Research Article

Factors influencing participation of tribes in the activities of forest development agencies in Tamil Nadu

Abstract

In Tamil Nadu, there were 32 Forest Development Agencies were functioning in 12 Forest Circles. Coimbatore forest circle is the one in which three FDAs were established and this formed the study area. The study was carried out in Coimbatore Forest Circle following a Multi Stage Random Sampling technique by selecting three hundred tribal households. FDAs were implementing several activities with the participation of tribes to avert man-animal conflicts and to improve the socio economic status of tribes. This study was focusing on documenting the activities and the participation of tribes in those activities. Among the activities, erection of Elephant trenches, plantation development and the Project Elephant schemes implemented by both Forest and Line Department officials have imparted some impacts in reducing the Man-Animal Conflicts by promoting higher employment generation. Because of higher employment opportunities, the participation of tribes were much influenced in FDA activities which are statistically significant at one per cent level. Besides, impact of FDA implementation, Plantation development activities and wild life protection measures are also discussed.

Keywords: factors influencing participation, man-animal conflicts, forest development agencies, joint forest management

P Durairasu, C Sekhar, A Vidhyavathi
Department of Agricultural Economics, Agricultural College and Research Institute, India

Correspondence: C Sekhar, Department of Agricultural Economics, Agricultural College And Research Institute, Tamil Nadu Agricultural University, Coimbatore – 641 003, India, Tel 95007 99007, 96009 56009, Email saekarck@gmail.com

Introduction

The forest resources are increasingly recognized by the people across the world due to their role in economic, social and environmental benefits. Forests are an important and integral source of food, fiber and fuel for the indigenous population.[1] They form an integral component of the biosphere, helping to stabilize the natural systems and contribute to biological diversity and help to maintain the quality of natural resources. The forests sequester Carbon-di-Oxide from the atmosphere by acting as carbon sinks, thus reducing the greenhouse effect. They also play a predominant role in aesthetic and recreational opportunities.[2] These forests were managed traditionally based on the sustained yield concept and the forest constitute an important future of India's natural wealth.[3]

Forest management and development activities face many challenges due to continued and increasing deforestation in the country. It is estimated that the deforestation rate in the country was at 1.5 million ha per annum till the recent past. The human activities play an active role in modifying the natural systems through the activities of agricultural expansion in the form of shifting cultivation, grazing, commercial logging and implementation of several developmental projects. These factors are driven by population explosion, rural poverty, market and policy failures, urbanization and industrialization. These forces have reduced the forest area in the country to about 23.64 per cent of total geographical area which is lower against the requirement of 33 per cent of the forest cover. The productive capacity of India's forest is 0.5 cubic meter to 0.7 cubic meter per ha per annum which is much lower against the global average of 2.1 cubic meter per ha per annum.[4] This low forest cover coupled with poor productivity and continued loss of forest cover necessitated the enunciation of National Forest Policy, 1988 by the policy makers in order to shift the forest management from traditional to participatory forest management, mainly to conserve the forests and limit forest degradation through participation of the local people.[5]

An institutional mechanism which could forge synergy at village level Joint Forest Management Institutions with higher level institutions and formal state institutions for maximizing investment and production in the vast stretches of hitherto degraded forest and adjoining lands. Under such circumstances, the National Afforestation Program was formulated by merger of four ninth plan centrally sponsored afforestation schemes by the Ministry of Environment and Forests, Government of India. National Afforestation Program (NAP) was formulated with the short term objectives of regeneration and development of degraded forests, augmenting the availability of peoples' need, promotion of agroforestry and development of common property resources, conservation and improvement of Non Timber Forest Products (NTFPs), development of coastal shelter belts, water harvesting program, rehabilitation of problem soils and effective technology development and transfer program and the long term objective of Conservation of natural resources, ecological restoration and environmental conservation coupled with quality life improvement of people through capacity and skill development.

The NAP was implemented through two tier set up viz., the Forest Development Agencies (FDAs) and Joint Forest Management Committees (JFMCs). This decentralized institutional structure would allow greater participation of the community right from planning and implementation of appropriate afforestation program. This study is the one which is aimed at testing whether the participation of tribes in planning and implementation of program is at a greater level or not and what are the factors which are influencing their participation becomes an important question. To address the same, this paper was written.

