Bamboo

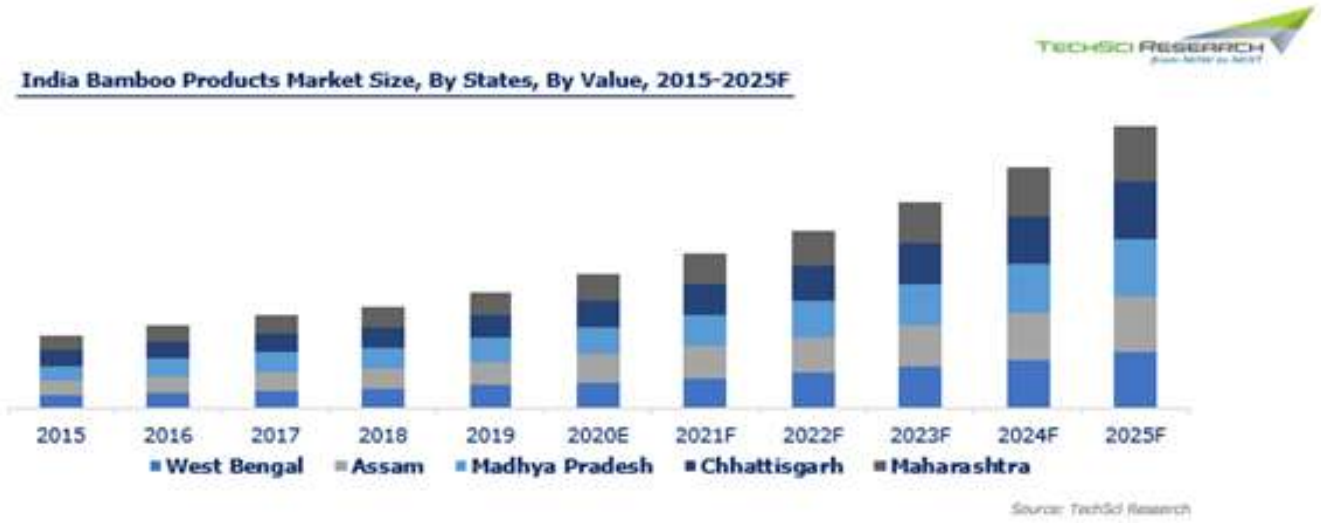
The World's most renewable material

Poonam K Malhotra

Bamboo, a super plant labelled **'the world's most renewable material'** is the fastest-growing woody plant in the world. It can grow up to four feet in one day. There are over 1000 species of bamboo. Bamboo requires no pesticides and little water; and when harvested, the plant regenerates itself in a flash. Bamboo also contains a substance called **bamboo-kun–an antimicrobial agent** that gives the plant a natural resistance to pest and fungi infestation. It can be grown all throughout the world and has countless uses both in and outside the home.

The high growth rate of bamboo and the fact that bamboo can grow in diverse climates makes the bamboo plant a sustainable and versatile resource. Because it is fast-growing, bamboo fixes more CO2 and generates up to **35 per cent more oxygen** than similar stands of trees. Bamboo planting can slow deforestation, prevents oil erosion, provides an alternative source of timber for the construction industry and cellulose fibre for the textile industry. Bamboo can be used as food, fibre and shelter and due to its ease of growth and extraordinary growth rate it is a cheap, sustainable and efficient crop. Just like other cellulose-based clothing materials, bamboo fibre is biodegradable in soil by microorganisms and sunlight.

Bamboo is both decorative and useful. Bamboo is in fact one of the strongest building materials available and even provided the first re-greening in Hiroshima after the atomic blast in 1945. Bamboo is proving to be an environment-friendly alternative to plastic that is renewable and can be replenished at a fast rate.



