Using Sustainable Livelihoods Framework for assessing the impact of Extension programmes: An empirical study in the context of Joint Forest Management

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Using Sustainable Livelihoods Framework for Assessing the Impact of Extension Programmes: An Empirical Study in the Context of Joint Forest Management

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Abstract

As a profession, Extension has been prompted to embrace a broadened mandate that goes beyond transferring technologies and triggering agricultural development. International organisations have started to shift from 'agricultural' to 'rural' focus in their programmes and it is inevitable that extension's success in future will not be judged in terms of technology transfer or (even) agricultural development alone. As a consequence, the scope of evaluating extension programmes will have to broaden itself for justifying the government expenditure and to enliven its prospect as a profession. Sustainable Livelihoods (SL) Framework provides excellent scope to capture the multifaceted impact of development programmes on clients' livelihoods in terms of increase in their asset base and decrease in vulnerabilities. The present article describes development of a tool to assess the impact of Joint Forest Management (JFM) intervention in selected villages of the Ayodhya Hills of Purulia district, West Bengal and also shows the results of its field testing. The development of the tool followed a simple indicator-based multi-stakeholder approach taking SL framework as a reference. Conceptualisation of 'impact pathway' with continuous incorporation of stakeholder views helped to develop this tool. This was followed by the development of a 'perception analysis tool', using recall data, to assess the impact of JFM intervention on the respondents. The field testing of the tool successfully captured the impact of JFM on peoples' assets and vulnerabilities. It could also discriminate successful Forest Protection Committee from the less successful one. This type of indicator-based multi-stakeholder approach may be applied for the future 'extension plus' programmes, which will contribute towards the sustainable livelihoods of its clients rather than disseminating technologies and/or technical information only.

Keywords: Broad-based Extension, Impact Assessment, Impact Pathway, Sustainable Livelihoods Framework, Perception Analysis Tool, Joint Forest Management.

Given the increased attention devoted to agricultural extension by governments and donors worldwide, there is a growing body of literature examining and reviewing agricultural extension (Glendenning *et al.*, 2010). It is also globally recognised that agricultural extension needs to reform in ways that allow it fulfil a diverse set of objectives that ranges from better linking of farmers to input and output markets (Neuchatel Group, 2002), reduction of vulnerability and enhancing voice of the rural poor (Farrington et al., 2002), development of micro-enterprises (Rivera et al., 2001), poverty reduction and environmental conservation (Alex et al., 2002) and strengthening and support of farmer organizations (Sulaiman & Hall, 2002). Anandajayasekeram *et al*. (2008) also observe that an effective agriculture extension system need to provide a broad range of services (advisory, technology transfer, training and information) on a wide variety of actions (agriculture, marketing and social organization) needed by rural people so that they can better manage their agricultural systems and livelihoods. So, while technology transfer is important, strengthening of locally relevant livelihood system is also of critical importance. As a consequence, the scope of evaluating such extension programmes will have to broaden itself for capturing the multifaceted impacts of extension endeavours on its clients' livelihoods.

It is known that the process of monitoring, evaluation (M&E) and impact assessment is essential for good management of extension projects. Impact assessment, in particular, is a form of *ex post* evaluation and attempts to determine the extent to which Technology Development and Transfer (TDT) programs have contributed to larger development goals, such as increased farm production, or improved food security, poverty alleviation, sustainable livelihoods etc. *Ex post* impact assessments are often used to convince policymakers to allocate more resources to research and extension (Anandajayasekeram *et al.*, 2008).

In discussing the impact of any research and extension program, one can identify two broad categories of interpretations (Anderson and Herdt, 1990). In the first category falls the direct output of activities like a variety, a breed, or a set of recommendations resulting from a research activity or a training event. The second category goes beyond the direct output and tries to study the effects of this output on the ultimate users. The people level impact looks at how fit the program is within the overall R&D to discover facts (research) that have practical beneficial application (development) to the society. Impact begins to occur only when there is a behavioural change among the potential users. This second type of impact deals with the actual adoption of the research output and subsequent effects on production, income, environment and/or whatever the development objectives may be (Anandajayasekeram *et al.*, 2008).

