

An impact assessment of sustainable forest management on socio-economic development in Sabharkantha (South) Forest Division of Gujarat state

Bilas Singh¹ and S.K. Sharma²

1. Arid Forest Research Institute

PO. Krishi Mandi, New Pali Road, Jodhpur, India

2. SLEM Project Directorate of Extension, ICFRE, Dehradun

E-mail: bilassingh@icfre.org ; sharmasati@gmail.com (corresponding author)

Abstract: This study, conducted in nine villages undertaking joint forest management (JFM) in Sabharkantha (South) Forest Division, Gujarat, is an attempt to assess the impact of protection and management on socio-economic of tribal people. The majority of the JFM areas showed that women participated actively in meetings, decision making and executing the works compared to before JFM committee. The major source of income was wage employment (58%) and fodder collection (26%). The income from NTFP was very low (6%) initial year of project. Findings indicate the need to promoting tribal people for protection more forest area of each village for their sustainable livelihood. [Nature and Science 2010;8(8):168-173]. (ISSN: 1545-0740).

Keywords: employment generation Gujarat, income, joint forest management, socio-economic assessment.

Introduction

The steady depletion and decreasing forest resources in many parts of the country led to the realization of the fact that without active and willing participation of the local communities it is not possible to achieve success in forest regeneration and protection. Regeneration of forests is a long drawn out process, Therefore, long-term security of tenure is critical. The principle of providing adequate stakes to local communities so that they have greater incentives for the protection and sustainable use of forest resources is as true for dense forests as it is for degraded areas. Thus it makes eminent sense that the local communities should be involved in sustainable forest management from the beginning instead of waiting for these areas to first become degraded. Keeping in view, the importance of forestry in rural economy, the policy planners choose the path 'people participation' in development of forest. Non-timber forest products have an important role to play in economic development in India. It is a natural element of sustainable, integrated farming systems and an excellent resource on which to build a variety of income and employment-generating opportunities. At the national level over 50 percent of forest revenue and about 70 percent of forest export revenue comes from NTFPs, mostly from unprocessed and raw forms (Tewari & Campbell, 1997). The alternative potential that NTFPs offer rural communities of Gujarat confirms by the fact that they generate employment for local people in the order of 2.5 million mandays per year and revenue of approximately US\$1.4 million. Hence, NTFPs can

serve a vital buffer role against conditions of absolute poverty in rural environments.

In the present study, household socio-economic survey and group discussion with JFM members were conducted to assess the impact of JFM on availability of fuel-wood and NTFPs.

Materials and Methods

Site characteristics and vegetation

The socio-economic study was conducted in March 2007 in three forest ranges of Sabarkantha South forest Division in Gujarat state. All the villages surveyed are located either in fringe of forest or in the forest areas. The mean annual temperature is 38.5 °C and mean annual rainfall is 607 mm in the area. The soil of the sites is calcareous, sandy loam, eroded stony and it is under hilly terrain of Aravallies hills

The forest of Sabarkantha Forest Division comprise of mixed deciduous forests with *Tectona grandis* as the major proportion of the vegetation. Dominant species recorded in the study area *Tectona grandis*, *Embelica officinalis*, *Diospyros melanoxylon*, *Cassia fistula*, *Holoptelea integrifolia*, *Sterculia urens*, *Syzygium cumini*, *Acacia catechu*, *Cordia mixa*, *Prosopis cineraria*, *Zyziphus mauritiana*, *Madhuca indica*, *Terminalia chebula*, *Terminalia crenulata*, *Bombax ceiba*, *Butea monosperma*, *Azadirachta indica*, *Annona squamosa*, *Sapindus laurifolius*, *Aegle marmelos* and Bamboo species for minor forest produce, timber, fuel wood and leaf fodder. Some of the dominant grass species in these forest areas are *Cymbopogon martini*, *Dichanthium annulatum*, *Aristida adscensionis*.

Details of surveys

The details of surveyed villages are given in the Table 1. Out of five ranges, the ranges were selected randomly for study consultation with the Forest Department officials in Sabarkantha South division. There were three village randomly selected from each range. Selection of JFMC villages was random and members were randomly interviewed in

all selected JFMCs; filled the 20 questionnaires from the available various social and economical categories of men and women. The each JFMC village planted and protected 25 hector forest areas in each site under NAP programme since 2003-04 for sustainable development. NTFP and employment generation of each JFMC was calculated on the basis of protected area.

Table 1. JFMC's village studied under the study in Sabarkantha South Forest Division.

