

ASSESSMENT OF CHANGES IN LIVELIHOOD OF FOREST DWELLING TRIBAL COMMUNITY THROUGH JFM: A CASE STUDY IN RANIBANDH BLOCK OF BANKURA DISTRICT, WEST BENGAL

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ABSTRACT

Joint Forest Management programme plays an important role in development of forest dwellers livelihoods, protection of forest and forest based resources since 1990. The programme has its roots in participatory forest management project in *Arabari*, West Bengal in 1970s. In West Bengal majority of forest dwelling communities belongs to ethnic tribal groups. These forests dwelling tribal people directly or indirectly depends on forest or forest based resources to earn their livelihood. Several government and non-government organizations are working to develop the forest based tribal livelihood through the JFM activities. From field studies it has been observed that JFM plays a significant role in the development of five capital assets of livelihood framework (DFID model) and similarly reducing the household level vulnerabilities among the tribal communities. The present paper tries to assess the changes in livelihood of forest dwelling tribal community in context of JFM by using the livelihood assessment tool (Develop by Balcher et al, 2005), in *Raniband* block of *Bankura* district in West Bengal.

Keywords: *JFM, Livelihood, Forest, Tribal*

1. INTRODUCTION

Majority of tribal people throughout the world lives basically in the most isolated or forest areas. The lifestyle and tradition of each indigenous community is unique and they are mostly dependent on traditional livelihood or utilization of natural resources for survival. The forest provides them with food and livelihood security. According to Census 2011, 8.6 percent of the total population in India (i.e 10.43 crore) belongs to tribal community. The corresponding figure for West Bengal is 5.8 percent of total population (i.e 52.96 lack). Most of Tribal people live in

near about 15 per cent of the total country area, in various environmental and Geo-climatic condition ranges from plains and forests to the hills (Kumar, 2010). In India nearly 100 million tribal people reside in forests and another 275 million live in the nearby forest fringe areas most of them are directly or indirectly dependent on timber and non-timber forest products (NTFPs) (Vemuri, 2008). According to the Indian State Forest Report 2011, Indian forests are mostly state owned and cover an area of 78.29 million hectares, which constitute 23.81 percent of the total geographical area of the country. The quality of forest and pattern of forest management determine its productivity, flow of natural forest resources and consequent pattern of livelihood of the forest dwellers. The National Forest Policy, 1988 and the subsequent government resolution on participatory forest management (MoEF,GoI 1990) emphasize the need for Community-based programme in forest management, which is popularly known as Joint Forest Management (JFM) programme in India. It has been observed that JFM has brought about significant changes in management of forest resources and development of livelihood of the communities who are dependent on forest resources directly or indirectly. In many cases JFM has also changes or develop the traditional livelihood pattern of the beneficiary communities. In India a large section of forest dwellers are tribals. In West Bengal also most of the tribal dominated blocks have forests and tribal communities live in forests or nearby forest areas. In *Bankura* district of West Bengal large section of tribal community live in forest areas. Among this district *Ranibandh* block have highest tribal population (census 2011) and area is mostly covered by forests. JFM is in practice in this block since the beginning. The present paper will try to explore the demographic profile, and impact of the JFM programme on changes in the livelihood pattern, by using five capital livelihood monitoring tools, of tribal communities living in tribal concentrated three selected villages of *Ranibandh* block of *Bankura* district.

