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Bamboo in Rural Livelihood, Trade and Future Prospects in the Madhya Pradesh: A Study of Traditional Artisans of Balaghat District (M.P.), India

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Abstract

One of the important gift of forest to humanity is bamboo. In India bamboo is valuable in the rural livelihood. However, despite improvement efforts the conditions of bamboo resources and traditional artisans have been deteriorating over the years. To improvise the socio-economic status of the artisans, different state governments are looking for information on the resource as well as artisans' skills so that necessary amendments could be accomplished in government policies and programs to develop this sector as an important vehicle for rural development. This article is based on an investigation that was conducted in Balaghat District, India using questionnaires. We report on bamboo species being used, indigenous knowledge of articles made from bamboo, resource utilization patterns, and management status of bamboo in Balaghat District. The paper also discusses major bottlenecks of the trade along with the potential interventions that could be used to enhance bamboo-based livelihood in the region.

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Introduction

Bamboo are a valuable and precious gift of nature to man. They have age-old connections with the material needs of the people and are fascinating to the artist, the poet, the craftsman and to the scientist. Aptly called the 'poor man's timber' they have a significant place in rural economy. For centuries bamboo has been a central part of many rural societies in Asia, Africa and Latin America (Frith, 2008). It has provided communities with wide range of opportunities, i.e., housing, utensils, food and agricultural products, thus plays an important role in the socio-economic status of people (Buckingham, 2010; Lobovikov et al., 2007). Bamboo has become an imperative trade commodity globally, in both local and regional market, and provides direct or indirect livelihood support to approximately 2.5 billion people (Banik, 1995; INBAR, 1999). It is important to learn that information on traditional uses of bamboo varies between and within region (Buckingham, 2009; Lobovikov et al., 2007; Ram and Tandon, 1997). Bamboo is an essentially important part of the livelihood and culture of tribal and rural people as their primary source of housing material (for thatching, roofing, flooring, and fencing), food (young shoots), agricultural implements and domestic utensils (Vantomme et al.,

2002). However, until recently the bamboo-artisans have maintained poor status as their material and products are considered cheap and low-quality items. There is a need to develop new livelihood opportunities through bamboo by improving the quality of products and targeting high value markets (Ghimire, 2008; Nath and Das, 2008). For this purpose it is important to learn the concerns of bamboo-artisans' in different regions so that appropriate actions may be taken for development of bamboo-trade in diverse areas.

Bamboo are fast growing plants that can be harvested annually without deteriorating the supply-base, which makes bamboo an exceptional resource from economic and environmental perspectives (Buckingham, 2009). India has a maximum area of 8.96 million hectares under bamboo in the world (Anonymous, 2005). It is the second richest country in terms of bamboo genetic diversity after china with a total of 136 species in 75 genera (Biswas, 2004; Rai and Chouhan, 1998). Despite having such a rich resource base and widespread living traditions of bamboo use, the tremendous potential of bamboo lies dormant and largely untapped in comparison with countries like China, Japan and Taiwan whose names are synonymous with bamboo in the world (Sastry, 2001). In recent times, though bamboo is largely used for industrial development thus offering newer opportunities to the world. On the other hand the traditional uses of bamboo are gradually disappearing in view of fast economic growth of different countries (Frith, 2008; Ghimire, 2008; Nath and Das, 2008). Much effort and planning are desired to obtain a balance of industrial and traditional uses of bamboo. The industrial development should not overtake the traditional bamboo-artisan as they are intimately associated with bamboo since ancient times.