Sustainable Livelihoods (SL) Framework provides an excellent scope to capture the multifaceted impact of extension programmes on clients' livelihoods in terms of increase in their asset base and decrease in vulnerabilities. Sustainable livelihood approaches identify the current livelihood strategies and objectives of the poor, in the context of vulnerability, the influence of policies, institutions and processes and current levels of access to assets and entitlements. This stresses that the poor draw on a range of assets, which they either own or can access, in order to achieve a range of livelihood

outcomes (going beyond income to include greater wellbeing, increased voice and reduced vulnerability). To do so, they pursue a range of livelihood strategies, often managing a 'portfolio' of part-time activities, and changing the composition of the portfolio in response to emerging needs, opportunities or constraints. Part of the outcome of these strategies (such as higher income) will be consumed; part may be re-invested back to replenish or strengthen their livelihood assets, and part may be used to reduce vulnerability. The types of strategy they can pursue are influenced by policies, and by formal and informal institutions and processes (DFID, 1999; Christoplos et al., 2001). This holistic understanding of the framework lends us a logical point to conceptualize impact of extension programmes on clients' livelihoods.

Impact assessment of Joint Forest Management (JFM) on sustainable livelihoods: the rationale of case selection

The current context of natural resources management is characterized by an increasing involvement of local communities in managing the commons (McCay and Acheson 1987; Ostrom 1990; Bromley *et al.* 1992). An increasing focus on people-centered policies, bottom-up planning processes, and decentralized governance (Chambers 1994; Agrawal and Ostrom 2001) are seen as some of the key characteristics of this new paradigm. In India, specifically, many communities have responded to the process of forest degradation by developing local arrangements that seek to regulate access and control over neighbouring forest patches (Saxena 1997; Sundar *et al.* 2001; cited in Nayak, 2006).

Following the National Forest Policy the Government of India issued more concrete guidelines in 1990 with the objective of involving village communities in the regeneration of degraded forestlands through institution building, community participation and access to usufructory benefits. This has unfolded a new forest management regime in India, which is commonly known as the Joint Forest Management. Under JFM, village communities are entrusted with the protection and management of nearby forests. These communities are required to organise forest protection committees, village forest committees, village forest conservation and development societies. The guidelines provide for rights to usufruct and non-wood forest products and percentage share of final harvest to organized communities willing to help regenerate depleted forest and wastelands (Sarin, 1995).

From the beginning, the stated objectives of JFM were to improve the condition of forests and provide for the sustainable livelihoods of collaborating communities (Pandey, 1996). It is now well known that JFM has resulted in restoration and regeneration of forests in India (Murthy *et al*. 2002, Murali *et al*. 2002). But it is not clearly known what impact it had on the livelihoods of the local people who collaborate to manage the forests jointly (Sundar *et al*. 2001, Belcher et al., 2005). In fact, there are few studies that have attempted to use the village-level livelihoods indicators to know the impact of JFM on the livelihoods of the people. Assessing such livelihoods impact of JFM is necessary for the sustainability of the programme.

Policy-makers and foresters have also discussed the JFM monitoring but have seldom considered the livelihoods outcome/impact of JFM, what is often meant by the monitoring of the programme and not its impact (Bahuguna and Upadhyay 2004). Few studies have expressed concern for livelihoods issues in JFM (Hill and Shields 1997, Bond *et al*. 2003), but very few of them have focused specifically on monitoring the livelihoods impact of JFM (Belcher, 2005; Pandey, 2005). Hence, impact of JFM on sustainable livelihoods has some pragmatic need.

The case illustration: Total development approach under JFM concept initiated by RKMLSP at Ajodhya Hills of Purulia, West Bengal

Imbibed with the idea of Swami Vivekananda, the Ramakrishna Mission Loksiksha Parishad (RKMLSP), the integrated rural development wing of the Ramakrishna Mission Asrama, Narendrapur, West Bengal has been in the field of rural development since the early 1960s, endeavoring in building up local leadership and local organization for sustained rural development by utilizing the local resources. With the support of a strong and efficient training base at Narendrapur, over 1000 registered rural youth organizations, are engaged in comprehensive community development in different rural areas of West Bengal under the guidance and leadership of RKMLSP.