2. BACKGROUND OF JFM PROGRAMME

The concept of JFM is not new in India. Long back in 1931 management of forests by *Van Panchayats* was started in *Uttarakhand* covering an area of 5,450 sq. km. Participatory forest management system involving the Government and local forest dweller communities was initiated in West Bengal by the West Bengal Forest Department as a pilot project in *Arabari* village of West Bengal in early 1970's. In that programme over 1,270 hectare of degraded *Sal* forests in 11 villages of Midnapore district with population of 618 families was covered, and it was a great success in management of forest resources. (Ref: *ENVIS Centre on Forestry*)

JFM can be defined as “..... Sharing of resource, responsibilities, control, and decision making right over forest lands, between forest departments and local forest dwellers community, based on a formal agreement. The primary principle of JFM is to give users a stake in forest benefits and a role in planning and management for the sustainable development of forest conditions and

productivity forest resource. A second goal is to support an equitable distribution of forest products” (Ref. Hill. I & Shields. D., 1998). Therefore the basic objective of JFM is proper management and conservation of forests, improving the livelihoods of forest based communities and reducing rural poverty. Under JFM programme forest based village communities are entrusted with the protection and management of nearby forests, which also provide them with sustainable livelihood options. Different committees like Forest Protection Committees (FPCs), Eco Development Committees (EDCs) etc. are formed under the programme. Since nineties the programme has been implemented throughout India by the Forest Department with the help of PRIs and other line departments.

3. OBJECT OF THE STUDY

The basic objectives of the study are as follows-

1. To study the demographic profile of tribal communities living in selected villages of the study area
2. To study the activities of JFM Programme in *Ranibandh* block of *Bankura* district
3. To assess the changes in livelihood pattern of the tribal communities through JFM programme, in the study area

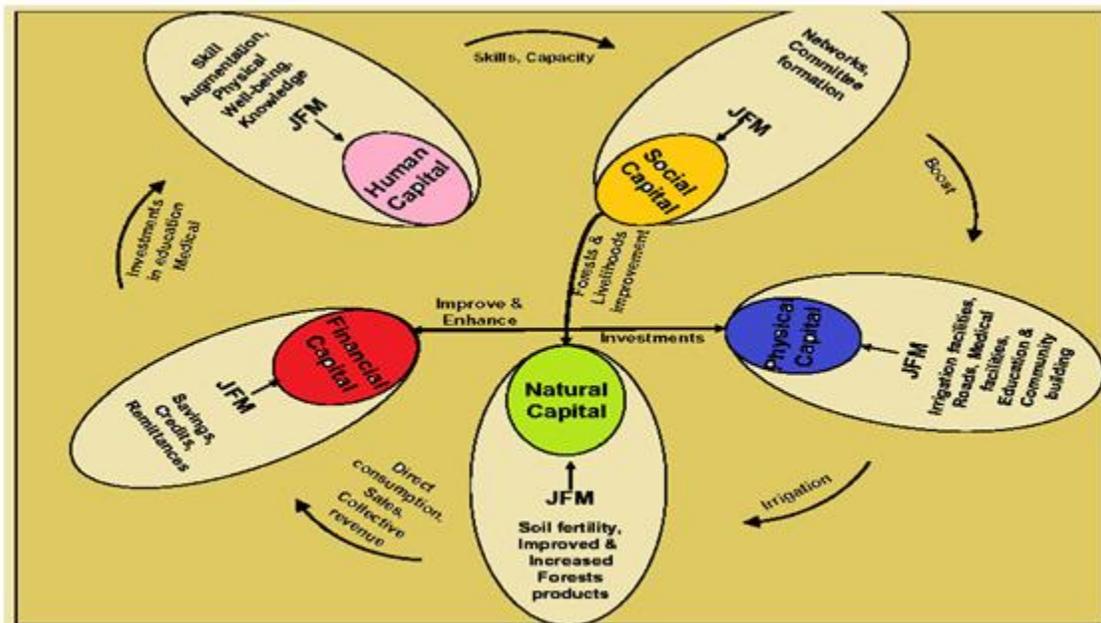
4. RESEARCH METHODOLOGY

The study is basically based on the primary field level survey. For the study three JFM villages *Mahadebsinam*, *Barapacha* and *Panijia* have been selected purposively from *Ranibandh* block of *Bankura* district, which is one of the worst poverty stricken districts of West Bengal. For selection of villages criteria used are (i) villages must have Forest Protection Committee (FPC) under JFM Programme, (ii) more than 95% members of Forest Protection Committee (FPC) belong to the tribal community. From each selected villages 20 nos. of sample households have been chosen randomly from the beneficiaries of JFM programme. For the study, structured questionnaires have been used to collect information from the sample households. Besides the household survey, discussions have also been made with key functionaries of the JFM programme, functionaries of PRIs, and members of the FPCs in the surveyed area. Secondary data obtained from different published sources and web materials have also been used to supplement the primary data. For analysis of data simple descriptive statistics and spider diagram was used. Livelihood assessment tool

