Full length Research

Socio-economic status of forest fringe villages in Tiruvannamalai District, Tamilnadu

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Socio-economic study of 42 villages in the forest fringe areas in Tiruvannamalai district was conducted during January to March, 2013. Data on villages profile, households and dependency of villages on forests was collected and analyzed critically. The study reveals that the forest fringe village dwellers depend on forest for fuel wood, fodder and other NTFPs. Hence, it is opined that forests play a very critical role in livelihood of villagers in forest fringe areas. Hence, management of forests with the co-operation of fringe village dwellers would be of good approach for sustainable management and utilization of forests and forest products

Keywords: Socio-economic status, forest fringe villages, Tiruvannamalai District, Tamilnadu

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INTRODUCTION

India is 10th forested country in the world. Forests are repository of the bio-diversity, gene pool resources, sequester carbon and provide lot of other environmental services. They play a very vital role in sustaining the life of people. The total forest cover in India is 67.83 M. ha. (20.64% of total geographical area). The ever increasing pressure on forest areas for variety of potentially conflicting uses makes it important to find not only ecological and social, but also economic status for managing forest in a suitable manner. Socio-economic survey tools are designed to collect information as a means of improving understanding of local resource management systems, resource use and the relative importance of resources for households and villages. Surveys also provide information on interaction with the government decision-making systems and community perceptions of trends and priority issues. Also to quantify the levels of awareness and support for the existing forest regulations and the levels of knowledge about the biological importance of the forest in the villages. Nearly 1, 96,000 villages are in the forests or on the forests fringes in India. They depend on forest for their livelihood. Of late, due to urbanization and development, the dependent on forests by villagers is drastically reduced. Nevertheless, still there are villages in India depend on forest for their livelihood support. Therefore, the present study was carried out on the socio-economic status of forest fringe villages in Tiruvannamalai district to understand their dependency on forests for their livelihood.

Tamilnadu is the eleventh largest state in India by area and the seventh most populous state. Tamilnadu has 23,625 sq. km. of forest cover, which is 18.16 percent of the geographical area of 1, 30,058 sq. km. of the State. The State has 9 out of 16 principal forest types (Champion and Seth, 1968) of the country and about 36 forest sub types, hosting a rich biodiversity, as compared to all other southern States. Tamilnadu has a population of 62,405,679 individuals with a decent ratio of males and females. The climate of Tamilnadu varies from dry sub-humid to semi-arid. The state has three distinct periods of rainfall: advancing monsoon period, South West monsoon from June to September, with strong southwest winds; North East monsoon from October to December, with dominant northeast winds; dry season from January to May. The normal annual rainfall of the state is about 945 mm (37.2 in) of which 48% is through the North East monsoon, and 32% through the South West monsoon. There are totally 32 Districts, which consists of 16,317 villages.

Tiruvannamalai is a town and the administrative headquarters of Tiruvannamalai district of Tamilnadu. Tiruvannamalai is located at 12°00′N 79°03′E12°N 79.05°E. It has an average elevation of 660 ft. It is located to the east of Eastern Ghats. The topography of Tiruvannamalai is almost plain sloping from west to east.

Tiruvannamalai experiences hot and dry weather throughout the year. The temperature ranges from a maximum of 40 °C to a minimum of 20 °C. Tiruvannamalai receives scanty rainfall with an average of 815 mm annually. Tiruvannamalai had a population of 1,44,683 with 72,351 males and 72,332 females (2011 census).

Village descriptions

There were 42 forest fringe villages were selected for the study. The main criteria for selection of villages is distance between village and forest (villages fall under the distance of 1-3kms). The following villages were selected for the study, Kalladavi, Beemanandal, Neepathurai, Vinnavanur, Arasanganni, Pudupattu, Dhamarapakkam, Thorapadi, Veeranandal, Kilpasan, Se. Gudalur, Bondai, Royandapuram, T. Velur, Keelvanakkambadi, Chinniyampettai, Sathanur, Chittathurai, Modaiyur, Kilaiyur, Kilkanavayur, Pudupattu, Mel Palur, Viralur, Velanandal, Thumbakkadu, Murugapady, Valiyur, Athinoor, Vengayavellore, Kovur, Koothalavadi, Inam Kariyandal, Kannadampundi, abbupattu, Kosalai, Nariyapttu, Kannapandal Thenmathur, Adiannamalai, Pavithiram and Adayur. A questionnaire containing 30 and 27 questions was prepared for collection of information on village and household profiles respectively (model questionnaire attached). Village Administrative Officer (VAO), President of the village, Head of village, Head of village committees were contacted to get village profile and individuals in each house hold were contacted for household profile. Sum of 15 households in a village were randomly selected for household profile. They were under affluent, less affluent, poor category. The data collected were pooled and presented here.