India has one of the richest bamboo resources in the world, second to China in Bamboo production. The annual bamboo production in the country is estimated at **3.23 million tons**. According to the **Forest Survey of India (FSI)**, in India bamboo grows in **8.96 million hectares** of forest area, which constitutes about **12.8% of the total forest area** of the country. India, in spite of having **30% of the world's bamboo resources**, constitutes only 4% of the global market. While China with just 40 lakh hectare holds about 50% of the world market, according to the **Bamboo Society of India.**

However, Recently in India, bamboo products have increased in popularity with many brands promoting their eco-friendly benefits and sustainability. From Fashion designers to Architects, daily use products to sanitary materials, bamboo is replacing cotton in textiles, single-use plastic in daily use products and wood in paper manufacturing. We bring you here the advantages of using bamboo in various industries and some of the well known Indian brands revolutionizing the use of bamboo.

Bamboo in Clothing and Furnishings

In recent years different technologies have been developed that allow bamboo fibre to be used for a wide range of textile and fashion applications. Bamboo yarn is also being blended with other textile fibres such as hemp or spandex.

However, textiles labelled as being made from bamboo are usually not made by mechanical crushing and retting. They are generally synthetic rayon chemically made from cellulose extracted from bamboo and are as harmful as rayon made from wood pulp.

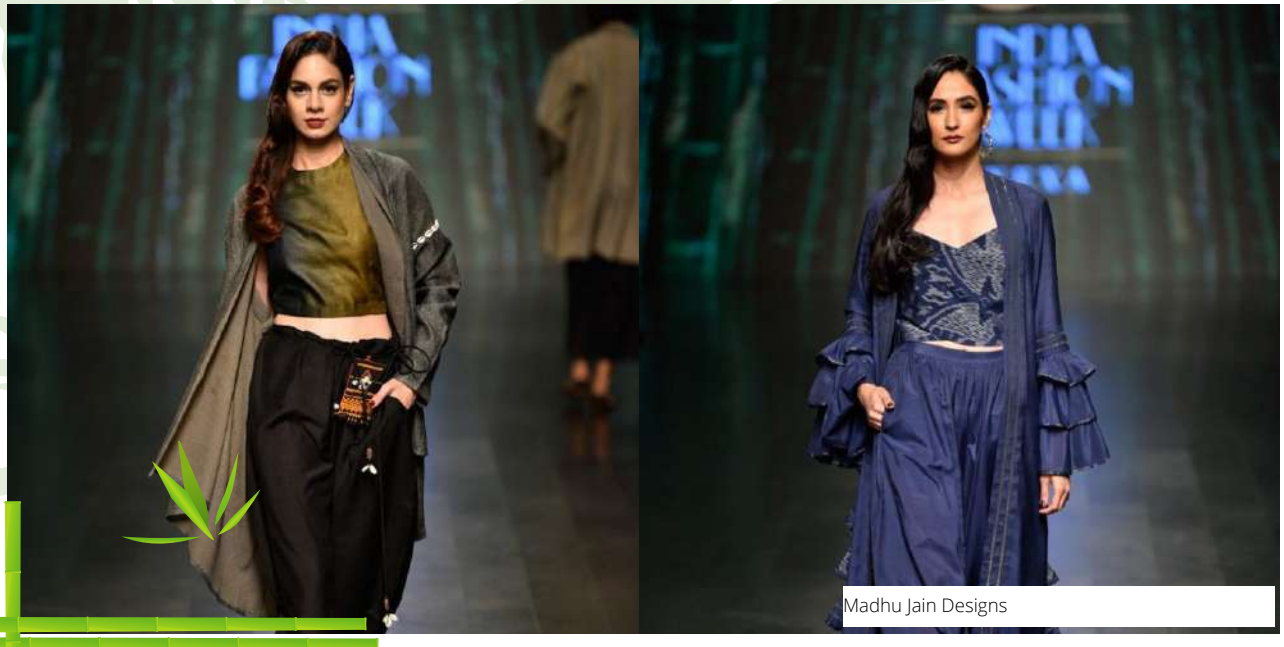
Bamboo fibres which are also regenerated fibres can be basically compared with viscose fibres as the source of raw material is nearly the same. Bamboo fibre is made of bamboo pulp and viscose is made of wood or eucalyptus pulp. However, while bamboo trees can be grown back in two years, it takes around 20 years for a normal or eucalyptus tree to reach its full height. This is the advantage bamboo fibres has over viscose fibres.