The total number of bamboo basket weavers in India was estimated at 0.82 million in 1981 of which 0.69 million lived in rural areas and this number have been increased over the years (Saxena, 2004). These communities have the expertise and skills for processing bamboo and make diverse items from it. However they are not able to receive sufficient compensation for their labor (Sundriyal et al., 2002). The available literature on traditional use of bamboo lacks reliable quantitative data which otherwise could make a useful compendium of information that may provide clues for development of its trade among bamboo-artisans (Kumar, 2009; Sastry, 2001). An acquaintance with the ground realities of bamboo-artisans and the resource they use, therefore, is highly desirable to assess the status and vulnerability of the trade in order to augment the quality of this important rural enterprise (Anonymous, 2006). In this study an attempt has been made to assess the indigenous knowledge on bamboo resource utilization patterns, management, and constraints of the traditional bamboo entrepreneurs with a goal to identifying the developmental bottlenecks and possibilities of upgrading bamboo based livelihoods for rural folks of Balaghat District. It is expected that such information could help to improve the status of bamboo-artisans, their trade and resources.

Materials and methods

Study area

Madhya Pradesh is centrally located and 34.84% of the total area of the state is notified as forests (Anonymous, 1995). The state has a total population of 66.8. Million of which the rural population is 58.89 Million. There are 11.61 Million rural families of which 4.87 Million families live in and around forests In terms of per capita income and Human development index (0.349) Madhya Pradesh ranks 15th in the country. 37.41% of the rural families live below poverty line, which is Rs.15, 000 annual income (HDR, 1998).

The study sites comprise of various forest communities spread all over Balaghat district. The district is located in the South Eastern Madhya Pradesh between latitude 21^{o}19' to 22^{o}24' North and longitude 79^{o}31' to 81^{o}3'east in the Eastern part of Satpura plateau. The district of Rajnandgaon in the state of Chhattisgarh in North-East, Mandla district in the north, Seoni district in the west, and Bhandara district in the state of Maharashtra from the southern geographically boundary. The district is marked by various rivers. Wainganga forms the Northwestern boundary. The river Bawanthadi and the Bagh define the interstate boundary in south while the river Banjar marks the eastern boundary. The total geographical area of the district is 9229 sq km, out of which 4051.8 sq km area comes under forest cover, amounting to 46% of the total area. Thus, this district occupies the first position in the forest area ranking, among the 50 district occupies the first position in the forest area ranking, among the 50 district of Madhya Pradesh. The reserve and protected forests occupy 2740.8 and 1310.9 sq km area, respectively (Sahu et al., 2008).

The district presently, has two territorial divisions viz. South and North Forest Divisions. These two divisions

comprise of twelve forest ranges *viz.*, Balaghat, Lougur, Hatta, Kirnapur, Waraseoni, Lalbarra, Katangi, Lanji (East/West), Lamta (North/South), Baihar (East/West), Ukwa (North/South), Birsa-Damoh. The forest is of high quality of mainly mixed miscellaneous nature, with more or less contiguous and compact patches. Observations reveal that the Reserve forests of North Forest Division have large compact continuous blocks except in the western part.

Among the tribes, the Baigas are the most backward inhabitants of the area. They possess good knowledge of the forest, forest growth and bamboo plants. In spite of the development work done by the government in the past 25 years, the Baigas are still confined to a poor and backward status.

Soil is the most precious asset upon which the entire floral and faunal diversity of an area depends. The district has alluvial soil in the lowland and black to brown clay loam soil in the plateau and tablelands. The most fertile soil is found in the plain areas of Wara Seoni and Balaghat tahsils.

Climate of any area has far reaching effect on floral and faunal development of the ecosystem. The summer hot season is from March to June, followed by the rainy season from June to September, post monsoon transitional climate from middle of September to October and the mild cold winter season from November to February. Overall, climate of the district is moderate with a minimum temperature of 4.4°C in January and a maximum temperature of 45°C in May. Rainfall is the source of maximum annual precipitation in the area other than mist, fog, and dew. As the rainfall pattern is of monsoonal type, rains in this district start from mid June and last up to the earlier part of October. The months of July and August rainfall as recorded are 1677 mm/year. Baihar tahsil has the maximum rainfall, followed by Balaghat and Wara Seoni (Sahu et al., 2008).