Village profile

Surveys were conducted on socio-economics of aforementioned 42 villages in Tiruvannamalai district during January to March, 2013. During the survey, it was observed that most of the villages (80%) in the forest fringe area of Tiruvannamalai from the nearest town are lying within the range of 6-30Km. About 45.71% of the villages are found upto 10 km, whereas 40% are ranging from 11-20 Km. However only 14.28% villages was lying in the range of 21 - 30 km.

Demographic profile

The male ratio in the fringe village is slightly higher than the female, whereas the caste distribution is skewed. The population of general category is 1.14%, and the higher percentage falls in the OBC category of 65.95 % (Table 1).

Table 1: Population distribution

S.No	Category	Percentage (%)
1	Male	51.72
2	Female	48.28
3	Scheduled Caste	27.64
4	Scheduled Tribe	5.26
5	Other Backward Caste	65.95
6	General	1.14

Literacy

Literacy rate for male (54.78%) is higher than Female (45.22). The literacy rate in the forest fringe areas as seen is slightly lower than the literacy rate of the district as a whole.

Occupational status

According to the field survey, the work force (population within the productive year of age) in forest fringe areas was distributed into Agriculture, Cattle rearing, Government Service, Private Service, Business and Labour. Out of which the 48.64% engaged on labour, 43.51% depend on Agriculture, 4.32% on Cattle rearing, 2.6% in the Government Service, 0.83% for Private Service and 0.1% in Business.

Below Poverty Line (BPL)

During the survey, the status report was showed 12.12 % of families coming under this category.

Land Acquisition

The land distribution among family of the forest fringe areas is much skewed. During the survey, it was found that there are 35.91% families are landless, whereas 37.38% possess land less than one hectare and 22.51% families held between 1 to 2.5 hectare of land. However 4.20% families have more than 2.5 hectare of land.

Live Stock

The history of livestock rising has been embedded in Rural life, since the inception of our civilization. It is an integral part of the socio economic activities of the rural areas and places a key role in mitigating the effects of poverty by providing meat and milk for daily use. The major percentage comes under the cow population of 39.6%.The next level is for the sheep population with

20.95% and the hen stands in the third place of with 19.11%.The others include Buffalo, Ox, Goat, Bull and Donkey (Table 2).

Table 2: Livestock composition in Forest fringe areas

Sr.	Category	Percentage (%)
1	Cow	39.6
2	Buffalo	0.04
3	Goat	16.08
4	Ox	2.15
5	Bull	1.55
6	Sheep	20.95
7	Hen	19.11
8	Donkey	0.51

Land under Cultivation

The major crops in the forest fringe areas include Paddy, Groundnut, Sugarcane, Cotton, Tapioca, Pearl Millet. Paddy contributes 26.9%, Groundnut contributes 26.13% (Table 3.).These two crops are the most preferred crops in the forest fringe areas. The other important crops like Sugarcane, Cotton, Banana, Tapioca, Pearl Millet etc are also cultivated by some of the villagers / farmers.

Table 3: Area wise Agricultural Crops Distribution

Sr.No	Category	Percentage (%)
1	Paddy	26.9
2	Groundnut	26.13
3	Sugarcane	22.09
4	Cotton	5.69
5	Banana	4.54
6	Tapioca	1.79
7	Pearl Millet	1.76
8	Miscellaneous	11.1

Crop Production

The Survey reveals that the major crops preferred for production in the forest fringe areas include Sugarcane, Cotton, Paddy, Groundnut, Tapioca, and Pearl Millet. The agricultural crops production composition is shown in the table 4.

