AN OVERVIEW OF GROWTH OF BAMBOO BASED INDUSTRY IN ASSAM: CHALLENGES AND OPPORTUNITIES

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INTRODUCTION

Bamboo represents untapped major natural resource of Assam which promotes all round sustainable development of the State and ensures ecological and livelihood security to its people. The eco-friendly bamboo has immense potential in improving rural economy, industrial development and a sound economic base for the state on sustained basis since it is a raw material of great versatility and forms an integral part of livelihood for the people.

India is second richest country of the world after China in terms of bamboo genetic resources as per the FAO report on world forest resources. Among the all regions of the country, The North East region is richer in bamboo resource which has 28% of the bamboo area and 66% of the total growing stock in the country (NBMI, up dated). Bamboo grows naturally in forests and is also cultivated on private lands in the region. Among NER, Assam has the greatest concentration of rattan and bamboo in the country. Total bamboo area in Assam is about 2.23 million hectares as against Indian’s total area of about 11 million hectares under bamboo. Out of the 130 bamboo species available in India, 34 species available in Assam. Bamboo forests of the State are well spread over. The main bamboo growing areas of Assam are the districts of Cachar, Karbi Anglong, North Cachar Hills, Nagaon and Lakhimpur. (Source- Commissionerate of Industries and Commerce).

Small scale industrial units occupy a vital role in industrial development in the State’s economy. There are 45509 SSI/MSME units in Assam and provided employment to 2.69 lakh persons till the end of 2016-17. Bamboo based industry is a small scale household based industry where the household member of any sex and age group can involve in the process of production development. Bamboo and rattan products are generally used for various domestic purposes. It is also an excellent material for indoor and outdoor furniture’s with its lightweight structure. in India, it is primarily meant for making paper pulp (35%), apart from this use, also used for housing (20%), non-residential uses (5%), rural uses - agriculture implements, weaving materials, pickled or stewed bamboo shoots (20%), fuel (8.5%), packing, including baskets (5%), transport (1.5%), furniture (1%), other wood industries (1%), other medicine (3%) etc. But unfortunately it is still primarily dependent upon traditional techniques of production and there are not much promotional measures to attract the consumers on a continuous basis. Under this circumstances, present study is an attempt to explore the structure and functioning of bamboo based industry and challenges faced by it. The specific objectives of the study are as follows-

i. Explore the structure and functioning of the industry.
ii. Assess the productive capacity and income generation of the bamboo based artisans.
iii. Analysis the challenges faced by the industry and thereby work out some policy initiatives for the development of the Bamboo based industry.

LITERATURE REVIEW

The researcher studies various research articles and government reports of functioning and structure of bamboo based products. A brief summary of this articles are as follows:

1. R. Khataniar in his research article analyses structures, functioning, productive capacity and income generation of Bamboo Cane and Craft Cluster. The study stated that rural bamboo-based industries do not grow up to the mark in spite of providing various incentives by state and central govt. Because these industries face various problems such as lack of technical skill, lack of modern equipment, poverty, illiteracy, lack of credit facilities. Therefore this study pays attention to the government grants and use modern technology to improve bamboo based industry.

2. Samir Jamatia in his article studies about use of bamboo in various sectors such as building materials, paper pulp, weaving, plywood and household sector. He also analysed that the biggest drawback of undeveloped bamboo industry is the irregular and scant supply of bamboo for entrepreneurial use. So he suggested that provision of demand- supply linkage by the market will benefit the livelihood of bamboo related artisans.

METHODODOLOGY

The study is exploratory in nature and based on primary as well as secondary data. The industrial cluster is considered as geographically concentrated households units producing bamboo products. The primary data were collected from the sample cluster’s household using a semi-structured schedule. The required information are about cluster’s employment, income and profit.
The eco-friendly bamboo crop has immense potential in improving rural economy, industrial development and a sound economic base for the state on sustained basis. Although Bamboo industry which is high value added product in India is still in its nascent stage, unprocessed raw bamboo is a dominant product in the domestic market. Assam is the biggest supplier of raw bamboo to the domestic market in India. Paper, biofuel and scaffolding are the major sector consuming the raw bamboo. Bamboo being a woody grass, with strong fiber and long culms, solid bamboo, hollow bamboo with various widths, is one of the best natural materials for making good quality furniture bamboo. Now a days, there is a high demand of bamboo products for residential uses, schools, in the tourism sector, etc. Bamboo is an excellent material for indoor and outdoor furniture’s with its lightweight structure. In India, it is primarily meant for making paper pulp (35%), apart from this use also used for housing (20%), non-residential uses (5%), rural uses (20%), fuel (8.5%), packing, including baskets (5%), transport (1.5%), furniture (1%), other wood industries(1%), other (3%).

