

**BUILDING MATERIALS & TECHNOLOGY
PROMOTION COUNCIL (BMTPC)**

Prototype Interactive Public Questions & Answers

What is BMTPC?

Building Materials & Technology Promotion Council (BMTPC) is a not-for-profit autonomous body registered in 1990 under the Societies Registration Act 1860 under the aegis of the Ministry of Housing & Urban Poverty Alleviation, Government of India.

What is its Vision?

“BMTPC to be world class knowledge and demonstration hub for providing solutions to all with special focus on common man in the area of sustainable building materials, appropriate construction technologies & systems including disaster resistant construction.”

What is its Mission?

“To work towards a comprehensive and integrated approach for promotion and transfer of potential, cost-effective, environment-friendly, disaster resistant building materials and technologies including locally available materials from lab to land for sustainable development of housing.”

What is the Structure of the Council?

The Board of Management has general control of the affairs of the Council and is responsible for formulating policies, programmes and gives directions for the activities of the Council. The Hon’ble Minister of Housing & Urban Poverty Alleviation is the President of the Board of Management of the Council which has eleven members representing various Ministries, Departments and prominent experts.

The management and administration of the Council is with the Executive Committee. The Executive Committee is headed by Secretary, Ministry of Housing & Urban Poverty Alleviation as Chairman and consists of eight members. At the operational level, the Council is headed by the Executive Director.

What are its Objectives?

- ❖ Development, production, standardisation and large-scale application of cost-effective innovative building materials and technologies.

- ❖ To promote manufacturing of new waste-based building materials and components through technical support and fiscal concessions.
- ❖ To develop and promote technologies for natural disaster mitigation, vulnerability and risk reduction.
- ❖ To provide support to professionals, construction agencies and entrepreneurs in selection, evaluation, upscaling of technologies.

What are its Thrust Areas?

- Improving the policy environment for sustained growth of cost-effective building materials, production and availability.
- Promotion of production units of building materials/components based on Flyash, Redmud, Phosphogypsum, agricultural residues and other wastes and by-products.
- Modernisation of small scale and village level building materials production units in rural and urban areas.
- Promoting economy in construction costs.
- Formulation of standards for local building materials.
- Strengthening industrial extension services for attracting more investment in building materials sector by working with national and international agencies.
- Upscaling of technologies, know-how acquisition, absorption and dissemination.
- Assessing vulnerability and risk in natural disaster prone areas.
- Promoting disaster resistant construction technologies.
- Global technology search and encouraging joint ventures in building materials and construction sector.

What are the areas of activities in which BMTPC is working?

1. Identification, Development, Documentation, Validation and Standardisation of innovative technologies.

2. Promotion of local and agro-industrial wastes based building materials.
3. Incorporation of new technologies in the Specification and Schedule of Rates (CPWD, State PWDs, etc.).
4. Development of simple and easy-to-operate machines for manufacturing building materials towards generation of urban and rural employment.
5. Providing Policy support for new building materials and disaster resistant technologies.
6. Adoption of regional design typologies.
7. Construction of Demonstration Houses/Structures using cost effective, energy-efficient, environment-friendly and disaster resistant technologies.
8. Development of entrepreneurs and promoting building enterprises.
9. Organising both national and international Exhibitions, Seminars, Conferences, Workshops and Training Programmes.
10. Building up Database and Dissemination of information through Publications, Website, Audio-Visual Aids.
11. Networking with national and international institutions and organisations for collective approach in achieving the objectives.
12. South-South international cooperation for transfer of technology in the area of low cost housing.
13. Undertaking planning, preparation, repair, rehabilitation, retrofitting, prevention and mitigation of natural disasters such as Earthquakes, wind/cyclones, floods and landslides.
14. Developing and promoting bamboo based building materials and construction technologies with special focus on North Eastern Region.
15. Setting up of Technology Demonstration & Production Centres and Display Centres towards diffusion of cost effective technologies and building materials.
16. Implementation of Government Schemes such as Jawaharlal Nehru National Urban Renewal Mission (JNNURM), etc.

What are new technologies developed and promoted?

BMTPC has developed a number of innovative building material technologies for medium and large construction works. Some of these technologies have been transferred to entrepreneurs for commercialisation. In addition, 22 innovative technologies developed by different R&D institutions have been selected and are being promoted. These have also been incorporated in the schedules of specifications of CPWD.

BMTPC has developed and promoted more than 30 machines for producing cost-effective, energy-efficient, environment-friendly building components which are easy to operate.

Are these technologies safe and cost effective?

