

# Bamboo

in Housing & Building Construction

*INITIATIVES OF BMTPC*



**bmtpc**

Building Materials & Technology Promotion Council  
Ministry of Housing & Urban Poverty Alleviation  
Government of India

## BACKGROUND

Bamboo has a long and well established tradition for being used as a construction material throughout the tropical and sub-tropical regions of the world. With the rising global concern, bamboo is a critical resource as it is very efficient in sequestering carbon and helps in reduction of Green House gas emissions.

In the modern context when forest cover is fast depleting and availability of wood is increasingly becoming scarce, the research and development undertaken in past few decades have established and amply demonstrated that bamboo could be a viable substitute of wood and several other traditional materials for housing and building construction sector and several infrastructure works. Its use through industrial processing have shown a high potential for production of composite materials and components which are cost-effective and can be successfully utilised for structural and non-structural applications in construction of housing and buildings. Main characteristic features, which make bamboo as a potential building material are its high tensile strength and very good weight to strength ratio. The strength-weight ratio of bamboo also supports its use as a highly resilient material against forces created by high velocity winds and earthquakes. Above all bamboo is renewable raw material resource from agro-forestry and if properly treated and industrially processed, components made by bamboo can have a reasonable life of 30 to 40 years. Though natural durability of bamboo varies according to species and the types of treatments. Varied uses and applications in building construction have established bamboo as an environment-friendly, energy-efficient and cost-effective construction material. The commonly used species in construction are *Bambusa balcooa*, *Bambusa bambos*, *Bambusa tulda*, *Dendrocalamus giganteous*, *Dendrocalamus hamiltonii*, *Dendrocalamus asper*, etc.

Bamboo, a highly versatile resource and widely available, is being used as an engineering material for construction of houses and other buildings. A number of small and medium sized demonstration structures have already been constructed during past few years. These have shown very good performance in different climates. In order to propagate use of bamboo in housing and building construction for wider application, awareness and confidence building amongst professionals and householders is required. This calls for organized actions on prototyping, demonstration, standardization aimed at improving acceptance levels and promoting appropriate construction practices.



## INITIATIVES IN NORTH EASTERN REGION

BMTPC is actively involved in developing bamboo based technologies and to promote these technologies in the North-Eastern Region and other bamboo growing areas, by setting up of Bamboo Mat Production Centres for processing of bamboo, encouraging commercial production of bamboo based products, construction of demonstration houses etc. The Council is also engaged in providing training to the local artisans in processing of bamboo.

### Bamboo Mat Corrugated Roofing Sheets

The BMTPC in collaboration with Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore, have jointly developed a technology for manufacturing of Bamboo Mat Corrugated Sheet (BMCS) which is durable, strong, water-proof, and decay-insect-fire resistant. The commercial production has been started at Byrnihat, Meghalaya. The product has been accepted by the consumers and is becoming increasing popular as a roofing option in the north east part of the country. It is estimated that in full capacity this unit will generate livelihood for nearly 7000 women/men (through mat weaving) in rural regions where bamboo is abundantly grown.

### Construction of Demonstration Structures in Mizoram and Tripura

BMTPC has undertaken construction of 10 demonstration structures, each, using bamboo based technologies in Mizoram and Tripura. These includes houses, OPD buildings, Library buildings, Picnic huts, Schools, etc. The cost of construction is considerably reduced by 25% to 30% using bamboo based technologies for different types of structures as compared to conventional construction. During constructing various types of structures local contractors, masons, artisans were provided training on use of bamboo in building construction. The specifications used are:

- Treated bamboo columns and beams,
- Ferrocement walls on bamboo grid reinforcement,
- Treated bamboo trusses, rafters and purlins,
- Bamboo mat board in wooden frames for door shutters,
- Bamboo mat corrugated roofing sheets,
- Locally available wood for door & window frames
- IPS flooring, etc.



## Bamboo Mat Production Centres

BMTPC, in cooperation with Cane & Bamboo Technology Centre (CBTC), Guwahati and State Governments, is establishing two Bamboo Mat Production Centres each in the States of Assam, Tripura, Mizoram and Meghalaya. The main objectives of Bamboo Mat Production Centres are to provide uninterrupted supply of bamboo mats to the manufacturing units of bamboo based building components for increasing the productivity, quality, to provide training in mat production process and to create employment opportunities in the North Eastern region. In the first phase, the Council is setting up Bamboo Mat Product Centres at Kowaifung, Tripura; Sairang and Bualpui, Mizoram and Sokhar Nongtluh Village, Meghalaya. The Council has already completed establishment of Bamboo Mat Production Centres at Kowaifung, Tripura and Sairang, Mizoram.

The Council in cooperation with CBTC is also providing training on bamboo mat production to the artisans from each Bamboo Mat Production Centres. The production capacity of each production centre will be 300 mats per day. It is estimated that the each Centre will be able to produce the mat at the rate of Rs.35 per mat and would be able to sell at the rate of Rs.45 per mat. This will provide employment generation of nearly 150 women/men per day i.e. 45,000 women/men days per year per Centre. Besides the above, the Centres can also generate income by supplying bamboo sticks made out of bamboo waste, to the artisans for making handicraft items. The mats produced by Bamboo Mat Production Centres are likely to utilized by various manufacturers who are producing Bamboo Mat Corrugated Roofing Sheets, Bamboo Mat Boards etc.

For further information, please Visit [www.bmtpc.org](http://www.bmtpc.org) or contact:



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