Bamboo and rattan products is generally used for various domestic purposes which are named below:- 1) Chalani(sieve) of different sizes, 2)Kula(winnowing fan), 3)Khorahi (small basket), 4) Dukula/Tukuri (big basket,) 5) Dala (bamboo tray) 6) Duli (Assamese)/Tali (Bengali)-Big basket for storing paddy/ rice, 7) Doon (Assamese)/ Kathi (Bengali) – for measuring paddy/rice (usually one doon contains 5 seers), 8) Dhol (big measure), 9) Bamboo mats known as Dhari, Dhara, Jharia or Darna. 10) Mat board, chop sticks, bamboo shoots, agarbatti sticks and other handicraft products.

Resource management and efficient technology can convert this fast-growing grass into a durable raw material for construction purposes and a wide range of semi-industrialized products. But the most important drawback for not developing bamboo based industry is the irregular and scant supply of bamboo for entrepreneurial use. Hence an efficient regulatory framework is most needed for the market to grow in a sustainable manner, especially where environment concerns are coupled with business development.

The utility of bamboo for house construction, bamboo plywood, agricultural implements, handicraft, irrigation, brooms, medicine, food, fuel, fodder, paper & pulp etc, is so much that it can be regarded as a perfect substitute for some wood based products. Bamboo based Industry can be broadly be categorized into:

1. Wood Substitutes and Composite:
   
i) Bamboo based panels: The panels are widely used in modern construction as structural elements such as flooring, roofing, partitions, doors and window frames due to their rigidity and durability. Various types of bamboo veneers, panels and boards can be broadly classified as follows: veneers, strip boards, mat boards, fibreboards, particle boards, medium density boards. Composites of bamboo and jute are also possible to make panels.

   ii) Bamboo Flooring: Bamboo flooring is a quality product that can be used widely and has a large, global consumer market due to its smoothness, brightness, stability, high resistance, insulation qualities and flexibility.

   iii) Bamboo Sticks for Blinds and Incense Industry: The art of making screens and blinds from bamboo is not new to India.

   iv) Bamboo Furniture: Traditional bamboo furniture uses natural round or split bamboo. A new type of ‘pack-flat,’ ‘knockdown’ furniture uses glue-laminated bamboo panels.

2. Industrial Products

Traditionally the industrial use of bamboo has been in the paper and pulp industry. Apart from this, the industrial products from Bamboo essentially comprise of converting into fuel or electricity through gasification. Through pyrolysis, bamboo can be converted into three valuable products - bamboo charcoal, oil and gas. Bamboo based produced gases can be used as a substitute for petroleum. Bamboo charcoal is an excellent fuel for cooking and barqueing. This is used as a deodorant, purifier, disinfectant, medicine, agricultural chemical and absorber of pollution and excessive moisture. The bamboo waste is also used for gasification and thereby producing electricity. The industrial products produced from raw bamboo are as follows:

   a) Bamboo for Paper and Pulp: In Assam 3 paper mills in Jagriroad, Kamrimganj, Jogighopa have been set up based on bamboo. But unfortunately, two out of three are closed.

   b) Bamboo Charcoal for Fuel: Bamboo charcoal is traditionally used as a substitute for wood charcoal or mineral coal. It can serve as a fuel, absorbent and conductor. It can serve as a fuel, absorbent and conductor.

   c) Bamboo based fibre and fabric: The most recent advancement in bamboo is the manufacturing of fibre for making yarn and into various fabrics. There are several spinning mills using 100 per cent bamboo yarn, and Indian companies such as Raymond, BSL Ltd of Bilwara group and Paramount Textile Mills Ltd, Madurai, have already launched fabrics made out of bamboo. Bamboo extracts contain valuable elements which can also be used an input in several industrial products such as in pharmaceuticals, creams, and beverages. Traditional medicines like Chawanprash use bamboo extracts.
3. Food products

Under this category, it is essentially bamboo shoots that are consumed after being cooked. Bamboo shoots carry the potential of value-added economic activity at the entrepreneurial and community level through cultivation, processing and packaging.

4. Bamboo housing: There are three main types of bamboo housing, a) traditional houses, which use bamboo culms as a primary building material; b) traditional bamboo houses, in which a bamboo frame is plastered with cement or clay; and c) modern prefabricated houses made of bamboo laminated boards, veneers and panels. These buildings are usually cheaper than wooden houses.