Agriculture is the mainstay of the people of Balaghat with over 85% of the population dependent on it. The economy in rural areas is subsistence in nature with high dependence on natural resources. A few communities are totally dependent on natural resources for their sustenance, viz. bamboo-artisans. There is a rich tradition of using bamboo for household purposes. The District has over 36 villages in 11 forest range that depend on these resources as their major livelihood per the records of the Balaghat Forest Circle Nistar-Book (2015). Bamboo is used for various purposes in all 11 forest range of Balaghat with 175298.165 hectare, area growing it. The gross commercial bamboo standing stock is estimated at 159059.518 hectare in the district.

Methods

This study was planned to assess resource utilization patterns and the socio-economic status of bamboo-artisans in the District of Balaghat. The methods employed in this investigation were designed in order to provide baseline information on the use of bamboo in the local system. Such information and data were gathered through field surveys and strategic investigations of bamboo-artisans. The area under bamboo in the district was obtained from the records of the Forest Department (Anonymous, 2015), while number of artisans' villages in the state was gathered from the records of M.P. Forest Department, (Balaghat Forest Circle-Nistar Book, 2015), district administrations and ground verification. 11 Bamboo Forest range, *viz.*, North Lamta, SouthLamta, Balaghat, Wara Seoni, Katangi, Khairlanji, Lalbarra, Hatta, Kirnapur, WestLanji,East Lanji were identified and selected with the help of experts and the Government of Balaghat. A total of 36 artisans' villages from these districts, comprising 1043 bamboo artisan families were surveyed. Documentation of the community indigenous knowledge system (IKS) of bamboo artefacts was done through social surveys. A questionnaire was designed to gather data. The questionnaire was administered through formal and informal interviews with the artisans 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 (Sarkar and Sundriyal, 2002; Sundriyal et al., 2002).

An inventory of different bamboo products, their local names, and their uses was also noted. 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 (Sundriyal et al., 2002). Marketing of the items was assessed through visiting villages, festivals and small towns. A cost-benefit analysis was done by assessing all cost involved in raw material purchase; labour used in collection of raw material, processing and product making; and net sale prices for different items. The socio-economic status of the artisans was assessed by gathering information on the net income from selling bamboo products, monthly expenditure of an average household, and net savings if any. Discussions were also held with the artisans to get their perception and views about possible ways and

means for bamboo resource management and conservation, the demand and supply status of the resource, and the community need for the products (Singh et al., 2003; Upreti and Sundriyal, 2001). All the data and information were cross checked at various levels and analyzed statistically. To assess trade related problems being faced by the communities and future strategies for bamboo sector development, the artisans were asked to provide three most pressing issues/ priorities that they feel important for improving their socio-economic status based on their experience and perception with the bamboo trade (Sarkar and Sundriyal, 2002). Subsequently they were also invited to rank the issues as I, II or III based on their perception. Rank I, II and III represent very high, high and medium priority for any given preference by the community on bamboo and its trade. All of the priorities were categorized and arranged in tabular form. All species used by the communities were collected and made into herbarium voucher specimens. These were identified with the help of plant experts and available flora with the Botanical Survey of India.

Results

Bamboo stalks and species

Bamboo in the District is categorized into two Forest Division; North and South Forest Division. Which have Lathi bamboo and Katanga bamboo. Bamboo is a thick, long and slender like plant (Fig. 1) while Katanga is giant ones, with numerous branches at a node and one or two much larger the rest plant (Fig. 2). In Balaghat District, three bamboo species belonging to three genera were recorded that grow naturally: *Dendrocalamus strictus, Bambusa bambos* and *Cephalostachym bergraile* (M.P. State Bamboo Mission). Bamboo species grow at mid and high hill areas of the District. The communities that make articles from bamboo and Katanga are called Lathi and Katang respectively. East Lanji Forest range has the maximum area under bamboo production of the total Bamboo Forest ranges in Balaghat. Hatta forest range has Katanga species only. All other Forest range is comprised of both Lathi bamboo and Katanga bamboo (Table 1).

Fig. 1: *Dedrocalamus strictus* (Lathi Bans) Balaghat District (M.P).

Fig. 2: *Bambusa bambos* (Katang Bans) Balaghat District (M.P.).

