

## Original Research Article

## Bamboo Based Enterprise in Uttarakhand State – A Pilot Study

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### ABSTRACT

Bamboo forms not only as an importation material for livelihood of rural communities but also as an important middle storey forest crop that has greater role in maintaining forest structure and wildlife.. Bamboo is a tall perennial grass found in the tropical and sub-tropical region in the world. It is fast growing species and also known as ‘poor man’s timber’. This manuscript addresses bottlenecks of bamboo and ringal-artisans trade and it is recommended that stakeholder’s role in conservation of bamboo and ringal resource is very important. There is need to diversify livelihood based bamboo and ringal products that will not only lead to provide them good income opportunities but will also bring dynamic change in all over rural areas of Uttarakhand. Present study deals with the market development that focused on better income for highly marginalized artisans. In Uttarakhand state an average income obtained by bamboo and ringal artisans is Rs. 900 to Rs. 2500 per month which is not sufficient for livelihood. Since it is time consuming and low income trade, hence younger generation is not taking any interest in it. However, no significant bamboo management practices are being carried out by the entrepreneurs. The key components to strengthen the bamboo and ringal based enterprise in Uttarakhand state are a proper management plan, resource conservation, plantation, establishment of bamboo-artisan cooperatives and developing a value chain to upgrade socio-economic status of marginalized artisans.

### KEY WORDS

Awareness | habitats | conservation | socio-economic | bamboo-artisans | rural

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## Introduction

Bamboo and Ringal plays important role economically, socially and ecologically in the rural areas. Bamboo belongs to the sub family *Bambusoideae* of the family *Poaceae* Scientific name: *Bambusoideae*. Bamboo is also known as “Green Gold” and, is a fast growing species. This green gold is sufficiently cheap and plentiful to meet the vast needs of human population from the “child cradle to the dead man’s bier” that is why sometimes known as “poor man’s timber” (Centre for Ecology Development and Research CEDAR report 2011). It utilizes huge quantity of carbon dioxide through photosynthesis. Bamboo has 50% carbon in all its parts which is a result of carbon sequestration by bamboo species (Song, 2011).

Worldwide there are more than 1,250 species under 75 genera of bamboo, which are randomly distributed in various part of the humid tropical, sub-tropical and temperate region. India is very rich in bamboo diversity. There are 125 indigenous and exotic species under 23 genera, found naturally or under cultivation (Naithani, 1993). An estimated 8.6 million ha forest area of the country contains bamboo (Rai and Chauhan, 1998). In Uttarakhand, 60,000 ha of forest area and total area under bamboo is estimated to be 0.139 million hectares (Science Reporter, June 2011, Sundriyal, 2015). A total of eight species are distributed in various parts of Garhwal and Kumaun Region. 4 ringal species were commonly used on the basis of their characteristics (Arya, 2014). Bamboo generally forms the understory in the natural forests. It is found in region where the annual rainfall ranges between 1,200 mm to 4,000



**Fig. 1:** Bamboo forest of Chakrata, Uttarakhand



**Fig. 2:** Bamboo Artisans in Chakrata Uttarakhand

mm and the temperature varies between 16°C and 38°C. The most appropriate conditions for the occurrence of bamboo are found between 770-1,080, meter above sea level (msl). There has been a growing awareness in recent years about the importance of bamboo being an important means of economic growth and of improving the socio-economic conditions of the rural poor. Bamboo as an industrial material can substitute wood to a great extent and that too at low cost. Bamboo has been traditionally harvested from forest lands in India and the homesteads which may have a few clumps of one of the many species of

bamboo for household use but very little intervention in terms of purposive planting has been done in the past. Convincing and informing users and policymakers of bamboo's versatility may fit in with a strategy of poverty alleviation and reducing pressure on tropical forests. Smallholders at the forest fringe can, in particular, improve their livelihood by processing bamboo or growing it in their backyard. Global value chains analysis is about linking local producers from developing countries to national and international markets. They make a link between raw-material producer and the final consumer. Global value chains are characterized by falling barriers on international trade due to the lowering of price support and export subsidies in the last decades (Sundriyal, *et al.*, 2011). At the same time there is increasing concentration and consolidation in all links of these chains. Furthermore, advances in communication technologies and declining transportation costs facilitate coordination between chain actors (Gibbon *et al.*, 2008), not by vertical integration but by consistency of processes and primitive information and communication technology (Gereffi *et al.*, 2005). Globalization and expanding international markets as well as the fast-growing middle and high income classes in many developing countries offer opportunities for developing country producers to operate in emerging national and international markets. This means that producers must gain better control over production, trade and distribution in order to guarantee the quality and value added of their products and to operate in a cost-effective way. Moreover, these producers must adapt to