Methodology

The current investigation was carried out in Coimbatore Forest Circle which consists of three Forest Development Agencies (FDAs) viz. FDA Coimbatore, FDA Pollachi and FDA Nilgiris which are respectively established in their forest division manned by District

Forest Officers. This circle is credential for its flora, fauna and other natural resources. These three FDAs have significant number of tribal population and commands higher multifarious forest developmental activities including wildlife conservation and management and hence assessing their participation in developmental activities become important. In this respect, its area of operation will act as a precursor for sampling design from the study area of Coimbatore Forest Circle.

Table 1 outlined that around 2.20 lakh ha of forest area is under Coimbatore Forest Circle. Among this, the Anamalai Wildlife Division

has got 43.59 per cent to the total forest area under Coimbatore Forest Circle followed by 31.53 per cent of the total area is under Coimbatore Forest Division and the remaining 25 per cent of area is under Nilgiris North forest division. Village Forest Committees (VFCs) and Eco Development Committees (EDCs) in which the tribes are as members whose participation is vital in conservation and overall plantation developmental activities. In this respect, the details of number of VFCs / EDCs available and the households surveyed in respect of Forest Development Agencies are delineated in Table 2.

Table 1 Area under different forest divisions of Coimbatore forest circle

Sl. No	Name of the Forest Division	Number of Ranges	Area in Ha
I	Anamalai Wildlife Division	6	95859.44 (43.59)
2	Coimbatore Forest Division	6	69347.22 (31.53)
3	Nilgiris North Forest Division	7	54722.80 (24.88)
	Total	19	219929.46 (100.00)

Table 2 Selection of sample households in Coimbatore forest circle

Sl. No	Name of the forest development agency	Number of VFCs/ EDCs available	Number of VFCs/ EDCs selected	Number of households selected
I	Anamalai Wildlife Division	34	5	100
2	Coimbatore Forest Division	33	5	100
3	Nilgiris North Forest Division	20	5	100
	Total	87	15	300

In the first stage, Coimbatore forest circle was purposely chosen. The entire members of the selected FDAs form the universe of the study. Under each FDAs, five VFCs / EDCs which are having higher tribal population were selected in the second stage. In the third stage, under each VFC / EDC, the tribal households numbering 20 were randomly selected to form a total sample of 300 households to assess their participation in the conservation and plantation developmental activities following a multi stage sampling technique.[6]

Analytical techniques

The impact assessment of FDA activities on sample households required proper valuation of inputs and the output gained by the respondents. This in turn calls for the use of appropriate tools and techniques of mathematics, statistics and econometric models to measure the impact of implemented program due to their participation. These techniques of analysis are assumed to be consistent with both, general conditions and conducive to the efficient allocation of resources.

Percentage analysis

Simple percentages were worked out in respect of target and achievements of FDA activities both financial and physical in the study area.

To assess the factors influencing the participation of tribes in FDA activities, apart from common techniques described, the following analytical techniques were used.

I. Regression Analysis

II. Garett's Scoring Technique

Regression analysis

The regression analysis is the main statistical tool used to obtain the estimates. It is the analysis of relationships among variables. It is one of the most widely used statistical tools because it provides a simple method for establishing a functional relationship among the exogenous and endogenous variables.

Factors influencing participation of tribes in FDA activities

The central objective of the present study is to assess the determinants of tribal participation and to determine the impact of participation of tribes in FDA activities on socio economic status of tribal households. In order to assess their participation in FDA activities and its impacts, the following method was employed. The efficiency of FDA depends upon the participation of tribes. Thus, an important research question is what factors have influenced the participation of tribes in FDA activities. For that purpose, the number of meetings attended by the women member was identified as Key indicator to represent the tribal participation in group activities. To construct the participation index, the variables taken into consideration were,