Table 1. Major Lathi bamboo and Katanga species growing naturally in Balaghat District (M P).

Bamboo species	Local name	Distribution (meters above sea level)	Habitat	Uses
Dendrocalamus strictus (Roxb.)	Lathi bans	325-1000	Low-hill moist forests (Siwalik)-Lansdowne forest Division	For making bamboo articles and extensively raw material is used in paper industry
Bambusa bambos (L.) Voss	Katang bans	500-1000	Sub-Himalayan tracts	For household articles
Cephalostachym bergraile	Balan bans	300-1200	Low-hilly and well drained loams	For household articles

Traditional bamboo and their products

The district has as many as 36 bamboo artisan villages and their distribution varies in different districts (Fig. 3). Waraseoni Bamboo forest range has the highest number of bamboo-artisan villages. An analysis of 36 villages spreading in eleven forest range of the District (*viz.*, North Lamta, South Lamta, Balaghat, Wara Seoni, Katangi, Khairlanji, Lalbarra, Hatta, Kirnapur, WestLanji, East Lanji) revealed that the artisans make many bamboo items, which comprised a variety of baskets, mats, toys and instruments, and various other utility items, which exhibits a diverse knowledge base (Fig. 4). However, 25-30 items were recorded to be sold in the villages, mainly as diverse agricultural utility items (Table 2). Most of the products were recorded sold for

Rs. 10-150, which is a low and affordable price for the local communities. Only grain storage baskets are priced over Rs.160 though their use has reduced to a large extent in recent times. It was estimated that the total selling price of items was 10-30% higher in the towns than in the villages. The artisans prefer to sell their items in the villages to avoid costs of transportation; times involved in selling, and labour from village to towns. It was also recorded that selling of the products in villages involved returns in cash and/or kind. In most cases manufacturing of the items was demand driven to meet the need of the villagers.

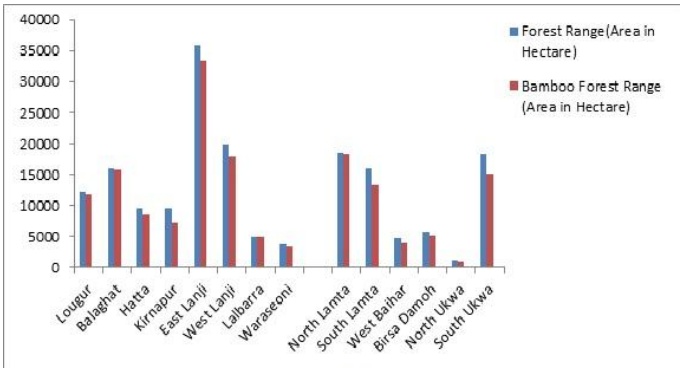

Fig. 3: Total forest area and net area under bamboo production area for range in Balaghat District (M.P.).

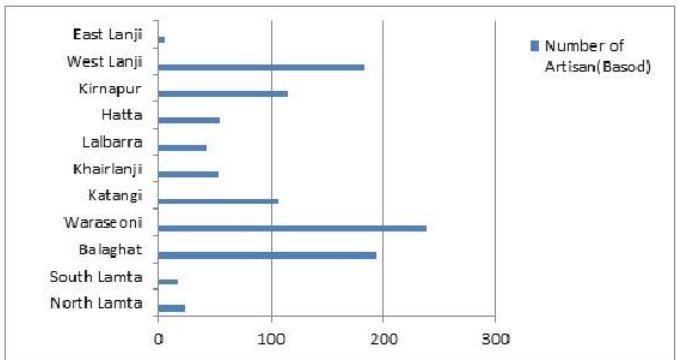

Fig. 4: Distribution of artisan (Basod) villages per forest Range in Balaghat District (M.P.).

