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Use of Common Property Resources in Rural Household of Arunachal Pradesh: A Case Study

Ram Krishna Mandal

Dera Natung Government College, Itanagar 791113, Arunachal Pradesh, India

ABSTRACT

The framework for rural livelihood analysis is gaining ground rapidly as a 'new' approach to rural poverty alleviation or reduction in low income economies. In rural areas of Arunachal Pradesh, livelihoods and its diversification has always been seen. Common property resources (CPRs) are regarded as an important resource base for the rural economy in many of the developing and underdeveloped countries till today because of their significant economic contributions to the sustenance of rural livelihood. Arunachal Pradesh is renowned for endemic biodiversity as the 18th Biodiversity hotspot. The communities have direct dependency on the forest resources for their day to day livelihood. It is widely accepted that CPRs still play an important role in the life and economy of the rural population of Arunachal Pradesh. The study reveals that CPRs played a very important role in the economy of the surveyed villages although the consumption value from community forest was higher for the non-poor households in absolute terms yet in relative terms, the poor households' dependency on community forest was very important and crucial for their survival. Hence, there was urgent need to form sustainable management of CPRs, particularly the forests in order to avoid 'the tragedy of commons'.

Key words: Poverty alleviation, common property resources, rural livelihood, forest resources, sustainable management

INTRODUCTION

Rural livelihood diversification is considered as the process by which rural households build an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living. Livelihood discourse offers a complete picture of the complexities of survival in low income economies than the terms formerly considered adequate like 'subsistence', 'incomes' and 'employment'. In rural areas of Arunachal Pradesh, livelihoods and its diversification has always been there. Recent discovery relatively by the development profession and a renewed emphasis in achieving rural survival under difficult circumstances brings forth awareness of the phenomenon with changes in its nature, incidence or importance. Thus the framework for rural livelihood analysis is gaining ground rapidly as a 'new' approach to rural poverty alleviation or reduction in low income economies. Perhaps this increased awareness of livelihoods and diversity is an indication for better formulated rural poverty reduction policies and programmes than those based conventionally on sectors and sub sectors. Level of living throws light on the economic well-being of the people. It tells us about individual, society, village, state or nation, its level of affluence and subsistence. This study, it is hoped, would throw light on the existing level of living of tribal people, their mode of living habits.

Recent literature on CPR management criticized “Hardin’s Tragedy of the Commons” often results, not from any inherent failure of common property but from institutional failure to control access to resources and to make and enforce internal decisions for collective use. These critiques argue that Hardin’s tragedy of commons’ is applicable only to the situation of appropriation of ‘open access resources’ and not to commons i.e., common property resources (Ciriacy-Wantrup and Bishop, 1975; Bromley, 1991). In case of open-access and unregulated common property individuals do not get proper incentives to act in a socially efficient way. The subdivision present the review of literature related to the study the purpose of the part to understand the result of various studies already undertaken in the relevant field and to find the research gap for the present study. Jodha (1995b) examine the developing countries is increased pressure on land, leading to over-exploitation and degradation of the natural resource base of agriculture. The problem is greater in the low-productivity, high-risk environments such as dry tropical regions. Common property resources (CPRs) are those resources, which are accessible to the whole community to which no individual has exclusive property rights (Jodha, 1986). Jodha (1995a) define CPRs as a “community’s natural resources, where every member has access and usage facility with specified obligation, without anybody having exclusive property right over them”. Adhering to the definition of Jodha, the resources falling under this category of CPRs in India are protected forests, community forests, village pastures, waste lands, waste dumping places, watershed drainages, grazing land (gauchar), village ponds, canals, tanks, wells, streams, rivulets and river beds. However, CPRs are regarded as an important resource base for the rural economy in many of the developing and underdeveloped countries till today because of their significant economic contributions to the sustenance of rural livelihood (Jodha, 1986). Common property is the concept developed around the hypothesis posed by Hardin (1968) in his article on the “tragedy of the commons,” in which he claims that farmers, herders, fishermen and other users are inevitably “condemned “to exploit to extinction common resources upon which they depend. Hardin believed that, in the case of making use of common resources, individual interests would overcome the interests of the collective. Common property resources constitute all such resources which are meant for common use of the people. In the pre-British India, a very large part of the country’s natural resources was freely available to the rural population. Those resources were largely under the control of the local communities. Gradually, with the extension of the state control over these resources decay took place in the community management system. The commoners’ right over the resources has gradually declined over the years. Nevertheless, it is widely held that CPRs still play an important role in the life and economy of the rural population.

