Since agricultural holdings are generally low in the area and used for producing mostly for self consumption purposes and agricultural work is obtained on a seasonal basis, villagers often confront the problem of deciding about the allocation of their endowed labour hours between agriculture related work and forest participatory labour that help earn a substantial part of their livelihood. In order to have an understanding of the conditions in which peoples' participation in forest management is likely to be most effective in terms of their outlook and allocation of participatory labour, it is felt imperative to consider the following model of optimal labour hours allocation between forest participation and agricultural activities. Aspect of participation in the joint forest management has two sides, determinants of participation and actual level of participation. Determinants in case of each village help focus on the index of requirements realized for participation and index of participation reflects the actual level of participation. The following analysis also throws light on the determinants required for achieving high participation from the forest dwellers.

Theoretical model:

In the absence of alternative job opportunities rural households usually have the option of allocating their labour in agricultural and allied activities (L_A) as well as participatory labour (L_F) under JFM. So assuming \underline{L} as the endowed labour, we can write $\underline{L} = L_A + L_F$. Benefits due to agriculture and allied activities at time t , is denoted as $\pi_A(A_t, L_A)$ where A_t is the area under agricultural operation. Joint benefit under JFM is expressed as a function of forest area (F_t), own participatory labour (L_F) and total amount of labour expected to be contributed by all other households (TL_F) in the form $\pi_F(F_t, L_F, TL_F)$. The household receives benefits from JFM activity to the tune of $\theta \pi_F(F_t, L_F, TL_F)$ where θ is assumed to be the share of JFM benefits accruing to the household. In a dynamic setting, it is further assumed that the household maximizes the present value of benefits covering both agriculture and forest participatory activity subject to relevant stock dynamics.

Thus the problem before the representative household is to

$$\text{Max} \quad \int_0^{\infty} [\pi_A (A_t, L_A) + \theta \pi_F (F_t, L_F, TL_F)] e^{-rt} dt$$

$$\text{Subject to} \quad dF_t/dt = \beta (L_F + TL_F) \text{ and } dA_t/dt = -\beta (L_F + TL_F)$$

Where A_t and F_t are the state or stock variables, L_F is the relevant control variable (L_A being equal to $\underline{L} - L_F$) and r is the rate of discount. Here we implicitly assume that regeneration of forest land is a function of total amount of participatory labour put under forest management activity. For simplicity it is explicitly assumed that regeneration of forest land is proportional to the combined amount of own and other peoples' participatory labour under JFM, the proportionality factor being β . As increase in forest land has a trade-off with that of land area under agriculture and allied operation, the corresponding land dynamics dA_t/dt is expressed as negative of forest land dynamics dF_t/dt .

The corresponding current value Hamiltonian is

$$H_c = \pi_A (A_t, L_A) + \theta \pi_F (F_t, L_F, TL_F) + \lambda_1 \beta (L_F + TL_F) - \lambda_2 \beta (L_F + TL_F)$$

Where λ_1 = shadow value of forest land regenerated through participatory labour

λ_2 = shadow value of agricultural land or opportunity cost of forest participatory labour.

If we assume that π_A and π_F are linear functions of L_A and L_F respectively, then applying maximum principle, we have the bang-bang solution

$$L_F = L_F^{\text{max}}, \text{ if } \delta H_c / \delta L_F > 0 \text{ -----(1)}$$

$$L_F = 0, \text{ if } \delta H_c / \delta L_F < 0 \text{ -----(2)}$$

$$L_F = L_F^*, \text{ if } \delta H_c / \delta L_F = 0 \text{ -----(3)}$$

From (1) we get $-\pi_{A,LA} + \theta \pi_{F,LF} + \lambda_1 \beta - \lambda_2 \beta > 0$. Rearranging it we get

$$\theta \pi_{F,LF} / \beta + \lambda_1 > \pi_{A,LA} / \beta + \lambda_2. \text{ Applying normalization and setting } \beta = 1, \text{ the expression is re-written as } \theta \pi_{F,LF} + \lambda_1 > \pi_{A,LA} + \lambda_2. \text{ -----(4)}$$

The implication is that if the share of marginal forest related benefit of own participatory labour ($\theta \pi_{F,LF}$) added to shadow value of forest land regenerated through participatory labour (λ_1) exceeds marginal benefit from agriculture due to agricultural labour ($\pi_{A,LA}$) plus shadow value of agricultural land area (λ_2), then forest participatory labour assumes

its maximum value L_F^{\max} , other wise no amount of participatory labour is allocated in JFM as revealed in (2). Equation (3) reveals the optimal allocation of participatory labour.

From the above framework, it is surmised that the qualitative and quantitative aspect of resource like agricultural land, forest land, sources of irrigation and extent of resource dependence have an impact on forest participation activity. The benefit from agricultural operations is mainly reflected in the high yield which is governed by the quality of agricultural land, efficient irrigation facilities, low family size reflecting high land- man ratio and less burden on agricultural land etc. When the ownership of agricultural land is rather low, it is of poor quality involving severe uncertainty in targeted level of crop output, irrigation facilities are rather poor thereby rendering insecurity in crop output, the value of the expression on the LHS of inequality (4) is likely to exceed that on the RHS. Under such situation villagers' immediate alternative is to depend heavily on forest resources to meet their basic survival needs and accordingly their participatory labour to maintain forest land is applied most intensively. Similarly if the forest land is of high quality with great regenerative capacity, villagers have a substantial dependence on forest collection activity for their subsistence and derive great benefit from marginal efforts, and FPC feels highly satisfied about the collaborative work with FD and maintains a cordial relation with FD officials, then also LHS of (4) is most likely to exceed its RHS. Accordingly intensive participation is likely to ensue. Apart from this, participation is expected to be high when alternative employment opportunity in the village is rather low, family size is large, leadership is strong that ensures cohesive and collective action and when there exists Low threat of degradation of forest area.

On the basis of the above analysis, a number of determinant attributes/variables with their qualitative/ quantitative requirements for engendering successful participation can be listed as in the table 6.1 below.

Table 6.1 : Determinants of Forest Participation

Determinants	Qualitative/quantitative requirements influencing high degree of participation
Size of agricultural land holding	low
Quality of agricultural land	poor
irrigated land	low
Quality of forest land	high
Leadership in the village	high
Family size	large
Employment opportunity	low
Extent of forest dependence	high
Satisfaction about the work of F.D	high
Perception of threat of future degradation	Low

In order to classify the data collected from field survey, relating to the aforesaid determinants into high /medium/low categories, some standard is set for appropriate cases and accordingly index of requirements as realized for respective villages are developed on the basis of assigning some weights.

For categorizing the quality agricultural land, production @20 qt. of paddy per bigha is considered as good or high quality, land producing between 16 to 20 qt per bigha is considered as medium quality while production below the level of 16 qt. per bigha is considered as low/poor quality. The land quality of all the considered villages is categorized following this criterion.

From primary data, it is observed that in case of land size exceeding 16 bigha, shallow is usually bought or utilised on hire services by the farmers for better irrigation purposes. Moderate irrigation facilities are provided through well, hand pump etc. for land size 10 – 16 bigha while for land area less than 10 bigha irrigation facility is recorded as poor.

The percentages of irrigated land in each category for all the considered villages are considered for developing the determinant index.

Size of agricultural land holding is considered as low in case it is less than 10 bigha. Medium size is considered to be in the range of 10 to 16 bigha while land area exceeding 16 bigha is considered as relatively big in size.

Quality of forest land is judged on the basis of data of income from NTFPs. For individuals earning Rs 12000/- per annum from forest based products, quality of forest is considered as high value while for individuals earning less than Rs. 6000/- per annum it is classified as low value. In case of earning in the range of Rs. 6000/- to 12000/-, it is perceived as medium type.

Leadership quality in each respective village is judged on the basis of responses of the respective village households perceived as high, medium or low type.

Again attributes like perception of threat of future degradation and satisfaction about the work of forest department as perceived by the villagers are classified into high and low categories.

Families finding job greater than 8 months a year are classified as enjoying high employment opportunity while employment for less than 6 months a year is considered as low opportunity group. In case of families availing jobs between 6 to 8 months, medium opportunity is considered to be the respective type.

Degree of forest dependence of respective families is considered by calculating the percentage of income earned from forest resources. In case of earning above 60 % of income, there is considered to be high level of forest dependence. If income earned from forest be within the range of 30 % to 60 %, it is considered as medium level of dependence while low dependence is assigned for less than 30% of income generated from forest.

The possessional feature of all the surveyed families in each of the seven villages have been classified in either of low, average or high category in the following table according to the aforesaid considered determinants of forest participation. In order to ascertain the extent of qualitative impact of the determinants on the degree of forest participation,

a determinants' index is derived for each village by assigning suitable weights of value of 1.00 to the most desired category for each respective determinant, while 0.5 to the medium and 0.25 to the least desirable category. Accordingly the weights assigned for the various categories corresponding to each respective determinant stand as displayed in table 6.2.

Table 6.2: Weighting of the Desirable Quality of Determinants

Determinants	Low	Medium	High
Size of agricultural land holding	1	0.5	0.25
Quality of agricultural land	1	0.5	0.25
irrigated land	1	0.5	0.25
Quality of forest land	0.25	0.5	1
Leadership in the village	0.25	0.5	1
Family size	0.25	0.5	1
Employment opportunity	1	0.5	0.25
Extent of forest dependence	0.25	0.5	1
Satisfaction about the work of F.D	0.25	0.5	1
Perception of threat of Eviction	1	0.5	0.25

The forest dwellers in each of the surveyed villages are classified in terms of the aforesaid three categories (low, medium and high) with respect to their possession /qualitative access /perception corresponding to each of the considered determinants. This classification in terms of percentages for each respective village is presented in the table below. Realized percentage values in each of the three categories are multiplied by their respective weights, summed up over all the determinants and then divided by their number to result in the determinants' index for each individual village. These percentage figures are presented in table 6.3, 6.5, 6.7 and 6.9 for the respective beats like Ranibundh, Punshya, Jhilimili and Muchhikata. The corresponding determinants indices are revealed in terms of tables 6.4, 6.6, 6.8 and 6.10.