Resource availability and consumption

Most of the bamboo and Katanga habitats fall under reserve forest, civil Soyam (revenue forest) and Van-Panchayat (village forest) areas. Bamboo grows as an associate species in forest areas at low hills, which is collected by the Forest Corporation and auctioned through depots on regular intervals. This is similar to other cases for the Forest Divisions, thus showing the great challenge to manage the resource. The bamboo-artisans live at mid and high hill areas, and the demand for the bamboo is met from privately owned bamboo groves by villagers. Such groves comprising 3-5 clumps of bamboo are maintained in wastelands, gorges and stream banks. The cost of individual bamboo culms varied from Rs. 10-15 in different villages, and the mode of transportation is head load or back load. For Katanga, the supply was met mainly from forest areas, *viz*., Van-Panchayat forests. At many places the villagers collect the Lathi bamboo free of cost from Van-Panchayat areas for their domestic needs. However for additional requirement, a nominal fee was paid to the Forest Department. In areas where collection of Lathi bamboo was banned, the raw material was collected illegally. The artisans spend 2 to 6 hours for collection of bamboo, while it takes between 6 hours to 2 days for collection of Lathi bamboo. An analysis of total annual village level consumption of bamboo articles revealed that nearly 600-3000 bamboo and Lathi bamboo articles were used in different villages depending upon villages sizes. Utility of such a large number of bamboo articles/village proved that this trade was a major source of income for the artisans. The entire trade is labour intensive, from raw material procurement to processing and marketing. The bamboo from low hill forests under the control of the Forest Department was not accessible to artisans as such depots are in far-off areas from villages. Moreover, they sell bamboo in bulk, which is out of the capacity of the artisans. The artisans required low volume of raw material in the form of green bamboo throughout the year, which is purchased from selected farmers at high prices. The cost-benefit analysis of the trade showed that it was a low profile enterprise, therefore some families were diverting to other activities, such as seasonal labour in need of cash.

Socio economic status of the artisans

The socio-economic status of East Lanji (bamboo-artisans) and South Lamta in the district was very poor, which mainly comprised highly marginalized scheduled caste families. They lacked land and other productive resources for their livelihood and therefore have been dependent on bamboo trade from centuries. These communities sold bamboo articles to nearby villages to earn their livelihoods. A large number of such traders lived in remote villages; therefore most of them are not in a position to take the actual benefit of the government-run schemes. It was interesting to note that among all the studied villages the statuses of the bamboo-artisans (98%) were recorded as below poverty line (BPL) scheduled caste (SC) families. In case of Katanga, however, 25% of families were BPL (SC) while of the remaining only 10% of families were

above the poverty line (APL) and the remaining 5% are below poverty line but not members of scheduled castes. All articles made by the artisans were used only for domestic purpose. The articles were sold directly to rural folk for cash or barter. Sometimes the items were sold in towns and festivals.

Table 2. Important traditional bamboo products commonly used in Balaghat District (M.P.).

Items	Local name	Used Bamboo species	Locally use
Big basket	Tokri (big)	*Dendrocalamus strictus*	Fodder collection carrying manure
Winnowing tray	Supa	*Dendrocalamus strictus*	Winnowing food grains
Small basket	Dalia (small)	*Dendrocalamus strictus*	Children use for carrying Chirpine leaves, wood and manure
Big basket with handle	Kandi (big)	*Dendrocalamus strictus*	For storage of vegetables
Small basket with handle	Kandi (small)	*Dendrocalamus strictus*	Used in marriage ceremony
Round basket	Chapri	*Dendrocalamus strictus*	For keeping chapatti and selling butter and cheese
Small round basket	Chapri (small)	*Dendrocalamus strictus*	For sowing harela (*Hordeum* sp.)
Food grain storage basket	Topra	*Dendrocalamus strictus*	For storage of food grains
Round sleeping basket	Choura (Jhuger)	*Dendrocalamus strictus*	For sleeping of newly born baby
Carrying basket	Doka	*Dendrocalamus strictus*	For carrying grass and fodder
Carrying basket	Solta	*Dendrocalamus strictus*	For carrying grass and fodder
Mat	Moste or Bishal	*Dendrocalamus strictus*	For drying and cleaning of rice
Hat	Topi (cap)	*Dendrocalamus strictus*	Cap
Mouth trap	Mav	*Bambusa bambos*	Mouth traps for ploughing animals (Ox)

Table 3. Artisan perceptions of the bamboo trade in Balaghat District, India. Rank I, II and III represent very high, high and medium priority for any given preference by the community on bamboo and its trade. (n=34).