For assessing the impact of JFM on livelihoods of tribal community, Livelihoods Improvement Impact Pathways, as used by Pandey, (2005) was used. The tool was also initially used by Belcher (2005) in a study done in Centre for International Forest Research (CIFOR)', Indonesia. Impact pathway actually shows the trajectories of JFM activities, their impact on capitals and

interrelationship between the five capitals/assets viz. Natural Capital, Financial Capital, Physical Capital, Social Capital, and Human Capital (fig. 1) (Pandey, 2005).

Figure 1: Livelihoods Improvement Impact Pathways



Source: Pandey, (2005) and Goswami & Paul (2012).(Modified after Belcher (2005) cited in Pandey, 2005)

Thus, conceptual framework (impact pathways) describes the cause and effect relationship between the before- and –after membership of FPCs under the JFM programme and the impact it may have on changes in livelihood patterns in tribal communities. (Pandey, 2005)

Based on the impact pathways village level indicator-based monitoring tool was developed following the study of *Pandey (2005)* and *Goswami & Paul (2012)*. This monitoring tool is used here as livelihoods assessment tool for perception analysis of beneficiaries of JFM (fig. 2) and is based on impact pathways and village level indicators, which were identified from the five capitals/assets: Financial, Physical, Social, Natural, and Human and its comparison with Vulnerability indicators. This five capital indicator base tool is widely used way to find out the overall change in livelihoods. In this tool all indicators are interrelated with each other. For example, formation of groups and facilities available through the intervention of JFM increases social and physical capital which in turn increases natural capital. Increase of natural capital ultimately increases livelihood opportunities and consequent increase in income of forest communities leads to increase in financial capital and also development of human capit

Figure 2: Livelihoods Assessment Tool for Perception Analysis of Beneficiaries

Capital	Indicator	Scoring					
		Present Status			Before Member of FPC		
		3	2	1	3	2	1
Financial assets	Last 3 years Average Household income level						
	Regularizing/systematizing income of household						
	Scope of livelihood opportunities						
	Household savings status						
	Access to credit						
	Status of expenditure on consumer and durable goods						
	Sale of household assets						
Physical assets	Area of irrigated land (in hectors)						
	Housing condition						
	Shelter and household possessions						
	Electric facility and electrical gadgets in house						
	No. of household assets Motor cycles/ cycles						
	Sanitation condition in house						
	Average travel time from house to nearest market						
	Ownership of production and processing equipment						
Natural assets	Access to target resource by HH (physical)						
	Access to target resource by HH (rights)						
	Control over target resource / ability to exclude others						
	Average time spent collecting fuel wood						
	Average time spent collecting water						
	Average time spent collecting fodder						
	Availability of firewood from forest/capita						
	Availability of NTFP/capita						
	Availability of food-grain and vegetables/capita						
Number of livestock in house							
Human assets	Health and nutritional status/ IMR						
	Access to Health care facility						
	Education Status in HH						
	Endogenous skills						
	Exogenous skills						
	Access to information						
	Empowerment of Women						
1 a	Endogenous social resources						

	Exogenous social resources						
	Political Consciousness						
	Male participation in FPC						
	Women Participation in FPC						
	No. of FPC meetings in a year						
	Participation of HH members in FPC Meetings						
	Scope of membership in Micro credit/self-help groups (SHGs) in village						
	Collective selling of agriculture/forest products results in improved prices (y/n)						
Vulnerabilities	Encroachment						
	Illicit Felling						
	Social unrest						
	Alcoholism						
	Ability to cope up with Natural Shocks						
	Seasonal fluctuations						