Table6.3:Percentage-wise Classification of Villagers according to Three Categories Corresponding to Each Determinant(Ranibundh beat)

Determinants	Katiam			Buriam			Kelia Pathar			Bhurkura		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Quality of agricultural land	100	0	0	100	0	0	98.27	1.73	0	100	0	0
Quality of irrigated land	89.55	2.99	7.46	87.23	10.64	2.12	98.27	1.73	0	97.14	2.86	0
Size of agricultural land holding	89.55	7.46	2.98	87.23	10.64	2.12	98.27	1.73	0	97.14	2.86	0
Quality of forest land	58.21	35.82	6.25	72.34	17.02	10.64	93.1	6.9	0	68.57	25.71	5.71
Leadership in the village	37.31	25.37	37.31	10.64	34.04	55.32	60.34	6.9	32.76	8.57	65.71	25.71
Perceived threat of degradation	19.4	0	80.59	31.91	0	68.08	56.9	0	43.1	20	0	80
Family size	53.73	34.33	11.94	34.04	57.45	8.51	56.9	37.93	37.93	54.28	40	5.72
Employment opportunity	74.63	19.4	5.97	51.06	39.91	17.02	24.14	37.93	37.93	74.28	17.14	8.57
Extent of forest dependence	31.34	58.21	10.45	42.55	0	57.45	62.07	37.93	0	20	57.14	22.86
Satisfaction about the work of FD	44.78	0	55.22	55.32	29.79	14.89	62.07	0	37.93	28.57	0	71.43
Determinants	Mahadebsinan - Barudi			Jamdaha			Barapucha					
	Low	Medium	High	Low	Medium	High	Low	Medium	High			
Quality of agricultural land	100	0	0	100	0	0	100	0	0			
Quality of irrigated land	95	5	0	94.74	0	5.26	100	0	0			
Size of agricultural land holding	95	5	0	94.74	0	5.26	100	0	0			
Quality of forest land	55	35	10	0	0	100	69.44	27.78	2.78			
Leadership in the village	55	35	10	84.21	10.53	5.26	80.56	13.89	5.55			
Perceived threat of degradation	20	0	80	68.42	0	31.58	25	0	75			
Family size	30	65	5	26.31	63.16	10.53	44.44	50	5.56			
Employment opportunity	95	0	5	47.37	26.31	31.58	47.22	50	2.78			
Extent of forest dependence	55	0	45	0	0	100	27.78	52.78	19.44			
Satisfaction about the work of FD	10	50	40	5.26	26.32	68.42	5.56	0	94.44			

Source: Field Survey

Table 6.4: Index of Participation Determinants (Ranibundh beat)

Villages	Katium	Burium	Kelia-pathar	Bhurkura	Mahadevsinan-Barudi	Jamdaha	Barapucha
Determinants' index	66.69	68.01	65.47	69.28	68.12	80.00	67.36

Higher level of participation determinants implies relatively greater degree of satisfaction of the desired category of participation determinants. This is mostly observed to happen in case of Jamdaha while for other villages the index falls within the range 66 to 70.

Table 6.5: Percentage-wise Classification of Villagers according to Three Categories Corresponding to Each Determinant (Punshya Beat)

Determinants	Janta Dumur			Kotra			Dhankura		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Quality of agricultural land	100	0	0	100	0	0	100	0	0
Quality of irrigated land	87.5	12.5	0	90.91	6.82	2.27	96.87	0	3.13
Size of agricultural land holding	87.5	12.5	0	90.91	6.82	2.27	96.87	0	3.13
Quality of forest land	85	15	0	65.91	34.09	0	46.87	46.87	6.26
Leadership in the village	17.5	10	72.5	15.91	25	59.09	9.37	6.25	84.37
Perceived threat of degradation	0	0	100	0	0	100	6.25	0	93.75
Family size	50	32.5	17.5	43.18	50	6.82	37.5	43.75	18.75
Employment opportunity	52.5	15	32.5	68.18	18.18	13.64	84.37	6.25	9.37
Extent of forest dependence	75	25	0	43.18	54.54	2.27	37.5	53.12	9.37
Satisfaction about the work of FD	17.5	0	82.5	11.36	0	88.64	12.5	0	87.5

Table 6.6: Index of Participation Determinants (Pushya Beat)

Villages	Janta Dumur	Kotra	Dhankura
Determinants' index	74	74.03	75.54

In case of villages in the Punshya beat the determinants' indices are very close to one another, indicating marginal variation with respect to impact of the constituent categories.

Table 6.7: Percentage -wise Classification of Villagers according to Three Categories Corresponding to Each Determinant (Jhilimili beat)

Determinants	Kasakendh			Baisnavpur			Ramgarh		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Quality of agricultural land	100	0	0	100	0	0	100	0	0
Quality of irrigated land	95.24	4.76	0	100	0	0	96.97	3.03	0
Size of agricultural land holding	95.24	4.76	0	100	0	0	96.97	3.03	0
Quality of forest land	95.24	0	4.76	80	20	0	78.79	21.21	0
Leadership in the village	23.28	38.09	38.09	28	12	60	9.09	33.33	57.58
Perceived threat of degradation	9.52	0	90.48	8	0	92	21.21	0	78.79
Family size	47.62	38.1	14.28	48	44	8	63.64	33.33	3.03
Employment opportunity	90.48	0	9.52	100	0	0	100	0	0
Extent of forest dependence	76.19	0	23.81	64	32	4	57.58	39.39	3.03
Satisfaction about the work of FD	14.29	0	85.71	8	0	92	6.06	0	93.94

Table 6.8 : Index of Participation Determinants (Jhilimili Beat)

Villages	Kasakendh	Baisnavpur	Ramgarh
Determinants' index	71.41	72.4	72.65

The perception with respect to individual category of determinants are in most cases tilted in favour of desired direction for better participation. However marginal variation also occurs in the villages of Jhilimili beat, which shows relatively better index for Ramgarh while somewhat smaller in case of the other two villages. The recorded percentages indicate that for all the cases most of the peoples' perception / responses appear to be antagonistic to participation with respect to categories like quality of forest land and extent of forest dependence. However these are somewhat counterbalanced by the recorded figures observed with respect to other category of determinants.

In case of villages in Muchikata beat, there are somewhat mixed responses with respect to categories like quality of forest land, family size, extent of forest dependence, perceived threat of degradation, leadership in the village etc. This is mostly evident in the recorded responses with respect to villagers in the Churku village. For all the other determinants, in majority of the villages, the responses are tilted in favour of the desired categories that are likely to motivate better degree of participation..

Table 6.9: Percentage-wise Classification of Villagers according to Three Categories Corresponding to Each Determinant (Muchikata Beat)

Determinants	Muchikata			Dubukhana			Khata Am			Churku		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Quality of agricultural land	100	0	0	100	0	0	100	0	0	100	0	0
Quality of irrigated land	100	0	0	100	0	0	91.67	8.33	0	76.92	23.08	0
Size of agricultural land holding	92.86	7.14	0	100	0	0	91.67	8.33	0	76.92	23.08	0
Quality of forest land	71.43	28.57	0	66.67	28.57	4.76	50	47.22	2.78	69.23	30.77	0
Leadership in the village	17.86	14.28	67.86	0	0	100	2.78	0	97.22	7.69	38.46	53.85
Perceived threat of degradation	25	0	75	23.81	0	76.19	44.44	0	55.56	23.08	0	76.92
Family size	50	42.86	7.14	52.38	42.86	4.76	41.67	47.22	11.11	53.85	30.77	15.38
Employment opportunity	89.28	3.57	7.14	95.24	0	4.76	97.22	0	2.78	92.31	0	7.69
Extent of forest dependence	25	75	0	33.33	57.14	9.52	22.22	69.44	8.33	53.85	42.31	3.85
Satisfaction about the work of FD	17.86	0	82.14	0	0	100	11.11	0	88.89	0	0	100

Table 6.10 : Index of Participation Determinants (Muchikata Beat)

Villages	Muchikata	Dubukhana	Khata -Am	Churku
Determinants' index	72.41	76.78	73.06	70.96

The efficacy of JFM partially reflected in the intensity of participation is supposed to be determined by the interaction of the aforesaid socio-economic and cultural determinants captured by the determinants' index. Unless these factors are properly reckoned with, the success of any long term planning for evolving participatory management is likely to be in doubt. The interaction of such factors can promote or protract community participation and it seems important to analyse the extent to which the determinants' index is associated with the level of peoples' participation in forest management. Derivation of an index of peoples' participation in forest management activities appears to be imperative in this context.

6.3 Issue of Social Capital

Extent of peoples' participation is also supposed to be influenced by the level of peoples' involvement, dedication and coordination in forest protection activities. This is again often shaped by the level of social capital. Social Capital refers to the norms and networks that enable collective action. It encompasses institutions, relationships, and customs that shape the quality and quantity of a society's social interactions. The nurturing and continuity of a social capital building process, when impacted positively, can improve forest participation and sustainability by building the community's capacity to work together to address their common needs, fostering better trust, cooperation and voluntary contribution of labour, while engendering mutually sympathetic outlook among the participants by avoiding conflicts, free-riding and proclivity to act individualistically.