Table 4: Production wise composition of Agricultural Crops

Sr.No	Category	Percentage (%)
1	Paddy	9.62
2	Groundnut	7.35
3	Sugarcane	55.28
4	Cotton	18.23
5	Banana	0.77
6	Tapioca	3.57
7	Pearl Millet	1.06
8	Miscellaneous	4.12

Infrastructure facilities

The survey was conducted to evaluate of availability of Social and Community level, infrastructure in the forest fringe villages. It was found that more than 80 % of the villages have primary school and 54.29 % have secondary school. Primary Health Centre commences to 51.43%. The description of the other basic infrastructure status is presented in Table 5.

Table 5: Infrastructure facilities in Forest Fringe Villages

Sr.No	Category	Percentage (%)
1	Primary school	80
2	Sec. School	54.29
3	College	11.43
4	Panchayat House	74.29
5	Primary Health centre	51.43
6	Post Office	42.86
7	Bank	22.86
8	Hospital	2.86
9	Market	2.86
10	Seed Centre	0
11	Bus Stand	17.14
12	Others	0

Road Connectivity and Electrification

The forest fringe villages are well connected by Paccka road of 85.71%. However villages connected with semi-paccka is 8.98% and Kaccha road is 5.31% resp. The condition of the electric facility is very good in the fringe areas, as all the villages that is,100% are electrified. The electrified household percentage also constitutes 100%.

Drinking water facility

There is no problem of drinking water in the forest fringe areas. Most of the villages use tap water (100 percent) followed by Hand Pump. The other options of drinking water like well, Bore well and natural source are available in the area. It was found during the survey that 94.29% fringe villages have sufficient drinking water. 5.71% villages have insufficient drinking water during summer season.

Irrigation facility

The sources of irrigation in the fringe villages are available in the form of Rain, Canal, River, Tanks/Ponds, Well, Tube well etc. Rain is major source for irrigation (97.14%). Well, constitute the next most common source of irrigation (94.29%).The limited sources are Canal (22.86%) and river (17.14%).

Prices of energy

The rate of the energy items Liquefied Petroleum Gas (LPG), Kerosene, Fuel wood, and other sources varied from place to place depending upon the remote location of village as well transportation charges (Rs. 430 for LPG and Rs. 3 for Cow dung cake)

Fuel wood and its Species

The issue of fuel wood collection is of prime importance to this study which reflects the degree of reliance of local population on forest produce for energy needs. The data presented in Figure 1 prevails that in most of the villages, more than one source of fuel wood was available in general.
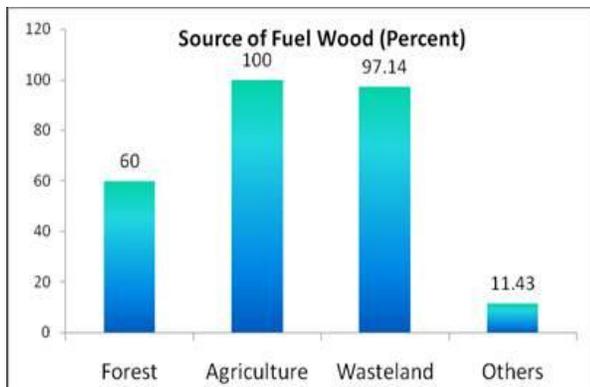

Figure 1: Sources of Fuel Wood (Per cent)

Various wood species are available in the forests, which are used as fuel wood. Most common species are *Prosopis juliflora and Albizia amara*. However, other important species also found during the survey are given below (Table 6.).

Table 6: Species wise consumption of fuel wood

S.No	Category	Percentage (%)
1	*Prosopis juliflora*	94.29
2	*Azadirachta indica*	62.85
3	*Albizia amara*	62.86
4	*Tamarindus indica*	31.43
5	*Pongamia pinnata*	8.57
6	*Acacia nilotica*	2.86
7	*Acacia planifrons*	2.86
8	*Albizia lebbeck*	2.86
9	*Acacia chundra*	2.86
10	*Vincea rosea*	2.86
11	*Terminalia chebula*	2.86
12	*Acacia leucophloea*	2.86

