P: ISSN NO.: 2394-0344 RNI No.UPBIL/2016/67980 VOL-6* ISSUE-7* October-2021
E: ISSN NO.: 2455-0817 *Remarking An Analisation*

Forest Resources Collection and Its Main Determinants: A Case Study of Two Selected Villages in West Bengal

Paper Submission: 15/10/2021, Date of Acceptance: 23/10/2021, Date of Publication: 24/10//2021

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Abstract

Forest resources directly meet the needs of the requirement of food, fuel, fodder etc. Sometimes forest dwellers collect different type's leaves like Sal, Ken etc. for selling purposes that increase the family income. The study establishes that the villagers near the forests earn a significant portion of their livelihood from forest resources. There are some economic factors such as household income, and land holding size, household resources and also some non-economic factors such as caste, gender, family size, which may affect the work of forest resource collection. This paper tries to find out the main factors which determine the forest income by the forest users' households.

Keywords: Forest Resources, Market, Income.

Introduction

Forests have played a vital role as an important renewable resource in the economic development of developing countries like India. About 23.41 per cent of India's geographical total area constitutes recorded forest area ('ISFR' 2009). Forests are rich sources of energy, housing material, firewood, timber and fodder and they provide employment to a large section of rural population. They also play a critical role in maintaining the ecological balance. It is observed that forests are not spread evenly in India; rather they are concentrated more in the poorer regions of the country. Interestingly these regions are characterised by low agricultural productivity and having inferior quality of soils.

In India, forest regions are not totally uninhabited. In the remote forests people have either been living traditionally or were brought by the Forest Department in the colonial period. Existence of human settlements in the forestry ensures the availability of labour. Livelihood of tribal communities mostly depends on forest products.

Review of Literature

N S Jodha(1986) has tried to highlight the role of Common Property Resources in dry land areas in generating income for the poor in his article titled "Common Property Resources and Rural Poor in Dry Regions of India." Based on household and village data from 21 dry topical districts in seven states in India, the author has shown that while privatization leads to transfer of access from poor to non- poor, the poor themselves cannot preserve the resources unless they are endowed with complementary sources. He has found out that CPRs are playing a very important role in the generation of rural employment like CPR product collection and other CPR product processing activities. He also found out that though CPRs have very low ability to generate income, it has reduced the rural inter-class income inequality. Finally the author has concluded that govt. has taken some policies of privatization of those CPRs to improve the quality of life of rural poor by distributing those CPRs among the rural poor but ultimately it has ended up to a mess due to the wrong allocation of CPRs. Consequently poor people became poorer and rich people became richer.

In the article written by Tony beck and Madan G Ghosh titled "Common property Resources and the poor Findings from West-Bengal", author has tried to highlight the importance of CPRs among the rural people and how its importance differs from poor to non-poor rural people. The authors have done a field survey in seven villages in West-Bengal .The survey has taken place for mainly two types of households (i.e. poor and non-poor) to see the relative importance of CPRs among them.

From the sample survey on the villagers of West-Bengal the authors have found out the very interesting fact that, despite large scale decline in access to CPRs, the contribution of CPRs to the livelihood of the rural population, especially the rural poor, has continued to be significant.

Finally, authors have concluded that CPRs are of crucial importance to the poor people's livelihoods even in a region where land is mostly privately owned. Author also sees that women and girls are mainly responsible for collection of CPRs. The poor people are excluded from access to CPRs mainly due to agriculture intensification, commoditization of CPRs, environmental degradation and population growth.

RaghunathSahoo andMamata Swain (2013), "contribution of common property resources for sustainable rural livelihoods in odisha: prospects and constraints' '. In this paper, an attempt has been made to determine the contributions of common property resources (CPRs) to rural household income and their fuel-wood and fodder requirements in four villages in Keonjhar district of Odisha. The study tells that intrusion, implementation of various developmental programmes and overexploitation resulted in degradation of CPRs. This leads to a livelihood crisis situation for the rural poor. Apart from their degradation, CPRs meet significantly the total requirements of fuel-wood and fodder of poor and non -poor households. It has been found that the income and employment opportunities from CPRs among poor households are more than non-poor households in the study area, but not in absolute positions. Therefore Measures are needed to ensure retention, regeneration and sustainable utilisation of CPRs to provide livelihood security to the CPR-dependent rural communities.

Objective of the Study

The objective of the present pepper is to estimate forest income by forest users among the chosen forests and also want to determine the factors which are responsible for such income.