The involvement of RKMLSP in environmental management had started during 1981-82 noticing an alarming decrease in the forest cover and its obvious consequences. Realizing the potential of the JFM concept originated by the Govt. of West Bengal (Forest Dept. of GoWB) to meet the challenge, RKMLSP volunteered to assist the department. Impressed by the relevance of the approach in the matter of the restoration of eco-system the Ford Foundation came forward to sponsor the programme and the JFM wing was born. The first phase (1991-95) of Ford Foundation sponsored JFM project, was aimed at assisting the FD/GOWB in (1) Training and motivation (2) Developing alternate production system and (3) Undertaking appropriate field studies. However, considering the inadequacy of the approach, in the 2nd phase (1995-99) JFM has been looked upon as a tool for human resource development and endeavor has been made to identify and utilize all available rural resources optimally for income generation to release pressure from forest. Stress was given on strengthening selected FPCs based on the ideals of Swami Vivekananda. In the third and final phase (2000 onwards) activities were undertaken on the same philosophy, adopting the following basics with the objective of formation of clusters of FPCs as Centre of Total Development (RKMLSP, 2008).

To understand the impact of the extension programmes of JFM wing of RKMLSP on the livelihoods of its clients, the present study was undertaken with the objectives of - developing a an indicator based impact monitoring tool for measuring the impact of JFM on the livelihoods of rural people and to conduct a field test of the monitoring tool in sample JFM villages in Ayodhya Hills of Purulia district.

Methodology

Designing the monitoring tool:

In order to achieve the objective of designing a monitoring tool for assessing JFM's impact on rural livelihoods the following steps were followed:

Literature review: Published literature on livelihoods monitoring, identification of available conceptual frameworks and associated tools to understand the subject better were studied.

Development of conceptual framework: Based on the general lessons from the literature review and stakeholder views a conceptual framework (impact pathways) and livelihoods monitoring tool were prepared that was used for monitoring the livelihoods impact of JFM in selected villages of Purulia. To design a conceptual framework, the foremost step was to plot the impact pathway. An impact pathway is an explicit theory or model or hypothesis about how a project will achieve impact (Douthwaite *et al*. 2003). Impact pathway shows the trajectories of JFM activities, their impact on capitals and interrelationship between the five capitals/assets (**Fig. 1**). Thus, conceptual framework describes the cause and effect relationship between the pre and post implementation of JFM and the impact it may have on rural livelihoods. With the help of the impact pathway, key indicators for the study were identified for all the five capital assets.

Scouting of village level indicators: In order to design monitoring tools to assess the impact of JFM on rural livelihoods, CIFOR's template was used. Belcher (2005) proposed a village level indicator-based monitoring tool. This monitoring tool is a livelihoods assessment process based on impact pathways and village level indicators, which were identified based on five capitals – Natural, Financial, Physical, Social and Human and Vulnerabilities. Stakeholders participated iteratively in scouting these indicators. This indicator-based tool was important in assessing the overall change in livelihoods. Indicators were interrelated with each other. For example, an increase in the Natural Capital may increase the income and revenue (i.e. financial capital) by means of collecting and selling forest products, which in turn improve the purchasing power and standard of living (i.e. social and physical capital).