Bamboo also has another advantage over cotton as a raw material for textiles. When comparing water consumption with cotton, the water consumed by bamboo fibre at the farming stage is very much less than cotton or the same as other regenerated fibres. It takes between **7,000 to 20,000 litres** of water depending on the region, climatic conditions, soil, etc to grow 1 kg of cotton fibre. On the other hand, regenerated fibres like Tencel, Viscose, Bamboo, Modal, etc need just between 300 and 500 litres of water.

Mechanically produced fine bamboo fibre

Bamboo fibre made by a mechanical-bacterial process and spun into a yarn produces a very high quality, strong and silky bamboo fabric, called bamboo linen. Another means of extracting fibre from bamboo, and probably the only purely mechanical process of extraction anywhere in the world, is practised in the days preceding the annual festival of the Kottiyur Temple of Kerala in India.

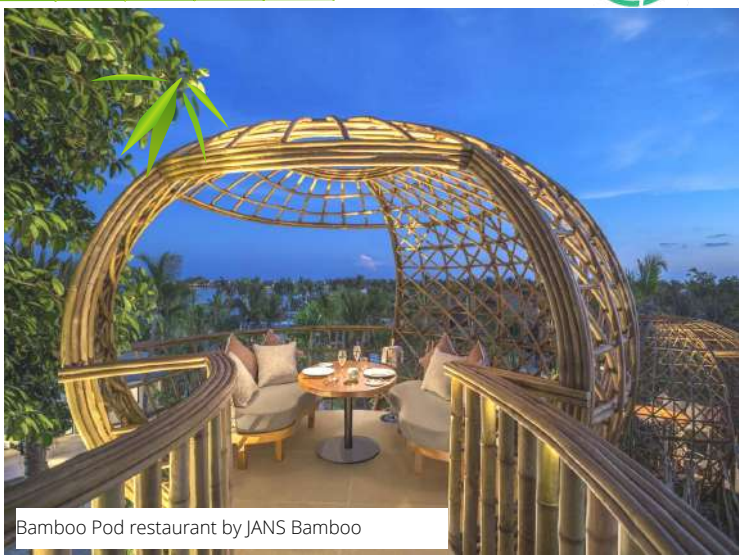
The fashion world's fascination with bamboo is attracting the interest of a number of designers. More and more of these materials end-products are expected to find their way into store shelves in the years to come. Famous Indian Designers like **Madhu Jain** and **Anita Dongre** are already experimenting with this fabric along with clothing brands like **Bamboo Tribe.**



Madhu Jain Designs

Bamboo in Construction

Since ancient times, Bamboo is used as a natural building material, Bamboo has many environmental benefits such as its ability to sequester carbon, bamboo skin being UV resistant, its tensile strength being equivalent to that of steel considering mass/weight ratio, which makes it one of the greenest building material. The embodied carbon which is the main source of GHG emissions is one of the lowest in bamboo, making it a favourite green material to combat climate change. In ancient times bamboo was used to build houses because of its natural strength and flexibility. Even today over one billion people in the world live in bamboo houses. According to **UNESCO**, 70 hectares of bamboo produce enough of the material to build 1000 bamboo houses. Apart from the fact that bamboo can be used for structural construction, it can also



Bamboo Pod restaurant by JANS Bamboo

be an excellent roof and flooring material, as mentioned by The **Centre For Green Building Material and Technology** (CGBMT). However, it needs to be properly treated as per IS codes in order to have a long life.