I. Awareness on the membership of VFC

II. Number of Meetings attended

III. Involvement in discussions during the meetings

IV. Attitude towards Forest Department and

V. Attitude towards VFC and involvement of households in discussions during the conduct of meetings.

The variables taken into consideration to analyze its influence on the participation index were educational status of head of the households, educational status of women in the sample households, age of the head of the households, size of the family, annual income of the households and the condition of the forests. It is argued that the meetings attended by the VFC members fairly explain the tribal participation in group activities. The linear multiple regression model fitted in this respect is furnished as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 D_1 + \beta_7 D_2 + e_t$$

Where,

Y = Participation Index (PI)

X_1 = Educational Status of the Head of the Household

X_2 = Educational Status of the Woman in the Household

X_3 = Age of the Head of the Household in years

X_4 = Size of the Family

X_5 = Annual Income in Rupees per Household per Annum

D_1 = Condition of the Forest as Dummy Variable

D_1 = 1 if it is a Dense Forest Environment; D_1 = 0, Otherwise

D_2 = Condition of the Forests as Dummy Variable

D_2 = 1 if it is Very Dense Forest Environment; D_2 = 0, Otherwise.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ are regression coefficients to be estimated

β_0 = Constant

e_t = Error Term.

The Values of the coefficients are tested with Statistical tables for its significant contribution to the Participation Index. Here 5 per cent and one per cent level of significance was considered for the analysis and its interpretation.

Garetts' scoring technique

To analyse the constraints faced by the tribal households in crop production and livestock rearing activity, Garrett's Scoring Technique was employed. Ranks were assigned to the scores using per cent position for each of the assigned rank by using the following formula.

Per Cent Position = 100 (R_{ij} - 0.50) / N

Where,

R_{ij} = Rank assigned for the ith category by the jth respondent

N = Number of reasons assigned by the Jth individual.

Using the table developed by Garrett[7] the per cent position of each rank were converted into scores. For each factor, the score of individual respondents was added together and divided by the total number of respondents for whom scores were added. The mean scores of all the factors were arranged in a descending order and the ranks were given. The factor having the highest mean value was considered to be the number one factor.

Results and discussion

The tribal groups are presumed to form the oldest ethnological sector of the national population. The term "Adhivasis" (Adhi means Original; Vasi means Inhabitants) has recently been designated to these groups. They are experts in hunting, shifting cultivation, minor forest produce collection from dense and deeper areas, live in isolation with the nature. Hence, they were called as son of the soil.[8] The tribes dependent on natural resources like Fodder, Fuelwood, Food, Fiber, Wood and Non Timber Forest Produce like Fruits, Floss and Medicinal Plants. The right to collection of Non Timber Forest Produce are vested with tribes almost all the time. To regulate the pilferages from the forests in the name of collection of NTFPs and to promote various afforestation schemes including NTFP species in the forests, Government of India has established Forest Development Agencies and issued operational guidelines for structure, composition, functions and activities of FDAs in the country. Tribes have their own participation in an organized manner with the support of Forest Department officials. The major activities of FDA included are implementation of Centrally Sponsored Schemes, Promotion of Agroforestry, Avenue Plantations, Value Addition and marketing of Non Timber Forest Produce, inventorization of Natural Resources, Environmental Education, Awareness creation on Forest Protection, Management of Forest Nurseries, Common Property Resources including water resources, Monitoring NGO activities and addressing socio economic needs of the people. For that purpose, few FDAs were established in Tamil Nadu by the Forest Department. These details are presented in Table 3.

Table 3 Forest Development Agencies in Different Forest Circles of Tamil Nadu (2002-2007)

Sl. No	Name of the forest circle	Number of FDAs	Budget Outlay in Lakh rupees	Percentage to Total outlay
1	Chennai	2	639.24	6.87
2	Vellore	3	1077.93	11.58
3	Tiruchirappalli	4	1229.77	13.21
4	Salem	2	619.14	6.65
5	Erode	3	899	9.66
6	Dindigul	2	344.95	3.71
7	Coimbatore	3	779.49	8.37
8	Dharmapuri	5	1477.92	15.88
9	Madurai	2	655.56	7.04
10	Virudhunagar	3	885.64	9.52
11	Tirunelveli	2	440.4	4.73

Table Continued...

