Bamboo Resource Scenario in the North - Eastern Part of Karbi-Anglong District, Assam: A Case Study

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Abstract: Bamboos are the tallest grass of the world and widely distributed in India and abundantly occur in northeastern region of India. Bamboos play an important role in the day to day lives of common people of Assam in general and among the Karbis in particular. Bamboo is the most extensively used plant resource among the Karbis. The present study attempts to find out the importance of bamboo among the Karbi tribes, availability and utilization pattern of bamboo and to identify the hindrance of the economic gain. Field study was undertaken among the Karbis in different villages of Karbi Anglong District of Assam. Case study, Participatory Rural Appraisal (PRA) and SWOT analysis methods were used for collecting the relevant information. The primary data was collected by structured and unstructured interview. It has been observed that bamboo is the most popular and extensively used forest resource among the Karbis and *Dendrocalamus hamiltonii* Nees is the most frequently used species in the hills while in the plains *Bambusa tulda* Roxb. and *Bambusa balcooa* Roxb. *(Sil borua)* are the commonly used species.

Keywords: Bamboo, Karbis, PRA, SWOT

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Introduction

Bamboo, the "green gold of forest" is one the fastest growing plants on earth and may grow up to 1.2 m per day. It is an environment friendly plant as it generates more oxygen than equivalent strands of trees, lowers light intensity, protects against ultraviolet rays, an important atmospheric land and soil purifier and its roots can reduce soil erosion up to 75% (Sharma *et al.*, 2016). It is a multipurpose and high yielding renewable resource with great economic value. The Northeastern region of India is one of the richest reservoirs of bamboo genetic diversity with its own unique biodiversity, habitats and ecosystems. More than 50% of the bamboo species occur in North - Eastern part of India, The region has 58 species of bamboo under 16 genera (Arora and Mauria, 1988). However, Biswas (1998) reported 63 species under 15 genera in the region. Borua and Borthakur (2003) reported the occurrence of 40 species under 10 genera from Assam. The Northeastern hilly States of India harbour nearly 90 species of bamboos, 41 of which are endemic to that region (Loushambam *et al.*, 2017). People in this region are using bamboo for various purposes from time immemorial, right from bridges over mighty rivers to sitting mats, safety items against rain, carry bags, writing pens, household utensils, cradle, walking stick for old man and finally bier to carry the dead body.

Assam is rich in sylvan resources and one of the largest bamboo producing states of India. The extent of bamboo bearing area in the forests of the state is

Fig 1. A view of the study area

7, 238km^2 (FSI, 2011). Bamboo forms an important component of the rural landscape of Assam and an integral part of the culture, lifestyle and economy of the people, which fulfill the diverse/basic needs of the rural masses and also provides the villagers with a wide range of goods and services. The main bamboo growing areas of Assam are the districts of Cachar, Karbi Anglong, North Cachar hills, Nagoan and Lakhimpur (DAB & R policy, 2003). Karbi Anglong District is one of the largest reserve of bamboo in Assam consisting both naturally grown and planted bamboos. The district is situated in the central part of Assam between 25º 31' N to 26º 36' N latitudes and 92°90'- 93°54' E longitude. The total area of Karbi Anglong District is 10,434 sq km accounting 13.3% of the total geographical area of Assam. The hills of Karbi Anglong are part of shillong plateau having an average altitude of 300-400 meters above sea level. The district is endowed with flora of evergreen, semi-evergreen and deciduous forests growing in harmony with a host of other herbs, shrubs, grass and vines however, bamboo is the most versatile of all forest resources. In spite of huge natural resources, fertile soil- the district is still lagging behind in over all development. Rugged topography, poor communication facilities, etc., are some of the reason behind the poor economic development of the region. The rural lives of Karbi Anglong are intricately linked with bamboo resource and versatile use of bamboo has made it the backbone of the rural economy of this region. The Karbis are one of the important tribes scattered in north east India with a major concentration in the central part of the Karbi Anglong district of Assam and their livelihoods depends on the forest based natural products of their surrounding forest. For the Karbi peoples life begins with bamboo and ends with bamboo (Teron and Borthakur, 2012). Bamboo is one of the important minor forest produces that assists in subsistence income of tribal folk to a greater extent (Sundriyal *et al*., 2002). The entire occupational pursuits of Karbis are closely connected to various bamboos made simple technology as well as all kinds of daily household items were made of bamboo. Poverty has been a hindrance for them to depend on different market-based products. In such cases, bamboo has been used as a primary indigenous resource and raw material; particularly in the aspects of their material culture (Longkiri, 2020). Different agricultural and fishing implements were also prepared by bamboo. Bamboo is emotionally associated with the social, culture and religious life and also with traditional institutions of the Karbis. Crafts made from bamboo form part and parcel of their culture and in certain occasions cannot be substituted with crafts made from other resources. The bamboo made products were used to sell in the market (Teron and Borthakur, 2012). Bamboo is also one of the ritual traits which are utilized in almost every ritual performance of the Karbis, the rites of passage or the rites of intensification. A variety of bamboo tree locally known as *Kaipho* is not to be planted in the household premise, because for the Karbis, it is a cultural taboo for them. With regard to cultural taboos it is also believed that if any impure thing is touch on the bamboo, then that whole clumps cannot be utilized for rituals and household purpose. Further the clumps of bamboo which are covered fully with a creepers then it cannot be also used for ritual and for household purpose (Longkiri, 2020).