Fodder and its Species

Agricultural lands and waste lands are the major source of fodder. Out of which 97.14% are contributed by Agricultural land. 91.43% are from Waste land. Forest is also other source of fodder for the forest fringe community. The following figure explains the same (Figure 2).
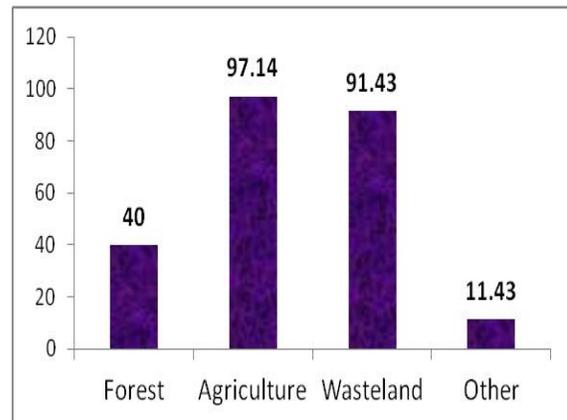
Figure 2: The Source of fodder (per cent)

More than 85% of fringe village are dominated by Paddy straw .While the other fodder species like Sorghum, Grass, Groundnut leaf and cake, Maize, Grains and *Aristida adscensionis* are also commonly available in those areas (Table. 7)

Table 7: Village wise consumption distribution of fodder species

Sr.No	Category	Percentage (%)
1	Paddy straw	85.72
2	*Sorghum vulgare*	65.71
3	Groundnut leaf	34.29
4	Grass	34.29
5	Groundnut extract	2.86
6	*Aristida adscensionis*	2.86
7	Maize	5.72
8	Grains	5.72

HOUSEHOLD ANALYSIS

Socio-economic survey tools are designed to collect information as a means of improving understanding of local resource management systems, resource use and the relative importance of resources for households and villages. Surveys also provide information on interaction with the government decision-making systems and community perceptions of trends and priority issues. Also to quantify the levels of awareness and support for the existing forest regulations and the levels of knowledge about the biological importance of the forest in the villages. These results provide an over view of the Socio economic status of forest fringe areas.

Maximum households lie within 1000–1500 meters from

the forest which is 8.1%. However 37.19% houses were 500-1000 meters. 14.52% houses are less than 500 meters. 15.48% lie between 1500-2000 meters. 9.05% lie between 2500-3000 meters. But only 9.02% lie above 3000 meters.

Ownership of dwelling

Most of the households in the forest fringe villages owned dwelling units in contrast to the situation prevailing in cities. Only 0.24% stays in the rental houses in the forest fringe areas.

Types of Household

Generally, after the improvement of the economic condition, rural peoples give higher priority to improve their houses as observed in Urban region; as a result percentage of Paccka house is high in the villages. However in the forest fringe village, 51.67% families have their Paccka houses as compared to Semi Paccka and Kaccha houses (Figure 3).
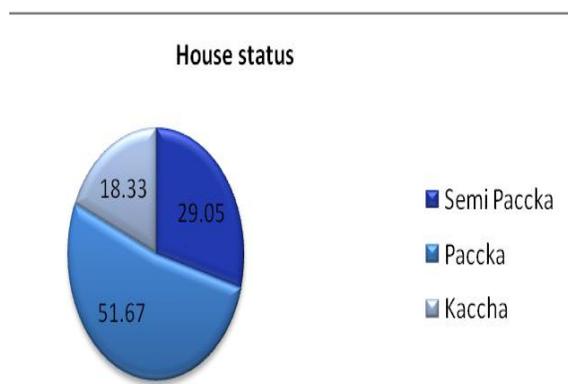

Figure 3: House Type

Type of family

The nuclear family percentage is more compared to the Joint family in the survey. Nuclear family status is 75% and the joint family shows 24.76% status.

Population

According to the census 2011, Tiruvannamalai District has a population of of 144,683, with 72,351 males and 72,332 females.

Age group pattern

The pattern of age group is one of the most important attributes of population composition. Mostly the

population characteristics vary significantly with age. India has one of the largest proportions of population in the younger age groups in the world. Age statistics form an important component of population analysis, as most of the analysis is placed on age group, structure of the population. The data on age is more noticeable when it is cross classified by variables like marital status, literacy, educational qualification and economic status. The maximum population lies between 20.89% lies between 21-30 years (Table 8). India, as the second largest population globally, has a startling age demographic, where over 50% of its population is under 25 (Bhat, 2001).