Sl. No	Name of the forest circle	Number of FDAs	Budget Outlay in Lakh rupees	Percentage to Total outlay
12	Kalakkadu (KMTR)	1	258.61	2.78
	Total	32	9307.65	100

Table 3 outlined that the Government of Tamil Nadu had set up around 32 FDAs covering 12 forest circle through the Forest Department with a budgetary allocation of 9308 Lakhs. Among the 12 Forest Circle, Dharmapuri Forest Circle alone has gained 5 FDAs with a financial outlay of Rs. 1478 lakhs which is accounted for 16 per cent to the total. But, the Coimbatore Forest Circle being the study area which has received only an outlay of Rs 779 lakhs for its 3 FDAs. The financial allocation to Coimbatore Forest Circle is found to be only eight per cent. When one could compare the allocation with Dharmapuri Circle, it is fifty per cent lesser to Coimbatore Forest Circle. Coimbatore being the wildlife rich zone, the protection related measures need to be taken on priority basis and hence the future allocation should be on the higher side.

The Coimbatore Forest Circle has three FDAs. They are Anamalai, Coimbatore and the Nilgiris. These FDAs has represented two agro climatic zones viz., Western zone and the Hilly zone. In these zones, the activities implemented and its details are furnished in Table 4.

Table 4 Approved Components of National Afforestation Project (NAP) in Coimbatore Forest Circle

Sl. No	Name of the work	Physical achievement	Financial achievement in lakhs	Percentage to Total outlay
1	Aided Natural Regeneration in ha	2010	182.37	23.4
2	Bamboo Plantation in Ha	1320	118.64	15.22
3	Mixed Plantations in Ha	1506	181.32	23.26
4	Entry Point Activities @ 4000 per Ha	0	127.84	16.4
5	Fencing, Micro Planning Works	0	48.37	6.2
6	Soil and Moisture Conservation	0	72.57	9.31
7	Maintenance and other Charges	0	48.41	6.21
	Total	4836	779.52	100

The approved components of National Afforestation Project was implemented through FDAs. The components (Table 4) of activities included were Aided Natural Regeneration; Establishment of Bamboo Plantations; Establishment of Mixed Plantations focusing NTFP species; Establishment of Entry Point Activities; Fodder species to wild animals; Fencing and Preparation of Micro Plans; Soil and Moisture Conservation; Maintenance and other Charges. Among the seven components, first three components are focusing towards regeneration and afforestation activity and the other four are support or related activities.

Among the afforestation activity, Aided Natural Regeneration was found to be the major activity with the physical achievement of 2010 ha by using 182 lakhs which is accounted for 23.40 per cent to the total outlay and an equal share was earmarked for establishing Mixed Plantations focusing wild life and the tribal welfare. Plantation development activities focusing fodder to wild animals and Bamboo plantation as Elephant food species, are permitting the animals to stay in the forests. However, the intensity of plantations and its survival monitoring could help the animals to stay within the forest floor. From that one could infer that afforestation, regeneration, establishment of mixed plantations for the purposes of fodder to feed the wild and grazing animals were fulfilled from the activities of FDA. Besides the FDA activities, one would be interested in assessing the schemes which are being implemented by the Forest Department through FDA. These details are analyzed and the results are presented in Table 5.

Table 5 Schemes Implemented by Forest Department in Coimbatore Forest Circle

Sl. No	Name of the scheme	Acronym	No. of Man days generated	Percent to Total
1	Western Ghats Development Program	WGDP	99803	33.56
2	Hill Area Development Program	HADP	31002	10.42
3	Indira Gandhi National Park	IGNP	8901	2.99
4	Indira Gandhi Wild Life Sanctuary	IGWLS	8008	2.69
5	Tamil Nadu Afforestation Project	TAP	62908	21.15
6	Nilgiris Biosphere Reserve	NBR	11054	3.72
7	Project Elephant	PE	54134	18.2
8	Integrated Forest Protection	IFP	8172	2.75
9	Forest Protection Scheme	FPS	383	0.13

Table Continued...