Recently, some scholars have come up with many interesting findings from various parts of the country pertaining to the impacts of JFM committees on status of local environment, livelihood pattern of the users and the management structures in details. Therefore, the best approach advocated many scholars is to adopt participatory approach and build community based resource management institutions for better and sustainable management of the CPRs, such as forests by ensuring sufficient incentives and mentoring mechanisms to make these institutions long lasting and sustainable in the years to come.

Arunachal Pradesh is renowned for endemic biodiversity as the 18th Biodiversity hotspot (Arunachalam *et al.*, 2002). The ethnic diversity comprises as high as 25 major tribes and many sub-tribes. The communities have direct dependency on the forest resources that helps in the

socio-economic development of the forest dependent communities. Various wild plant species have been used by the local communities in Arunachal Pradesh that include green vegetable, roots and fruits as food (Haridasan *et al.*, 1990). About 118 wild edible plants and 31 medicinal plants are reported from Arunachal Pradesh. Moreover, wild edible plants have the potential to become staple foods and alternative of conventional agricultural crops. The existence of the forest is depending upon the participation of forest dependent communities in the forest protection and regeneration. The symbiotic relationship of forest and tribal communities has been well recognized in the Indian national forest policy. The wisdom of the forest dependent community has been a tool to conserve the valuable biological diversity that ascertained the socio-economic upliftment of the traditional societies. International and national initiatives have also emerged to safeguard the Indigenous Knowledge System (IKS) or traditional knowledge system through Convention on Biological Diversity (CBD) and National Biodiversity Act 2002 (Venkataraman, 2009). Nonetheless, the existing forest resources of the northeast India is a result of the community involvement in the protecting the forest resources through a protection regime adopted through village council by enforcing customary laws suiting to the local conditions.

This study attempts to unveil the importance of CPRs for the livelihood of the indigenous communities and their role in the socio-economic development.

MATERIALS AND METHODS

Study area: The West Siang District, one of 17 district of Arunachal Pradesh located in the central part of Arunachal Pradesh extends between 93°57-95°23' East longitude and 27°69-29°20' North latitude. It is bounded on the North by China. It is the home-land of various tribes. Of all tribal groups of West Siang district, the Galos rank first in population. Donyi-Poloism is the main religion of the tribes in the district. Total Population of this district as per 2011 is 112272 consisting 58589 males and 53683 females. The sex ratio is 916 and population density is 13. The Percentage decadal growth rate of population for 2001-2011 is 8.04. The literacy rate is 67.62% for persons, 73.89% for males and 60.76% for females. Out of the six sub-divisions, Likabali sub-division is our study area. This sub-division has 3 circles: Likabali, Kangu and Gensi. This is the only sub-division where we see three types of physiography viz. plain land, foot hill and high maintain area. We select 1 village of each circle.

Data sources and tools for data collection: The present study was mainly empirical in nature. The data which was used and incorporated in the paper was collected from primary as well as secondary sources. Data collection was made with the aid of structured and pre-tested questionnaires on the basis of stratified random sampling technique from the respondents of the sampled villages. The main tools of the study were two sets of questionnaire namely: (i) Household schedule and (ii) Village schedule. Both household schedule and village schedule were canvassed in the sampled villages. The household schedule was sought to gather information regarding demography as well as socio-economic characteristics of household, occupational pattern and sources of livelihood, landholdings, tenure and production system, collection and use of forest products from community forest, consumption expenditure and household management system etc. On the other hand, the village schedule also was sought to gather information regarding identification of sampled village, village history, availability of infrastructural facilities and particulars of the quality of forests near the village, role of village institutions and institutional framework of resource management.

These sampled households were further divided into the relatively poor and non-poor households. This was done by compiling a census of village households with Participatory Rural Appraisal (PRA) techniques. The participants in the PRA exercise were asked to categorize all households into two different household groups namely poor and non-poor based on the criteria as to what the villagers consider as important for assessing an individual's socio-economic position in the village. Richards *et al.* (1999) and Adhikari (2001) used the similar criteria for categorizing households into different groups. This categorization should be understood in relative terms since all the households in the study area are subsistence jhumias and farmers with few households having earning opportunities outside agriculture and CPRs. We have classified the sample households in two categories, viz., poor and non-poor. The households, whose livelihood based on CPRs and Agriculture having not more than 5 acres of cultivable land without alternative source of income were considered as poor while the households, whose livelihood based on CPRs and Agriculture having more than 5 acres of cultivable land with having other alternative source of income were considered as non-poor.