In order to apply the concept of social capital at a practical and operational level, it can be factored out by considering components like community cohesion, evinced in the degree of mutual trust, cooperation, perceived absence of conflict and animosity, participation in voluntary contribution etc. These are likely to intensify peoples' participation towards joint action and coordinated efforts. However this is supposed to be most effective in the event of adequate institutionalized effort towards social mobilization and group formation within the community. The current micro-planning processes offer insufficient attention towards such necessity. In the study region it has been observed that there is great absence of institutional effort in social capital building process. It is constrained due to limited staff, lack of adequate degree of motivational and institutional training and limited financial resources. Mere positive attitude of villagers pertaining to the existence of mutual trust and understanding may not be sufficient to ensure a strong correlative status with participation efforts conducive to forest conservation. It is most important that through joint forest management institution partnered with community support organizations, these village people are roped in a continuous social capital building process. This may be in the form of organizing frequent village meeting, door to door counseling by FD staff, dissemination of forest conservation related information through various medium and allowing all people to ventilate their views, suggestions and thus enabling interclass communion. This should also be made robust by ensuring systematic mutual monitoring of participatory efforts susceptible to adequate provision of penal measures in cases of defection. In the villages across the study region there has been observed a good degree of peoples' responses supportive of the existence of social bond of friendship, trust, amity etc. But in most of these villages, there has not been initiated any coherent programmes for bringing the people under social capital building process by imparting them awareness, training and motivation necessary for ensuring strong participatory efforts oriented towards conservation. Further community capacity in forest conservation programmes have often been weak, due to their high level of illiteracy, poverty and mutual support and trust that often leads to connivance of forest degradation activity undertaken by members of FPC themselves. In this context table 6.11 reveals village-wise percentage responses of interviewed villagers regarding their perception about the existence of different components of social capital like MT, CO, VC, no COF, no ANI, no FRR, no SO and no IN.

Table 6.11: Village-wise Percentage of Responses about Perceived Social Capital Components

	MT	CO	VC	no COF	no ANI	no FRR	no SO	no IN
Katiam	79.10	80.60	61.19	67.16	44.78	67.16	68.66	61.19
Buriam	76.60	95.74	70.21	91.49	46.81	100.00	100.00	95.74
Kelia pathar	75.86	98.28	63.79	74.14	41.38	67.24	65.52	68.97
Bhurkura	91.43	100.00	91.43	40.00	60.00	25.71	20.00	17.14
Mahabaru	70.00	80.00	65.00	35.00	75.00	25.00	40.00	35.00
Jamdaha	100.00	100.00	84.21	84.21	47.37	89.47	68.42	68.42
Barapucha	97.22	97.22	86.11	88.89	83.33	72.22	86.11	66.67
Kotra	100.00	100.00	97.73	100.00	55.56	97.73	100.00	100.00
Janta dumur	100.00	100.00	95.00	97.50	100.00	100.00	100.00	100.00
Dhankura	84.38	84.38	81.25	84.38	65.63	65.63	62.50	50.00
kasakendh	100.00	100.00	100.00	100.00	52.38	100.00	100.00	100.00
baisnavpur	100.00	100.00	88.00	96.00	100.00	100.00	100.00	100.00
ramgarh	96.97	96.97	96.97	96.97	42.42	100.00	100.00	100.00
muchikata	96.43	92.86	78.57	89.29	89.29	96.43	89.29	100.00
dubukhana	100.00	100.00	100.00	100.00	95.24	100.00	100.00	100.00
khata-am	97.22	97.22	97.22	97.22	97.22	97.22	97.22	97.22
churku	100.00	100.00	96.15	100.00	100.00	100.00	100.00	100.00

Mutual trust – M T , Cooperation – C O, Voluntary Contribution – V C, no Conflict – no COF, no Animosity –no ANI, no Free riding – no FRR, no Social Ostracisation – no SO, no Individualism – no IN, Social Capital Index – SI.

In this context the table 6.12 reflects the individual index values of each of the components of social capital viz. MU, CO, VC, no COF, no ANI, etc. Further each of the component index values for each respective village in the considered beats have been summed up and divided by the number of such components to result in the corresponding social capital index.

In order to derive each component index, it is desirable to express the respective percentage responses for any village j in terms of attainment of that village . This attainment aspect is reflective of how well social capital has been developed. in village j

Table 6.12: Indices of Social Capital

Village	MT	CO	VC	no COF	no ANI	no FRR	no SO	no IN	SUM	SI
Katiam	0.30	0.03	0.00	0.49	0.06	0.56	0.61	0.53	2.59	0.32
Buriam	0.22	0.79	0.23	0.87	0.09	1.00	1.00	0.95	5.15	0.64
Kelia pathar	0.20	0.91	0.07	0.60	0.00	0.56	0.57	0.63	3.54	0.44
Bhurkura	0.71	1.00	0.78	0.08	0.32	0.01	0.00	0.00	2.90	0.36
Mahabaru	0.00	0.00	0.10	0.00	0.57	0.00	0.25	0.22	1.14	0.14
Jamdaha	1.00	1.00	0.59	0.76	0.10	0.86	0.61	0.62	5.54	0.69
Barapucha	0.91	0.86	0.64	0.83	0.72	0.63	0.83	0.60	6.01	0.75
Kotra	1.00	1.00	0.94	1.00	0.24	0.97	1.00	1.00	7.15	0.89
Janta dumur	1.00	1.00	0.87	0.96	1.00	1.00	1.00	1.00	7.83	0.98
Dhankura	0.48	0.22	0.52	0.76	0.41	0.54	0.53	0.40	3.86	0.48
Kasakendh	1.00	1.00	1.00	1.00	0.19	1.00	1.00	1.00	7.19	0.90
Baisnavpur	1.00	1.00	0.69	0.94	1.00	1.00	1.00	1.00	7.63	0.95
Ramgarh	0.90	0.85	0.92	0.95	0.02	1.00	1.00	1.00	6.64	0.83
Muchikata	0.88	0.64	0.45	0.84	0.82	0.95	0.87	1.00	6.44	0.81
Dubukhana	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	7.92	0.99
khata-am	0.91	0.86	0.93	0.96	0.95	0.96	0.97	0.97	7.50	0.94
Churku	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	7.90	0.99

relative to others. We now express social capital index S_j in terms of attainment level X_{ij}

This is done by using the formula

$$S_j = 1/8 \cdot \sum S_{ij} \text{ where}$$

$S_{ij} = (X_{ij} - \text{Min } X_{ik}) / (\text{Max } X_{ik} - \text{Min } X_{ik})$ is the i th component's contribution to social capital index for village j .

If we define social capital index in this form for village j , it will turn out to be invariant to positive affine transformation of underlying variables X_i ($i = 1, 2, 3, 4, 5, 6, 7, 8$). Thus if one substitutes for each $i = 1, 2, 3, 4, 5, 6, 7, 8$, $Y_i = a X_i + b_i$ where $a > 0$, the absolute value of each S_{ij} and hence S_j would remain in unaltered state.

The social capital indices SI may broadly be divided into three segments viz. very high value index, high value index and comparatively low value indices relative to the extant forest resources. For example, Churku and Dubukhana in Muchikata beat have very high level of SI despite the fact that forest resources in these places have been extremely thin. Villagers here are very poor and they maintain all sorts of amity amongst themselves. Economic condition for all are more or less similar and strong bond of trust and mutual sympathy among the villagers drive them to neglect mutual illegal felling and consequent thinning of the forest. In villages like Kotra, Janta- dumur, Kasakendh, Baisnavpur, Khata-am etc. the computed indices are

found to rather high. Amount of forest land in these regions is rather high while number of households comparatively low. Pressure on forest depletion is therefore not much perceptively felt. So people here do not feel much of heterogeneity, animosity, conflict of interest and free riding tendency amongst the FPC members and abstain from showing individualistic behavior towards fellow forest dwellers. In villages like Mahadev sinan -Barudi, Katium , Bhurkura and Dhankura SI is observed to be rather low. This is possibly due to scant amount of forest resources around these villages relative to number of households dwelling here. The negative externality effect of harvesting forest resources by some households on other groups exacerbates lack of trust, conflict of interest and attitude, free-riding behaviour and lack of cooperation amongst the village dwellers here.

Chapter 7

Inter-village Differential in the Degree of Participation, Socio-economic Issues and Forest Degradation.

7.1 Derivation of Participation Indices Across the Villages

Joint forest management is theoretically supposed to serve many benefits. These arise in the form of (a) risk spreading (b) economy of joint decision in the form of information sharing, low transaction cost involved in the channeling of local traditional knowledge /wisdom along with modern conservation strategy or technology, (c) better market access in the form of possibility of having a better selling price of forest based items in the presence of cooperatives arranged by FD (d) assurance of a steady return for all members from the revenue of timber sale at certain intervals (e) qualitative enhancements through extension of improved technology to FPCs by FD and (f) possible eco-tourism values etc. While the communities would continue to enjoy subsistence benefit from forests, many could evolve higher level value-added activities that generate even greater returns. It is said that in West Bengal JFM has come out relatively more successful (Pattanaik et al, 1997) than in other states because of genuine efforts and coordination made by FD as well as FPCs. Mutually interacting operation of these two parties on the same tract of land with an element of peoples' participation is likely to generate more output than would be available if the forestland were managed separately by the two parties without evolving peoples' participation.