Famous Architects **Neelam Manjunath**, **Binoy Jain**, **sustainable architecture firms like Green Evolution JURIAN Sustainability and Companies like JANS Bamboo and Boober** are extensively promoting

Neelam Manjunath's Home of Five Seasons

USES OF

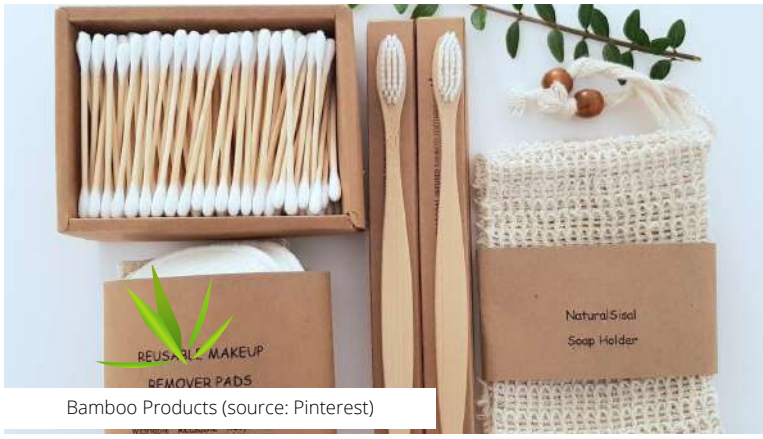
Bamboo in their design constructions and interiors. **It is a matter of pride for India that the Bamboo Pod restaurant built by JANS Bamboo, India for Waldorf Astoria resort in the Maldives is recognized by CNN Travel UK as one of the 16 most beautiful waterfront restaurants in the world.** From R&D facilities, centres of excellence, banquets, restaurants, farmhouses, landscape elements and most importantly eco-resorts, bamboo structures are being built in the Country. These are environmentally far superior to conventional green-certified structures built using concrete and steel.

Bamboo in Paper

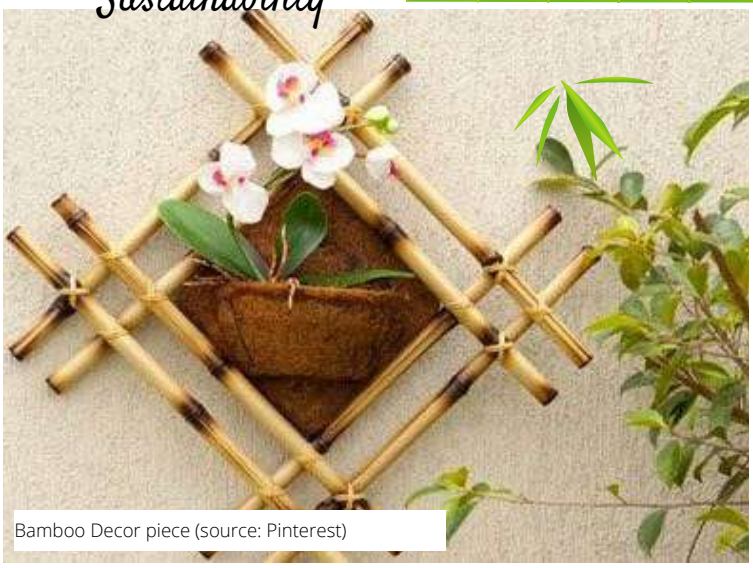
Indian companies **Orient Paper Mills and Ballarpur Industries Ltd (BILT)** are converting bamboo into paper reducing the need for wooden biomass.

Bamboo in Daily Use Products

Eco-friendly start-ups are innovating the use of bamboo and creating daily use products like toothbrush, straws, etc. to replace single-use plastics. **Companies like BECO India, Bambrew, Visara Naturals, Zogam Bamboo Works, bambooindia.com and Boober**, etc are manufacturing innovative daily use products using bamboo.



Bamboo Products (source: Pinterest)



Bamboo Decor piece (source: Pinterest)

microbial agent, so it will not cause skin allergy, and at the same time, it also has competitive prices in the market. Many start-ups are manufacturing sanitary napkins from bamboo. **Companies like Carmesi, Heyday, Private Label and RI Nanotech, etc.** are bamboo-based sanitary pads in India.