These technologies are safe as these have been developed over a period of time, networking with R&D institutions with proper technical investigation & testing and understanding of local technologies existing in varied regions. Based on technical inputs provided by BMTPC, Indian Standards have been formulated by BIS on these technologies. On an average overall cost effectiveness in construction is 15% to 25%.

What is the technology dissemination mechanism and any mass housing project been constructed with the help of cost effective technologies promoted by BMTPC?

Demonstration Structure

The Council embarked upon the construction of demonstration mass housing using innovative technologies under the erstwhile VAMBAY Scheme. The Council has constructed following demonstration structures:

- Bangalore (Karnataka) – 252 dwelling units
- Uttaranchal (Dehradun) – 100 units
- Maharashtra (Nagpur) – 70 units

Chhattisgarh (Bilaspur) – 100 units, Karnataka (Kudalu) – 70 units, and Tamil Nadu (Trichy) – 100 units are in various stages of construction. The Council has also put up demonstration structures in Andhra Pradesh, Haryana, Rajasthan, Punjab, Orissa, Jammu, Karnataka, New Delhi, etc.

Various technologies and construction methods used for construction of houses are:

Walling

- Random rubble stone masonry in foundation & plinth,

- Hollow concrete blocks
- Load bearing masonry in solid concrete blocks,
- Flyash bricks
- Fal-G bricks/blocks
- Stabilised mud blocks
- Ferrocement wall panels and beams

Roofing

- Insitu RCC filler slab for roofing,
- RCC planks and joists
- Ferrocement roofing channels
- Micro concrete roofing tiles
- RCC L-panels, etc.

Door/Widow Frames & Shutters

- Precast RCC door frames,
- Door shutters using composite materials.
- Ferrocement door shutters

Construction of Green Houses at Leh

To meet the needs of jawans and officers posted as the Border Security Forces, the BMTPC has put up 2 demonstration Green Houses for Indo-Tibetan Border Police at Leh. These green house huts have been designed to provide controlled temperature conditions for growing of vegetables in these high altitude locations.

Mass Housing at Bawana

Encouraged by cost-effective technologies, the Delhi State Industrial Development Corporation (DSIDC) is using these in the construction of 3164 houses for industrial workers at Bawana. The cost of a house worked out to Rs. 350 per sq.ft. Flyash bricks in rat trap bond, RCC planks and joists, ferrocement shelves, sunshades and steps were used in construction.

Bamboo based Structures

In order to promote bamboo based technologies in North Eastern Region, the Council has constructed demonstration structures in Tripura and Mizoram.

For providing employment to the rural workers especially women, the Council is establishing Bamboo Mat Production Centres in Assam, Tripura, Mizoram and Meghalaya.

Capacity Building

The Council is organising Training Programmes on various subjects related to the cost effective housing for construction professionals and workforce.

Information Dissemination

Besides organising the exhibitions, conferences, workshops, the Council has published a number of manuals, guidelines, brochures on various aspects of cost effective, environment friendly, energy efficient and disaster resistant technologies.

Examples of employment generation perspective of any technology developed by Council?

Bamboo Mat Corrugated Roofing Sheet

BMTPC has developed Bamboo Mat Corrugated Roofing Sheet and already transferred the technology for manufacturing the Sheets at Byrnihat, Meghalaya with production capacity of 3000 sheets per month which may provide livelihood and employment to nearly 10000 workers (mostly women) through mat weaving.

Bamboo Mat Production Centres

The employment generation from each Bamboo Mat Production Centre is envisaged to be of nearly 150 women/men per day i.e. 45,000 women/men days per year per Centre. The mats produced by these Centres are likely to utilized by various manufacturers who are producing Bamboo Mat Corrugated Roofing Sheets and Bamboo Mat Boards which will also result in employment generation.

What are the activities of BMTPC in North Eastern Region

- Developed a technology for manufacturing of Bamboo Mat Corrugated Roofing Sheets as an alternative to asbestos and corrugated iron sheets. A commercial plant for producing Bamboo Mat Corrugated Sheets has been set up in Meghalaya.
- Construction of demonstration structures using bamboo based technologies in Mizoram, Tripura, Nagaland, Meghalaya and Arunachal Pradesh.
- Establishment of Technology Demonstration cum Production Centre in Tripura.

- Establishment of Bamboo Mat Production Centres in Assam, Mizoram, Meghalaya and Tripura.
- Organisation of Training Programme on Use of Bamboo in House Construction.

What are the initiatives made by BMTPC in the area of Disaster Mitigation?