The sample villages located in and around Ranibundh forest range derive diverse benefits from it in the form of not only timber, fuel, fodder and leaves but also livelihood and job opportunities. It seems therefore imperative to assume that people in these villages indulge in participatory forest development activities which also cater to their livelihood to a very great extent. In order to have an index reflecting peoples' participation, we consider the following villages spread over different beats and which are considered important from the point of view of forest dependence.

There is no universally accepted measure or index that can be used to address a developmental programme in terms of people's participation. In the present context, the method used by

Singh (1992) has been adopted to compute the people's participation (PPI) index. The participation indices for different villages, beat-wise are presented below.

Table 7.1: Participation Indices in the Sample Villages of Ranibandh Beat

Indicator	Wts	Katiam	Buriam	Kelia pathar	Bhurkura	Maha-baru	Jamdaha	Barapucha	Rank of indicator
Participate in the activity of the JFM	15	502.5 (5)	510 (5)	315 (6)	307.5 (5)	217.5 (7)	247.5 (7)	472.5 (6.5)	41.5 (6)
Participate in the Meetings of FPC	10	355 (3)	335 (3)	200 (1)	180 (3)	150 (4)	160 (3)	300 (3)	20 (3)
Opinion paid attention or not	10	235.0 (1)	235.0 (2)	230.0 (4)	115.0 (2)	45.0 (1)	185.0 (4)	270.0 (2)	16 (2)
Participate in the election of FPC member	10	430 (4)	370 (4)	215 (3)	285 (4)	135 (3)	155 (2)	335 (4)	24 (4)
Monitoring activity in JFM	15	525 (6)	517.5 (6)	292.5 (5)	367.5 (6)	157.5 (5)	217.5 (5)	472.5 (6.5)	39.5 (5)
Responsibility to the JFM	15	892.5 (8)	667.5 (8)	510 (8)	525 (8)	277.5 (8)	255 (8)	525 (8)	56 (8)
Motivation to the other people	15	712.5 (7)	547.5 (7)	322.5 (7)	480 (7)	180 (6)	225 (6)	465 (5)	45 (7)
Villagers can manage CPR alone or not	10	350 (2)	210 (1)	210 (2)	65 (1)	75 (2)	130 (1)	245 (1)	10 (1)
Total	100	4002.5	3392.5	2295	2325	1237.5	1575	3085	-
Total no of villagers	Nil	67	47	58	35	20	19	36	-
Participation Index	Nil	59.7	72.2	39.6	66.4	61.9	82.9	85.7	468.4

Table 7.2: Participation Indices in the Sample Villages of Punshya Beat

Indicator	Weights	Janta- Dumur	Kotra	Dhankura	Rank of indicator
Participate in the activity of the JFM	15	465 (5.5)	472.5 (5.5)	420 (6)	17 (6)
Participate in the Meetings of FPC	10	305 (2)	345 (4)	280 (2)	8 (2.5)
Opinion paid attention or not	10	320 (4)	275 (1)	285 (3)	8 (2.5)
Participate in the election of FPC member	10	315 (3)	300 (2)	290 (4)	9 (4)
Monitoring activity in JFM	15	465 (5.5)	472.5 (5.5)	390 (5)	16 (5)
Responsibility to the JFM	15	570 (8)	637.5 (8)	480 (8)	24 (8)
Motivation to the other people	15	555 (7)	630 (7)	465 (7)	21 (7)
Villagers can manage CPR alone or not	10	280 (1)	340 (3)	180 (1)	5 (1)
Total	100	3275	3472.5	2790	-
Total no of villagers	Nil	40	44	32	-
Participation Index	Nil	81.9	78.9	87.2	248

Table 7.3 : Participation Indices in the Sample Villages of Muchikata Beat

Indicator	Weights	Muchikata	Dubukhana	Khata-Am	Churku	Rank of indicator
Participate in the activity of the JFM	15	315 (7)	315 (7)	525 (6.5)	225 (3)	23.5 (6)
Participate in the Meetings of FPC	10	225 (4)	210 (3.5)	350 (4)	240 (5)	16.5 (4)
Opinion paid attention or not	10	45 (2)	160 (2)	250 (1)	80 (2)	7 (2)
Participate in the election of FPC member	10	180 (3)	210 (3.5)	345 (3)	235 (4)	13.5 (3)
Monitoring activity in JFM	15	277.5 (5)	307.5 (5)	525 (6.5)	337.5 (6.5)	23 (5)
Responsibility to the JFM	15	412.5 (8)	315 (7)	525 (6.5)	360 (8)	29.5 (8)
Motivation to the other people	15	300 (6)	315 (7)	525 (6.5)	337.5 (6.5)	26 (7)
Villagers can manage CPR alone or not	10	35 (1)	95 (1)	320 (2)	5 (1)	5 (1)
Total	100	1790	1927.5	3365	1820	-
Total no of villagers	Nil	28	21	36	26	-
Participation Index	Nil	63.9	91.8	93.5	70	319.2

Table 7.4: Participation Indices in the Sample Villages of Jhilimili Beat

Indicator	Weights	Baisnavpur	Kasakendh	Ramgrah	Rank of indicator
Participate in the activity of the JFM	15	180 (6)	247.5 (5)	367.5 (6)	17 (6)
Participate in the Meetings of FPC	10	110 (2)	160 (3)	235 (3)	8 (3)
Opinion paid attention or not	10	75 (1)	155 (2)	155 (1)	4 (1)
Participate in the election of FPC member	10	115 (3)	175 (4)	250 (4)	11 (4)
Monitoring activity in JFM	15	172.5 (5)	262.5 (6)	345 (5)	16 (5)
Responsibility to the JFM	15	217.5 (8)	307.5 (8)	480 (8)	24 (8)
Motivation to the other people	15	187.5 (7)	270 (7)	390 (7)	21 (7)
Villagers can manage CPR alone or not	10	120 (4)	150 (1)	230 (2)	7 (2)
Total	100	1177.5	1727.5	2452.5	-
Total no of villagers	Nil	25	21	33	-
Participation Index	Nil	47.1	82.3	74.3	203.68

The sample villagers were asked a set of eight questions that were so framed as to have an always (1), sometimes (0.5) or never (0) type answer. Out of eight questions, four followed a particular pattern and the remaining four another pattern. Each of the questions was assigned a weight showing its relative importance as a measure of participation. The sum of the weights added up to 100. The weights were determined in consultation with the forest dept officials and FPC members. This method helped in computing a participation score for each of the sample respondents and all the score thus computed were added and then divided by the number of sample respondents in each of the sample villages to compute a PPI for each village (as given in the tables above).

In case of Ranibundh beat, Participation index appears to be on a lower side in Kelia-pathar, moderate in case of Bhurkura, , Maha-baru and Katium, moderately high in case of Burium, while rather high in case of Barapucha and Jamdaha.

Probable reason for this is that villagers in Kelia-pathar attended the meetings very casually as they felt that they were denied their due importance by forest officials regarding expressing their opinion, expectations and priorities in the decision making process and so stayed relatively passive and inactive. This is also vindicated by the relatively low score in case of components like participation in meetings, monitoring activity etc. Here the villagers are divided into three categories viz. Santal, Bhumiz and general. Many of them expressed their

dissatisfaction over political favouritism and unequal access to FPC activity. Despite having Rs 2800/- per family in recent times as their share of forest revenue from the forest dept., they do not feel encouraged to participate in FPC activity. There is lack of mutual trust and social cohesion among the villagers. of FPC, poor participation in election of FPC members as well as monitoring of activity in JFM. For the moderately participation scoring villages, dominant weaknesses were observed in case of issues like 'participation in meetings of FPC', 'opinions paid attention to', 'monitoring activity in JFM', 'villagers' confidence in managing the resources by themselves' etc. Absence of transparency in case of election of FPC management committee members as well as unilateral forest related financial decisions by the forest officials (by alienating the ordinary member villagers)often incite peoples' apathy and distrust towards participatory benefits. And this also accentuates lower degree of participation in specific cases. The FPC in Jamdaha village is well coordinated with the FD. Forest felling here occurs at regular interval and the FPC members are assured of the stipulated percentage of forest revenue. The villagers here are well tied in the knot of mutual trust and cohesion. There is observed an intense level of forest dependence here, which is mostly reflected in the form of collection of NTFPs from Mahua plants the flower of which is used for extracting liquor while the fruit is used for extracting oil. The attachment of the villagers with the forest and their intense dependence on forest resources have motivated them to take active drive in forest conservation activities.

In all the three villages in Punshya beat participation indices are on a higher side. Tribal people dominating in Dhankura, have a great dependence on NTFPs. Again alternative job opportunity is extremely low here. So they feel the urge to preserve the forest land for sustainability. Apart from this, local knowledge motivate villagers to cut small trees scientifically so that the stem gets enough opportunity for re-growth. Forest dependence is high in Kotra and there exists mutual trust among the members despite political differences. However participation in FPC activity, although commendable, has not been attained here at the expected level. From survey it has been observed that forest protection committee as well as forest dept has not been active in Janta- Dumur resulting in degrading tendency of forest resources. Despite this villagers have a coordinative relation with forest dept. This is perhaps due to the generation of Govt. employment among a segment of villagers due to construction of an embankment and initiation of multi cropping system. Although participation index is on

a higher side here, it does not ensure major check on degradation depending on how effectively people carry out their participative responsibilities.