Bamboo as Food

Bamboo shoots are low in calories, high in dietary fibre and rich in nutrients. The shoots have protein, carbohydrates, amino acids, minerals, fat, sugar, fibre and inorganic salts. Shoots and rice (the seeds of a dying bamboo) are used in various preparations. Young bamboo shoots are usually consumed as vegetables in curry and also as a pickle. The nutritional value of bamboo shoots varies by species to species, harvesting procedure and growing environment. Bamboos are also utilized in different areas as herbal or traditional treatments. The list is endless...

BAMBOO

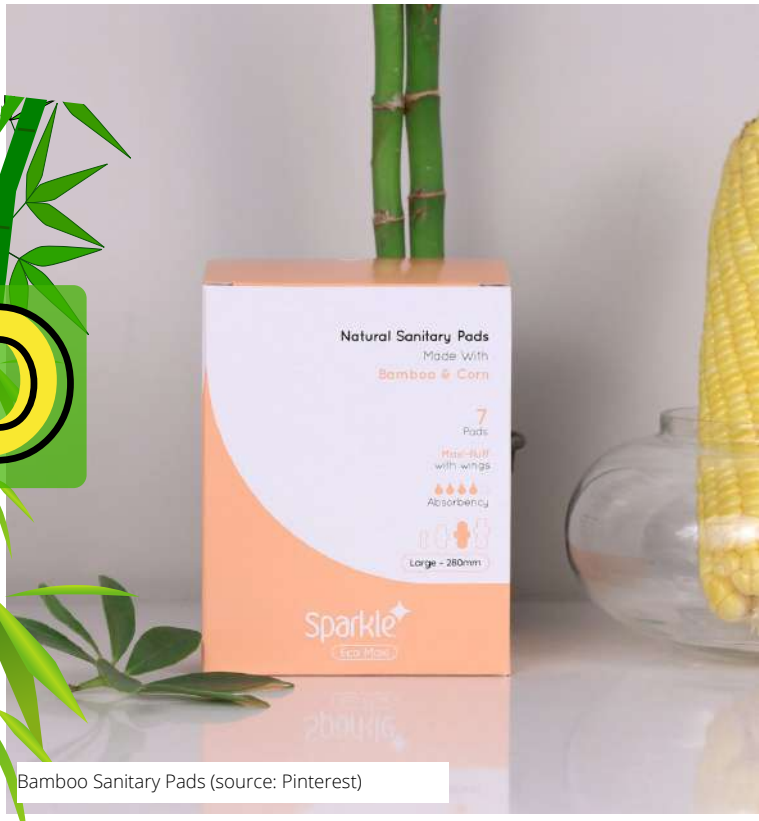
Bamboo Shoots meal (source: Unsplash)

Bamboo in Decoratives

It is traditionally used for basketry and handicrafts like food-grain containers, mats, hats, hand fan,shupe, etc. It is also used in musical instruments like flutes etc. It has a greater scope of value addition process. **Websites like Tribesindia** are selling bamboo traditional items from all over India.

Bamboo in Sanitary materials

The bamboo fibre has natural effects of sterilisation and bacteriostasis, therefore it has an incomparably wide foreground on the application in sanitary materials. Because of the natural antibiosis function of the bamboo fibre, the finished products need not have additions of any artificial, synthesised, anti-



Bamboo Sanitary Pads (source: Pinterest)

Conclusion

Since time immemorial, bamboo has been the backbone of much of the world's rural life and will remain so as the population increases. It will continue to play an important part in the development of enterprises and the transformation of rural environments.

For sustainable economic and social development, ecological sustainability is a basic requirement. The use of this super plant called Bamboo needs to be encouraged more and more. The World needs more innovation as well as more acceptance of Bamboo products for the sake of our environment and the future of life on our mother earth.

Sources: Wikipedia, www.indiantextilejournal.com, www.woodema.org