(Source: Livelihood of the Bamboo Base: Challenges and Opportunities by Samir Jamatia)

These are the structures and functioning of Bamboo based Industry in Assam.

5. MONTHLY INCOME AND PROFIT, PRODUCTION OF HOUSEHOLD ARTISANS:

From the primary survey it is sought that the bamboo related artisans mostly produce bamboo-based furniture, flower stand, household products. An artisan works for 8-10 hours per day and 22 days per month on average. The monthly income, profit and production of artisans are as follows:

<table>
<thead>
<tr>
<th>Items</th>
<th>Sofa</th>
<th>Lamp</th>
<th>Household products</th>
<th>Flower stand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity produced</td>
<td>3</td>
<td>20</td>
<td>250</td>
<td>280</td>
</tr>
<tr>
<td>Production Time(unit/hours)</td>
<td>90.00</td>
<td>8</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>No of days working per month</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Price per units</td>
<td>14000.00</td>
<td>1000.00</td>
<td>148.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Value of products</td>
<td>42000.00</td>
<td>20000.00</td>
<td>37000.00</td>
<td>14000</td>
</tr>
<tr>
<td>Cost of Production (excluding labour cost)</td>
<td>13000.00</td>
<td>4950.00</td>
<td>10,170.00</td>
<td>1350.00</td>
</tr>
<tr>
<td>Net Income earned</td>
<td>29000.00</td>
<td>15050.00</td>
<td>26,830.00</td>
<td>12650.00</td>
</tr>
</tbody>
</table>

Source: Calculated by field surveyed data

SCOPE OF BAMBOO BASED INDUSTRIES

Bamboo is deeply rooted in every household of Assam since Assam is rural based agriculture economy. From the above analysis it is seemed that bamboo is not only used as a household purposes but also uses a source material for furniture, various industrial goods. Through various steps such as upgraded value chain, branding, positioning, finishing, marketing division, adopting cluster approach, promoting export, bamboo based industry can be upgraded to a higher level. The various scope for developing bamboo based products can be as below:

1. Upgraded value chain for bamboo furniture

Some artisans are engaged in the bamboo furniture making and are generating income with this activity. Bamboo cannot be converted into the furniture capable enough to compete with the wooden and metal furniture, but the use of newly developed bamboo wood and bamboo composites can create competitive products. Bamboo furniture made from bamboo boards, bamboo timber and round bamboo through various processes and modern techniques shall replace wooden modular furniture in near future.

2. Branding: Presently bamboo furniture is sold in the market as a product and does not have any branding. Branding of the bamboo furniture manufactured by the artisans in the state can facilitate the marketing of the product and help in establishing long term association with the consumers. By branding of the furniture, source and quality of the product and other product characteristics can be conveyed to the consumer.

3. Positioning: Positioning of the diversified products of bamboo furniture manufactured by the artisans as eco-friendly and handcrafted can attract high end consumers to the bamboo furniture. Dedicated design center is needed to develop newer and newer designs of bamboo furniture and to improve the existing designs as per market requirements.

4. Finishing: It is a specialized function and need skilled manpower along with sophisticated equipment. Finishing center will cater to all the finishing needs of the artisans and will give final improved touch to the bamboo furniture.

5. Packaging Center and Storage: For transportation of Bamboo furniture to the market in distant cities and to export the furniture to other countries, proper packaging is prerequisite. Proper packaging can prevent mechanical damage to the product and maintain its integrity along with the enhanced presentation. There-fore Packaging center will be established to fulfill all the packaging needs of the bamboo furniture artisans and it will also act as finished product store.

6. Marketing Division: Marketing division will be established in the common facility center which will employ the marketing professionals to market the bamboo furniture in domestic as well as international market.
7. **Proposed value chain** will focus on the international market and increase the export of bamboo furniture to the foreign countries. Efforts will be taken to manufacture standardized product as per the HS codes and penetrate the potential market in other countries.

8. **Scope for cluster development:**

Establishing the big bamboo industries does not seem feasible at present in India, but clustering of the activities is certainly possible. By cluster approach, India can enhance competitiveness of the bamboo sector through utilization of modern processing equipment, techniques and standard. Since the artisans engaged in manufacturing of bamboo furniture are residing in close vicinity and have common requirements, cluster approach can be developed. Presently all the artisans involved in manufacturing of bamboo furniture are working individually from their home. By formation of cluster, bamboo artisans will be able to sale their products collectively which will enhance their bargaining power and increase financial returns. It can also purchase raw material collectively thus reducing the cost of raw materials. It will also be easy for the intervening agencies to provide training to the artisans in development of new furniture designs and carpentry techniques. It will make possible for the artisans to participate in expos and trade fairs and for branding the products and maintain product characteristics. Cluster attracts the suppliers, customers and public investors in infrastructure.