Village survey: One village of each circle, which contained more population, was selected for survey and 50 families where 25 poor and 25 non poor were selected through random sampling technique without replacement to fill up the pre-designed questionnaire through direct interaction with respondents from each village. Total respondents of three villages of three circles were 150 ($50 \times 3 = 150$) on the basis of male: Female = 3:2. Here only three villages under three circles (one village under one circle) were considered for survey. The researcher selected the respondents of age group (31-60) years as this age group is particularly more responsible to earn the livelihood for their family. The village survey was taken in the month from April to August, 2012.

Analysis of the data: The data thus collected from all the households of the sample villages were analyzed village-wise, occupation-wise and class of expenditure-wise. A number of table and diagrams were used to facilitate for easy understanding. Simple numerical calculations, graphical representations, different statistical tools like mean, standard deviation, coefficient of variation were used to analyze the data and to write the report of the study.

RESULTS AND DISCUSSION

The tribal economy in general was defined by its primitiveness. In the absence of any market force, the traditional institutional framework provided them a subsistence type of economy, where production relation was established on basis of the interactions between man and nature. People evolved the nature for their own shake. Man extracted the nature for producing his bare needs in the forms of gathering, hunting, rearing and later in agriculture but to every extent he was limited by the concept of provisions; neither had he produced for the market nor did he buy the needs from there. Money economy was virtually absent until the very yesterday. Although static but a self-sufficient and self-reliant economy was prevailing under the guidance of a traditional framework. However, the recent scenario in this respect is very much different from its original version (Mandal and Ghosh, 2012). Occupational structure in the state varies from primitive and

Table 1: General information

Study area	Total No. of H.H.		No. of respondents H.H.				Total
			Male		Female		
	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	
Likabali	25	25	15	15	10	10	50
Kangu	25	25	15	15	10	10	50
Gensi	25	25	15	15	10	10	50
Total	75	75	45	45	30	30	150

Source: Field survey, 2012, H.H.: Household

Table 2: Respondents' age group and employment in general

Study area	31-40		41-50			51-60			Total	
	Res. No.	Employment	Res. No.	Employment		Res. No.	Employment			
		M	F	M	F	M	F			
Likabali	20	6	2	20	6	3	10	5	2	24 (48)
Kangu	20	4	3	20	8	2	10	5	-	22(44)
Gensi	20	6	2	20	2	1	10	4	-	15 (30)
Total	60	14 (9.3)	5(3.3)	60	10(6.67)	4(2.67)	30	7(4.67)	1(6.66)	61(40.67)

Source: Field survey, 2012; Res. No.: Respondent number, M: male, F: female, percentages are shown in parenthesis

indigenous agricultural practices with an inbuilt knowledge system initiates traditional occupational engagements in activities like hunting and gathering, shifting cultivation (slash and burn method) and collection of minor forest produce, to self employment, wage labour in agriculture and service sector as well as earning from their inbuilt management system of natural resources. These are some of the diversified livelihood options which portray a unique pattern in the rural-urban set up and comprise the major livelihood options that are available to the local populace at large giving a unique pattern of traditional base with transitional outlook towards continuity and change to modernity. Information about the Surveyed Villages is shown in Table 1.

Findings: For general information of the study area, number of households, number of males and females responded are shown in Table 1. From 50 households, 30 males and 20 females were interviewed, each from each household. Out of 30 males, 15 are poor and 15 are non-poor. Out of 20 females, 10 are poor and 10 are non-poor. Total number of respondents was 150 in three villages.

Employment scenario in the study area

Findings: Age group wise employment in general excepting NCPRs and in NCPRs is shown in Table 2 and Table 3. To see employment scenario we divided the households into three age groups: 31-40, 41-50 and 51-60 seen in the Table 2 and Table 3. Employments in general were 48, 44 and 30% while in the same way employments in NCPRs were 56, 56 and 70% in Likabali, Kangu and Gensi respectively. Age group wise 9.3 of male and 3.3% of female in (31-40),

Table 3: Poor and non-poor wise employment in general and in NCPRs

Study area	Respondent	Employment in general		Employment in NCPRs	
		Poor	Non-poor	Poor	Non-poor
Likabali	50	15	18	10	7
Kangu	50	10	15	15	10
Gensi	50	9	14	16	11
Total	150	34(22.66)	47 (31.33)	41(27.33)	28 (18.66)