stringent quality and safety standards and regulations in these markets (Dolan and Humphrey, 2004). Important barriers in developing country for the producers are the lack of an enabling environment offering institutional and infrastructural support, availability of resources and efficient and effective coordination in value chains. In particular, small-scale producers are at a disadvantage because they have less capital to invest, use traditional techniques, depend on family labor and lack contact with market players (De Janvry and Sadoulet, 2005; Daviron and Gibbon, 2002; Reardon and Barret, 2000).

Present pilot study is focused on to assess the socioeconomic status of bamboo and ringal artisans and provide market opportunities to achieve better income for marginalized artisans along with resource conservation.

## **Materials and Methods**

### **Study area**

The study area, Jaunsar-Bawar (Chakrata) is a hilly region, 85 km from Mussoorie, in Chakrata Tehsil, in Dehradun district. It geographically lies between 30.75°N 77.83°E Elevation 2,118 meters Jaunsar-Bawar comprises two regions, inhabited by the two predominant groups: Jaunsar, the lower half, while the snow-clad upper region is called Bawar, which includes, the 'Kharamba peak' 3,084 meters. A total population of Chakrata is 90,000. Bhimtal is a town and a nagar panchayat in Nainital district in the state of Uttarakhand, India. It is situated at an altitude of 1370 meters above sea level 29.3461° N, 79.5519° E. A total population of Bhimtal is 7,722. The criteria of selection of these two study area is that the maximum bamboo

products are being sold from Bhimtal and minimum from Chakrata.

**Lifestyle of Rural Villages in Uttarakhand**

The people of Bhimtal and Chakarta villages of Uttarakhand are mainly belonging to the farmer’s community who also practice certain crafts throughout the year. Bamboo/ringal craft are one of them which is practiced seasonally and mainly in ringal village. There are 8 species of Bamboo and ringal growing naturally in Uttarakhand (Table 1). The

people of these villages have developed a tremendous understanding about the raw material (Bamboo) and make products of daily use for their livelihood. Their products are sold in the nearby cities and villages like Chakbaheri, Baheri Gaon, Vinay kand, Mehra Gaon. The lifestyle of the people here is very simple. The nature of these village people is very friendly and welcoming. The houses are beautifully decorated with the locally available resources.

Bamboo Species	Local	Distribution meters above sea level	Habitat	Uses
<i>Dendrocalamus strictus</i>	Lathi	325-1000	Low-hill moist forests	bamboo articles
<i>Bambusa bambos (L.) Voss</i>	Choya	500-1000	Sub-Himalayan tracts	articles
<i>Dendrocalamus somdevae</i>	Khokhal	600-1500	Mid-hills, homesteads	baskets
<i>Dendrocalamus patellaris</i>		1200-1500	Kumaun region	basketry work
<b>Ringal-bamboo</b>				
<i>Drepanostachyum falcatum</i>	Ghad	1500-2100	Found as dense	baskets,
<i>Sinarundinaria anceps (Mitford)</i>	Jumra	2100-2700	Grow naturally in clusters	agricultural Product
<i>Himalayacalamus falconeri</i>	Dev	1900-2750	Grow naturally	fans,
<i>Thamnocalamus spathiflorus</i>	Thaam	2500-3500	On moist and shady	Agricultural implements
<b>Total : 08 species</b>				