9. **Export Potential of Bamboo and Bamboo Products:**

Export is considered as an important instrument in the providing expanded market and financial returns to the farmers and artisans, and hence improve economic growth and correcting its Balance of Payments position of any country. With the availability of huge Bamboo resources and technical knowhow about the various product developments, India is now ready for capturing the bigger share in world bamboo trade. Assam exports Bamboo raw material, Bamboo shoots Bamboo Shoots, Bamboo Mats/Screens, Woven Bamboo products Bamboo Plaits and Plaiting material, Bamboo basket work, Bamboo Charcoal Bamboo, Engineered bamboo products, Bamboo Flooring, Bamboo plywood, Bamboo pulp, Bamboo paper Based Articles etc. (Source- INBAR- An Overview 2016)

Thus these are various scope of developing bamboo based products.

**Challenges faced by the industry:**

Though this sector has huge potentiality to grow up to a boom position but it faces various types of problems such as Fundamental, Market related, Input related and Technological. The problems are as follows:

1. **Fundamental:** The artisans who produce bamboo based products get less than 5% of the retail price and middlemen captures rest portion. Since they are poor, uneducated, they do not have knowledge of modern technology and hence younger generation is not interested and move away from heritage.

2. **Market related:** The bamboo based industry also faces various market related problems such as shifting of consumer choice from artisanal goods to factory made, problems of intermediaries, lack of marketing skills. The traditional craft skill however beautiful, it needs sensitive adaptation, proper quality control, correct sizing and accurate costing to make a place in the market.

3. **Input related and Technological:** The bamboo-based industry suffers from low wages, technological obsolescence, non-use of simple machines, low efficiency and quality of output. There is also inadequate access to credit for both working and fixed capital. Besides, neither the credit facilities were provided sufficiently.

Besides above mentioned problems, the most important bottleneck was identified as absence of regulatory framework. In general, there is also seemed to be a strong promotional role of a governmental organisation, which help in generating awareness on bamboo products, running a nationalized campaign and help developing product market linkages.

**VARIOUS SCHEMES ADOPTED BY CENTRAL GOVERNMENT FOR PROMOTION OF BAMBOO BASED INDUSTRIES:**

The Union government has adopted various schemes such as National bamboo Mission, Bamboo and cane development Institute, SFURTI etc to develop Bamboo Based Industry on a sustainable manner. The Various schemes and its related to financial institution are as follows:

1. **National Bamboo Mission:** National bamboo mission has been initiated by the Planning Commission, during the 10th Plan, for holistic development of bamboo sector by increasing the bamboo plantation and marketing of the bamboo products.

The NBM 2006 was brought under the Integrated Horticulture Development Mission during the year 2014-15 and was continued till the year 2015-16. In April 2018, a restructured NBM was approved by the GOI with an investment of Rs 1290 crore in the coming 2 years.

Its Objectives:

1. Promote the growth of the bamboo sector through as an area based regionally differentiated strategy;

2. Increase the coverage of area under bamboo in potential areas, with improved varieties to enhance yields;
3. Promote marketing of raw bamboo and bamboo based handicrafts;
4. Establish convergence and synergy among stake-holders for the development of bamboo;
5. Promote, develop and disseminate technologies through a seamless blend of traditional wisdom and modern scientific knowledge.
6. To generate employment opportunities for skilled and unskilled.

2. **Bamboo and Cane Development Institute**

The Bamboo and Cane Development Institute was set up to cater to the changing design and technology needs of buyers and to provide support to artisans and craftsmen in these two aspects. The Institute conducts training programs and workshops and acts as a resource centre. The Centre also facilitates the participation of artisans and craftsmen in trade fairs.

3. **National Bank for Agriculture and Rural Development (NABARD):** NABARD has accorded special status for development of bamboo farming in consonance with the action plan prepared by National Bamboo Mission for upgrading the bamboo economy.

4. **Small Industries Development Bank of India (SIDBI):** It was set up under an Act of Indian Parliament, is the Principal Financial Institution for the Promotion, Financing and Development of the Micro, Small and Medium Enterprise (MSME) sector. The institution is providing various schemes for Micro, Small and Medium enterprises.