Table 8: Age Group Pattern (in Years)

Sr. No.	Age Group	Percentage (%)
1	0-10	17.59
2	11-20	19.18
3	21-30	20.89
4	31-40	16.57
5	41-50	12.94
6	51-60	7.32
7	61-70	3.75
8	Above 70	1.76

Educational Status

Education plays a key role in human resource development through upgradation of technical knowledge and expertise which is interlinked with the socio economic improvement of the person. The survey revealed that only 1.93% have professional degree and 25.94% are illiterate (Table 9). India is the country with the largest illiterate population in the world (Human Development Report, 2010). Poor children in rural areas have less access to education, and perhaps more significantly, less access to quality education than their urban counterparts.

Table 9: Educational Status

Sr. No.	Category	Percentage (%)
1	Illiterate	25.94
2	Primary	21
3	10+2	17.03
4	Middle	11.8
5	Not applicable (up to 5 years)	8.06
6	Graduate	5.51
7	High School	5.45
8	Professional Degree	1.93
9	Post Graduate	1.82

Occupation

The study reveals that 17.99% of the people are engaged in Agriculture work. 34.39% are unemployed. This includes house wife's also (Table 10). India saw a

Table 10: Occupation of the Population

Sr. No.	Occupation	Percentage (%)
1	Unemployed	34.39
2	Not applicable (up to 13 years)	20.49
3	Agriculture	17.99
4	Agriculture and labour	8.0
5	Unskilled labour	6.19
6	Skilled Labour	5.22
7	Private Service	3.97
8	Business	1.99
9	Govt. Service	1.31

Table 11: Annual Income

Sr. No.	Annual Income (Rs.)	Percentage (%)
1	<30000	12.14
2	30001 – 60000	49.29
3	60001 – 90000	18.33
4	90001 – 120000	9.52
5	120001 – 150000	4.29
6	150001 – 180000	2.38
7	180001 – Above	4.05
8	Total	100

slight (0.3%) rise in unemployment from 10.4% (in 2008) to 10.7% (Labour report, 2009)

Marital Status

Marriage is the foundation stone of family structure in most of the societies around the world. Divorce and widow / widower are important social issues. But the divorce rate is lower in rural India. The married percentage of population is 54.09% whereas Single shows 40.81%. The separated rate is 1.59% and the widow / widower rate is 2.38 % .

Religious Diversity

Religious Diversity and Religious tolerance are both established in the country by law and custom. A vast majority of Indians associate themselves with the religion. The main Religion in forest fringe areas is Hinduism of 99.76 %, Parr *et al*. (2011) reported that the majority of households in Thiruvallur district (93%) identified themselves as Hindus.

Caste System

The caste system in India is a system of social stratification, social restriction and a basic for affirmative action. The study revealed that 73.3% belongs to Other Backward caste followed by Scheduled Caste, Scheduled Tribes and General.

Annual Income

Household income is one of the most important indicators of livelihood. The household have multiple sources of income like agriculture, labour, business, private and government jobs etc.(Table 11). This survey supported the work of Parr *et al* (2011).

Social Participation

Social participation refers to the people's social involvement and interaction with others. Activities such as volunteering, donations making, participating in sports and recreation activities are some forms of social participation. It is an important element of peoples well being and ability to socialize with others. During the survey it was found 3.57% households are involved in Social Activities,1.19% households are involved in politics, 1.43% are regular donors, 2.86% are engaged in Volunteer work.

Below Poverty Line (BPL)

Below Poverty Line is an economic bench mark for the society and poverty threshold used by the Government of India. Identified individuals and households under the BPL Category get assistants and aid by the Government. The survey revealed that 14.76% of the population in the forest fringe villages belongs to the BPL Category.