S.No.	Forest Range	Name of JFMC Village	Project started	Area (ha)
1	Meghraj	Chhikari	2003-04	25
2		Manada	2004-05	25
3		Mudashi	2005-06	25
4	Shamlaji	Odd	2004-05	25
			2005-06	25
5		Kundal	2005-06	25
6		Bhetali	2005-06	25
7	Bhiloda	Patiakuwa	2003-04	25
8		Vagheshwari	2003-04	25
			2004-05	25
9		Veipur	2006-07	25

Result and discussion

Socio-economic Profiles of villages

The total number of house hold in these villages is 4785 in which Schedule Tribe constitute 65.56% as major group, Schedule Cast is 2.69% and others are 31.75%. The female population was higher

(51.12%) as compared to male population (48.88%). The population is mainly dependent on agriculture and forest for their livelihood. Majority of these villages are small land holdings (57.87%) and medium farmers (27.07%) and land less (10.13%) presented in figure 1.

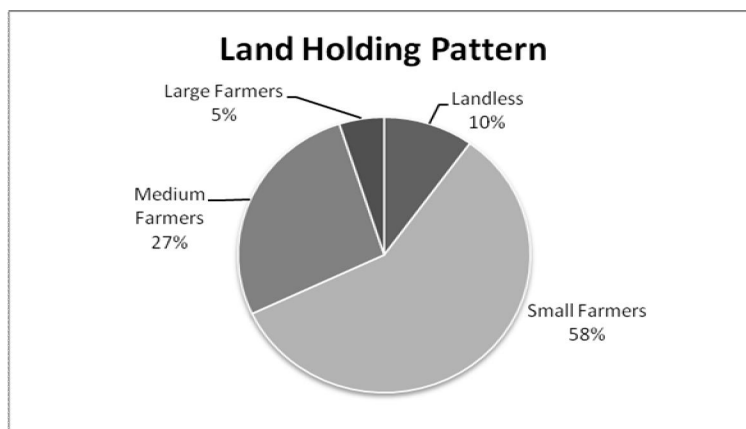


Fig. 1. Land holding pattern (%) in surveyed JFMCs ranges of Sabarkantha (South) Forest Division

The most agriculture land is under or land is rainfed amounting to 78.13% of total land. Livestock population is high and milch animals are reared as a source of income. Almost all these villages are predominantly dependent for fodder and grazing on forest resources. The Joint Forest Management

Committee aims to protect forest area on sustainable basis and generate employment for the neediest sections of society, particularly those belonging to scheduled castes/ scheduled tribes, landless rural labourers and inhabiting the forests and adjoining areas.



Protected and Un-protected Forest Area at Kundol

Social impact:

Schedule caste and Schedule Tribes are major community in the JFMC villages of Sabarkantha. It was found that women participated actively in meetings, decision making and executing the works. The best example of women participation is Aravali Briksh Utapadan Sahakari Mandali, Odd; where all executive members (11) and total members (200) are tribal women. Organized ability was increased in the Landless labours and farmer for protecting their forest on their own so their strength comes from their own motivation. Leadership increased among the villagers. Women contributed more than 60% labour works in the studied areas.

Economic impact:

Results presented in Table 2 indicate that the fodder production increased in the each JFMC village after plantation and protection. JFM committees protected and conserved forest resources resulting in increase fodder production. The fodder collected by desired JFMC members from the plantation area on cut & carry basis. The highest production of fodder was observed (1600 quintal) in Vagheshwary followed by Khundol >Odd > Patiakuwa. These sites produced higher fodder due to more treated area (50 ha) as well as two to three years protection time except Patiakuwa. More ever, Patiakuwa produced highest fodder on the basis of per unit land and time. The highest collection of Tendupatta was 91665 bundles in Kundal followed by Patiakuwa and Vagheshwary. High density and good growth of *Tectona grandis* in Patiakuwa and Vagheshwary resulted in low density of *Diospyros melanoxylon* (Tendupatta) plants and its production. In addition to

this from the JFMC protected forest area of Kundal, Bhetali and Vagheshwary village, *Accacia nilotica* and *Anogeissus pendula* gum was also collected adding to the income of beneficiaries (Table 3). Initially, the availability of Tendupatta and NTFP was very low quantity but it is a clear indication of potential of such increased returns and ensured good financial returns to the JFMC members in future. Before JFMC protection committees, the production of NWFP was negligible amount in each site.

The analysis of benefit pattern (Table 3) indicated that the major source of income was wage employment (58%) and fodder collection (26%). The income from NTFP was very low (6%). The total income from wage was the highest (Rs.4,21,566/) in Odd JFMC village and Bhetali was the lowest (Rs. 58,898/). Per capita income of the beneficiaries from wages was only generated to Rs. 2061/ per house hold through plantation activities by means of labour wages. With over 24521 men days of wages created under afforestation programme in the study area there would be a clear increase in the income of rural of beneficiaries. Total benefit from fodder collection was the highest in Vagheshwary (Rs.2,40,000/) followed by Kundal (Rs.1,68,750/), Odd (Rs.1,31,250/) and Patiakuwa (Rs.1,05,000/) JFMC villages. The highest benefit per house hold from fodder collection was Rs. 1080/ in Manda JFMC village and the lowest was Rs. 225/ in Mudasi and Vejpur JFMC villages. In general, the benefit from fodder collection was Rs. 627/ per house hold. Additional supplementary activities such as dairying and poultry also enhanced their economic status.