In Muchikata beat participation indices are on a higher side in Dubukhana and Khata-am villages while relatively low in Churku and Muchikata. Khata-am being located in a remote and dense forest region, people have very few alternative employment opportunities. Duration of employment here is very small, @ average 7-8 days a month. Having no alternatives, people take active interest in the FPC activities for sustaining their livelihood. In Dubukhana people are extremely poor suffering from severe unemployment. Hence many of them migrate to Burdwan several times a year for working as agr labourer. However villagers have easy access to loans from sources like club, samiti, friends and relatives, mahajan, shops etc. This strengthens the bond of mutual help, co-operation and trust among the villagers thus motivating them towards participation. Employment opportunity and income is rather low in Churku. Pursuit of agriculture is very difficult here due to lack of perennial water source. Hence due to high dependence on forest, people have a tendency to participate in its preservation. However, despite frequent trampling of crops by elephants, villagers usually get only a small part of their demanded compensation for this from the forest dept. This sometimes leads to loss of cooperative trust between FPC and FD and lowers the participative mood. In Muchikata village there is a strong socio-economic as well as political imbalance resulting in lack of unity and trust among the villagers. The false perception among sabar people, wrongly believing in their entitlement to some remuneration for forest guarding activity ultimately results in their dissociation from forest protection activity. The FPC is almost inactive here as mutual stake in forest guarding hardly exists. In Jhilimili beat participation index is rather low in Vaishnabpur village while on a fairly higher side in Kasakendh and Ramgarh. In Vaishnabpur there is a prevalent false sense of deprivation amongst villagers in the form of non-payment by the FPC despite their participation in forest protection activity. Apart from this the impact of village politics as revealed in a skewed rationing system leads to lack of cohesion among the villagers. So villagers do not spontaneously participate in forest preservation and forest get degraded with the multiple impact of poverty, illegal filling and babui grass cultivation. Forest resources in Ramgarh village is however not much degraded with moderately high degree of participation. Villagers here in the absence of adequate employment opportunities, earn substantially from local dependence on sal leaves and hence offer their efforts to preserve the forest. In Kasakendh

villagers' participation though empirically found to be good, has not been able to contain the shrinking of the forest with collusive practices and mutually supportive forest felling.

7.2 Relationship between Determinants and Participation Indices

Having derived the indices of determinants as well as that of participation for the considered villages, it is observed that the correlation coefficient between the determinants and participation indices for the respective villages come out to be 0.563. (significant at 18.8 percent). This is only a very moderate degree implying that the components in the determinants indices often do not assume desirable pattern of values and villagers' participatory responses sometimes transcend (in either way) what would conform to the computed value of index of determinants. Quality of forest land as well extent of forest dependence is on a lower or moderate side in the villages like Keliapathar, Bhurkura, Katium and Mahabaru. Leadership quality is also perceived to be of very poor type in these villages. Again as already stated, the percentage of highly dissatisfied villagers about the works of forest department is rather high in Keliapathar and Burium. Moreover excepting Jamdaha, in all the other villages there is observed a dominance of perceived high threat of eviction. According to the desirable status of determinants, all these factors account for an untoward bias towards the mood of participation on the part of the rural stakeholders.

7.3 Social Capital and Intensity of Forest Participation

In the context of some study Dale et al (2010) opined that social capital is necessary for sustaining participatory development, since it leads to increased interaction among stakeholders and access to resources in and outside the community. However social capital in itself may not always be sufficient to develop a strong local participatory initiative since it is also influenced by the intervention of the level of economic and human capital. Like other forms of capital social capital has a stock and flow concept. There are differences in the level of stock of social capital across different geographical locations depending on the heterogeneity in terms of caste, class, religion, gender and educational dimensions. The flows of forest level participatory benefits of this stock is supposed to be influenced by the ability of the poor masses to rise on the economic ladder and the process of building and augmenting

social capital stock through external institutionalized human interventions. In order to keep the flows persistent in terms of felt benefits in resource (forest) conservation, there is needed a continuous process of building and inciting the initiatives of concerned stakeholders. This process is influenced by the presence or absence of internal or external factors like role of NGOs, role of forest dept, institutional rules and leadership initiative in conflict resolution and removing discontent, detecting free-riding and non-cooperation and motivating people to voluntarily contribute to forest conservation activity. Leaders can play an important role in initiating cooperation as well as resolving conflict (Bardhan 93). In regions lacking the spirit of cooperation and cohesion, emergence of a transparent and fair leadership can enhance the social bond and trust. Further although in tribal societies leadership is an accepted proposition its presence with the ability of leader to build and maintain social capital is extremely important. In this connection extension of motivating efforts through intervention of NGOs and committed endeavour by forest dept staff can contribute towards building of awareness among forest dwellers about the importance of forest protection, promote more participatory efforts, broaden equality in decision making, promote sustainable commercial exploitation of forest resources and develop internal leadership. Its importance in nurturing and improving the inherited stock of social capital in the formative years of any forest protection institution can hardly be denied. It is these aspects that have been observed to be greatly missing in most of the villages of the study region. Only sporadic efforts at irregular intervals to interact with the forest dwellers can hardly serve to motivate them towards effective participatory forest conservative efforts. The assumption that social capital helps engender participation among forest people is weakly satisfied in the context of the study villages. It may be observed that the correlation between social capital indices and participation indices for the 17 villages together appears to be moderate at value 0.418 (sig. level 0.095). The positive value signifies that in general social capital directly influences the participatory efforts and is supportive of the usual hypothesis. But the correlation value is rather on a lower side and not strongly significant. The implication is that there is not found a sound degree of matching of the level of social capital with that of participation efforts. One basic reason is that the components of social capital are based on peoples' responses about their perceptions which is based on the inherited social sphere in which they are brought up and which is hardly linked to a continuous social capital building process that generates awareness, motivation and commitment towards forest preservation. Further the existing level of poverty and low access

to economic capital together with the presence of high degree of mutual trust ,cohesion and absence of conflict often drive the forest dwellers to simultaneous extraction of forest based resources for maintaining a livelihood. The members of FPCs having a fellow feeling for these villagers often have to connive at the depletion and illegal felling of forest resources, thus gradually leading to a degraded status of the forest. Again JFM members often feel insecure about having the stipulated 25 % of revenue generated from forest felling activity because of fluctuations in the timing of such felling. Presence of high degree of mutual trust and cohesion and the exigency of meeting financial and physical wants often bring the villagers on the same level in their objective of depleting forest resources in order to meet immediate livelihood requirements. The fact the mere existence of social capital may not be sufficient to induce strong participation linked preservation is vindicated by the status of peoples' responses about decline of species and degradation of village forest resources. Degree of access to economic capital (resources) also governs it. The survey region being very remote from urban centers can hardly generate adequate alternative non farm occupation while the condition of agriculture is rather poor. Lack of adequate alternative jobs often compel the tribal people as well as poor non tribal population to fall back upon forest resources. As a result despite some stock of social capital, there emerge situation like tragedy of commons that exacerbates forest degradation. It is therefore extremely important to obviate the scourge of poverty by generating prospects of sustainable commercial exploitation of forest resources in each village that might induce people to have a frugal intervention in forest. Further the villages in the study region have suffered due to low capacity in generating leadership from within, relative apathy of forest department staff in delivering their assigned duties and bringing the village dwellers within the fold of social capital building process. Often the villagers reported their satisfaction about FD staff in the sense that they turned a blind eye to and did not interfere in the depletion activity of forest resources undertaken on their part. In order to reverse this , it is extremely important to develop leadership, commercial intervention by NGOs and JFM programme related capacities of the ground level staff of the forest department who are the connection between the forest department and local communities. Process of building of social capital by staging frequent meeting of FPC members, ensuring voice and proper care to the opinion of every participant in the meeting, provision of extension services in forest preservation and plantation, imparting training in commercial agro-forestry activities, ensuring felling of mature trees at regular intervals and sharing of the revenue among FPC members together with

the whole hearted involvement of the ground level forest department staff in the JFM programme might be supportive of restricted access to forest resources thus contributing towards containment of forest degradation. Able leadership provided by such ground level forest dept workers can be an important source of social capital in communities that lack the internal factors for building it.

Chapter 8

Socio-Institutional Analysis for a Sustainable Forest Management

8.1 Need for Institutional Inducement for Commercial Use of Forest Resources

There are varied instances of institutional arrangement for forest management. This is tempered by the degree of involvement of forest based communities either on their own initiative or under the supervision of forest dept and sometimes intervened by the NGOs and other agencies. The institution of JFM which is in vogue in West Bengal basically envisages a symmetric relation between the forest dept and local forest community. While the forest dept officials are expected to assist the forest based people with extension of managerial skill for keeping the accounts, disseminating scientific knowledge about plantation and silviculture, the villagers are also expected to provide their participatory labour and obey the rules of management institution in a mutually reciprocal JFM relation. Often some NGOs are found, which are supposed to act like catalysts in encouraging and facilitating the forest management efforts of local forest dwellers and FPC members, while also serving to promote better rural livelihood options based on forest activities and access to efficient market system. The central Govt. in its 1988 national policy issued numerous and sometimes progressive policy circulars for JFM operation with a conservative focus for forest resources. However these were adjusted with specific rules and institutions by a number of states. In West Bengal the implementation process of JFM by the Govt. depts. evinced severe erosion of historic and forest resource right of the community and tribal people, restrictive rule on the harvesting and transport of many forest products and conflict resolution mechanism that swayed heavily in favour of the respective district forest dept. The essential drive for forest dept is of facilitating the process which implies adapting the official JFM framework to enable forest dept. officials to participate in villagers' initiatives. So long forest communities have mostly remained dependent on forest resources to meet their immediate fuel needs and collect other small non- timber forest products deeply associated with their daily life. There seems to be a lacuna in the drive of forest dept to excite communities to realize the commercial potential of forest based activities and hence the need of its preservation and efficient management. The fact that forest can be a major source of cash livelihood in most communities has largely

remained untapped. For JFM to represent sustainable forest participatory management, stress on mere regeneration of timber through community participation needs to be replaced by emphasizing on production of commercially viable forest based alternatives for utilizing the forest based livelihood potential of the members of community institution. Systematic and courageous drive together with policy actions are needed both at national, state and local levels to reorient JFM from a command and control model towards facilitating a commercially viable livelihood based approach. The focus on implementing a forest based livelihood through JFM presupposes a strong institution based on the cohesion of interest, trust and zealous group effort among community members. Some motivational guidance and mentoring action is required in order to goad the local people into achieving viable commercial management of the targeted forest products and link it with the respective processing activity. The primary factor required for initiating this process is to have a strong JFM institution and to provide support for conflict resolution, impart leadership training skills and ensure a prudent resource sharing mechanism. There is a stupendous necessity of providing a major boost to the actions of members in forest community institutions, majority of whom suffer from socio-economic weaknesses like low level of literacy, poverty, marginalized social status, flimsy forest use right as well as poor level of awareness of limited social provision for them. In this respect there is a great need for a positive supportive role of a diverse type of stakeholder institutions for ameliorating the status of forest participation, protection and forest utilization by the members in the JFM institution. Apart from the primarily related forest Dept, concurrent pro-active functioning of different secondary stakeholder groups may resuscitate the JFM institution both in economic and social terms.