**Table 1:** Major Bamboo and Ringal species growing naturally in Uttarakhand India (Sundriyal *et al.*, 2011).

**Research methodology**

Descriptive questionnaire survey was adopted for the study. Information on indigenous knowledge of community, net income, monthly expenditure, consumption of products per house hold, net saving, demand and supply, ways of marketing was collected through formal and informal interview of local communities and artisans. Two districts, viz. Dehradun (Chakrata), Nainital (Bhimtal), were identified and selected with the help of local experts. A total of 53 artisan’s villages from these two districts, comprising 32 bamboo- and 28 ringal-artisan families were surveyed. The questionnaire survey was done to obtain detailed information with reference

to species used, areas and mode of collection, time spent for collection of the raw material, and general condition (poor, good, better) of the resource at site (Sundriyal *et al.*, 2002). An inventory of different traditional bamboo products and their uses was also made. The quantity of raw material used for making different products, designs used, time taken for making these items, and mode of selling of the product was also investigated (Fig. 4).

**Results**

**1. Socio –Economy Status of Bamboo Artisans**

In this study, a total of 09 villages of two districts were surveyed. In Chakrata

(Dehradun District) 4 villages with 22 households were covered. A total of 08 bamboo and ringal products made by the artisan /village and the average monthly income of the artisans is Rs 1500-2000. In Bhimtal (Nainital District) 33 households in 5 villages were surveyed. Artisans harvest raw material to make the craft items is from forest and their community land. A Total of 13 bamboo and ringal products are being made by artisan /village and the average monthly income of the artisans is Rs 2000-2500 (Fig. 2) which is very less and time consuming trade. Therefore, it has been noted that younger generation is not interested only 30-60 years' age group artisans are engaged in this trade. Mostly 70 - 90% SC/ST families are involved in bamboo/ringal craft (Figure 1). Out of two studied towns Bhimtal is a tourist place and artisans are more skilled therefore they make fine products and get good market whereas artisans of Chakrata make products only for the local use and marketing is at village level only.

## 2. Problems of Bamboo Artisans

In the Recent years the demand of bamboo and ringal products have gone down due to the introduction of plastic and fibre products in village level. Total artisans families are mostly dependent on Van Panchayat, Reserve Forest and Community Forest for Ringaal or Bamboo. On the other hand day by day due to the less demands of bamboo products increasing number of forest fire, flowering of Ringaal and the landslides - accelerated the damage to naturally growing Ringaal patches – all of these increased the fetching distance, this has resulted in lack of raw material, low

income, unemployment, migration for livelihood and degeneration related to cultural heritage of Himalaya which include craft, aesthetic beauty and local resource based economy. Since artisans are skilled in weaving of bamboo products but their finishing is very rough and still making big and traditional products therefore facing marketing problem.

## 3. Trade System of Bamboo and Ringal Products

Major drawback of this trade is that in rural areas mainly marketing of bamboo product is done by a middleman therefore maximum benefits go to the middleman and shopkeeper (Table 2). In this process artisan sell their product to the middleman and he sells in a shop. Therefore, wholesaler get the maximum benefit up to 4-5 time more in this marketing chain (Table 2). It is very important that artisans should be linked with some cooperative or NGOs who can take the responsibility of marketing so that they can directly sell their products to them.

## 4. Traditional vs New Bamboo/Ringal Products

Traditional bamboo products were compared with new bamboo products in terms of weaving design, preparation time, quantity of raw material used, demand of product and marketing. It has been observed that artisans can earn double income by making new products as time and quantity of raw material is required very less. In 1 day 2 new bamboo products can be made whereas traditional products take 2 days for single product (Table 3.)

Local name of product	English name of products	Villagers	Middleman	Wholesaler	Total trades par/ product(Rs.)
Kandi/ Odagi	A big basket	100/-	150/-	250/-	500/-
Solta/ Malkhna	A big basket	120/-	180/-	260/-	560/-
Dalia	Porridge	200/-	240/-	320/-	760/-
Supa	Winnower	190/-	210/-	300/-	700/-
Pastedan	Toothpaste stand	100/-	120/-	150/-	370/-
Kudadan	Dustbin	300/-	350/-	420/-	1070/-
Mohat	Mat (9X9)	2000/-	2500/-	3200/-	7700/-
Mandir Kandi	Pooja basket	100/-	130/-	160/-	390/-