5. **SFURTI** is Scheme of Fund for Regeneration of Traditional Industries. Ministry of Micro Small and Medium Enterprises (MSME), Govt. of India has launched this scheme in the year 2005 with the view to promote Cluster development. This scheme is executing various interventions to improve bamboo based products. The various types of intervention are as follows:
   a) **Soft interventions** - General awareness, counseling, motivation and trust building; Skill development and capacity building; Institution development; Exposure visits; Market promotion initiatives; Design and product development; Participation in seminars etc.
   b) **Hard Interventions** - Creation of facilities such as Multiple facilities for multiple products and packaging wherever needed; Common facility centres (CFCs); Raw material banks (RMBs); Up-gradation of production infrastructure; Tools and technological up-gradation;
   c) **Thematic interventions** - cross - cutting thematic interventions at the sector level including several clusters in the same sector with emphasis on both domestic and international markets. These will primarily include: Brand building and promotion campaign etc.

There are also various suggestions to improve artisans, producer’s organization, value chain some policy initiatives to develop bamboo based products from all aspects. The various suggestions are as follows:

1. **Artisans:**
   a) Providing skill improvement training to artisans in newer tools and techniques of making bamboo products. These sectors need adoption of improved technology, standard/improved designs and improved artisan skill through training which will be actively promoted.
   b) Providing institutional support in the form of creating market linkage so as to reduce dependency on few traders for marketing of their products.
   c) Organize artisans in groups and undertake capacity building in product development and market accessibility.
   d) Promote collective procurement of raw material and collective sale of finished goods to enhance bargaining power of the artisans group.

2. **Producer’s organizations**
   i) Organizing artisans group to form Producer Company to enhance their bargaining power.
   ii) Engage in new product development and marketing of the finished products.
   iii) Providing social security and financial support to the individual artisans.

3. **Value Chain Intervention**
   a) Institutions for creating knowledge base in bamboo sector and mechanism to provide information to different stakeholders in bamboo value chain.
   b) Establishing primary processing center in different clusters to ensure the regular supply of quality raw material to the artisans and bamboo based enterprises. Designing of new products to diversify the product range to increase competitiveness in high end consumer markets.
c) Establishing institutional marketing system to facilitate the marketing of bamboo products.

d) Providing technical and financial support to entrepreneurs and producers organization. Establishment of bamboo Technology Park.

4. Market Intervention

e) Improving the image of bamboo to enhance its application by spreading awareness through various events and increasing visibility of bamboo products.

f) Providing various platforms to display and sale of bamboo products.

g) Promoting bamboo trade in international market by establishing linkages and providing support to remain competitive.

5. Policy Level Interventions:

i) Institutional arrangement to certify the quality of bamboo products in national and international market.

ii) Increase the use of bamboo products in Government institutions and programme. Public Works Department Industrial should use of bamboo is in manufacturing bamboo flooring, bamboo shoot industry and bamboo furniture in conjunction with timber and rattan.

iii) Increasing the import duty on bamboo products, providing incentives and subsidy to encourage establishment of such industries and safeguard the interest of domestic manufacturers.

iv) Promotional measures should be undertaken by the government to make the products popular among the masses.

ev) Adoption of strict regulatory framework and proper implementation of govt schemes and initiatives.

Source- Bamboo and Rattan policy 2003, GOVT OF INDIA

The bamboo and Rattan policy 2003 shall encourage joint ventures with entrepreneurs outside the State including foreign enterprises with technology, finance and export linkages. This arrangement will channelize the resources through local traders and manufacturing industries into domestic and international markets earning handsome revenue for the State.

Besides this, the government (Central) has adopted the policy of cluster development with a view to provide competitive advantage to the firm in three different ways, namely productivity, innovation, and formation of new business.

CONCLUSION

The bamboo is deep-rooted natural resource which is an important livelihood in every household of Assam economy. In such an modern age, bamboo is not only used for household activities but also for industrial activities such as making furniture, paper and pulp industries, bamboo plywood, agricultural implements, handicraft, irrigation, brooms, medicine, food, fuel, fodder etc which improves economic condition of bamboo related artisans and hence develop of Assam economy specially rural. Though this sector has huge potential to grow but due to poverty, lack of technical knowledge, skill, modern equipment, lack of promotional measures for this sector, lack of regulatory framework this sector is not developed as it can. Bamboo industry related artisans get less than 5% of retail price and hence their economic condition is so poor that they can’t adopt modern technology to develop. So the bamboo based industry can be developed through various measures such as skill development, regulatory framework, easy credit facilities, promotional measures, positioning and branding of bamboo based products, export promotion, linking bamboo based products with domestic and international market, and most importantly adoption of cluster development approach. Thus bamboo based industry can be developed and improve our rural economy.

REFERENCES