The study is mainly based on Primary data .For collection of Primary data, I purposely selected two forests, one is greater access to market and other is less access to market and infrastructure. Then one adjacent village to each forest is identified. We select 50 households of each village on the basis of two way stratified random sampling according to caste and land holding size. One is Sundarkhela forest village which is situated at Raj Nagar Blok (Birbhum District), far from Rajnagar market (about 20 km from Rajnagar market). Another is Illambazar Forest which is near to Illambazar Market. Here both the forests are managed by the rule of joint forest management (act in 1991).

We collect data on households' engagement in different types of jobs and their corresponding income and lastly on their expenditure on different heads. Villagers collect different forest resources such as fuel, fodder, forest food and some leaves. Most of the forest's resources are used for own consumption purposes but some resources are used for selling purposes. Then we valued all the resources in market price for those resources which have market price. But for some resources market price does not exist and hence, prices of substitute goods are being considered as imputed prices. In this way I converted the entire forest products into monetary units.

Secondary sources like, Forest survey of India, and Population census have been also used for this paper.

Observations

You may define the basic concepts that you frequently use in your paper. You should clearly state what your hypotheses are?

From Secondary Sources

(Forest survey of India 2011, 2019, Population Census 2011)

In India, the rural population is about 68% of the country's total population (2011 census). A significant portion of rural people depend on the forests for meeting the needs of fuel, fodder, small timber, bamboo and NTFPs. As per the Census 2011, there are about 6,50,000 villages in the country, out of which nearly 1,70,000 villages are located in the proximity of forest areas (situated within 5 km from any forest area), which is about 26% of total villages in the country. They are often termed Forest Fringe Villages (FFVs). Forests play an important role in the socio-economic and cultural lives of the people inhabiting these villages.

Estimates of quantities of fuelwood, fodder, small timber and bamboo collected annually by the people living in the FFVs with population from the nearby forests is presented in the following table.

Table-1

State/India	Population in FFVs	Fuelwood ('000 tonnes)	Fodder ('000 tonnes)	Small Timber(cum)	Bamboo ('000 tonnes)
West Bengal	11559614	2519	21209	134964	45.47
India	306556264	85290	1053039	5848204	1834.25
% of WB with respect to India	3.77	2.95	2.01	2.31	2.48

Table-2

Forest cover area of , west Bengal & India 2011 & 2019 assessment(Area in km²)						
District/ state	**Geo. Area**	**total forest cover(2011)**	**% of total forest cover to total ga(2011)**	**total forest cover(2019)**	**% of total forest cover to total ga(2019)**	**% Change in total forest cover from 2011 to 2019**
West Bengal	88752	12995	14.64	16902	19.04	30.06
India	3287263	692027	21.05	712249	21.67	2.92

In the above table-2 it is seen that the percentage increase in total forest cover from 2011 to 2019 in India is only 2.92 %, whereas in west Bengal this figure is 30.06 % .

From Primary Survey (Own field survey)

Table-1 Income and land ownership of the HHs for both forests

Income Group(Rs/ month)	No of households	Average family size	Average land holding(Accor)	Average HH non forest monthly income(Rs/month)
Near to Market	50	4.08	1.09	9455
Far from Market	50	5.34	1.10	4161

In the above table, it is seen that the average land holding size of both household groups are approximately the same. On the other hand average private monthly income is higher for forest villagers, where the forest is situated near to market compared to villages far from market. So we can say that villagers of forests under joint forest management which are near to market are richer compared to villagers of forests under joint forest management situated far from market.

The table -2 & Table-3 shows that the percentages of households are collecting fuel, fodder, food & different types of leaves from both the forest and it is seen that the larger percentage of households are collecting fuel, fodder and food in case of forests situated far from market compared to forests near to market. Villagers collect different types of leaves, from a greater percentage of households near to market compared to those in the forests situated far away from the market. It has been found that, as income of households increases the collection of all types of items decreases though with some exceptions.

Table-2 Pattern of collection of forest product, fodder and fuel according to Income Groups

	FAR FROM MARKET			NEAR TO MARKET		
Income Group(Rs /month)	No. of sample HHs	% of HHs collecting fodder (%)	% of HHs collecting fuel (%)	No. of sample HHs	% of HHs collecting fodder (%)	% of HHs collecting fuel (%)
0>-<3000	23	47.83	100	4	50	100
3000-<6000	18	83.33	88.89	19	89.47	89.47
6000-<10000	6	16.67	50	12	41.67	33.33
10000 & above	3	33.33	0	15	20	13.33
Total	50	56	84	50	54	54

Table-3 Pattern of collection of forest product, all leaves and food according to Income Groups

	FAR FROM MARKET			NEAR TO MARKET		
Income Group(Rs/month)	No. of sample HHs	% of HHs collecting shal, ken, khejur leaves (%)	% of HHs collecting food (%)	No. of sample HHs	% of HHs collecting shal, ken, khejur leaves (%)	% of HHs collecting food (%)
0>-<3000	23	60.87	86.96	4	100	100
3000-<6000	18	27.78	61.11	19	89.47	89.47
6000-<10000	6	0	16.67	12	33.33	41.67
10000 above	3	0	0	15	6.67	20
Total	50	38	64	50	52	58

Multiple Regression Model

We have examined to what extent total forest income is related with different important variables like total land holding of the households, total members of the households, total numbers of cattle and total family private incomes from different sources for a household.