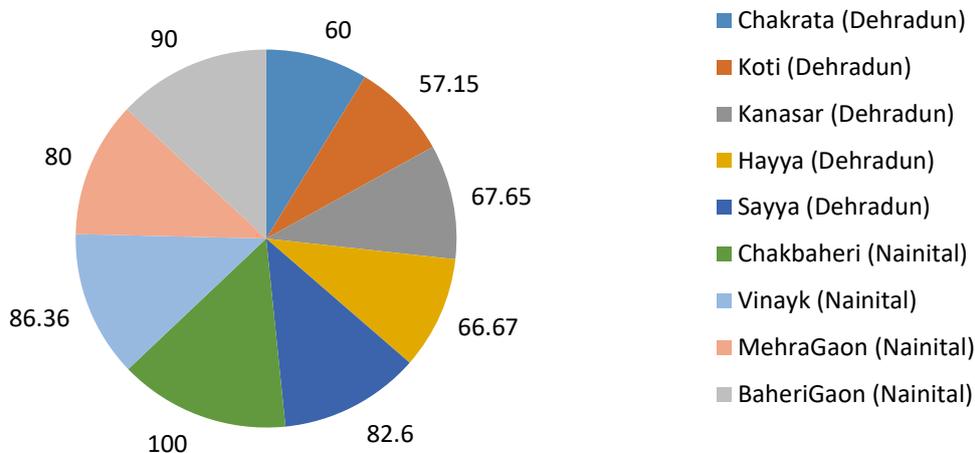
**Table 2:** Bamboo/Ringal Product trade system in rural villages of Chakrata (Dehradun District)

	New product	Traditional product
Species name	<i>Himalayacalamus falconeri</i>	<i>Dendrocalamus strictus</i>
Local name of product	Lamp	Kandi/ Odagi
English name of products	Lamp	Basket
Raw material used (Culm/product)	1/2 Culm	02 Culm
Preparation time/Product	1/2 day	2 days
Average cost price (NRs/ piece):	100/-	100/-
Market rate (Piece/ person)	300/-	200/-