Source: Developed by author following *Pandey (2005), Goswami & Paul (2012) and Belcher et al (2005 & 2012).*

To know the perception of the beneficiaries of JFM regarding the impact of JFM on changes in their livelihood each indicator identified was scored based on three perceived conditions by beneficiary households: high, Medium and low and were assigned scores 3, 2 and 1 respectively. The Average cumulative score for each capital for both present status (i.e after joining FPCs as a member) and past status was calculated separately according to the following example:

Financial Capital	Present Status (<i>High= 3, Medium= 2 and Low= 1</i>)		
	Indicator 1	Indicator 2	Indicator 3
Respondent HH 1	3	2	2
Respondent HH 2	2	1	2
Total	5	3	4

Cumulative score = Total Score of all Indicator, i.e.: $(5+3+4) = 12$

Average Cumulative score = Total Score of all Indicator / Total No. of Indicator

Average Cumulative score= $12/3 = 4$

Profile of Study Area:

Ranibandh Block is located about 60 KMs. to the south of *Bankura* town and 15 KMs from Sub-Divisional Head Quarters, *Khatra*. Total geographical area of the *Ranibandh* block 428 Sq. K.M (Ref: www.bankura.gov.in). The block is popularly known as “*Jungle Mahal*” regarding several vast stretches of picturesque green landscapes with different flora and fauna. Tribal population is the major component of its demography. In *Ranibandh* block Tribal population constitute 47.07 percent of Block’s population (i.e 56,061 thousand). They mostly belong to *santal*, *sabar lodha* etc. communities. According to the state forest report *Ranibandh* forest range was covered by 5615.204 ha area and *Ranibandh* forest range is distributed among *Ranibandh*, *Ambikanagar*, *Punshya* and *Banpukuria* beats. In the study area of *Ranibandh* beat 24 numbers of FPC are working for the protection and conservation of forest. Among these FPCs only *Mahadebsinam*, *Barapacha* and *Panijia* FPCs is chosen for our study. The detail profile of the surveyed area is given in Table No 1.

Table 1: Basic profile of study area:

Basic profile Particulars	Sample Villages		
	Mahadebsinam	Barapacha	Panijia
Total Area (in ha)	305.88	401	131.16
Total House hold	46	71	155
Total population of the Villages	184	329	674
Total ST population (%)	177 (96.16%)	322 (97.87%)	641 (95.10%)
Total Literates	117	170	414
No. of selected Sample HHs	20	20	20
Major source of Occupation	Wage earning	Wage earning	Seasonal cultivator and Wage earner
Nearest Market distance	Ranibandh 10km.	Ranibandh 14km.	Ranibandh 6km.
Nearest LAMPS	Katium LAMPS	Katium LAMPS	Katium LAMPS
Forest distance at residential land	0 km.	<0.5 km.	0.5 km.
Road distance from residential land	4km.	10 km.	4 km.

Source: Compiled from Indian State Forest Report 2011, Census 2011 and Primary survey data.

5. RESULT AND DISCUSSION**Socio-Economic Condition of Sample Households:**

Results from field survey were analysed and following observations regarding socio-demographic conditions of the surveyed population were found.

From Table-2 it is clear that of the surveyed population 46.44% belongs to female and 53.56% belongs to male of the three surveyed villages percentage of female population, among sampled households, is slightly higher in *Barapacha* but in case of other two villages male percentage is higher. It has also been observed that of the surveyed population percentage of people in the working age group (i.e 18 to 60 yrs) is more than other groups.