8.2 Commercialization Issues of NTFPs in the Study Region

The forest region in the surveyed villages are rich sources of supply of fuelwood, fodder, fruits, sal, kendu, medicinal plants, babui grass etc. There may be three broad classifications of villagers regarding the type of dependence for meeting requirements related to two categories: (i) only self consumption as well as (ii) both self consumption and sale. For Fuelwood people in all the surveyed villages fall in both categories, for food, fruits and fodder there is mixed observation in the sense that people in some villages collecting these items belong to both categories while in some other they collect for both consumption and sale. For the other items like sal, kendu, medicinal plants, babui grass and others collection

mostly occurs for sale together with occasional requirement for self consumption. Sale of NTFPs are carried out both in the nearby local markets as well as to serve distant markets through the complex web of middlemen.

The implication is that these products happen to be substantially important in the basket of earnings of these poor people and given proper and cost effective way of marketing these products, they can prove to be commercially important from their livelihood perspective. In this context it may be said that market intermediaries and NGOs can play a vital role in facilitating access to markets by providing market information, as well as skills and financial support. The sustained role of Govt. agencies in collecting the NTFPS as raw inputs at supportive rates from the forest dwellers and channeling them to urban centers for commercial or industrial use may prove extremely effective in generating a viable NTFP based livelihood support strategy. Even small /medium scale entrepreneurs operating in the vicinity of processing industries can play an important role in extending the better forest management skill, offering proper price and market, generating demand and facilitating access to finance to the multitude of village NTFP collectors. However, there is likelihood that there may be concentration of power among a few individuals for highly processed or perishable products for international markets. The intrusion of private agencies in NTFP marketing and commercialization programmes by subverting the role of Govt. agencies may give rise to this sort of concentrated power at the cost of long term interest of village communities.

There is noticeable presence of some NGOs influencing the socio-economic condition of the forest dwellers through commercial intervention in the Ranibundh range. For instance medicinal plants are generally collected by sabars or other backward classes in the study region. It is well known that certain NTFPs have a huge potential for health care. Traditional medicine relies predominantly on medicinal plants and herbs. Further, the flourishing pharmaceutical industry bases much of its research on medicinal plants and their traditional uses. The villages in Ranibundh range is richly endowed with a variety of species of medicinal plants as depicted in the following table- 4 with their Sanskrit names and corresponding Botanical classification.

In this context, the efforts by Ramkrishna Mission (an NGO) as middle agents in collecting medicinal plants from the villagers and transporting those in distant centres, has made a

tangible impact on the livelihood of a specified group of forest people. The NGO, in coherence with their social responsibility, ensures that the poor villagers get a fair price for the plants they supply. Further a storage room has been constructed by the mission in order to provide facility of storing excess collection of medicinal plants and thus provide some economic benefit to the poor villagers. The medicinal plants having demand throughout the year provide alternative source of earning to these people at times when they have to sit idle because of lack of job. Further there being less of competition in the sphere of collection of these plants, these people enjoy some sort of monopoly gain in this activity. Again, promotion of livestock related business activities through the efforts of NGOs have induced some villagers to undertake rearing of poultry and goaterly and earn income through local business.

In recent times the Govt. of West Bengal has decided to purchase sal and kendu seed and leaves collected by the tribal people, at a higher rate than that provided by the mahajans. The recent socio-political climate in the state has put pressure on the Govt. to adopt this step even if it involves loss. Although the responsibility of purchasing sal seed and kendu leaves from the adibasi people and its subsequent marketing lies with the Govt. controlled large agricultural multipurpose cooperative society (LAMPS), its efficacy is in question because of speculative activity by mahajans. All the 144 LAMPS in the state are directly controlled by the West Bengal Tribal Development Cooperative Concern (WBTDCC). Thousands of men and women in the forest region are members of LAMPS. In order to enable the forest department to ascertain monopoly purchase right over the collected sal seed and kendu leaves in this region, it is annually given Rs. 10 lakhs by the WBTDCC for establishing lease right on secondary forest resources and purchasing all the sal seed and kendu leaves through LAMPS. The Govt is in a fix about the illegal speculative activity and liaison with private businessman by a section of mahajans in LAMPS controlled area.

It has been observed that while the State Govt has fixed the rate of Rs 35/- for two thousand kendu leaves, the mahajans are practising collection of the best quality leaves at Rs 40 /- Similar practice holds for sal seeds. The problem is that they are separating out the best leaves for their collection while leaving the inferior quality for the LAMPS to collect. The market for the inferior grades being rather dull, LAMPS is in great trouble of incurring recurrent loss. According to LAMPS officials the quality of sal seed and kendu leaves vary from village to village throughout the forest region , while the rate offered by the Govt. is the same

everywhere. Increasing losses had led many LAMPS to close purchase of the aforesaid NTFPs. And this has inflicted most of the trouble of loss of earning opportunity on those people in tribal villages which are poorly endowed with high quality sal seed and kendu leaves.

Recently a private cosmetic producing company operating in the region has stepped in for undertaking collection of mostly aloe vera from the villagers. Aloe vera is a rare plant which proves essential in making certain aromatic compounds. Lack of knowledge about proper market prices of this plant and relative immobility in connecting themselves with an urban oriented commercialized transaction, compels these poor villagers to sell these rare plants to whatever amount the agents of the private company offer at their doorstep.

From the aforesaid analysis it is suggested that in general commercial earning prospects for forest dwellers through harvest of NTFPs is better materialized under the promotional efforts of NGOs or Govt. agencies than under private agencies. However there are still certain aspects that afflict the issue of sustainable earning even in the favourable institutional intervention. For instance the NGOs often cannot extend their commercial collection activity equally at all the villages in a range. As a result there may be different prices charged for the same NTFP at different locations. The flow of this information among the villages often generates discontent among certain section of forest people which may lead to local conflict and unsustainability of continued operation of the NGOs. Further sabar and other backward castes often do not exercise sustainability mechanism when harvesting the medicinal plants because of sheer ignorance about its importance for their own livelihood or lack of training in sustainable harvest. In order to have quick earning they often uproot the entire plant instead of just collecting mature leaves. This has an adverse impact on their future earning as plant regeneration takes sufficient time, and sometimes some species becomes almost nonexistent thus expediting the aspect of forest degradation.

8.3 Importance of Emergence of Producers' Organizations

In order to release its own reins of control and responsibility and avoid the intervention of private agencies in the field of marketing and commercialization of forest products, the Govt. should increasingly support emergence of a strong producer organization on a solid footing. Given proper guidance, the members of the organizations often belonging to the FPCs or being

members of their families, are likely to take active initiative for expanding their own business through networking or exploring access to newer avenues of markets. This is also likely to strengthen community based producers' power and capacity to gain access to newer markets and enable them to sell larger consignments of fuelwood, bamboo and other NTFP based items directly to larger processing or marketing firms through auctions or diverse type of contract agreements. This arrangement would prove beneficial to the rural people (under the fold of producers' organization) in delivering them from the clutches of middlemen or private profit seeking agents and enhance their bargaining power at the point of sale of forest based resources. Producer institutions could develop on the basis of communities of several nearby villages grouping together in the form of cooperatives or they can be a part of a broad based community led state associations focusing on marketing of specific forest based resources in and out of the geographical location of their origin. Particularly there exist possibilities of aligning the functioning of such organizations with existing and emerging agricultural cooperatives in the domain of marketing and processing of a number of diverse type of non timber forest products. Existence of representatives of multiple social classes or castes as well as mutual conflicts of interest may sometimes tend to undermine the efficacy of such institutions. In order to guard against such possibilities there is needed emergence of leadership role capable of strengthening the bond of social capital and substantial investment in augmenting social capacities and a strong inclusive producer institution Further there need to be an efficient mechanism of gathering and sharing market related information among communities, forest dept, farmers and other related Govt. line depts. This is necessary to adjust harvesting of NTFPs for commercial purposes and align it with market demands for deriving substantial rent element out of its marketable prospects. The extension of e-Choupal concept to marketing of forest products might be effective in this context. Evolutionary development of such producer institutions can help do away with the necessity of having a high cost, restrictive state monopsony and relocate the role of the state in the form of more of a facilitator and provider of information, infrastructure and technical training support. In this context the local panchayats cannot ignore their roles in aligning their activities towards building more of infrastructure, communication and technical support service to bridge the commercially oriented efforts of producer institutions in communities in remote forest regions.