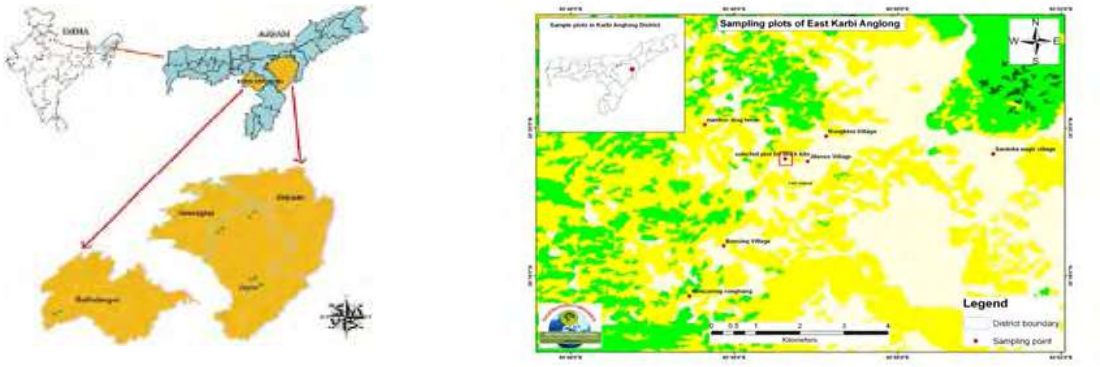

Fig 2. Site map of the study area

The hilly part of the Karbi Anglong district is endowed with bamboo forest and small amounts of homestead gardens. Bamboo forest grove is a separate zone within the homestead garden or in the adjoining land parcels where bamboo is grown either in pure stands or mixed with other tree species (Nath *et al.*, 2006). The villagers manage these bamboo forest groves for commercial purposes whereas, the homestead garden bamboos are essentially for meeting day to day requirements. The hills are dominated with mainly *Dendrocalamus hamiltonni*, *Melocanna baccifera*, S*chizostachyum dullooa* along with *Bambusa tulda* and *Bambusa balcooa* in the plains. Bamboo is the most versatile of all forest resources among the Karbis as almost all articles are made and/or can be made from bamboo. More than five species of bamboo are used by the Karbis for various purposes out of which, *Kaipho* (*Dendrocalamus hamiltonii Nees et Arn. ex Munro*) is the most frequently used species in the hills while in the plains *Bambusa tulda Roxb* and *Bambusa balcooa Roxb* (*Sil borua*) are the commonly used species (Teron and Borthakur, 2012). Karbis are highly acclaimed for their expertise not only in bamboo crafts but also for their cane and wood works. These crafts which are often decorated with unique designs include totem, baskets, utensils, mats, containers, sieves, fans, granary, weaving implements, mortar and pestle, musical instruments, weapons, etc.

Materials and Methods

The present study attempts to find out the importance of bamboo among the Karbi tribes, availability and utilization pattern of bamboo and to

Table 1. Occurrence of village bamboo species in the bamboo forest and homestead gardens in different villages of Karbi Anglong North - East division, Assam

Species	Number of bamboo clumps per			
	Bamboo forest		Homestead garden	
	Average (ha)	Range (ha)	Average (ha)	Range (ha)
B. tulda	2.6	0.13 – 2.6	0.39	0.06 – 0.39
B. balcooa	0.13	0.13 – 0.06	0.0	0.0
D. hamiltonii	3.9	0.26 -3.9	0.06	0.03 – 0.06
B. nutants	1.95	0.13 – 1.95	0.03	0.03 - 0.65
S. dullooa	2.34	0.39 – 2.34	0.06	0.06 - 1.3

1 hectare =7.5 Bighas

identify the hindrance of the economic gain. For this a survey was conducted in villages in North - Eastern part of Karbi Anglong district of Assam during 2018 - 2020. The data were collected from the villages of Borpothar and Nilip block of Karbi Anglong district of Assam (India). Five (5) villages from Borpothar block and five (5) villages from Nilip block (Table 2) of North -Eastern range forest division of Karbi Anglong were selected for the present study. To describe the socioeconomic characteristics of the rural bamboo growers in relation to bamboo availability per household, utilization pattern and preferred species of bamboos in day to day life of Karbi people, Case study, Participatory Rural Appraisal (PRA) and SWOT analysis methods were used for collecting the relevant information. The primary data was collected by structured and unstructured interview. This method was applied to collect empirical information about pristine methods of preparation of bamboo objects, different types, utility of objects etc. Participatory rural appraisal method was appliedto understand the socioeconomic status of the target group, resource mapping and topography of the area. Onethird of the households in the villages covered in the study. The findings revealed that Karbis used bamboo for various purposed viz. for ritual purpose, food, as well as to prepare different household implements but as commercial commodity it is wanting.