Table 2: Demographic Position of Sampled Household

Age Groups	Sex	Name of Villages					
		Mahadebsinam		Barapocha		Panijja	
		Nos.	%	Nos.	%	Nos.	%
0-6	Male	6	60	5	45.45	5	55.56
	Female	4	40	6	54.55	4	44.44
	Total	10	10.87	11	10.48	9	9.18
6> to 18	Male	9	56.25	11	57.89	14	87.5
	Female	7	43.75	8	42.11	2	12.5
	Total	16	17.39	19	18.1	16	16.33
18> to 60	Male	30	50.85	33	52.38	34	50.75
	Female	29	49.15	30	47.62	33	49.25
	Total	59	64.13	63	60	67	68.37
<60 above	Male	4	57.14	3	25	4	66.67
	Female	3	42.86	9	75	2	33.33
	Total	7	7.61	12	11.43	6	6.12
Total	Male	49	53.26	52	49.52	57	58.16
	Female	43	46.74	53	50.48	41	41.84
	Total	92	100	105	100	98	100

Source: Primary data from field survey.

It has also been observed that among the surveyed population 38.30 percent is illiterate and 61.70 percent is literate. Percentage of illiterate people is slightly more in *Panijja*. Illiteracy in female population is more than male counterpart in surveyed population. Majority of the sample population belong to primary and middle school level. A very few number of graduates has also been observed in the sample population.

At present *Ranibandh* block has been declared by the Government as *Jangalmahal* notified area, accordingly entire HH has been considered under BPL types of category and every HH get Rs. 2 per kg rice from government sponsored special scheme.

In the study area majority of people belongs to lower economic class and are engaged in multiple livelihood options other than agriculture. Considering the diversity in livelihood, major and minor occupations of the sample population are presented in Table-3.

Table 3: Major Occupation of Sample Household

Major Occupation									
Village	Mahadebsinam			Barapocha			Panijia		
Types of Occupation	% of Male	% of Female	% of Total	% of Male	% of Female	% of Total	% of Male	% of Female	% of Total
Seasonal Cultivator	6.12	0.00	3.26	5.77	0.00	2.86	38.60	0.00	22.45
Forest Product Collection	0.00	34.88	16.30	0.00	28.30	14.29	0.00	19.51	8.16
Animal Husbandry	0.00	9.30	4.35	1.92	5.66	3.81	0.00	9.76	4.08
Wage Earning	46.94	4.65	27.17	44.23	7.55	25.71	10.53	14.63	12.24
Others	14.29	4.65	9.78	13.46	1.89	7.62	15.79	0.00	9.18
House Wife	0.00	11.63	5.43	0.00	9.43	4.76	0.00	34.15	14.29
Student	24.49	20.93	22.83	26.92	22.64	24.76	22.81	9.76	17.35
Unemployment	8.16	13.95	10.87	7.69	24.53	16.19	12.28	12.20	12.24

Source: Primary data from field survey

Table-3 depicts that in *Mahadebsinam* and *Barapacha* sample villages, majority of the working population (i.e. 27.17 per cent and 25.71 per cent respectively) engaged in wage earning (i.e. Agricultural & Non-Agricultural Labour) activity and majority of them are male. Only 3.26 percent and 2.86 per cent of tribal population in *Mahadebsinam* and *Barapacha* sample village dependent on cultivation and basically cultivated a single crop in the year. In *Panijia* village, 22.45 percent of sample population is still involved in traditional cultivation and majority (i.e. 38.60 percent) of them is male. In all the three villages a large section of tribal women are involved in forest product collection followed by livestock rearing as major occupation.

If we consider minor occupation in all the three villages it is also clear from Table-4, that majority of tribal women are involved in forest product collection followed by livestock rearing besides their household or other major activity. In all the three villages a large section of male people are also involved in forest product collection besides their major occupation. A large section of population (20.65 percent) in *Mahadebsinam* village is involved in animal husbandry activity as their minor occupation. Dependence of people in forest product collection as minor occupation is more in *Mahadebsinam* village (27.17 percent) followed by village *Panijia*. Thus in all the three sample villages a large section of tribal population is dependent on collection of

forest product, livestock rearing or other forest based activity as a part of their major or minor occupation.