Source: Field survey, 2012. percentages are shown in parenthesis

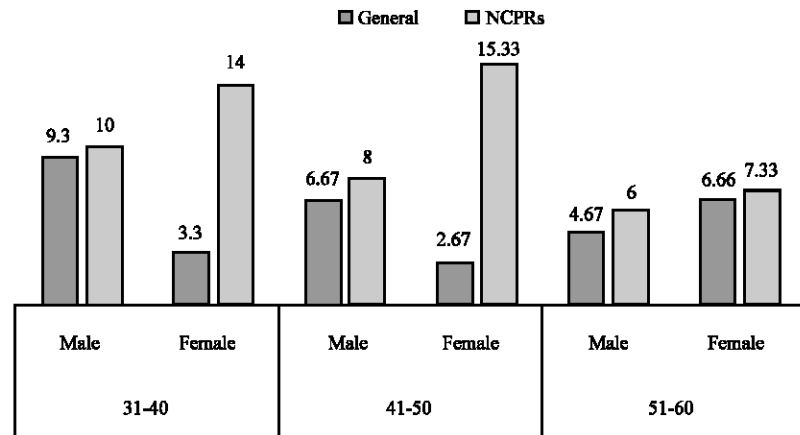


Fig. 1: Age groupwise employment in general and NCPRs

6.67 of male and 2.67% of female in (41-50) and 4.67 male and 6.66% female in (51-60) years were employed in general excepting NCPRs as observed in Table 2 in the study area. Again age group wise employed in NCPRs as per Table 3 we see that 10 of male and 14% of female in (31-40), 8 of male and 15.33% of female in (41-50) and 6% male and 7.33% female in (51-60) years were employed in the study area. Employment scope is very limited. Government scheme for poverty alleviation is very poor and insufficient. In general, female employment was very lower than male employment shown in Table 2 in general excepting in NCPRs but female employment was more than male for all age groups in NCPRs shown in Table 3. Employment in general and NCPRs can also be depicted in Fig. 1. Therefore, in total 40.67% were employed in general and 59.33% in NCPRs. In Likabali adjacent to Assam, there is foot hill where employment was less in NCPRs and more in general excepting NCPRs in comparison to other areas. Age groupwise employment in general and NCPRs and percentage of employment in General and NCPRs are shown in Fig. 1 and Fig. 2. Overall percentage of employment in General and NCPRs is also depicted in Pie-chart diagram in Fig. 3. Again poor and Non-poor wise Employment in General and in NCPRs is shown in Table 4 and in Fig. 4. It was seen that poor and non-poor were more employed in Likabali. Being a sub-division, there were more scopes for employment in general signifying that the people was less dependent on NCPRs while employment opportunity was less in other two study areas. As a result people were more dependent on NCPRs. Generally poor were more employed in NCPRs in comparison to the non-poor. Percentage wise 22.66 of poor and 31.33% of non-poor were employed in general while 27.33% of poor and 18.66% of non-poor were employed in NCPRs. It is observed from the study that poor people were engaged more in NCPRs while non-poor people were engaged more in general.