Vulnerability Atlas of India

Brought out the “Vulnerability Atlas of India” and “Landslide Hazard Zonation Atlas of India”, which maps the entire country with respect to natural hazards like earthquakes, cyclones, floods and landslides – a first ever exercise across the world. The revised Atlas has been brought in 2006 in digitized format giving latest hazard maps and risk tables of houses district-wise.

Rapid Damage Assessment Studies

The Council has undertaken rapid damage assessment studies after major natural disasters which include the earthquakes of Uttarkashi (1991), Latur (1993), Jabalpur (1997), Chamoli (1999), Gujarat (2001) and cyclones in Andhra Pradesh (1996), Gujarat (1998) and Orissa (1999) and floods in Punjab and Haryana (1996).

Guidelines

The Council has also brought out Guidelines for improving earthquake and cyclone resistance of housing. Both these publications are in great demand from the professionals.

Seismic Retrofitting of Buildings

The Council jointly with Gujarat State Disaster Management Authority has undertaken construction of 478 model buildings in 478 villages to demonstrate disaster resistant technologies and retrofitting 445 public buildings. These model buildings are serving as Disaster Management Centres at local level and are helping in disseminating disaster related technologies and methodologies to make human settlements safer against natural hazards.

Retrofitting of selected schools of Municipal Corporation of Delhi (MCD) from 12 zones so as to demonstrate the retrofitting techniques for seismic strengthening and train engineers of MCD and local petty contractors, has been initiated. Five school buildings have already been retrofitted.

Information Dissemination

A set of 10 Posters and booklet for safe construction in English and Urdu were prepared for dissemination of information on good practices of earthquake information for the recent earthquake affected areas of J&K. Vulnerability of Kupwara Hospital in J&K against seismic forces were studied and retrofitted for seismic strengthening. For capacity building, BMTPC in cooperation with IIT Roorkee was involved in training of 300 engineers in Kupwara and Baramulla after the recent earthquake.

Strengthening Techno-legal Regime

For strengthening techno legal regime for safer construction, the Council assisted MHA for preparing Model Building Bye-laws and is organising 1-day technical workshops on Model Building Bye-laws in 22 States including NE States to help them in modifying their techno-legal regime. So far technical workshops have been organized in 20 States and UTs.

Training of Professionals

1. 5500 masons and 50 engineers were trained in disaster resistant technologies during the Capacity Building Programme after Gujarat earthquake.
2. Initiated a series of Short Term Training Courses with IIT Roorkee on “Earthquake Resistant Design and Construction”.
3. Initiated a series of Training Programmes "Retrofitting of Buildings and their Foundation-Slope System in Earthquake and Landslide Prone Areas" with VIT, Vellore.
4. During the course of retrofitting work in MCD schools, a Training Programme on “Retrofitting of masonry Buildings - Theory & Practice, was organized for 250 MCD Engineers of all levels.
5. As a follow up of rehabilitation programme in Jammu & Kashmir, BMTPC joined with IIT Roorkee for training of 300 engineers in Kupwara and Baramulla.

What is BMTPC's Role in evaluating New Products/ Technologies?

Under Performance Appraisal Certification Scheme (PACS), BMTPC evaluates based on lab and field tests, the performance of new

products/technologies not covered by any Indian Standards and give necessary certification with due approval of Technical Committee.

What is PACS?

Performance Appraisal Certification Scheme (PACS) is a third party voluntary scheme, being operated by BMTPC, for providing Performance Appraisal Certificates for new materials/ components/ systems on which Indian Standards are not available, after due process of assessment.

Steps taken to Introduce Cost Effective Technologies in Educational Curricula

- i) Introduced the elective subject CE.757 Alternative Building Materials and Technologies for 7th Semester of Civil Engineering in the Visveswaraya Technological University at Belgaum, Karnataka.
- ii) Academic Course on Earthquake Resistant Construction Technologies is being started with Indian Institute of Technology, Roorkee.
- iii) Academic Course on Construction Management is being started with Centre for Environment Planning & Technology, Ahmedabad.
- iv) Establishing Permanent Display Centres in engineering and architectural colleges for benefit of the students.

What is Council's Role in implementation of JNNURM?

The Council is functioning as one of the Appraisal Agencies for appraisal of Detailed Project Reports received from various States and UTs. Mission Directorate, JNNURM, Ministry of Housing & Urban Poverty Alleviation has also designated BMTPC for monitoring of BSUP & IHSDP projects including physical and financial progress, implementation of reforms and capacity building programmes.

The Council also organizes workshops/training programmes on preparation of DPRs.

Developed model designs of houses, informal markets and community centres.