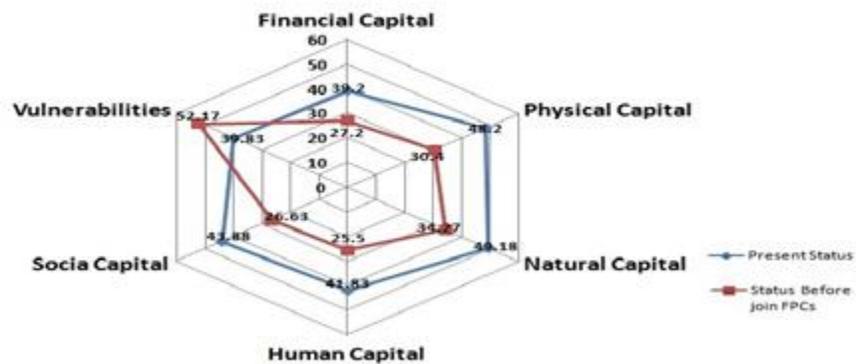
Table 4: Minor Occupation of Sample Household

Minor Occupation									
Village	Mahadebsinam			Barapocha			Panijia		
Types of Occupation	% of Male	% of Female	% of Total	% of Male	% of Female	% of Total	% of Male	% of Female	% of Total
Forest Product Collection	26.53	27.91	27.17	7.69	22.64	15.24	12.28	34.15	21.43
Animal Husbandry	10.20	32.56	20.65	0.00	5.66	2.86	1.75	14.63	7.14
Wage Earning	6.12	2.33	4.35	3.85	3.77	3.81	29.82	2.44	18.37
Forest Product Collection & Animal Husbandry	4.08	0.00	2.17	17.31	13.21	15.24	7.02	24.39	14.29
Others	20.41	2.33	11.96	36.54	5.66	20.95	14.04	2.44	9.18
House Wife	0.00	0.00	0.00	0.00	1.89	0.95	0.00	0.00	0.00
Student	24.49	20.93	22.83	26.92	22.64	24.76	22.81	9.76	17.35
Unemployment	8.16	13.95	10.87	7.69	24.53	16.19	12.28	12.20	12.24

Source: Primary data from field survey.

Changes in Livelihood Pattern of the Tribal Communities through JFM:

Figure. 3. Changes in five capital / assets and vulnerability due to JFM intervention in Mahadebsinam village

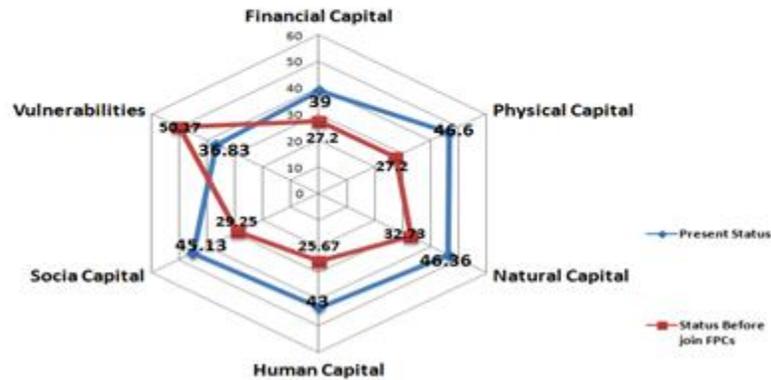


Source: Primary data from field survey.

Status of Livelihoods before and after the implementation of JFM, Mahadebsinam Village:

Results from field testing of livelihood assessment tool in *Mahadebsinam* village are shown in the above radar diagram (Fig. 3). The diagram clearly shows improvement in financial, physical, natural, human and social capital due to JFM intervention. Financial capital score increased by 12 point from 27.20 point. Scores of physical capital, natural capital, human capital and social capital has been increased by 17.80 point, 14.91point, 16.33 point and 17.25 point respectively. On the other hand vulnerabilities have been decreased by 12.34 point from 52.17 point before joining of FPC. The situation of increase of scores of all capitals and decline in vulnerabilities clearly indicates change in overall livelihood scenario of sample population of *Mahadebsinam* village.