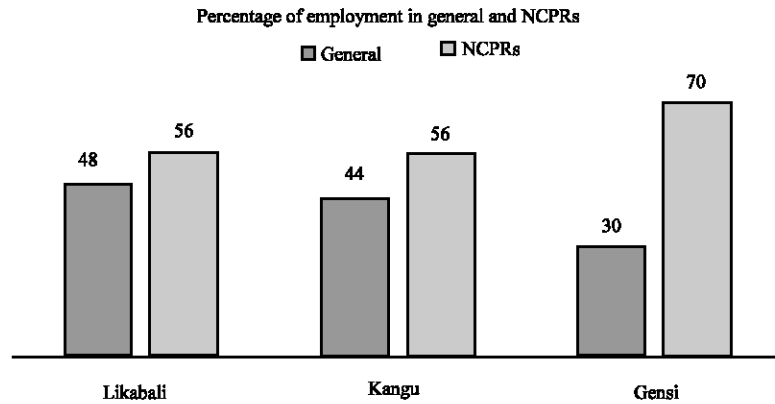


Fig. 2: Percentage of employment

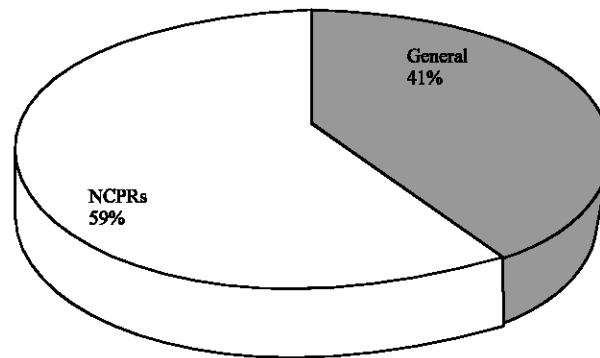


Fig. 3: Overall percentage of employment in general and NCPRs

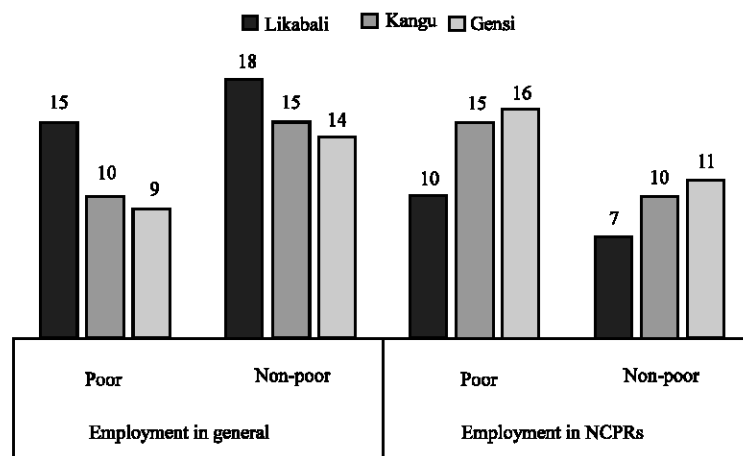


Fig. 4: Poor and non-poor wise employment in general and NCPRs

Dependency of rural people on CPRs/ community forest in the study area: In the surveyed villages majority of the households were mostly dependent upon CPRs for their daily livelihoods. Community forest plays an integral part in rural household economies. The myth, belief and tradition are centered around the forest and its environment and their dependency on it becomes

crucial due to many socio-economic factors like predominance of jhum cultivation, lack of road connectivity and transport facility, non-availability to market access, traditional belief etc. Under such circumstances, obviously the rural households are compelled to depend on different forest products. They also catch fish from the river/lake and hunt animals in the jungle. These CPRs provide general benefits to the surveyed households through supply of the fodder and grazing land, which help them in saving their private land from crops production. Wild food and leafy vegetables are collected as food items. Their life is intimately related to the forest. In our surveyed area it is found that the household's income from Business, Service and Wage is very low. There are two types of Agriculture Practices prevalent in the surveyed villages: shifting cultivation and permanent cultivation. Per manent cultivation is limited. For the poor households the area under permanently cultivated land is insignificant. Jhuming is their major agriculture activity. However it is not possible to operate huge plot of land at a time due to the constraints of family labour and private property resources etc. As a result the poor are bound to dependent upon CPRs.

The dependency of tribal people on CPR can be established in various ways. Most of the researchers are taking into consideration the household income in this aspect. But the collection of quantities information about income from rural areas in the tribal society is extremely difficult and over and under estimation of collected data cannot be ignored.

Selected benefits from CPRs/community forest

Food and its security: Forests, trees and CPRs provide essential inputs to local communities and hence, play a critical role in their lives. One major function is that of providing food and its security. Local forest wealth and other locally available resources, in their infinite variety, are sometimes the mainstay or backup to food availability in such communities. Such resources provide a wide range of food to local communities through roots, plants, leaves, flowers, fruits, vegetables, seeds, meat from wild life etc. Each season brings with it a variety of food.

Habitat and shelter: Forests and trees make available logs of wood, bamboo, grass etc. required by local communities for constructing their huts for shelter. Local communities are dependent on forests and trees for procuring such materials. Forests also provide shade and grazing space to them.

Livelihood: Forests, trees and CPRs sustain livelihoods of local communities. Sustainable livelihood requires a level of wealth, of stocks, of stocks and flows of food and cash which provide for physical and social wellbeing and insecurity against becoming poorer (Chambers, 1986). Livelihoods dependent on local natural resources can be diverse from making of leaf plates to collecting gum and seeds to hunting of wildlife etc. Such livelihoods, generally, vary with seasons. Forests, trees and CPRs support livelihoods of local communities/groups in three ways (Chambers *et al.*, 1991) as indicated below:

- By providing for subsistence needs of fodder, fuel etc
- As a source of income and
- As capital goods or savings to be cut and encashed to meet contingencies

Table 4: Collected items from NCPs i.e., major use of forest (direct benefits)