We undertake estimation of multiple regression models to find out how the forest income of households (the dependent variable) depends on such quantitative variables as Private monthly income, farm size, family size and number of Cattle (independent variables). To estimate the impact of qualitative variables like caste identity of the households, management of forest and distance from market we include three dummy variables along with all the quantitative variables indicating economic condition of the households.

Results of multiple regression analysis Table for all regressions

	Regression Dependant variable: Total monthly forest income	Regression Dependant variable: Total monthly fuel income	Regression Dependant variable: Total monthly fodder	Regression Dependant variable: Total monthly food value	Regression Dependant variable: Total monthly value of shal leave
Regressors	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Intercept	-235.2605** (-2.00)	26.00801(.70)	-194.3054**(-2.01)	-127.9649** (-2.67)	61.00183*(1.96)
Family size	46.07123**(2.38)	32.63572***(5.32)	-.6415441(-0.04)	10.86793(1.38)	3.209128(.63)
No. of Cattles	97.54147***(6.22)	-1.930567(-0.39)	89.3148***(6.93)	3.462751(0.54)	6.695481(1.62)
Private Monthly income	-.0143821**(-2.49)	-.0080355***(-4.41)	-.0047674(-1.01)	.0018013(0.77)	-.0038806**(-2.22)
Farm size	-92.59985*** (-3.37)	-4.117074(-0.47)	-47.5358**(-2.10)	-25.73066**(-2.30)	-15.21632**(-2.09)
ST(dummy)	1026.864***(14.74)	197.6331***(8.97)	314.0008***(5.48)	309.0356***(10.90)	206.1946***(11.21)
Far from Market	316.4157***(4.24)	33.61715(1.42)	201.2273***(3.28)	145.4211***(4.79)	-63.84978***(-3.24)
R^2	.8136(67.67)	0.6861(33.88)	.5672(20.31)	.6511(28.93)	.6969(35.64)
Adj R^2	.8016(67.67)	0.6659(33.88)	.5393(20.31)	.6286(28.93)	.6774(35.64)

Note- Values are in the brackets for R^2 and Adj R^2 representF values and in other cases the values in the brackets represent T values.

From the above Regression analysis (Regression-1), it is established that the forest income increases significantly as one moves from forests near to market to forest situated far from market and it also increases very significantly for ST households. The above regressions further show that forest income declines with increase in monthly family private income and increases in land holding size indicating a negative relation between economic condition and extraction of forest resources. The relation between increases in forest income with increase in family size is significant. Increase in family size provides with more hands to collect forest products. Larger number of cattle in a household leads to increase in demand for forest products as fodder.

We run regression 2 by taking the total value of fuel collected from forest as a dependent variable with similar independent variables and find out that fuel income increases with increase in the number of ST people. The fuel income collected from forest declines with increase in monthly family privative income and it increases significantly with family size. As family size increases, the need for fuel and hands to collect fuel from forest increases. As forest income declines with increase in private monthly income, it indicates poor take more fuel from forest. Owning more cattle reduces the need for forest fuel and less dependence on forest for fuel. However there is no significant difference between the two types with regard to fuel collection from forest.

Running the same regression equation with fodder as the dependent variable shows that number of cattle, caste dummy (ST) and market dummy are influencing significantly positively the amount of extraction of fodder. Farm size influences significantly negatively indicating villages with smaller size of farms depend more on forests.

In case of collection of food items from forest, the coefficient of caste dummy and market dummy are positively significant. If the forests are situated far from the market, people get more food items from forest, and ST community people collect more food from forest compared to other caste people.

The collection of different types of leaves significantly positively depend on the dummy variable of Caste. This implies ST community people take more leaves compared to other caste people. On the other hand, market dummy influences significantly negatively which implies in the case of forests near to market, people get more leaves from forest compared to those in forests which are far from market. We have also seen that monthly private income and average farm size are negatively significant. This impels poor people take more advantage in terms of different types of leaves collection

Conclusion

Forest dwellers of the chosen forests are collecting different kinds of forest products from their respective forests but the villagers of forest far from market are able to get large amounts of forest products compared to forest situated near to market. The main factors which are responsible for the income of the forest are family size, farm size, and private monthly income, number of cattle and caste & market. Commercialisation of forest products lead to generating lower forest income of forest dwellers.

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