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INTERNATIONAL BAMBOO CONFERENCE

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INDIAN BAMBOO INDUSTRY

MARKET OVERVIEW & OUTLOOK

Introduction

Used for housing, pulp, paper, panels, boards, veneer, flooring, roofing, fabrics, crafts, oil, gas and charcoal, Bamboo today is a major non-wood forest product and wood substitute. Important from a socioeconomic and cultural standpoint, its usage as a healthy vegetable (the bamboo shoot) has also been growing over the years.

Quickly changing its image from the “poor man’s tree” to a high-tech, industrial raw material and substitute for wood, Bamboo is globally recognized now as an *increasingly important economic asset in poverty eradication and economic and*

environmental development. Bamboo has always played an important economic and cultural role across Asia and its usage is growing rapidly in Latin America and Africa as well.

Always an important resource in Asia, Bamboo is gaining importance in other regions with increase in higher value uses

In spite of bamboo’s importance worldwide the global statistics pertaining to its resources, production and trade remain rather scarce and inconsistent. The lack of reliable and comprehensive data on bamboo resources

and utilization has been a cause of concern hampering its sustainable development and limiting its potential to contribute to poverty reduction.

Bamboo plant

Bamboo belongs to the *Gramineae* family and has about 90 genera with over 1200 species. It flowers rarely and in irregular cycles which are not yet clearly understood. Bamboo is an extremely diverse and hardy plant which can easily adapt to varied climatic and soil conditions. While dwarf bamboo species grow to only a few centimeters (cm), medium-sized bamboo species may reach a few meters (m) and giant bamboo species grow to about 30 m, with a diameter of up to 30 cm. Bamboo stems are generally hard and vigorous, and the plant can survive and recover after severe calamities, catastrophes and damage.

Global bamboo scenario

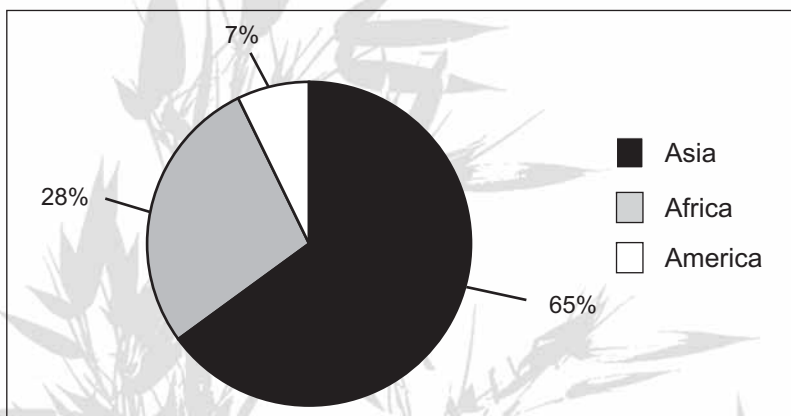
Distribution

Bamboo is naturally distributed in the tropical and subtropical belt between approximately 46° north and 47° south latitude, and is commonly found in Africa, Asia and Central and South America. Some species may also grow successfully in mild temperate zones in Europe and North America.

Bamboo acreage	Area (million ha)	% of forest cover
Worldwide	36	3.2
Asia	24	4.4
*Africa	2.7	-
*Latin America	10	-

Source : FAO, YES BANK analysis

Fig-1 : contribution to world bamboo resources by continent

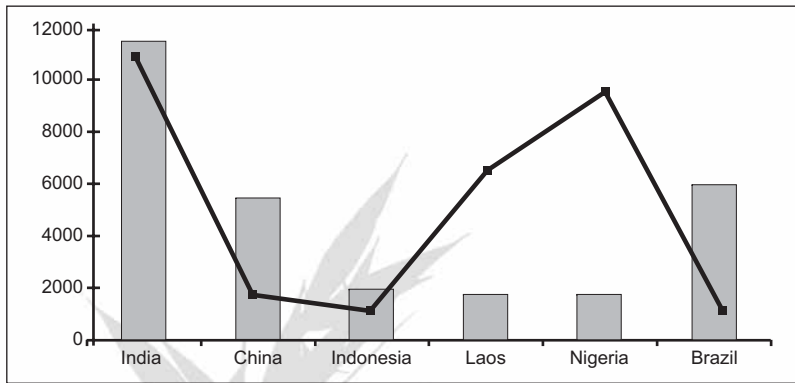


Source : FAO, YES BANK analysis

*Reported by six countries (Ethiopia, Kenya, Nigeria, Uganda, the United Republic of Tanzania and Zimbabwe)

*Precise assessments are not available; a total of over 10 million hectares is a realistic estimate for the region.