Food					
Vegetables	Protein	Construction/Furniture	Health-care medicine	Fuel	Other minor forest produces
Edible fruits	Edible insects,	Stone	Root	Wood	Grazing land of the livestock,
Edible seeds	deer, fowl, rabbits,	Mud	Leaves	Leaves	grass, leaves, animal fodder,
Mushroom	monkey, wild goat,	Wood	Branch	Straw	wood for furniture and capital
Leaves	wild pig, snake,	Bamboo	Bark	Bark	equipment for agriculture and
Branches	bear, wild cat,	Leaves	Flower	Bamboo	tools
Roots, flowers,	mongoose, fishes	Cane	Bud	oil	
Stems,	squirrel, rat and		Honey		
Tender	snake, birds				
Bamboo	(all types)				

Source: Field survey, 2012 as listed by the local community

Table 5: Indirect benefits from forests

Preventing erosion
Conserving moisture
Conserving water
Re-cycling nutrient
Preventing drought or reducing its impact
Providing habitat for wild life
Providing leaf manure
Fixing nitrogen by leguminous trees
Regulating climate and rainfall
Providing greenery
Making for prestige and beauty
Reducing pollution

Such sustenance to livelihood can be reduced or disrupted with loss of forest cover, degraded forests and CPRs or reduced accessibility to such resources. It can have serious implications on livelihood patterns resulting in migration to other areas and/or increase in poverty and hunger of local people.

Fuel wood and fodder: Most local communities are dependent on forests, trees and CPRs for their fuel wood requirements. Some collect it on a daily basis while others go on selected days for such collection. Amongst fuel wood species, local people have their own preferences and priorities for varied reasons. Cent percentage people of the surveyed villages collect fuel wood and also hoard during winter season for rainy season.

Benefits-a mixed bag: The bounties of forest, trees and CPRs are a mixed bag providing direct and indirect benefits. Direct and indirect benefits are shown in Table 4 and Table 5.

Findings: All the people in the study area depend directly and indirectly on NCPs. Direct benefits are shown in Table 5. The respondents were collecting almost all of the items shown in the Table 4.

Bamboos play an important role in the rural economy. Bamboos are a sub family of grasses that include over 1,200 species worldwide 18 g and 130 species are so far known from India. The 26

species belonging to 9 genera occur in Arunachal Pradesh (Dept. of Forest, Itanagar, Govt. Arunachal Pradesh). In addition to the other vegetables, the local people make shoot of bamboo and use it in almost of all menus of dish. They also preserve the shoot and use it throughout the year and more or less take every day. Health management practice forms a part of their culture, the man made part of their environment. They have a close and symbiotic relation with the nature. Their health management system has two parts: (a) Propitiation of spirits-good or bad-responsible for causing diseases and (b) Use of curative medicines prescribed by herbalist from local herbs. Nature not only provides food and shelter but even today most of the Galos depend on forest for herbal medicine to keep them fit and healthy. They mostly depend on the local herbiest (local doctor) for their common ailment. The modern medical facilities were yet to reach far flung hamlets and they were delighted and keep themselves fit and fine with traditional method. For common diseases like cough and cold, indigestion, skin diseases, etc., their older folk of the family treat them from the surrounding herbs. The herbiest does treat jaundice, piles, bone fracture, cardiovascular diseases, gynaecological disorder etc. Before going for modern medical treatment, even today most of them consult and take permission from the local herbiest in the villages. The community possessed good health and their health management was purely nature based and environment friendly.

Indirect benefits: Apart from direct benefits, forests, trees and CPRs also provide indirect benefits. Some Indirect benefits of forests were described by local communities of villages. The list shows that the villagers are well aware of the rich properties of forest with which they have a day to day interaction (Mandal, 2012). This is shown in Table 5.

Different sources of rural livelihoods: Rural household in the study area makes a living and provide their material needs in different ways. They sustained themselves mainly by jhum cultivation and were dependent on different forest products from community forest. While some agricultural and forest products were sold to the market or used wholly for household consumption or exchanged partly through barter system with neighbors or with another villagers. All the family members (including husbands, wives, children, nephew, niece, grandfather and grandmother) contributed their labour to the economic maintenance and survival of the household while the division of labour along gender and age lines was followed in many rural households. Their participation in the formal economy comprises only a few facets of economic life in rural areas. They generally participated in informal economic arrangements with neighbors and member of their local communities. One or more may hold full or part-time jobs in the formal economy while other household members may contribute to the economic livelihood of the household by engaging in informal or semi-formal activities. Some of these sets of activities generate income and some reduce expenses compared to commercial activities. In the rural setting, rural households use the land and CPRs that a household either owns or has access to it. They also use rural skills and accumulated sub-traditional knowledge (for example, how to dribble on the slope of jhum land or how to rear animals) (Singh, 2010).