Preferences	Ranking			Total rank
	I	II	III	
Scarcity of raw material	6	5	4	15
Value addition to products	5	4	5	14
Skill development activities	6	4	2	12
Access to loans & credits	4	4	3	11
Conservation of resources	5	2	3	10
Lack of interest of younger generation	2	2	4	8
Market linkages & access	3	3	1	7
Lack of transportation	1	3	1	5
Awareness about government policies	1	2	2	5
Cooperative formations	1	1	3	5
Resource ownership	1	2	1	4
Bamboo facility centers	0	1	1	2
Mainstreaming artisans	0	1	2	3
High labor costs	1	1	1	3
Advocacy for artisans	0	0	2	2

Management of bamboo

A major volume of the bamboo-trade in the District of Balaghat is concentrated in village areas and being run by highly marginalized communities that have low socioeconomic profile in the society. Despite their good skill for the processing of bamboo, these communities do not own the resources that they need. The bamboo-artisans purchase the raw material from private growers, while Katanga artisans collect it directly from forests and depos. Nearly 75% of Katanga-artisans and 85% of bamboo-artisans directly collect the respective resources from forest areas. (The remaining 5% of Katangal-artisans and 85% of bamboo-artisans purchase their materials). There was no specific management done for maintaining and increasing area under bamboo by the owners. This is because bamboo is not a socially accepted species in Balaghat, therefore has not been adopted into plantations by the communities until recently. A greater awareness is desired for potential plantation growth of various bamboo species by local communities. Usually bamboo clumps were found in

open areas and in wastelands. In those areas there was no protection from grazing animals which negatively disturbs the growth of new shoots. It is therefore important to extend the plantation technology of bamboo to the artisans. The benefit of government run schemes yielded limited results because of various reasons including lack of organizing power, risk taking capacity, and awareness among the artisans. This study has found than 75% of artisan families earned an income that ranges from Rs. 2000 to Rs. 4000 per month, while the remaining 25% earned less than Rs. 2000 per month. In case of Katangal, 10% of artisans earned between Rs. 3000 to Rs. 5000, 35% earned between Rs. 1000 to Rs. 3000 and the remaining percent earned Rs.<1000. The data clearly depicted that the trade is highly subsistent as it requires high labor input, the products produced are in low volume, and there were low returns per family.

Trade problem and future strategies

The artisans also understand that the trade is highly subsistent but they do not have many options to replace it. When asked about how to change their status, the artisans expressed major concerns and priorities for development of bamboo based enterprises (Table 3). Scarcity of raw materials was cited as the most serious concern by the artisans. They feel that selection of new items and value addition to existing products could help to increase incomes and improve market demand. For this purpose, skill and capacity building was a key area to work on. Increasing access to credit and loans was also considered important to improve the status of artisans. The entrepreneurs also felt that the issues of resource conservation, involvement of the younger generation in bamboo trade, developing market linkages, lack of transportation, awareness on government policies and formation of artisans' cooperatives were important issues (Table 3). The concerns for resource ownership, availability of bamboo facility centers in nearby villages, high labour involvement in the trade, and availability of advocacy services for artisans were other commonly cited priorities of the artisans. A critical analysis of artisans' concerns and priorities clearly depicts the major areas of interventions and policy formation for bamboo traders.