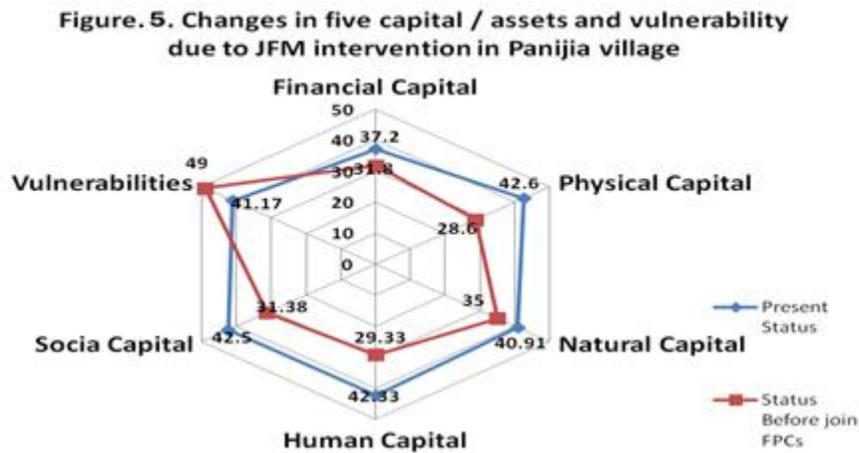
Figure.4. Changes in five capital / assets and vulnerability due to JFM intervention in Barapacha Village



Source: *Primary data from field survey.*

Status of Livelihoods before and after the implementation of JFM, Borapocha Village:

Results from field testing of perceptions analysis of Barapacha village is shown in the above radar diagram (fig. 4). The diagram clearly shows improvement in all five capitals of livelihood assessment and considerable reduction in vulnerabilities after JFM intervention. Significant changes have been observed in Physical capital (19.40 point score), Human capital (16.33 point score) and Social Capital (15.88 point score) as an impact of increase in financial capital by 11.80 point score. Better livelihood opportunities due to JFM interventions also helped people coping up with several vulnerabilities and accordingly vulnerabilities have been declined from 50.17 point to 36.83 point i.e decline by 13.34 point score. This situation clearly indicates improvement in livelihood scenario of people of Barapacha village.



Source: Primary data from field survey.

Status of Livelihoods before and after the implementation of JFM, Panijia Village:

Results of testing of livelihood assessment tool in *Panijia* village are shown in the above radar diagram (fig. 5). The diagram clearly shows improvement in physical capital, human capital and social capital by 14.00 point score, 16.33 point score and 11.12 point score respectively due to JFM intervention. But changes in financial capital are very minimal, from 31.82 point to 37.2 point score i.e increase by only 5.40 point score. Similarly changes in Natural Capital are also very minimum i.e 7.29 point score only. In this village vulnerability position of sample households has been declined very less compared to other two sample villages.

Comparative Analysis of Change in Five Capital / Assets through JFM in Study Area:

A comparative picture of changes in livelihood capital including vulnerabilities of sample villages is given in the following table (table 5).

Table. 5: Percentage change in capital scores Before and After join of FPCs

Capitals / Vulnerability	Surveyed Villages			Average Percentage Change in Surveyed Area
	Mahadebsinam	Barapacha	Panijia	
Financial Capital	44.12	43.38	16.98	34.83
Physical Capital	58.55	71.32	48.95	59.61
Natural Capital	43.51	41.64	16.89	34.01
Human Capital	64.04	67.51	44.32	58.62
Social capital	64.78	54.29	35.44	51.50
Average Percentage Change of all Capital	55.00	55.63	32.52	47.71
Vulnerability	-23.65	-26.59	-15.98	-22.07

Source: Primary data from field survey.