8.4 Importance of Multi -Institutional Interaction.

At present there is a serious lack of an integrated focus on the multidimensional issues pertaining to the problem of management and conservation of forest resources. There are a number of institutions who intervene in the use of forest resources from diverse perspectives with direct or indirect stakeholder concern. More focused planning along with socio-economic analysis is needed to integrate their actions towards a viable forest management agenda. There are economic, social, financial and management issues that need to be put an integral attention in this perspective. The stakeholders can be identified to be existing at apex level, intermediate level and grassroots level. At the apex level there exist Ministry of Environment and Forest (MOEF), State forest dept and National Institutes like Institute of Economic Growth(New Delhi). At the intermediate level there exist district forest dept, research institutes, NGOs etc. At the Grassroot level there are potential roles of forest communities, panchayats, local forest dept, prospective agro based small scale industries, SHGs etc., interaction /partnership amongst whom can be explored to evolve better forest utilization and management options. On a broader base the MOEF should actively participate in the development of forest management and implementation plan by coordinating with each respective state forest dept. in order to take into account the specificities of forest sector of each state. There are a number of economic issues that directly influence peoples' participatory attitude towards forest management. These are, however, often ignored in relation to development of a better forest management planning process. For instance during the survey in Ranibundh, Punshya , Muchikata and Jhilimili beat, it was found that many of forest dwellers were aware about new forest act ensuring their secured tenurial status, subject to certain conditions, while many others were not conversant with this new provision. Switching from the existing status to the new tenurial state is likely entail certain costs as well as benefits. Again since most of forest resources in the study areas happened to be degraded, there could be expected little incentive on the part of communities to actively participate in commercial forest regeneration programme on these degraded land because of long gestation period and low prospect of financial return. Depending on situations , a positive drive requires allocating small portions of good quality forest land to communities in order to enable them earn quick returns by felling a part of matured or semi matured forest. Part of their earnings can also be invested in degraded forest apart from contributing to their livelihood. Further

prospect of region specific commercial exploitation of forest resources from the point of view of catering to a sustainable livelihood of forest people, needs incisive analysis. Hence the MOEF along with state Govt. and experts in academic institutes need to focus on economic issues like assessing the costs and potential benefits of alternative tenurial options, judging the community incentive by providing them stake in healthy and matured/ semi matured forest land along with degraded land, reviewing benefit sharing mechanism as well as the potential of turnover in case of commercialized forest activity.

The intermediate layers of institutions are basically meant for coordinating the micro plans at community specific level with working plans undertaken by agreement between state forest dept and MOEF. Over time the working plan undertaken generally with a 10 –year cycle should gradually shift to a more strategic and pinpointed focus that provides a better foundation for specific community level forest plan. The MOEF should be kept conversant with the dispatch every year of the list of new micro plans launched in consonance with felt necessities of each respective forest community/region. Sustainable micro planning should be based on preparation of good operational manual covering a range of steps to build social capital and exploring improved livelihood options. The end objectives of such a sustainable planning process is to address broader rural development and livelihood concerns through evolving co-development of linked aspects like forestry, livestock, agriculture , agro- forestry, wood-handicrafts, processing, marketing etc.

In this context there is felt the necessity of developing enhanced cohesion and synchronization in the functioning and operation of a number of stakeholder institutions like panchayats, communities, local forest office, agro-forest based small industries, SHG as well as grassroot NGOs. In the 100 days programme in NREGA scheme there is the provision of plantation activities involving village people. In forest based villages the panchayat, through involvement of community members, can take active steps in arresting degradation of forest land by allocating substantial fund towards this plantation programme. Local forest office also can benefit this programme by extending their support and monitoring services. And wherever necessary, they may take the initiative of arranging for extension of specific training in plantation and rearing of saplings by involving expert services. Even certain SHGs as well can be indirectly integrated in this plantation programme. They may be engaged in developing

nursery of saplings of high value forest trees plantation of which may be a part of NREGA scheme. The panchayat or even grass root level NGOs can motivate and promote the functioning of these SHGs by alleviating their financial stress and imparting them training in nursery related activities. Thus proper and planned integration of NREGA, community, local forest dept. SHG and grass-root NGOs can substantially contribute towards having a sustainable forest base and protect the forest land from degradation. Further agro-forest based industries may also be motivated to start their enterprises in regions near by forest areas which are richly endowed with varieties of forest products like mahua, kendu, bamboo, sal leaves, and other fruits. Marketing channels may be developed which might cater to marketing of products of these small scale industries as well as forest based items produced by SHGs. There has to be a complete change in the mindset that forest products are different from agricultural commodities and hence marketing needs to be managed by forest dept. Given several reorientations in market policy, many communities can play instrumental role in the developing production- marketing channel as low cost producer of commodity wood, higher quality timber (viz. sal or teak), commercially useful mahua and kendu plant as well as non timber forest products. Strong local institutions are necessary to ensure equitable distribution of benefits where commercial prospect is high. Further the development of marketing channels is conditioned by the local forest quality, distance from urban centers, condition of access road and state of social capital in the community. Panchayats have a stake in this context by allocating substantial NREGA fund for development of village road connectivity and lessening the virtual distance from urban market centers. Further focused forestry research can contribute a lot towards enhancing the productivity of a range of species consisting of both non-traditional timber and non- timber forest products which have a sound commercial potential. There is in general little linkage between objective scientific forest research , extension activity and its uptake by forest communities (Khan and Pillai, 2002; Hedge , 2000). The study region is richly endowed with many of the timber and non timber species and their scientific propagation as well as commercial exploitation for a sustainable livelihood of the resource community requires a cohesive and coordinative functioning of all the aforesaid forest stakeholders.

Chapter 9

Concluding Observations and Policy Suggestions

9.1 Concluding Observations

Prudent management of forest resources has assumed a great importance from the point of view of providing means of livelihood to a great number of rural poor. In recent years although the joint forest management system has been introduced the FPC members often do not seem to be adequately motivated to provide conservation efforts for sustaining the forest adjoining their localities. The primary stakeholders happen to be the forest communities or people living in and on the forest fringe areas earning substantial part of livelihood in the form of fuel wood, fodder, fruits, flowers, fencing materials etc. The secondary stakeholders happen to be state/district forest dept, NGOs, plantation companies etc.

In developing countries like India degradation of common property resources(CPR) has often been associated with high rate attached by the poor in discounting future flow of benefits, improper property right, economic insecurity, regulation failure and relative efficacy of local institutions that shape the degree of collective action. Insecure property right and associated risk of eviction, poverty and poor access to insurance and credit market are often viewed as underlying factors responsible for degradation of common property resources. Again absence of motivation/monitoring often fail to enforce active participation thereby leading to degradation of the resource. Besides this class and gender conflict, agricultural intensification, population pressure and increasing commodification also leads to unsustainable management of the resource. In this backdrop an incisive study has been carried out in the context of a tribal dominated forest region highly exposed to degradation. Focus has been put in this perspective on the aspect of insecurity in property right, dynamics of socio-economic features, commercialization issues, relative efficacy of peoples' participation and trade off between short and long term interest of the community.

Since the enunciation of forest protection act (1990), the traditional community access and control has been substantially wrested by the forest dept in W.B with only specific duties and

functions reserved for the forest protection committee (FPC) formed of the villagers. However this has hardly reduced the poor people's dependence for collection of non-timber forest products (NTFPs) that provide a substantial part of their livelihood in the study regions that are less agriculturally intensified. Apart from this, the enjoyment of CPR resources by non-poor households is not at all negligible.

The food calendar for the region, suggests that during Jan – Feb and Feb- March the working condition is better with opportunities of local work and forest based work and good vegetable growing conditions. Work opportunities gradually gets thinner during March- April and some people are compelled to resort to migration for earning an income. Income earning opportunities virtually become nil during April-May when people have to depend mainly on kendu leaf and other forest collection activities.

Threat to food security during May-June is of course extremely high and people work hard to eke out a livelihood. Forest dependency is felt to be high with collection of Kendu leaves, Fire wood, fruits & food from forest with hardly any vegetable available.

During June – July and July- Aug there is buoyancy in farming activities because of the onset of monsoon with people working in own field as well as sometimes migrating to work in others' land. Aug-Sept is the most difficult period when villagers have no other alternative than to depend solely on forest resources. Food insecurity and livelihood become extremely acute with little availability of rice to the families. Forest dependency for diverse NTFPs is vividly visible. In Sept- Oct the condition begins to improve rather but with still high dependence on forest income. During Oct-Nov to Dec – Jan the condition gradually improves with availability of local work facilities, end of food scarcity and dependence on forest for just fuelwood and sal leaf collection.

Extent of self dependence on forest products in each village is assessed by regressing the individual self dependence values on local employment days (LED), poverty status (S), respective family size (FS), income other than agriculture (OI), number of items (NI) collected from forest land and livestock (LS). There is found to be different degrees of significant influence of several variables on the forest dependence in the considered villages. Majority of the villagers in most of the cases reported about decline of species and forest degradation. During lean periods marked by privation and physical stress, villagers are left

with no other alternative than to take resort to illicit felling and cutting of trees/branches, collecting various NTFPs together with grazing their cattle. The FPC members themselves often very poor, ignore mutual illegal collection from forest out of sheer necessity of survival. This sets forth the problem of tragedy of the commons. Further spread of commercial cultivation of babui grass has an untoward impact on the health of forest resources. It has a harmful impact on the long run productivity of soil as the land can never be used for growing crops or any other plant species. Binary logit regression has been fit to analyse the likelihood of perceived degradation on the part of village dwellers. Results indicate that in all the cases fear of eviction from forest land induces significant insecurity of forest tenure and accentuates the probability of forest degradation.