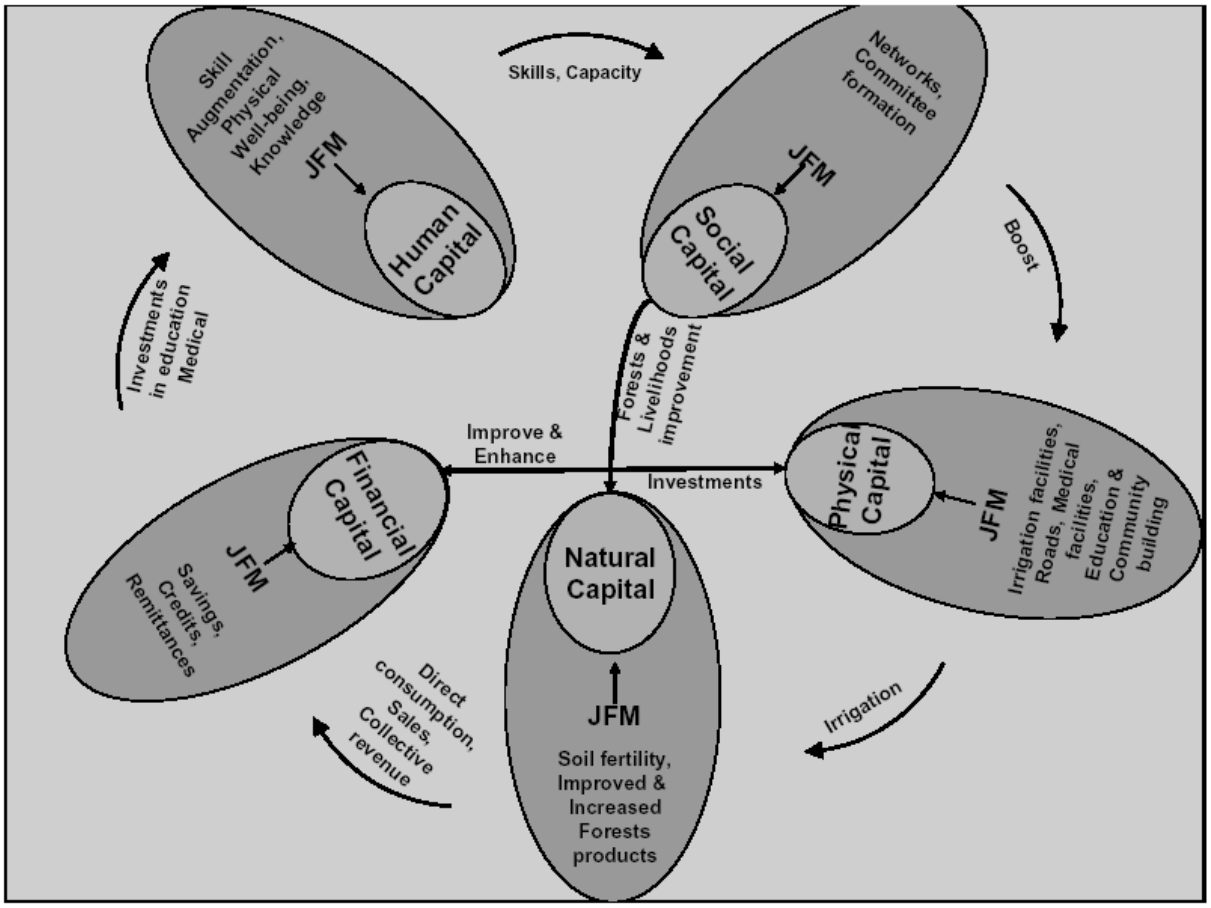

Figure 1. Livelihoods Improvement Impact Pathways (Modified after Belcher (2005) cited in Pandey, 2005)

Livelihoods perception analysis tool

This tool is an extension of livelihood monitoring tool. This tool was designed to know the perception of stakeholders regarding the impact of JFM intervention on their livelihoods. Each identified indicator was scored based on three perceived conditions by stakeholders: best, moderate and worst and were assigned score 3, 2 and 1 respectively. Assigning scores was done in order to make all indicators quantifiable and comparable with each other. Cumulative score for each capital was calculated by multiplying the number of respondents to the score assigned and then adding up all the scores obtained by each indicator for before-and-after situation individually within the capital (Pandey, 2005).

Perception analysis is an important tool to know the past and current positions related to particular factors. Perception analysis has been used as core methodology in the study of spread, performance and impacts of joint forest management (Ravindranath and Sudha 2004). In the absence of robust data related to earlier years, perception analysis is a useful tool for knowing the before- and after situations.