In the study area most of the farmers having larger bamboo forest than homestead gardens. Bamboo forest size ranged from 0.13 to 3.9 ha with an average of 2.05 ha implying that the villagers are predominantly bamboo forest holders. However, homestead bamboo holders ranged from 0.06 to 1.3 ha. Inventory of village bamboo species showed that the farmers grew five species (Table 1) in both homestead gardens and in the bamboo forest area of which *Dendrocalamus hamiltonii* Nees is the most frequently used species in the hills while in the plains *Bambusa tulda* Roxb. and *Bambusa balcooa* Roxb. (*Sil borua*) are the commonly used species (Teron and Borthakur, 2012). In general, the farmers owing larger extent of paddy lands have larger forest bamboo area and homesteads garden. Species inventory and knowledge of the villagers priority species are expected to contribute further understanding of the distribution and importance of bamboos at the regional level. It may also help in developing a scientific management system for sustainable utilization of this important village resource.

Though the rural lives of the people of this area are so intrinsically linked with bamboo the dependency on bamboo as livelihood option decreasing day to day. This may be due to over exploitation of bamboo, urbanization and conversion of bamboo bearing land into small tea garden. Paddy lands

Table 2. Population status of the surveyed village

Sl. No	Village Name	Total Population	Male	Female
1	SardokaEngti	1125	586	539
2	Jilangso	1338	680	658
3	Rongkimi	685	374	311
4	Sam Rongpi	475	242	233
5	MouzasingRanghang	930	482	448
6	Rongbong ghat	720	364	356
7	Songrong	380	193	187
8	Mon Rongpi	542	265	277
9	Bensing	1236	631	605
10	Langkhang	550	281	269

Table 3. Average Income of each household from forestry/ Home stead /year

Item	Quantity produced	Gross income (Rs)	Net Income (Rs)
Bamboo	100-500 Culms	5,255.00	4,025.00
Agriculture (paddy)	10-30 Quint.	84,021.00	71,418.00
Firewood	40-50 Quint.	3,164.00	3,100.00
Other (Beetle nut, pig geryetc.)	--	3,875.00	3,682.00
Total		**96,311.00**	**82,225.00**

also constitute a major land use system and daily labour is the primary profession of the villagers. In general, the farmers owing larger extent of paddy lands have larger bamboo forest and homesteads garden. Further more, most of the villagers had little or no education. During survey, it has been observed that most of the bamboo growers generally clear fell the bamboo clumps for quick economic gains, which significantly affect the height and size of new culms in the subsequent years (Nath *et al*., 2006). Scientific clump management and harvesting techniques for bamboo resource development are therefore necessary. Utilization of village bamboo resource locally may promote the livelihood security of the rural people,which results in over all regional development. Taking into account the high potential of income generation from bamboo products, a scientific and systematic developmental program for utilizing the vast resource needs to be taken up to uplift the socio-economic status of the underprivileged weaker section of society and generate significant employment opportunities for the people of the North-east range of Karbi Anglong District. However, lack of organized market, lack of awareness among the villagers/ entrepreneurs and also policy and operational bottlenecks, viz. restrictive harvesting and transit rules, land ceiling act, double taxation of bamboo, non-remunerative price regime, needs to be addressed to give the desired momentum to the sector. To achieve the demand of the social and commercial aspects of bamboo and bamboo products there is a need to aware the people at the grass root level.

Conclusion

Bamboo is the potential resource for improving economy of the rural Karbis, but majority of the population in the study area had little or no education, therefore, awareness has to be built regarding benefits they can earnby value proposition of bamboo, scientific harvesting and clump management techniques etc. Simultaneously, a programme of awareness building is needed to influence the government (commerce, industry and various ministries), potential traders and investors on the potential of bamboo for economic, social and environmental gain. Sustainable management protocols with emphasis to utilize the village bamboo resource locally may promote the livelihood security of the rural people which may result in over all regional development. Presently, bamboo markets are growing and offer new opportunities for promotion of bamboo as alternative to wood. This is a golden opportunity for the farmers, entrepreneurs, industries, agencies to tap the potential under the sector for economic, ecological and social gains. Rural employment can be generated by proper harvesting and management of bamboos thereby helps in conservation of bamboo diversity without much care and effort.

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