Sl. No	Name of the scheme	Acronym	No. of Man days generated	Percent to Total
10	Taller Seedlings	TS	463	0.16
11	Solar Fencing	SF	11852	3.99
12	Establishing Sandal Plantations	--	722	0.24
13	Part – II Schemes of State Government		5	0
Grand Total			297407	100

Among the five major schemes operated, Western Ghats Development Program (WGDP) has focused on the components of establishing Fire Line Tracing, appointment of fire watchers and repair of check dams. Among the five major schemes operated by Forest Department, the WGDP alone was capable of generating 99803 man days of employment which is accounted for 33.56 per cent to the total followed by Tamil Nadu Afforestation Project was able to generate 21 per cent of employment to the total number of man days generated. Project Elephant is another scheme which is capable of generating 54134 number of man days which is accounted for 18 per cent to the total number of man days generated in Coimbatore forest circle. In toto, around 2.97 lakh man days of employment were generated in Coimbatore Forest Circle through the schemes enunciated in Table 5. These are considerable level of employment to tribes. Besides this, the line departments were also actively involved in executing the schemes which are friendly to the tribes and hence these details were analyzed and the results are presented in Table 6.

Table 6 Activities carried out by Line Departments in Coimbatore Forest Circle in Support of Wild Animals

Sl. No	Name of the activities	No. of Assets	Number of man days generated	Percentage to Total
1	Construction of Check Dams	19	17594	8.88
2	Elephant Trenches	4	1100	0.55
3	Bee Keeping	10	50	0.02
4	Tree Top Tracking Shed	4	100	0.05
5	Improvement Works in Tribal Houses	125	10012	5.05
6	Construction of Group Houses	390	159915	80.71
7	Battery Operated Vehicle	2	9383	4.74
8	Erection of Water Trough to Wild Animals	2	NA	NA
Total Assets		554	198154	100

NA: Not Available

Table 6 has outlined the details of line department activities carried out in Coimbatore Forest Circle through Forest Development Agencies. Several activities were carried out by line departments like Construction of Check Dams; Elephant Trenches; Bee Keeping, Tree Top Tracking Shed, Improvement works in Tribal Houses; Construction of Group Houses; Battery operated vehicle, Erection of water Trough to the wild animals . Among these activities, the activities to avert the Man-Animal Conflicts were Elephant Trenches, Tree Top Tracking Shed to identify the animals and one can inform the tourists to be safe in the tourist spots, Provision of Battery Operated Vehicle which safely take the tourists through the vehicle and Erection of Water Trough for the wild animals in the periphery of the forests so that the animal's requirement for water could be met. Through these activities, one can minimize the entry of animals to the farm lands.

Besides, erection of group houses to tribes by the line departments are also carried out which is accounted for 81 per cent to the total followed by construction of check dams and improvement works in the tribal houses. Provision of these facilities quite naturally enhance their interest to participate in the developmental activities initiated by FDAs. The support of tribes in alleviating the conflicts are much more and hence the basic infrastructure for the tribes in the tribal hamlet becomes needy. Already we have discussed that VFCs/EDCs in which the tribes are as members whose participation in FDA activities become much more important specifically the womenfolk and hence these details are also analyzed and the results are presented in Table 7.

Participation of Tribes at the time of implementation of FDAs (2002) and during the period of completion of FDA activities (2007) were compared and the results are discussed to highlight the impact created by the FDA activities. Table 7 revealed the details of participation by male and female members in the tribal households. The percentage increase in the participation of male member in the FDA activities between 2002 and 2007 was found to be only 16.67 per cent. Whereas, the female tribes participation in the FDA activities were found to be around 40 per cent increase during the period stated. Because of participation in the FDA activities, the participation in other activities have become drastically reduced and the reduction was arrived at 67 per cent between 2002 and 2007. From this one could infer that the participation was higher among the womenfolk in the FDA activities.