Fig-2 : Extent of bamboo resources of major producing countries



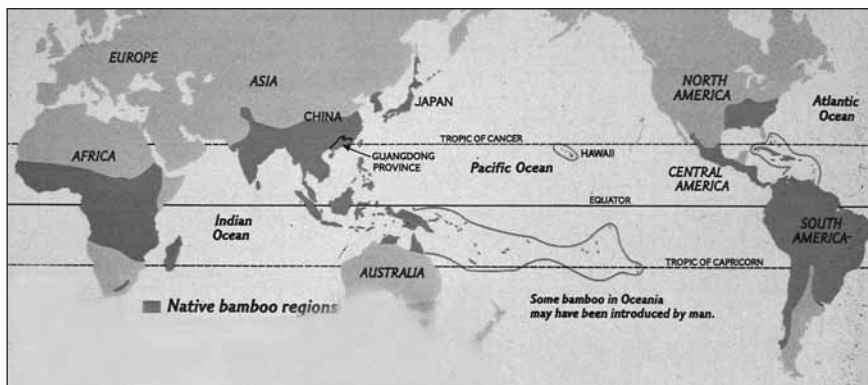
Source : FAO, YES BANK analysis

The available data on bamboo is scarce and even the reported data is not uniform mainly due to different methodological approach in calculation in different countries and also in many countries it is considered of low economic value and regional level mapping is not carried out.

India & China account for 45% of the world total bamboo resources

Asia remains the richest continent in bamboo resources with about 65 percent of total world bamboo resources falling in the continent. Three of the top six producing countries are from Asia. India and China together account to approximately 45 per cent of the world bamboo resources with an individual share of **30 and 15 per cent** respectively.

Bamboo distribution map (World)