It is clear from the above table that average percentages changes in livelihood capital of *Mahadebsinam* and *Barapacha* villages are better than *Panijia* village due to more forest cover and active working of the FPCs. Also in *Panijia* village illegal cutting of trees has been reported by the local residents, which destroys the benefits of JFM. Similarly, reduction in percentage change of vulnerabilities of sample households of *Mahadebsinam* and *Barapacha* villages is greater than *Panijia* village. In *Mahadebsinam* and *Barapacha* villages' financial capital has increased more than *Panijia* village because of diversification of household income source and collection of very bulk amount of NTFPs. Moreover, in *Mahadebsinam* and *Barapacha* people are also involved in livestock rearing, cultivation of *Sabai Grass* in forest land and other seasonal earning activities. In *Panijia* village diversification of household income source is less and people are basically dependent on traditional farming activity. Percentage change of physical capital in *Barapacha* village is 71.32 per cent, which is highest among three villages. It has been observed that FPC members of this village actively participate in all development activities of PRI and other line departments. In regard to human capital percentage change in *Mahadebsinam* and *Barapacha* villages is also better than *Panijia* village. The people of former two villages have got some livelihood development and vocational training (like Sal plate making, NTFPs value addition, handcraft making etc.) from the forest department, PRI, LAMPS and NGOs to diversify their livelihood. Percentage change in social capital is highest in *Mahadebsinam* village followed by *Barapacha* and *Panijia* villages. Participation of people in different social groups like FPC, SHGs etc. are more in *Mahadebsinam* and *Barapacha* than *Panijia*. Respondents

informed that after participation in the JFM programme people's ability to work together has increased, which reduces cost of processing of NTFPs and also provide informal safety nets to them. Now both male and female members participate in JFM programme and take decision jointly, which is an important decisive factor in livelihood development. In natural capital major percentage change has been observed in *Mahadebsinam* (43.51 per cent) and *Barapacha* (41.64 per cent) village. But the percentage change in natural capital in *Panijia* village is very insignificant due to weak JFM programme.

5. CONCLUSIONS

Several studies on Joint Forest Management in West Bengal have highlighted the impact of JFM on the livelihood of forest dwellers. JFM is a holistic participatory approach in management of forest and forest based resources and also development of forest based livelihood of the forest dwelling community. It has been observed that tribal people of sample households in the study area are involved in collection of NTFPs, fair woods, animal fodder etc. from forest to meet their daily household consumption and extra earning as minor occupation. A Major portion of the working force of *Mahadebsinam* and *Borapocha* villages are engaged in wage earning activity but in *Panijia* village major portion are involved in traditional cultivation as their major occupation. Female members of the surveyed villages are basically involved in household activity, forest product collection and rearing of livestock.

For assessing the changes in livelihood pattern due to JFM in the study area, Livelihood Assessment tool as developed following the Livelihoods Improvement Impact Pathways of Belchar et al (2005) and others, has been used. From field testing of livelihood assessment tool it has been observed that the impacts of JFM in three villages of the study area are more or less consistent with some variations in improvements of five capital assets. In *Mahadebsinam* and *Barapacha* villages significant changes in growth of all five capitals and significant decline in vulnerability have been observed. But in *Panijia* village it has been observed that the changes in growth of financial, natural and social capital are very slow than other villages, while the growth in physical and human capital is slightly better. Also decline in vulnerability in *Panijia* is slow in comparison to other two villages. It has been observed from the study that overall physical, human and social capital in the study area has significantly improved and vulnerabilities reduced due to JFM intervention. It can also be observed that FPCs in *Mahaebnsinam* and *Barapacha* villages are more active than *Panijia*, which resulted in higher growth of physical and natural capital in the former two villages. Therefore, it can be concluded that significant changes have been observed in the livelihood pattern of the forest dwelling tribal community in the surveyed area due to implementation of Joint Forest Management.

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