Table 7 Gender Participation in the Activities of FDAs in Coimbatore Forest Circle

Sl. No	Particulars of Members	Number of Households participated during 2002	Number of households during 2007	Per Cent increase over 2002
I	Number of VFCs	0	87	100
2	Membership Fee for ST	0	I	0
3	Membership Fee for Non ST Members	0	2	0
4	Number of Female Members	75 (25)	104 (35)	40
5	Number of Male Members	143 (48)	168 (56)	16.67
6	Members Engaged in Other Activities	82 (27)	28 (09)	(-) 66.67
7	Total	300 (100)	300 (100)	

Factors influencing participation of tribes in FDA activities

Participation is normally influenced by some of the factors. Identification of those factors and presenting the same is helpful to the decision makers to fulfill the needs of stakeholders. In this respect, the possible variables which influence the participation of tribes were identified and an index developed for the same following the method delineated in methodology section.

To construct the participation index (PI), the variables taken into consideration were Awareness on the Membership of VFC, Number of Meetings attended, Attitude towards Forest Department, Attitude towards VFC and Involvement in discussions during the conduct of meetings. The details of Participation Index as Independent variable and the Explanatory variables are presented in Table 8.

The variables taken into consideration to analyze its influence on the participation index were Educational Status of the head of the household, Educational Status of women in a tribal household, Age of the head of the household, Size of the family of tribal household, Annual income in rupees per household per annum and the condition of the forest as dummy variables viz., Dense Forest and Very Dense Forest if it improves from open to dense and dense to very dense forests.

Table 8 Factors Influencing Participation of Tribes in FDA Activities

Variables	Anamalai FDA		Coimbatore FDA		The Nilgiris FDA	
	coefficient	't' Value	coefficient	't' value	coefficient	't' Value
R2	0.77		0.91		0.85	
F Value	42.83		128.76		76.57	
Intercept	1.08	08.29**	0.9	09.26**	0.83	07.55**
Educational Status of Head of the Household	0.33	09.21**	0.2	07.02**	0.45	21.95**
Educational Status of Women in the Household	(-) 00.02	0.61	0.03	1.7	0.03	1.23
Age of the Head of the Household	0	1.02	0	1.06	0	0.42
Size of the Family	(-) 00.02	0.79	(-) 00.01	0.59	(-) 00.03	1.32
Annual Income in Rs per Annum	0	0.31	0	1.77	0	0.92
Dense Forest	0.23	03.09*	0.52	08.32**	0.21	03.28*
Very Dense Forest	0.42	05.08**	0.65	11.24**	0.2	03.11*

(** Indicates the Variables at One per cent level of significance and * Indicates the Variables at Five per cent level of significance)

Table 8 revealed that the Participation Index was strongly influenced by the educational status of the Head of the household and the condition of the Forest if it improves from open to dense and dense to very dense forest. These three variables were statistically significant at one per cent level keeping all other variables at their mean level (Table 8). All other variables included are not statistically influencing the participation index.

The variables included in the participation index has yielded 91 per cent influence due to the variables in Coimbatore FDA, followed by 85 per cent variation in the Nilgiris FDA and 77 per cent variation in Anamalai FDA. The 'F' value generated were also found to be significant revealing that the function fitted was sound enough. However, any outcome of an activity may have few constraint and hence how these constraints are demotivating the tribes/farmers in crop production and livestock rearing activities were analyzed and the results are presented in Table 9.

The tribes were practicing crop production activity. In that, there were some constraints which are being faced by the tribes. The principal constraints are crop damage by wild animals, willing to practice suitable technologies but not available on time and theft by another settlement households. Prior to implementation of FDAs during 2002, the constraint on crop damage by wild animals has scored

higher mean score with 0.89 revealing that the menace is bigger and the same was reduced to the level of 0.79 as its mean score indicating that the post implementation of FDA activities have reduced the crop damage to some low level. When one could compare the scores during 2002 and 2007, the households felt that they are bit relaxed due to the intensity of the problem. That is frequency is reduced due to the control measures like elephant trench and monitoring the movement of wild animals which are initiated through FDAs. Whereas, the desirous

of practicing suitable technology and its adoption for crop production activity has been increased due to awareness on technology adoption. Those are visible through its mean score from 0.52 to 0.58. That was mainly due to the exposure of technologies in crop production activity due to the participation of Line Department officials in the activities of FDA. Similar to the constraints in crop production activity, livestock production activity has also faced some constraints. These are analyzed and the results are presented in Table 10.