Review and finalisation of the monitoring tools among stakeholders

Several brainstorming sessions among peers and stakeholders were used in review process to make monitoring tools more comprehensive, more useful, more relevant, and easy to use. These stakeholders included Forest Department personnel, Non Governmental Institutions working locally, staffs of JFM wing of RKMLSP and Forest Protection Committee (FPC) members of the study villages. In this process stakeholders gave their insightful inputs that were used to modify the tool. The tool was modified, wherever necessary, according to the suggestions given by the stake holders. Drawing on the managerial sciences an iterative process of tool/product development was applied. Thus, the Indicators were modified according to the study area and with the help of iteration process (reviewing tool again and again for suggestions and improvements) from stakeholders and key informants.

The usefulness of this tool is that it can be used to assess the individual capital as well as indicator performance in particular FPC. As individual capital can be measured by this tool, one can get the clear indication on whether or not a particular capital is improving. Using the insights, stakeholders can put efforts to improve upon the activities that affect a particular capital. In the absence of a proper monitoring it is difficult for the forest department officials and NGOs to understand that after putting so much of effort, what impact JFM had on the livelihoods of the local people? This question can be answered by the help of the livelihoods monitoring tool.

Sampling: District Purulia was selected purposively for the study as a considerable JFM experimentation of RKMLSP has taken place in this district. Apart from this, Purulia is one of the worst poverty stricken districts of West Bengal and the impact of any development intervention will be more prominent in this district. Ajodhya range is one of those ranges in the hilly terrain of Purulia district where JFM activities had been experimented. Apart from this, the researcher had easier access to this range. Ajodhya bit was also purposively selected for the same reason. Two villages, one each from a list of successful (Sonahara) and less successful (Safarambera) FPCs, were randomly selected. The lists were procured from the Forest Department records.

Data collection: Primary data was collected by semi-structured interviews with key informants, group interview through semi-structured interview schedule with villagers on specific indicators, focus group discussion and observation. For the perception analysis tool group interview was conducted with 5-6 villagers at a time and answers received from a member was reviewed/verified by other members present in the same group. FPC president was key informant and helped in cross checking the answers. Usual discussion involved issues like - What were activities and facilities provided by FD/Reasons for happiness from FPC/Ways you think JFM have helped you to improve your livelihoods/Number of people that worked outside village on a daily basis etc.

Data analysis: Data was analysed by simple descriptive statistics, spider and bar diagram and t-test.

Results and Discussion

The livelihoods monitoring tool

According to study objectives, several indicators through which a perception tools would be developed were identified after iterative interaction with different stakeholders (villagers, Forest Department officials and labours, different NGO personnel, doctors, health workers and others). This finalized set of indicators in the perception analysis tool (to be used for periodical assessment of rural livelihoods) is given below (Table 1).

Table 1. Perception analysis tool along with the indicators that would be helpful to perceive the impact of JFM on sustainable livelihoods

Capital	Indicator	Before			After		
		1	2	3	1	2	3
Financial	Wages/capita from forestry works (3 years average) Total money deposited in FPC in a year (in Rs.) Money deposited in the account of FPC (No. of times in a year) No. of shops selling consumer goods No. of people have savings other than the deposit to FPC No. of people borrowing money No. of times people borrow money No. of distress sell of assets						
Physical	No. of Pucca houses/capita No. of houses with electric service/capita No. of Motor cycles/capita No. of Mobile phones/capita Average travel time to nearest market Area of irrigated land/capita (In hectare) No. of sanitary latrine/capita						
Natural	Area of JFM plantation/capita Tree plantation in homestead land Area of key NTFP/capita Average time spent collecting fuel wood per household per week Average time spent collecting water per household per week Average time spent collecting fodder/ household per week Value of annual firewood production/capita Value of annual NTFP production/capita Annual food-grain production/capita						