Discussion

Bamboo has provided a wide range of opportunities to rural communities all over; however until recently the socio-economic status of bamboo-artisans has been poor in view of low prices and quality of their material and products (Ghimire, 2008; Nath and Das, 2008). In the past two decades greater attention has been given to building up income prospects of bamboo-artisans by improving quality of products and aiming for high-value marketplaces. For this purpose, there is a need to investigate bamboo-artisans' concerns that affect the resource status and trade. In this study we analyzed resource use patterns and business related issues being faced by bamboo-artisans in Balaghat district in Central India. Balaghat district has significant areas under bamboo, and there are traditions of using this resource for various household utility items. The state government is strengthening infrastructure to widen this sector as an important vehicle for rural development. The use of bamboo is intense and comparable with the range of bamboo products made in various Central India (Singh et al., 2003; Sundriyal et al., 2002). However, in recent times only a few items were commonly sold in villages. Artisans use thick bamboo from community lands, while Lathi-bamboo was collected from forest areas. The District of bamboo in both these areas has been limiting, therefore the cost of raw material has increased substantially over the years. All bamboo-artisan households were found to be below the poverty level, while two-third of Katanga-bamboo artisans were below the poverty level. Those families in poverty lack land and other productive resources to support their livelihood thus are dependent on subsistence bamboo trades (Balaghat Forest Circle-Nistar book, 2015). As the selling of the products in town markets involved intensive labour, cost of transportation, and time, artisans prefer to sell their products near raw material sources in rural areas to minimize transport costs and time. The cost-benefit analysis of the trade revealed that it was a low profit enterprise, which prompted many families to shift to seasonal labour. High labour requirement and the dwindling raw material status indicate high trade vulnerability (Ram and Tandon, 1997; Upreti and Sundriyal, 2001).

This study revealed a large number of challenges to develop the bamboo sector in the Forest Range of Balaghat. Resource ownership of artisans and management of existing bamboo stalks are key areas to begin with. This is unlike Central India where farmers manage their own bamboo gardens, thus maintaining enough resource under their control (Sarkar and Sundriyal, 2002). In Balaghat District They lack bamboo plantation and propagation skills. The village communities do not promote bamboo plantation due to beliefs that traditionally bamboo is associated with the last rites of human beings. At low hill areas of the state,

bamboo areas are still under the control of Forest Department. Such bamboo was auctioned in depots, thus available to artisans. There is a challenge to conserve wild and farm grown bamboo stalks. Most products carry domestic use value only, which has a low profit earning opportunity. If this enterprise is to grow and thrive, there is a need to adopt a holistic approach so as to properly institutionalize resource conservation, supplementing artisans' needs, product development and marketing.

Conclusion

Proper use of bamboo resources applying modern technology can enhance the economy of bamboo-artisans as well as the district. There is tremendous potential for improving quality of bamboo products for meeting the demands of domestic and international markets. At global level, China has been leading the export market of bamboo products though India has the most area under bamboo (Lobovikov et al., 2007); therefore it has enough potential to compete in international markets. For this the traditional bamboo-artisans need to be targeted in all districts in the country and their capacity needs to be built for making bamboo products of high market demand. This study reveals that in Balaghat district value addition of existing bamboo-products and skill development on such activities is highly warranted to earn higher incomes. For this purpose product diversification is a key area to work in to enhance quality of trade. Artisans' access to new tools for processing, technology for improving strength and durability of the products and use of improved finishing techniques are highly desirable, for which artisans' skill and capacity need to be built. Increasing artisans' access to loans/credit, markets and involvement of younger generations in the trade should receive high priority. Organizing artisans is another key to be addressed. Formation of artisans' cooperatives is desired to promote advocacy for the artisans' cause and concerns. Furthermore, registration of artisans is necessary so that they get maximum benefit from government run schemes and other programs. The state government has set-up a few bamboo facility centers and it is suggested that their number is to be increased to cover all artisans. Moreover such centers should be linked with a series of programs to extend technical and financial training to artisans on a regular basis. Since most of the artisans are landless there is a need to give land to them so that they may plant bamboo and own the resource. There are government run schemes for the transfer of land to landless people and it is suggested that the bamboo-artisans are to be brought under such schemes. If some of these suggestions could be adopted and implemented, the bamboo-trade and artisans status could be improved substantially enhancing the economy of the state as well.

Conflict of interest statement

Authors declare that they have no conflict of interest.

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