We have identified ten categories of rural livelihood combinations in the different surveyed villages of the study area. These are:

- Agriculture and Forestry (A+F)
- Agriculture, Forestry and Animal husbandry (A+F+AH)

Table 6: Different sources of livelihood in the study area

Sr. No.	Livelihood combinations	Study circles			Total	Rank	(%)
		Likabali	Kangu	Gensi			
1	A+F	50	50	50	150	1	100
2	A+F+AH	48	45	47	140	2	93.33
3	A+F+B	7	8	6	21	7	14.00
4	A+F+S	17	12	12	41	3	27.33
5	A+F+WL	5	7	6	18	9	12.00
6	A+F+AH+B	8	9	7	24	5	16.00
7	A+F+AH+S	9	7	7	23	6	15.33
8	A+F+AH+WL	8	6	7	21	7	14.00
9	A+F+AH+B+S	10	13	11	34	4	22.66
10	Other combinations (OC)	5	7	8	20	8	13.33

Source: Field survey, 2012

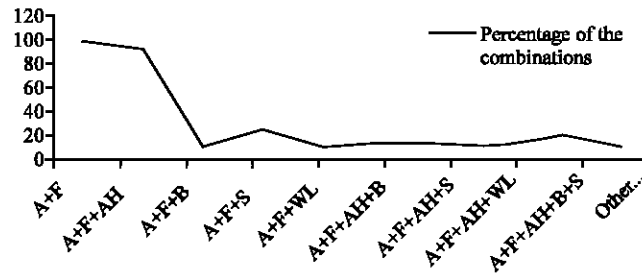


Fig. 5: Percentage of combinations

- Agriculture, Forestry and Business (A+F+B)
- Agriculture, Forestry and Service (A+F+S)
- Agriculture, Forestry and Wage labour (A+F+WL)
- Agriculture, Forestry, Animal husbandry and Business (A+F+AH+B)
- Agriculture, Forestry, Animal husbandry and Service (A+F+AH+S)
- Agriculture, Forestry, Animal husbandry and Wage labour (A+F+AH+WL)
- Agriculture, Forestry, Animal husbandry, Business and Service (A+F+AH+B+S) and
- Other combinations (OC)

These attributes, no doubt help to define the character and the range of activities/occupations in rural livelihood strategies in the surveyed villages of the district. However, changing abilities of rural household members and changing household composition make particular activities more or less feasible. Therefore, the overall livelihood combinations are shown in Table given below. The livelihood combinations of Agriculture and Forestry (A+F) has the highest frequency having cent per cent while Agriculture, Forestry and Animal husbandry (A+F+AH) has second highest frequency having 140 out of which Likabali stands highest. Likewise the serial raking and the percentages of livelihood combinations is also shown in this Table 6 and in Fig. 5.

These sampled households were further divided into the relatively poor and non-poor households. This was done by compiling a census of village households with Participatory Rural Appraisal (PRA) techniques. The participants in the PRA exercise were asked to categorise all

Table 7: Extent of households' dependence on common property resources in the study area

Study villages	Household categories	Common property resource's contribution per household				Annual income (Rs.) from CPRs per HH	Income from CPRs as proportion of total income (%)
		Food items (%) per HH	Fuel supplies ¹ (%) per HH	Animal grazing ² per HH	Employment days (No.) in a year per HH		
Likabali	Poor	70	90	100	120	10000	70
	Non Poor	30	60	80	50	3000	15
Kangu	Poor	65	84	100	110	9000	65
	Non Poor	25	55	75	40	2500	12
Gensi	Poor	60	80	100	100	8000	60
	Non Poor	25	50	73	38	2000	10

households into two different household groups namely poor and non-poor based on the criteria as to what the villagers consider as important for assessing an individual's socio-economic position in the village. Adhikari (2001) used the similar criteria for categorising households into different groups: Poor and non-poor. This categorisation should be understood in relative terms since all the households in the study area are subsistence jhumias and farmers with few households having earning opportunities outside agriculture and CPRs (Singh, 2010). The details are shown below in Table 7.

Level of dependence: Notwithstanding monitoring and measurement complexities, some of the benefits derived from common property resources in the regions had been quantified. Common property resources had been degraded and their productivity was much lower in that situation than the past. Consequently, the non-poor i.e., the rural rich (large farmers) depended very little on them. It was not worthwhile for them to collect and used meagre quantities of products from these resources. On the other hand, the rural poor (small farmers and landless labourers) with limited alternatives increasingly depended on low pay-off options offered by such resources. In the villages of the study, 60-90 percent of the rural poor depended on common property resources for fuel, fodder and food; the corresponding proportion of rich farmers did not exceed 20%. The heavy dependence of the rural poor linked these resources to the dynamics of poverty and to development interventions centred on the poor. Therefore, any change in the status and productivity of common property resources directly influenced the economy of the rural poor. The dependency of poor and non-poor on CPRs is shown in Table 7.