The highest collection of NTFPs was Rs. 105265 by Kundal JFMC village followed by

Patiakuwa (Rs.69749). More than seventy percent of household were engaged in collection of NTFPs generating income of Rs. 104/ per house hold from NTFP collection like Tendupatta, *Acacia nilotica* and *Anogeissus pendula* gum and *Annona squamosa*, (sitafal) fruit only during 2006-07. Benefit from NTFP collection was very low in initial year of protection but it is most likely to due to more

availability of NTFP as a result of continued protection in later age. The exploitation pattern of NTFPs indicated that there are about ten items of NTFPs having different usages. In addition, numerous other items such as fruits, berries, tubers and herbs were collected for their daily consumption needs.

Table 2. Employment generation, fodder and NTFPs produce up to 2006-07 in studied area.

Name of Village	Employment generated (men days)	Fodder (Quinta)	Various NTFP					Number of house hold benefited
			Tendu patt (bundle)	Gum (kg)	Mahuda flower (Quintal)	Sitafal fruit (kg.)	Fuel wood (Quintal)	
Chhikari	4824	250	-	-	-	-	-	103
Manda	1640	180	-	-	-	-	-	25
Mudashi	5360	195	-	-	-	-	-	130
Odd	5540	875	-	-	-	-	-	150
Kundol	1946	1125	91665	120	-	-	-	250
Bhetali	774	475	-	17	-	-	360	125
Patiakuwa	786	700	13749	-	20	500	-	155
Vagheswary	1745	1600	12600	9	-	-	1200	253
Veypur	1906	105	-	-	-	-	-	70

Table 3. Income from wages, fodder and NTFPs produces up to 2006-07 in studied area.

Name of Village	Income from wages	Fodder	Various NTFP				
			Tendu patt	Gum	Mahuda flower	Sitafal fruit	Fuel wood
Chhikari	367082	37,500	-	-	-	-	-
Manda	124796	27,000	-	-	-	-	-
Mudashi	407869	29,250	-	-	-	-	-
Odd	421566	1,31,250	-	-	-	-	-
Kundol	148081	1,68,750	91665	9600	4,000	-	-
Bhetali	58898	71,250	-	1360	-	-	72,000
Patiakuwa	59811	1,05,000	13749	-	50,000	6000	-
Vagheswary	132786	2,40,000	12600	720	-	-	2,40,000
Veypur	145037	15,750	-	-	-	-	-



Tribal people collecting *Madhuca indica* (Mahuda) flower at Patiakuwa



Tribal people collecting *Acacia nilotica* and *Anogeissus pendula* gum at Vagheshwari

Protection and conservation enhanced regeneration and growth of many species in JFMC village forest area in Sabarkantha resulted in increased fodder and NTFP produces. The protection and sustainable managed forest areas improved richness of species as well as increased income of tribal villagers from collection of NTFP

(Patel *et.al* 2006). Income and employment generation could almost double if simple value-addition technologies are developed and adopted within the context of small-scale enterprises (Soni, 1995). Moreover adaptation of simple value addition techniques in small scale enterprises have the tremendous potential enhancing the employment

generation, income and capacity building of tribal involved in JFM activities.

Acknowledgements

Author is thankful to the Director, AFRI for providing necessary facilities. Thanks are also to Sh. P. H. Chawhaan, Scientist 'F' for constructive criticisms and fruitful suggestions. **I thank to Sh. Mahendra Singh, RA-II and Sh. J.P. Dadhich, RA-II for their help. I also thank the State Forest Department, Gujarat for providing support at the field level.**

References

- [1] Patel, R.; Subhash Mali, S.; Tripathi ,J.P.; Kaushal , V.and Srinivas Mudrakartha, S. (2006) Regeneration of teak forests under joint forest management in Gujarat. *Int. J. Environment and Sustainable Development*, 5(1): 85-95
- [2] Tewari, D.D. & Campbell, J.Y. (1997) Economics of non-timber forest products. *In* J.M. Kerr, D.K. Marothia, K. Singh, C. Ramaswamy and W.B. Bentley, eds. *Natural resource economics - theory and application*. New Delhi, India, Oxford and IBH.
- [3] Soni, P. L. (1995). Some commercially important gum exudates. *Indian Forester* 121 (8): 754-759.

7/17/2010