**Table 3:** Comparison between traditional and new product of bamboo/ringal craft

**Total % of SC/ST family involved in Bamboo and Ringal weaving in Uttarakhand**



**Fig. 3:** Total % SC/ST families involved in bamboo and ringal craft in Uttarakhand

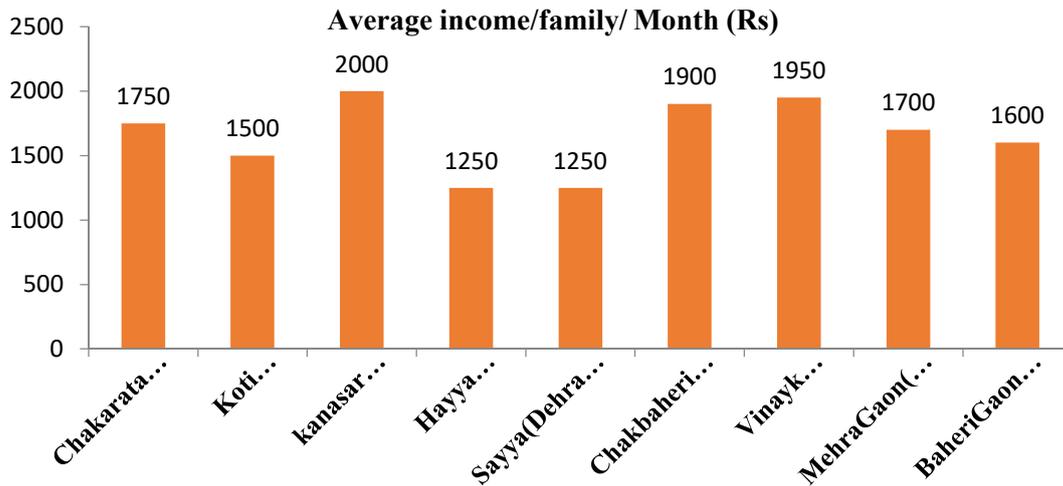


Fig. 2: Average income/family/ month (Rs) in Chakrata and Bhimtal Uttarakhand

### Conclusion/ Discussion

In Uttarakhand state the bamboo and ringal trade cannot grow beyond a certain threshold level in general, as long as if not addressed meaningfully. A strong promotional role of governmental policies would help generate awareness on bamboo and ringal products that can run a nationalized campaign and help develop product market linkages, (Samir, 2012). Better livelihood for rural Communities in bamboo and ringal craft generates rather good income for them. Bamboo and ringal processing as an income generating or business activity is largely under developed and it is primarily based on only upto handicraft and other household items level, especially in the rural areas. Also, apart from the dependence on natural bamboo resources, considerable household planting for local use and marketing would go a long way to improve rural livelihoods. To upgrade the socio economic status of highly marginalized artisans there is a need to train them in making new products. Availability of raw material is also a problem. It is very

utmost important to promote community for plantation of bamboo and ringal in wastelands or in their land. Constraint of funds is another issue due to that artisans are not able to take trainings and they also lack awareness on government policies and schemes.

To improve the socio economic status of bamboo artisans a wider involvement of stakeholders, governments and rural communities and development of value chain would help bridge these knowledge gaps.

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### References

Arya, D. (2014): Dwarf bamboo (ringal): a traditional livelihood option for

- scheduled caste families of Garhwal Himalaya. *International Journal of Advanced Research in Engineering and Applied Sciences*, 3(7), 67-73.
- Daviron, B., and Gibbon, P. (2002): Global commodity chains and African export agriculture. *Journal of agrarian change*, 2(2), 137-161.
- De Janvry, A., Sadoulet, E., and Zhu, N. (2005): The role of non-farm incomes in reducing rural poverty and inequality in China.
- Dolan, C., and Humphrey, J. (2004): Changing governance patterns in the trade in fresh vegetables between Africa and the United Kingdom. *Environment and planning A*, 36(3), 491-509.
- Gereffi, G., Humphrey, J., and Sturgeon, T. (2005): The governance of global value chains. *Review of international political economy*, 12(1), 78-104.
- Gibbon, P., Bair, J., and Ponte, S. (2008): Governing global value chains: an introduction. *Economy and society*, 37(3), 315-338.
- Jamatia, S. (2012, August): Livelihood of the Bamboo base: Challenges and Opportunities. In *Proceedings of 54th Society of Wood Science and Technology conference on sustainable development of wood and biomass in our new global economy*, Beijing China: International Bamboo and Rattan.
- Naithani, H. B. (1993): *Dendrocalamus somdevai*: A new species of bamboo from Uttar Pradesh, India. *Indian Forester*, 119(6), 504-506.
- Rai, S. N., and Chauhan, K. V. S. (1998): Distribution and growing stock of bamboos in India. *Indian Forester*, 124(2), 89-98.
- Reardon, T., and Barrett, C. B. (2000): Agroindustrialization, globalization, and international development: an overview of issues, patterns, and determinants. *Agricultural economics*, 23(3), 195-205.
- Report Centre for Ecology Development and Research CEDAR, 2011
- Science Reporter, June 2011
- Song, X., Zhou, G., Jiang, H., Yu, S., Fu, J., Li, W., and Peng, C. (2011): Carbon sequestration by Chinese bamboo forests and their ecological benefits: assessment of potential, problems, and future challenges. *Environmental Reviews*, 19(NA), 418-428.
- Sundriyal, M., and Joshi, K. (2015): Bamboo Status and Trade Vulnerability: A Central Himalayan Case Study. In *10th World Bamboo Congress, Korea* (pp. 1-9):
- Sundriyal, M., and Sundriyal, R. C. (2011): Bamboo Trade and Future Prospects in the Central Himalaya: A case study of the traditional artisans of Uttarakhand, India.
- Sundriyal, R. C., Upreti, T. C., and Varuni, R. (2002): Bamboo and cane resource utilization and conservation in the Apatani plateau, Arunachal Pradesh,

India: implications for management. J.  
Bamboo and Rattan, 1(3), 205-246.

Trujillo, D., and MistructE, M. D. C. (2018):  
Developments in structural design  
standards with bamboo. In World  
Bamboo Congress Keynote  
Presentation. Xalapa, Mexico.