Household accessories

Household Accessories are an important indicator for the development. High flow of income converts in to procurement of more household accessories for the betterment of life style. Historically, it was seen that social and cultural environment is in favour of traditional assets. But with the passage of time, modern assets like latest televisions, mobiles, are being procured by the individuals even in the forest fringe areas. As a result of these, those who are economically sound have modern assets of one or another variety. During survey, it was observed that 95% families posses television, whereas 80.71% have mobile. Other accessories like refrigerator, LPG, Jeep/Car etc; are also found frequently in the forest fringe areas as given below (Figure 4)
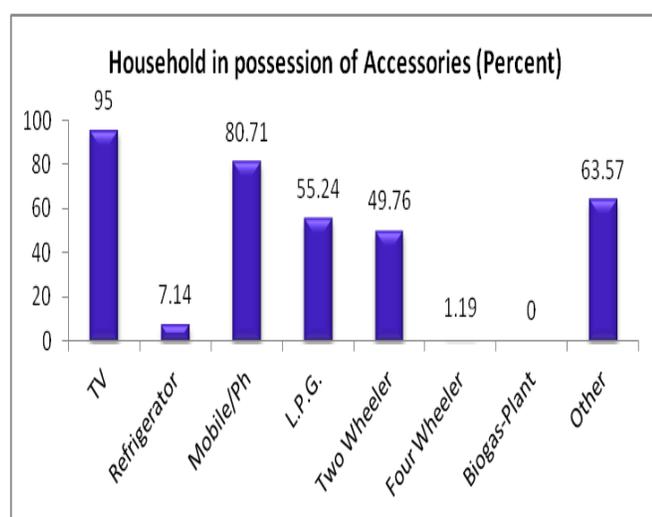

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Figure 4: Household accessories

Land Status

Land records available with the household were verified while collecting information of land type at the household level. The details like scattered land, consolidated land, waste land, irrigated land and un-irrigated have been collected. The survey reveals that 69.19% of the total land were scattered, whereas 30.81% land was recorded as consolidated land. It was also notices that 0.35% land area belongs to waste land. While 64.69% land falls under irrigated category; 34.96% was recorded as un-irrigated.

Agriculture Equipment

The major agriculture equipment used is Pump set and Tractor. The others methods are ploughing, Thrasher and harvesting machine (Table 12).

Table 12: Availability of Agricultural Equipment

Sr. No.	Equipment	Percentage (%)
1	Plough-Ox	3.1
2	Tractor	50.95
3	Solar Energy	0.24
4	Fodder Machine	5.71
5	Harvesting machine	5.24
6	Pump Set	25.95
7	Thrasher Machine	0.24
8	Sewing Machine	0.24
9	Other	10.71

Land Area under Agriculture

The information gathered during the survey reveals that 98.04% area was under Cultivation.

Major Agriculture crops

In general, the farmers of fringe areas take two crops in a year. However some farmers take only one crop based upon the facilities. The details of the Expenditure, production and market rate are listed below (Table 13).

Livestock Population

The history of livestock raising has been embedded in Rural life, since the inception of our civilization. It is an integral part of the socio economic activities of the rural areas and place a key role in mitigating the effects of poverty by providing meat and milk for daily use. The major percentage comes under the cow population of 63.85%.The next level is for the goat population with 18.08% and the sheep stands in the third place of with 11.95%.The others include Buffalo, Bull.

FOREST DEPENDENCY

Forests provide a wide range of natural assets, including household goods, cultural values, physical and biological products, and other services that are vital to the livelihood of many people. Growing levels of concern have been leading to the studies of forest resource dependence among the rural households, socio-economic factors and their related activities, fuel wood consumption and forest degradation. Population explosion has induced great pressure on forest which leads to depletion of forest resources. Fuel wood and fodder are the basic forest products that are extracted daily or weekly basis in most of the rural areas.

Table 13: Area under major Cultivation and their production

S.No	Category	Percentage of cultivated area	Expenditure (Rs/Hec)	Production (Q/ha)	Market rate (Rs/Q)
1	Paddy	31.01	31,945.63	22.42	829.68
2	Groundnut	28.88	9,982.47	45.44	2,370.15
3	Sugarcane	24.31	51,676.00	655	5,167.00
4	Tapioca	3.85	7,243.32	135.37	712.5
5	Horsegram	2.02	12,348.99	73.96	1,700.00
6	Colleus	1.42	46918	215	6250
7	Miscellaneous	8.51	62435	352	2800
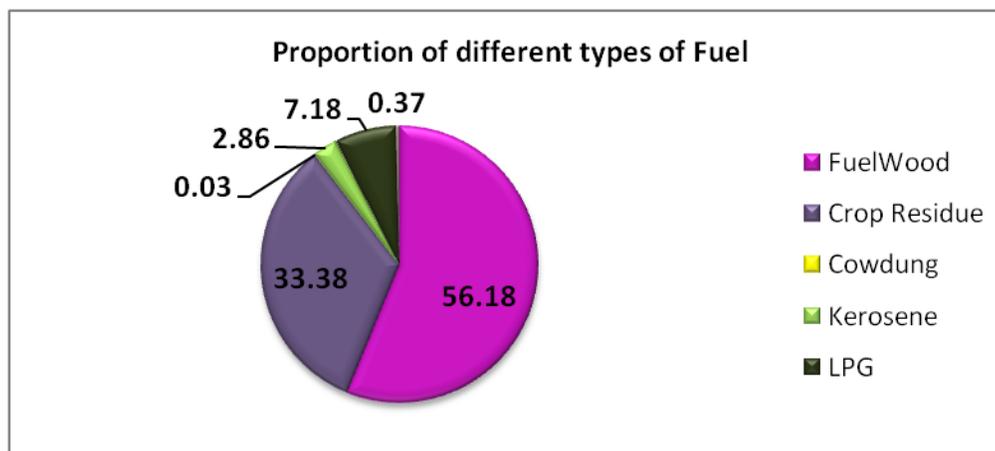
Figure 5: Proportion of different types of fuels