	Annual vegetables production/capita Average number of livestock		
Human	Infant mortality/capita No. of deaths due to lack of treatment Percentage of school age children attending school Average age of school leaving of people that work outside village on a daily basis/capita No. of people that distress migrate from village to work outside for long periods/ capita		
Social	Proportion of adult population participating in FPC Proportion of FPC members that are women No. of FPC meetings in a year Attendance of FPC members in Meetings Micro credit/self-help groups (SHGs) in village (y/n) Collective selling of agricultural or forest products results in improved prices (y/n) Proportion of total SC/ST population participating in FPC		
Vulnerabilities	Encroachment Illicit Felling Social unrest Alcoholism Ability to cope up with natural calamity		

3-best, 2-moderate, 1-worst

Table 2. Capital and vulnerability score of the respondents before and after JFM intervention

Village	**Financial capital**		**Physical capital**		**Natural Capital**		**Human Capital**		**Social Capital**		Village-wise cumulative score		**Vulnerability**	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Sonahara	108	121	88	119*	255	267	77	156**	66	87	754	843	160	93**
Safarambera	105	164**	96	125	318	293	84	122	190	184	793	888	175	86**
Capital-wise cumulative score	213	285*	184	244	573	560	161	278*	256	271				

* & ** Significant difference at 5% & 1% level of significance found in paired t-test (α=0.05)

Results from field testing of the perception analysis tool are given in Table 2. It may be observed that physical and human capital has significantly improved in Sonahara due to JFM intervention; whereas, for Safarambera, significant improvement was found in financial capital. However, vulnerability was found to have decreased significantly in both the study villages. Overall, financial and human capital was significantly improved over time as captured by the perception analysis tool. Interestingly, in Safarambera, both natural and social capital was marginally decreased over time. Safarambera was a less successful FPC in comparison to Sonahara. And this has been observed from the field testing of the tool. A comprehensive visual understanding may be arrived at from Fig. 1 and Fig. 2.

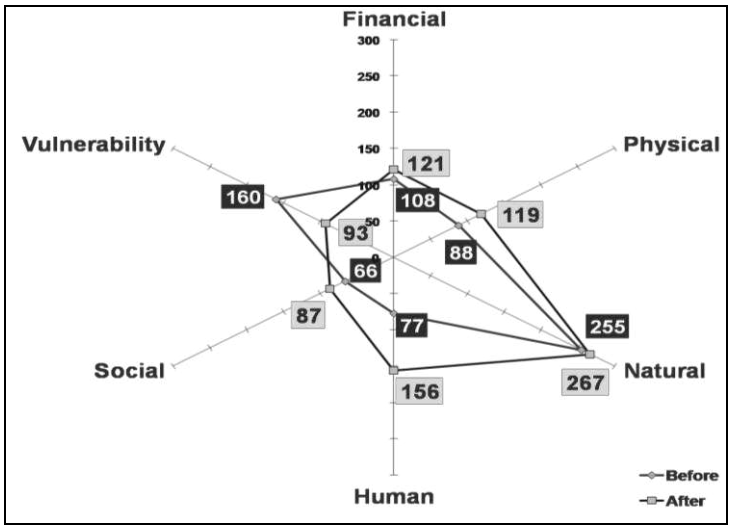

Figure 1. Changes in assets and vulnerability due to JFM intervention in Sonahara village