Table 9 Constraints Faced by the Sample Households in Crop Production Activity

Sl. No	Constraints	Coimbatore forest circle			
		2002		2007	
		Rank	Score	Rank	Score
I	Crop Damage by Wild Animals	I	0.89	I	0.79
2	Willing to practice Suitable Technologybut not available on time	IV	0.52	III	0.58
3	Size of Land Holding	III	0.54	II	0.62
4	Theft	II	0.57	IV	0.49

Table 10 Constraints Faced by the Sample Households in Livestock Production Activity

Sl. No	Constraints	Coimbatore forest circle			
		2002		2007	
		Rank	Score	Rank	Score
I	Lifting of Livestock by Wild Animals	I	0.9	I	0.81
2	Higher Price of Livestock	II	0.62	II	0.69
3	Poor Market Accessibility	IV	0.51	III	0.6
4	High Input Price	III	0.55	IV	0.51
5	Lack of Veterinary Care	V	0.4	V	0.36
6	Small Grazing Area	VI	0.22	VI	0.21

Table 10 revealed that lifting of livestock by the wild animals was found to be the biggest constraint during 2002 and has gained the mean score of 0.90 and the same has gained the mean score of 0.81 during the year 2007 implied that the intensity of the problem was little reduced due to the protective measures taken by the Forest and Line departments through the Forest Development Agencies. Another important constraint is higher price of livestock that all the households were unable to invest in that venture. That is reflected during 2007. Another important constraint is the households have produced the crop output and the output from livestock rearing but poor market accessibility forced the households to sell it in the local traders as distress sale.

From this paper, one could understand that the implementation of FDA activities in Coimbatore Forest Circle, has promoted some impacts in output generation as well as mitigation of conflicts between man and the wild animals by erecting some structure or barrier or by providing the needs of wild animals in the forest fringe zone. Some examples are providing drinking water facility to animals; construction of check dams; erection of elephant trenches in the needy area. In this respect, what kind of policy issues are further needed to keep away the conflicts between man and the animals at wilder environment are presented in Table 11.

Table 11 Policy Issues for Forest Development Agencies in Tamil Nadu

Sl. No	Policy issues	Suggested guidelines
I	Integration of all Forestry Schemes	I. All Centrally Sponsored Schemes should be brought under NAP Scheme. The tribes in which they are as members need to be promoted for the betterment of tribes and the forest wealth
2	Creation of Institutional Mechanism	I. Creation of Federation of JFMCs II. Ensuring Legal Status for JFM
3	Capacity Building for Sustainable Harvest and Value Addition	I. Providing Enough Awareness on FDAs II. Technology Transfer programto Tribes III. Value Addition of Forest Produce

Table Continued...

Sl. No	Policy issues		Suggested guidelines
4	Policy Changes for Income and Employment Generation	I.	Provision of employment to tribes as Forest Watcher, Malis, Driver, Mahout, Anti-Poaching Squad, etc.
5	Elephant Mitigation Structures	I.	Erection of Honey Bee Wall
		II.	Cutting Elephant Trenches
		III.	Providing Need based Fodder Species to the Elephants in the Corridor
		IV.	Invigorating the Animal Monitoring / Anti-Poaching Squad
6	Implementation of Innovation Projects	I.	Establishing value addition Unit for Processing of Non Timber Forest Produce so as to gain higher value per unit.

Conclusion

This study formed part of implementation of FDAs in Tamil Nadu focusing Coimbatore Forest Circle. The Component of activities of FDAs were capable of enhancing the level of participation of tribes especially among the womenfolk. The implementation of FDA activities have promoted some impacts especially in curtailing the man-animal conflicts in Coimbatore Forest Circle and hence those activities and their strength and weaknesses are to be investigated further to incorporate such programs in near future for further development and to mitigate the conflicts between man and the animals.

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Conflicts of interest

The author declares there is no conflict of interest.

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