Micro planning of various dimensions in arresting fast depletion of forest land, regeneration of degraded forest and development of watersheds, ensuring conservation of valuable and important species of forest timber and products seem to be of utmost importance in sustaining forest based livelihood. These may be well served in the structure of JFM through community's active involvement coordinated by the efforts of FD. But wholehearted participation of communities in the micro-planning process is often short of the desired level, with greater heterogeneity across different rural groups and lack of adequacy in the determining factors conducive towards a better participatory attitude. In some cases viz. Kelia Pathar, villagers attended the meetings very casually as they felt that they were denied their due importance by forest officials regarding expressing their opinion, expectations and priorities in the decision making process and so stayed relatively passive and inactive. The Santal and Bhumiz people were discriminated against by general caste people in matters of village level decision making.

It is observed that the correlation coefficient between the determinants and participation indices for the respective villages come out to be 0.563. (significant at 18.8 percent). This is only a very moderate degree implying that the components in the determinants indices often do not assume desirable pattern of values and villagers' participatory responses sometimes transcend (in either way) what would conform to the index of determinants.

Extent of peoples' participation is also supposed to be influenced by the level of peoples' involvement, dedication and coordination in forest protection activities. This is again often

shaped by the level of social capital composed of mutual trust, cohesion, cooperation and amity among village stakeholders. There is needed a continuous process of building social capital and inciting the initiatives of concerned stakeholders. This process is influenced by the presence or absence of internal or external factors like role of NGOs, role of forest dept, institutional rules and leadership initiative in conflict resolution and removing discontent, detecting free-riding and non-cooperation and motivating people to voluntarily contribute to forest conservation activity.

Because of its low-key motivating role, the FD has so long been relatively passive in sensitizing the forest dwellers to the potential of commercial exploitation of forest resources. So long forest communities have mostly remained dependent on forest resources to meet their immediate fuel needs and collect other small non-timber forest products deeply associated with their daily life. The Govt. and forest Dept. should increasingly support emergence of a strong producer organization. With proper guidance, the members of the organizations often belonging to the FPCs or being members of their families, are likely to take active initiative for expanding their own business through networking or exploring access to newer avenues of markets. This is also likely to induce in them the spirit of conserving the forest resources for their longer term sustainable gain.

There is no doubt that enhanced cohesion and synchronization in the functioning and operation of a number of stakeholder institutions like panchayats, communities, local forest office, agro-forest based small industries, SHG as well as grassroot NGOs would lead to better prospect of forest based commercial activities and thus arrest forest degradation.

9.2 Policy Suggestions

Active participation in forest conservation activities presupposes a sense of commitment, attachment and motivation on the part of the forest dwellers. While economic constraints like impediments to have better agricultural income due to low quality and small land-size as well as poor irrigation facilities are likely to explain their inclination to depend on forest and provide their best participatory effort to preserve it for their sustainable livelihood, some other socio-cultural factors might be operative to prevent the potential of participation from being fully realised. Individual or group decision by the villagers to tap the forest resources while also ensuring its conservation requires some degree of social cohesion, motivated by the

actions of some leading agent. The members of FPC managing committee, or N.G.Os or even Panchayat cannot deny their leading role required for resuscitating the motivational spirit of the villagers, which has been truly imperceptible in many of the surveyed villages. Again in many cases the villagers have been apathetic to participation because of their dissatisfaction with the attitude of the forest dept officials. Sometimes the collusive tendency of forest dept. with some of the affluent section of the villagers in taking unilateral decision regarding choice of forest felling site and time and way of calling tender for its disposal, with ordinary masses in the dark, has invoked peoples' non-cooperation and disenchantment in forest participation activities. Administrative machinery has to be sincere, neutral, and establish its attitudinal honesty for evolving forest preservative participation. The element of trust among all the stakeholders need immediate restoration. The quality of forest land, although often thought to be naturally endowed, may be revived for the better with an element of participatory efforts. For this purpose whole hearted socio-psychological and economic support by the forest dept as well as motivational impetus by non –Govt. agents seem to be most essential. In order to induce increased participation of FPC members in JFM programmes, it is necessary for FD to organize short –term training and orientation courses for boosting their stake and involvement. In this context, implementing more of forestry extension- education courses, use of mass communication media as well as ensuring increased social interaction among the villagers through the efforts of the aforesaid agents might pave the way for enhanced motivation for their participation. Regular meeting between FPC members and FD officials, involving the beneficiaries at all stages of FPC programmes including micro-planning and RRA(rapid rural appraisal) might pave the way for a smooth functioning of JFM institution.

Most of the forest people consist of socio- economically backward groups consisting of tribals, SC people, marginal and small farmers etc. The FD need to make alternative income and employment for them without which they cannot be effectively prevented from resorting to over exploitation of forests for their immediate needs. Micro plan aspect should be so devised as to integrate the activities of FPCs with those that are undertaken by different departments of the Govt. Such effort by the FD would lead to integrate FPC programme with several rural development programmes like NREGS (national rural employment guarantee scheme), SGSY (swarna jayanti gram swarojgar yojana), BRGF (backward region grant fund) etc. There should be mutual support and collaboration in implementing the integrated rural development

plans. Thus while the FPC should set aside some fund for providing income generating activities and creating infrastructure in the area, the organizations like WBTDc, Zilla Parishad, GOWB(Govt. of West Bengal) depts, Irrigation, Horticulture etc should supplement and complement the activities of FPC.

There need to be effective and significant control of the functioning of mahajans in nexus with a few profit seeking private businessmen in the villages around the study region. The emergence of these agents is standing in the way of smooth functioning of LAMPS in collecting sal and kendu leaves at Govt. regulated prices from all the villages alike. The operation of mahajans in offering some what greater rate than that by LAMPS for the better quality sal and kendu leaves have been detrimental to the interest of some of the villages where the quality of such NTFPs is rather on the poorer side. These are left as residue only to be covered by LAMPS purchase. In order to serve the interest of all forest based villages in a similar way, either LAMPS purchase rate should be slightly higher up than that offered by mahajans or LAMPS may offer some secondary benefits for enticing villagers who offer their NTFPs to it.

So long there has not been any systematic development of forest based cash livelihoods in most of the village communities. More focused policy actions are needed at both national and state level to reorient JFM from a command and control mechanism to a broad based commercial and livelihood based approach. This necessitates the development of processing and marketing of various non-wood forest products (NTFPs). At present as already stated, some NGO is engaged in purchasing some medicinal plant species on a commercial basis in a few specific villages. However viable commercial exploitation of all kind of NTFPs in each community / village need revamping and streamlining of marketing arrangements made by WBTDc and LAMPS. Further there is also need to set up small scale economically viable processing units around the region to induce the prospect of cash livelihood based on commercial exploitation of NTFPs. Forest management oriented towards promoting sustainable cash livelihood would also induce the spirit of forest conservation in the participatory effort of rural stakeholders.

Promotional measures need to be undertaken for building community producer institutions by bringing together the FPC members strewn in a number of adjoining villages in a beat or several beats. They are supposed to take decision in matters of plantation, marketing , contract farming and storing their products. The functioning these institutions should be supported by encouraging state level community forestry associations which might facilitate the expansion of storage capacity, arrange for training of FPC members in better harvest methods and value addition, processing technology, provide them with price and market information of various NTFPs, link them with outside market and enable them to sell large consignments of NTFPs directly to big processing or marketing firms through contract agreements or auctions (The world bank , 2006).

In the perspective of management and conservation of the forest it may be said that indiscriminate cutting of branches of tress and uprooting bushes yielding minor forest products, is usually done to meet fuelwood demand of the village community. If this pressure on forest CPR can be relocated, the forest resources can be somewhat conserved. This requires identification of alternative areas for developing village woodlots through plantation of indigenous tree species /or even some quick growing species for serving fuelwood purpose. In this respect the village panchayat should take the leading role in initiating such efforts through involving FD staff. This is because without an active role of local socio-political institution like panchayat, it may be difficult for indirect stakeholder agencies like FD or voluntary organizations to feel concerned and take sustained interest in such programmes. This programme should be supplemented by increased investment in resource assessment and mapping system. This would strengthen the local institutions with knowledge about growth and yield information about local species. Village woodlots should be developed separately on revenue/panchayat waste land consisting of fast growing fuel wood yielding species. Local species with high yielding NTFPS should be planted and preserved till they mature to fruit bearing stage and their cutting should be controlled through involvement of local monitoring body.

Again due to existing risk of eviction and loss of hitherto enjoyed customary right to access the forest resources, villagers often do not feel motivated to protect the forest with a feeling of alienation of their traditional property right. So grant of permanent tenurial right to forest dependent people, mitigating the fear of eviction, extension of various support facilities and

ensuring a cohesive trust between forest dept. and forest protection committee seem most urgent for ensuring meaningful participation. In this context it may be mentioned that in recent past the Govt. of India has passed the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, which is a key piece of forest legislation. It has also been called the "*Forest Rights Act*", the "*Tribal Rights Act*", the "*Tribal Bill*", and the "*Tribal Land Act*." The law concerns the rights of forest-dwelling communities to land and other resources, denied to them over decades as a result of the continuance of colonial forest laws in India. However the stringent provisions and conditions of the act has resulted in only a very tardy implementation and hence a substantial number of eligible forest tenurial right claimants still remain outside its purview in the study region. Its speedy implementation is supposed to render forest conservation on a more effective and sustainable basis.

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