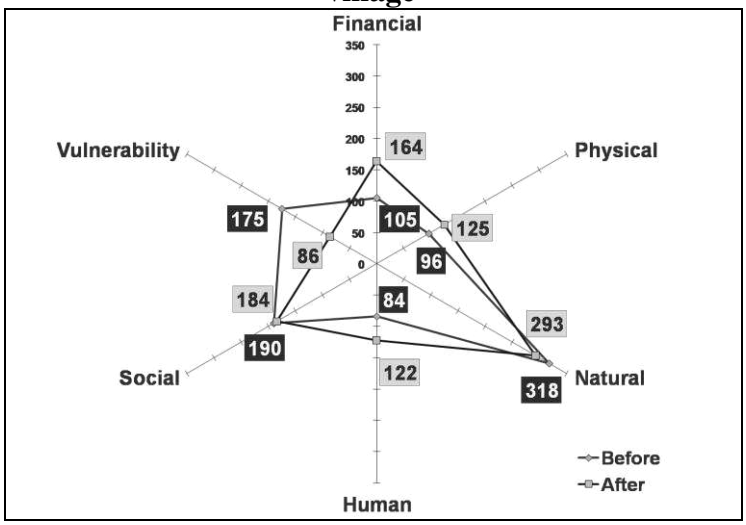

Figure 2. Changes in assets and vulnerability due to JFM intervention in Safarambera village

An increase in the daily wages provided by the forest department (FD) to the village workers (Rs.79.31 during the study period i.e. 2008-09) resulted in higher income. In case of forest felling the villagers got differential price rates for different purposes e.g. for timber (*Sal*-165/-, Eucaliptas-185/-, *Akasmoni*-200/- per cubic meter), for pulpwood (*Sal*-80/-, Eucalyptas-80/-, *Akasmoni*-90/- per cubic meter), for firewood (*Sal*-55/-, Eucalyptas-55/-, *Akashmoni*-60/- per cubic meter). Development of entrepreneurial skills among villagers (FD provided training and facilities so that members can earn additional money through activities like sewing, broom making etc.) also added to their income. Lac cultivation is one of the income generating activities and the Forest Department helped to promote lac cultivation by providing free lac seeds to the villagers. In all these efforts, RKMLSP had positive collaborative role. Villagers were imparted training for better lac cultivation and linkage development for marketing at Ayodha where *Aranyak's* lac production unit of RKMLSP is situated. There is a natural relationship between financial capital and physical capital. As financial capital increased, physical capital also increased. For example, once wage increased the people tried to build *pukka* house and other household assets. JFM programme was working for increasing the natural capital e.g. area of plantation, area of JFM activity, area of key NTFP, value of annual NTFP production, annual food grain production, '*Mahua*' collection, lac production etc. But, unreported illicit felling and lack of scientific input in Natural Resource Management resulted in small or negative growth in natural resources. The cumulative score of human capital was found to have almost doubled. That was only because, other capitals were also increasing and that affected the development of human capital. Infant mortality, maternal mortality rate decreased. The proportion of children attending school also increased. A definite positive change could be observed in the society. The cumulative score of social capital also increased due to formation of grassroot institutions, development of linkage with several public and private institutional entities. As capitals increased, vulnerabilities went down. Villagers were provided with HYV paddy and maize seeds, which led to increased productivity of food grain. In both the villages, during the months of scarcity (Dec- July), FD provided additional work as well as daily wages to the villagers. Famine works included maintenance of *pulia* (small culvert), construction and maintenance of *kuchha* road in villages, construction and maintenance of boundary wall in the periphery of plantation area etc. Better opportunities helped people coping up with several vulnerabilities like food insecurity, distress sale, different seasonal health hazards, problem of water unavailability etc.

Conclusion and implications:

The present article has shown a novel approach of formulating indicator-based impact monitoring tool with participation of stakeholders of an extension programme. Conceptualization of project's impact is of crucial importance for development of such a perception analysis tool. However, suitable baseline data will overcome the dependence on recall data for such purposes. Such indicator-based tool is also suitable for capturing the multifaceted impact of extension programmes on rural livelihoods. This would seriously put a point in favour of extension services that have, for long, emphasized on area, production, productivity, technology adoption etc. for assessing project impact. For example, in the current case, along with the observation of negligible increase in natural

resources due to JFM intervention (which is often considered as the most important goal of a JFM programme) the monitoring tool also demonstrated improvement in other livelihood assets and reduction in vulnerabilities. This may also help to point out the potential and under-achieved aspects of an extension programme that may be given further attention to. With the broadening mandates of extension agencies, this tool seems to be a good fit. Moreover, this flexible tool may be modified according to the ground reality. This will also ensure more stakeholder participation in the impact assessment of extension programmes.

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