Table 14: Source of energy and their Monthly consumption

Sr.No	Category	Cooking	Heating	Lighting
1	Fuel wood(Kg/month)	6686.1875	2044.820	-
2	Crop Residue (Kg/month)	3494.281	1725.134	
3	Cow dung (Kg/ Month)	2.91	2.55	
4	Kerosene (Lt / month)	318.315	106.171	24.07
5	LPG (Kg/month)	1127.56	-	-
6	Biogas(Kg/month)	58.33	-	-
7	Electricity(Unit/Month)	-	-	992.222
8	Coal / Lignite (Kg/Month)	-	-	-
9	Others (Kg/month)	-	-	-

Fodder

Rural communities in the forest fringe areas meet their fodder requirement from different sources like forest, Van panchayat, Road side, private pastures, Own land and purchase. Forest is one of the major source of fodder for grazing as well as stall feeding. The overall total fodder consumption in the forest fringe areas of Tiruvannamalai was 1,406,301.15 tons in a year. Out of which 1,291,734.93 tons/year are for grazing fodder and Stall fed fodder is 114,566.22 tons/year. The main source of grazing from the community land constitutes 32.99% and the main source for Stall feeding comes from the Own land source of 79.87 %.

Energy Use Pattern / Energy Consumption

Fuel wood is the major energy source for the forest fringe areas either for Cooking, Heating or Lighting .The other sources of energy are very limited may be due to the cost involved. Fuel wood provides 56.18% of the total fuel requirement in the fringe areas, which clearly reflects very high dependency on forest (Figure 5)

Energy consumption

In rural areas, the different types of energy are used for cooking as well for heating and lighting (Table 14). LPG

is the main source of energy in these areas. The communities living in the forest fringe depend heavily on the forest and their forest goods needs.

The main source of energy used by the forest fringe people were fuel wood, Crop residue, Kerosene, LPG and Electricity as given in above table. The total fuel wood consumption in forest fringe areas of Tiruvannamalai distinct was 56%.

Source of fuel wood

The main source of fuel wood is from the Own land source of 33.29%. The total fuel wood consumption in forest fringe area was 105310.36 tons per year. Out of which 35054.60 tons of fuel wood was coming from Own land source. 27.61% are coming from the own land, whereas 4.11% are being purchased. The other sources of fuel wood are given below. Parr et al. (2011) reported that though the villages in Tamilnadu are electrified, people depend on firewood for cooking and other energy.

Forest product extraction from forest

During the survey at household level, it was found that the forest fringe communities extract different types of forest products in the form of timber for agriculture equipments and household items, resin, honey, jute.

Extraction from Forests at a glance of forest fringe areas of Tiruvannamalai District.

The following table 15 gives snapshot of total extraction from forest by the forest fringe communities of Tiruvannamalai District especially in the form of Fuel wood, fodder and to some extent of timber.

Table 15: Extraction from Forest of Tiruvannamalai Districts

Sr.No	Category	Tons / year
1	Total Fuel wood	26,562.91
2	Total Timber	---
3	Total Fodder	302,698.88
4	Total NTFP`s	----

CONCLUSION

The present study reveals that the forest fringe village dwellers depend on forest for fuel wood, fodder and other NTFPs. Hence, it is opined that management of forests with the co-operation of fringe village dwellers under JFM (Joint Forest Management) programme would be of good approach for the forest department.

This approach would also support villagers for their livelihood.

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