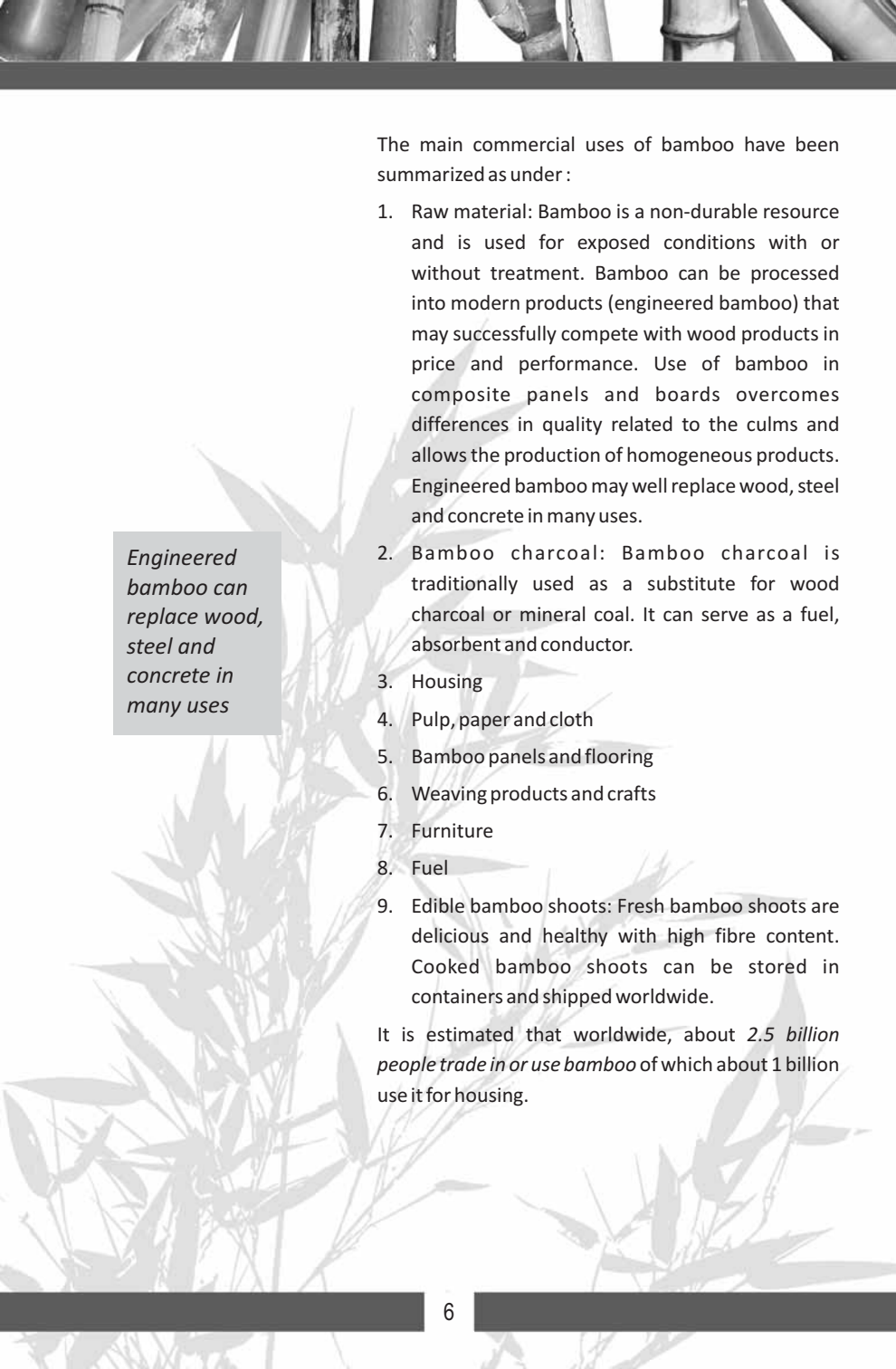
■ Important Bamboo regions

Ownership of bamboo resources

The ownership structure and tenure system are important in formulating effective bamboo resource policies. Forest ownership is in transition in many countries. FAO (2006) conducted a regional survey on ownership of forests and trees in over 20 countries in Asia. Preliminary results of the study indicated that over 80 percent of Asian forests are public. Most forest areas are under the formal jurisdiction of governments, and forest management is mostly a governmental issue. In the last 20 years, a gradual shift has been noticed towards decentralization. Ownership and control over natural resources is increasingly shifting from the state to local communities and the private sector - and to individual households in many countries (Scherr, White and Kaimowitz, 2003). In Asia the area under private ownership has increased from 19 per cent in 1990 to 27 per cent in 2000.

Bamboo products and global trade

Forest resources are experiencing increasing pressure due to the growing world population and improving living standards. During the last 15-20 years, bamboo has developed as an exceptionally valuable and often superior substitute for wood. Bamboo-based panels and boards are hard and durable and may successfully substitute for hardwood products. Bamboo may soon replace wood in many industrial applications and thereby contribute to the saving and restoration of the world's forests.



Engineered bamboo can replace wood, steel and concrete in many uses

The main commercial uses of bamboo have been summarized as under :

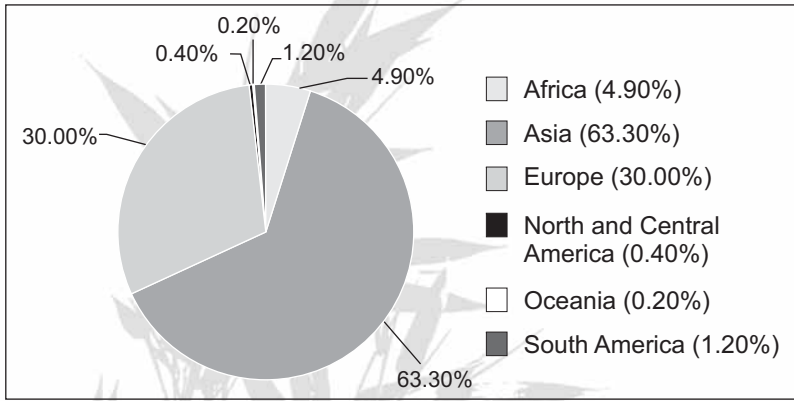
1. Raw material: Bamboo is a non-durable resource and is used for exposed conditions with or without treatment. Bamboo can be processed into modern products (engineered bamboo) that may successfully compete with wood products in price and performance. Use of bamboo in composite panels and boards overcomes differences in quality related to the culms and allows the production of homogeneous products. Engineered bamboo may well replace wood, steel and concrete in many uses.
2. Bamboo charcoal: Bamboo charcoal is traditionally used as a substitute for wood charcoal or mineral coal. It can serve as a fuel, absorbent and conductor.
3. Housing
4. Pulp, paper and cloth
5. Bamboo panels and flooring
6. Weaving products and crafts
7. Furniture
8. Fuel
9. Edible bamboo shoots: Fresh bamboo shoots are delicious and healthy with high fibre content. Cooked bamboo shoots can be stored in containers and shipped worldwide.

It is estimated that worldwide, about 2.5 billion people trade in or use bamboo of which about 1 billion use it for housing.