In general, the dependency of poor households on commons for consumption was, relatively higher than the non-poor households on firewood, bamboo, leafy vegetables, eatable roots and leaves while the income of non-poor is relatively higher than the poor households on timber and other groups of forest products like honey, medicinal herbs, seeds and wild animals hunt which can be marketed. Besides, the rural households generate directly some income by selling CPRs products in the markets and save expenditure by consuming and using CPRs items at free of cost. In terms of consumption expenditure from CPRs constitute annually 38.67% on an average where 65% for poor and 12.33% for non poor in the study area though the income from CPRs is higher for the rich in absolute terms yet in relative terms the poor's income from CPRs is very important and crucial in their household economies.

Most of the researchers are taking into consideration the household income in this aspect. But the collection of quantities information about income from rural areas in the tribal society is extremely difficult and over and under estimation of collected data cannot be ignored. Following the Table 7, regarding poor and non-poor household shows the total consumption expenditure of the household, value of CPR product consumed and then the percentage of CPR product consumed to the total consumption expenditure. It has been observed in the surveyed area that both the poor as well as the non-poor household derive a substantial portion of their consumption requirement from the CPR. The collected basket of CPR products consist of fuel wood, edible leaves, roots, mushroom, fruits from jungles, fish from the river, lake and streams, hunted meat, etc. There was a marginal variation in the consumption of CPR products among the villages.

Overall observations on the basis of field study:

- Depending on the high altitude, shifting cultivators used to grow maize, wheat, vegetables, potatoes, ginger, chillies, rice, millets, pulses, beans, sweet potatoes, oil seeds, yams, millets, mustard, sugar cane, sesame, pineapples, citrus fruits, bananas, jackfruits and so on
- In Likabali adjacent to Assam, there is foot hill where employment was less in NCPRs and more in general excepting NCPRs
- Meat of fowl, rabbits, deer, pigs, monkeys, etc.s, was used to be an important source of protein of hunting community. But the forest laws restricted these practices. Hunting was curtailed under the Wildlife (Protection) Act, 1972 but an amendment in 1991 banned it entirely. But these laws were not functioning properly. Many times the villagers were hunting the wild animal and selling the meat in the village or in small market
- Bark, roots, tubers, corns, leaves, flowers, seeds, fruits, sap, honey and other forest produces were a regular source of nutrition for this community. The forest laws were restricting them for massive extraction of forest produces. The minor forest produce gathered by this community was now restricted in massive way
- Fish in ponds and streams in the forest was also used to be a traditional source of protein
- Lack of access to pasture land for grazing animals owned by community had led to a decline in the population of cattle which was used to be the main source of milk and meat for communities
- It was found that illegal extraction of CPRs (firewood, timber, bamboo etc.) was a common phenomenon in the surveyed villages. Thus, the conversion of CPRs into State property had failed to fulfill its objective to regulate the commons
- At the same time, the empirical evidences from the surveyed villages showed that the growing tendency of privatization of CPRs had led to an increasing inequality in the distribution of natural resources. Hence, as an alternative to both market and State controlled institutional arrangements, local level decentralized management of CPRs should be emphasized. In this connection, it is noted that the tribes, in the study area, had their own system of forest management where the age-old traditional institution headed by Gaon Burah (*Village chief*) plays an important role in management of CPRs in terms of resource allocation mechanism, sanction and enforcement rules. However, much of its importance had lost due to modernization

and introduction of monetary economy. Further, the importance of the age-old traditional institution is at stake due to the introduction of village panchayat system and increasing interference of the State functionaries

CONCLUSION

The study reveals that CPRs played a very important role in the economy of the surveyed villages although the consumption value from community forest was higher for the non-poor households in absolute terms yet in relative terms, the poor households' dependency on community forest was very important and crucial for their survival. Hence, there was urgent need to form sustainable management of CPRs, particularly the forests in order to avoid 'the tragedy of commons'. Therefore, there was an urgent need to strengthen the age-old traditional system of village council headed by Gaon Burah in addition to the village Panchayat with specific purpose of management of these resources.

The study found that the Common Property Forest Resources are crucial for the survival as well as the livelihood of the rural households and betterment of environment in the study area. Thus, in order to ensure the sustainable use of the Common Property Forest Resources, establishment or improving the effective management of CPRs and its equitable distribution have become formidable challenges before the authority.

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