Bamboo industry which supports 2.5 billion people today is expected to grow from current \$12 billion to about \$20 billion by 2015

The world market for bamboo is large and growing. Recent estimates place the global market for bamboo at about \$12 billion and market growth to \$20 billion or more is foreseen by the year 2015. However, reliable statistics are still lacking and most of the economic activities related to bamboo are not recorded officially.

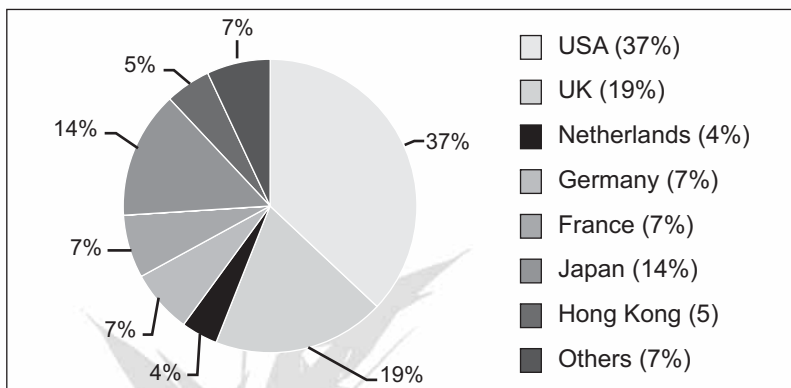
Fig -3 : Market share of continents in bamboo products export



Source : FAO, YES BANK analysis

North Eastern Region Account for 54 per cent of India's bamboo resources

Fig -4 : Market share of major countries in bamboo products import



Source : FAO, YES BANK analysis

Bamboo scenario in India

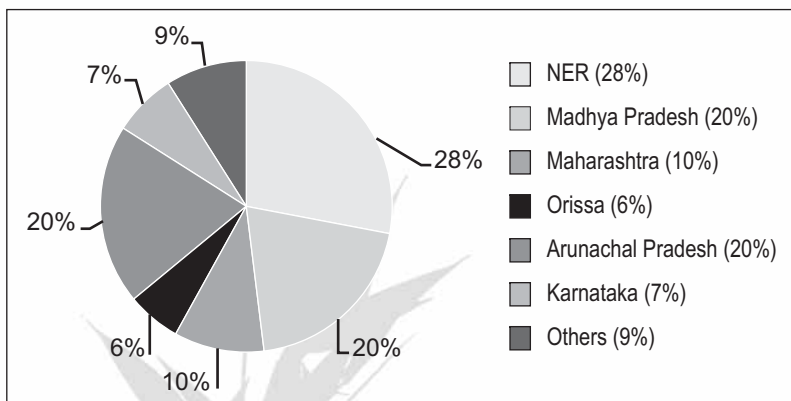
India while have 17 per cent if the global acreage, has only 4 per cent of global market due to low yields compared to countries like Japan, China & Malaysia which contribute 80 per cent

India has the largest area and the second largest reserve of bamboo in the world today. A very large standing resource of bamboo is found mostly in moist and deciduous forests in all the states except Jammu & Kashmir. Of India's total forest area of 67.7 million hectares, bamboo (both natural and planted) occupies around 11.4 million hectares. This represents 16.7 per cent of the total forest area of the country and 3.4 per cent of the total geographical area (329 million hectares) of India. But despite having the largest area under bamboo in the world comprising more than 100 different species, India contributes to only 4 per cent share of the global market. This is mainly attributed to the low productivity of around 0.4 tonnes per hectare which is much lower compared to other countries such as Japan, China and Malaysia which contribute about 80 per cent to the world's bamboo market.

Distribution

The NER (North Eastern Region) has the largest bamboo stock in the country and accounts for 54 per cent of the bamboo resources in India. The other most abundant bamboo growing areas are the Andaman and Nicobar Islands, the Himalayan foothills, Madhya Pradesh and Western Ghats.

Fig - 5 : Area-wise distribution of bamboo in India



Source : Indian Plywood Industries Research and Training Institute

Bamboo market of India : Present and future opportunities

The market size, both domestic as well as share of international trade is expected to increase to 5 times by 2015

The size of the domestic bamboo economy has been estimated at around 2000 crores by the Planning Commission. The market potential however, is estimated at around Rs. 4500 crores, which could grow to Rs. 26,000 crores by 2015. India's share in the global market is estimated to be \$1 billion (around Rs. 4000 crores) and is expected to increase to \$5.7 billion (around Rs. 22800

crores) by 2015.

Consumption pattern of bamboo in India

Pulp	35.0
Housing	20.0
Non-residential	5.0
Rural uses	20.0
Fuel	8.5
Packing, including basket	5.0
Transport	1.5
Furniture	1.0
Others, wood working industries	1.0
Others, including ladders, mats etc.	3.0

The current and expected size of the market for some of the bamboo products has been summarized in the table below :

Product / Application	Current Market (Rs in Crore)	Expected by 2015 (Rs. in Crore)
Bamboo Shoot	5	300
Bamboo as wood substitute	10,000 (import value)	30,000 (in 20 years)
Bamboo Plyboard	200	500
Bamboo Plyboard (for trucks & railways)	1000	3400
Bamboo Flooring	100 (Domestic) 100 (Export)	1950
Bamboo pulp	100	2088
Bamboo Furniture	380	3265
Building and Construction Material		
Scaffolding	-	861
Housing	-	1163
Roads	-	274
Bamboo grids for Tiny/cottage sector (e.g. Agarbatti)	-	1000
Misc. Uses (ice creams, fireworks, pencils, matches etc.)	394	600

Source : Planning Commission : National Mission on Bamboo Technology and Trade Development.

Challenges in developing domestic bamboo economy

The challenges in developing the domestic bamboo economy from production to consumption can be broadly classified under the following heads :

Production

Availability of quality inputs severely limits productivity leading to over exploitation of existing forests

- The major hurdle in cultivation of bamboo from seeds has been poor availability of planting material. Most of economically important bamboo species bear seeds only 2 to 3 times in a century and seed viability is only for a short period.
- Existing use of rhizome as planting material. This is not only insufficient and costly but in most of the clump forming bamboos, is leading to relocation rather than development of the resource.
- Over-exploration of the existing forests. This is threatening the very existence of important genetic resources of economically important species.

- Low awareness of conservation practices which is gradually leading to the decrease in production and supply of bamboo.

Harvesting/Storage

Manual harvesting and lack of storage infrastructure hinders efficient cultivation

- Adhoc and unsustainable harvesting based on seasonal dictates of market demand which can be largely attributed to the patterns of intermediation in marketing channels.
- Lack of mechanization in harvesting making it a cumbersome and inefficient practice and often leading to losses being incurred.
- Lack of appropriate storage and warehousing infrastructure. After harvest bamboo is required to be transported safely and stored properly in warehouses near the villages. This is mostly lacking at present.

Processing

- Scarcity of quality raw material aggravated by the gross inefficiency in management, harvesting and storage.
- Processing machinery and equipment available in India often found to be expensive and not satisfactory in terms of performance and handling capacity.
- The imported machinery are not always suitable for handling the sympodial bamboo which grows in our country. This often results in rapid wearing and poor quality of product.
- Non-availability of genuine machinery spare parts and poor after sales service due to unorganised nature of the industry.

Marketing

- No accurate assessment of the demand and supply position of the resources which is resulting in considerable uncertainty in the industrial and business operations.
- Bamboo still not widely recognized as a substitute for wood and not used in mainstream construction industry.
- Most Bamboo product manufacturing still considered as a source of livelihood for artisans and not as a remunerative and lucrative industry.

Way forward

Shift from wild bamboo to farmed bamboo needed to ensure consistent quality

- Major policy shift towards farm supplies from forest based bamboo resources, which do not exist at present. The industry requires bamboo that is consistent in quality and this can be provided by planting stocks that are intensively managed so that the desired quality is selectively bred into the crop by good practices that are embedded into the cultivation and harvesting of the natural resource.
- Commercialization of bamboo as an enterprise at farmer's level. Bamboo should be put into the industrial pedestal with appropriate tie-up arrangements with bamboo based industries viz. paper, handicrafts and the new emerging areas of eco-friendly products e.g. housing, tiles, flooring, bamboo shoots etc.
- Boost research and development activities for genetic improvement in bamboo, development of efficient methods for mass production of superior quality planting stock and conservation of the genetic resources. Since a limited number of species produce most of the products, basic research should be directed towards the minor but potentially useful species.
- Increasing availability of planting material to the farmers through development of improved storage facility for bamboo seeds, vegetative propagules and establishment of a network of suppliers of plant material.
- Selection of high yielding clones and agro techniques for raising bamboo plantation for higher productivity.
- Installation of a grading system for classifying bamboo according to its age, height and thickness to ensure better prices and provide an incentive to grow and supply bamboo of the required maturity, quality and species.
- Development of processing machinery, suitable for Indian bamboo species, producing quality product at a competitive price.
- Proper linkages between private growers, cottage industries/artisans and marketing agencies need to be established by envisaging a holistic developmental plan for the bamboo industry.