

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

**OUTCOME BUDGET 2018-2019**

**Chapter – I**

The Building Materials & Technology Promotion Council (BMTPC), registered as Society in 1990, is an organisation fully supported by the Ministry of Housing & Urban Affairs, Govt. of India with the objective of bridging gap between the laboratory development and large scale field application of cost effective, sustainable building materials and housing technologies including disaster resistant construction practices.

**Chapter – II**

Sr. No	Name of Scheme/ Programmes	Objective/ Outcome	Outlay 2018-19 (in Rs. Crore)	Quantifiable Deliverables / Physical Outputs	Projected Outcomes	Processes/ Timeliness	Remarks/ Risk Factors
1	2	3	4	5	6	7	8
			4(ii)				
			Plan Budget				
1.	Building Materials & Technology Promotion Council	<ul style="list-style-type: none"> <li>▪ To promote development, standardization and large scale field application of proven innovative and emerging building materials and technologies.</li> <li>▪ To work as a Training Resource Centre for capacity building and promotion of good construction practices</li> <li>▪ To promote methodologies and technologies for natural disaster mitigation and management</li> <li>▪ Project Management &amp; Consultancy</li> </ul>	Rs. 20 crore	<ul style="list-style-type: none"> <li>▪ Identification, evaluation and promotion of 3 emerging housing technologies, construction of demonstration structures at 2 locations for mainstreaming of technologies</li> <li>▪ Documentation on Status of new technologies used by various State Governments</li> <li>▪ Award of Performance Appraisal and Certificates on 5 technologies under PACS</li> <li>▪ Skill upgradation of 150 workers and capacity building of 200 professionals</li> <li>▪ Disaster mitigation and management including Publication of third edition of Vulnerability Atlas of India for 36 States/UTs and preparation of Mobile App</li> <li>▪ Scrutiny of projects under Housing for All, appraisal, monitoring &amp; TPIM review of projects, capacity building of functionaries of state local bodies.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Availability of different proven and emerging technologies for construction of houses with speed and quality at affordable cost.</li> <li>▪ Saving in high energy conserving materials</li> <li>▪ Availability of skilled manpower</li> <li>▪ Vulnerability reduction by adopting disaster resistant technologies</li> <li>▪ Promote sustainable habitat design practices.</li> </ul>	March, 2019	<ul style="list-style-type: none"> <li>▪ Quality in form of output with respect to its usability.</li> <li>▪ Non Availability of free land for the projects from the States.</li> <li>▪ Lack of sensitivity among stakeholders.</li> </ul>

### Chapter – III

BMTPC has reoriented its approach towards promotion of not only sustainable technologies through intensive evaluation, dissemination but also looking at emerging prefabricated housing technologies from within the country and abroad for social mass housing. Various Committees have been constituted for smooth and harmonious functioning of the Council.

### Chapter – IV: Review of Past Performance

During the years 2016-17 and 2017-18, the Council has undertaken the following major activities:

#### Performance during 2016-17

1. As a new initiative, BMTPC is constructing model demonstration houses in different parts of India using emerging technologies with the objective of spreading awareness about new technologies and disseminate technical know-how in the states. The status of the projects at various locations are as follows:

S.No.	Location	No. of DUs	Technology to be used	Status
1	Saraswathi Nagar, Nellore, Andhra Pradesh	36 (G+1) and 1 Community Centre	GFRG panels and Community Centre using Green technologies	Completed. Inaugurated by the Hon'ble Minister of HUPA on September 3, 2016.
2	Bhubaneswar, Odisha	32 (G+3)	EPS technology	The work upto ground floor slab level has been completed.
3	Bihar Shariff, Bihar	36 (G+2)	Coffer Structural Stay in Place Formwork System	After excavation work, the layout of the project is in progress.
4	Gachibowli, Hyderabad, Telangana	32 (G+3)	Coffer Structural Stay in Place Formwork System (16 houses) and Light Gauge Steel Frame System (16 houses)	The layout work is in progress.
5	Aurangabad Jagir, Lucknow, Uttar Pradesh	40 (G+1)	Stay in Place EPS based double walled panel System	The foundation stone of the project was laid by Shri Raj Nath Singh, Hon'ble Minister of Home Affairs, Govt. of India on January 3, 2017. The layout work is in progress.
6	Uttarakhand	32 (G+3)	Stay in Place EPS based double walled panel System / EPS based core panel system	The MDDA has provided design of their existing layout of the project. The tender document is under preparation.
7	District Kanchipuram, Tamil Nadu	40 (G+3)	GFRG panel system	Site identified. the planning and designing of the project is under process.

2. BMTPC in its pursuit to evaluate and identify appropriate housing technologies suiting to different geo-climatic and hazard conditions of the country has identified nine more construction systems for further evaluation. As an ongoing activity, the Council has so far under PACS certified 16 new construction systems. BMTPC has developed a Knowledge Portal for sustainable Habitat, where users and technology providers can provide information on different sustainable materials and technologies used in making a habitat.
3. Ministry of Urban Development has directed CPWD, DDA & NBCC to adopt three new technologies which have been validated by BMTPC at their construction sites initially in Metropolitan cities of India and where the value of works is Rs. 100 crores or more. Now the Ministry of Urban Development vide circular dated December 28, 2016 has notified that these new technologies may be mandatorily adopted for all projects across the country irrespective of location and project cost w.e.f.1.4.2017. CPWD has also introduced turnkey project item rate with scope and payment schedule on these three technologies in DSR 2016. The Council is assisting the Ministry in interacting with CPWD, Railways, Defence and Public Sector units who can adopt new technologies for their employees and other housing projects and thereby catalyze the market.
4. A Report on Guidelines for Utilization of C&D Waste in Construction for Dwelling Units and Related Infrastructure in housing schemes of the Govt. has been prepared. A Workshop on the subject was organized on 23<sup>rd</sup> September, 2016 at New Delhi.
5. The Council completed the research project for development of design guidelines for EPS buildings including earthquake resistant designs and Durability and Service Life Assessment of Buildings using EPS system with IIT Roorkee.
6. BMTPC has undertaken the documentation of those projects in which alternate emerging technologies have been used in Delhi-NCR, Maharashtra, Karnataka and West Bengal.
7. The Council organised a National Workshop on Emerging Building Materials and Construction Technologies on November, 18, 2016 at New Delhi to bring various stakeholders, looking for emerging building materials and technologies and construction practices, on one platform to take stock of new developments in this area.
8. Draft Standard on design of GFRG Panel System prepared in association with IIT Madras was considered for finalization by Technical Committee of Bureau of Indian Standards. With certain modifications the draft Standard has been approved. In addition to the design manual and water proofing manual on GFRG technology, BMTPC has also developed Schedule of Rates (SOR) in association with IIT Chennai. SOR for Monolithic Concrete Construction using aluminium/plastic formwork has also been prepared.

9. The Ministry of Housing & Urban Poverty Alleviation has been interacting with the Ministry of Consumer Affairs, Food and Public Distribution, which is the controlling Ministry of Bureau of Indian Standards (BIS) for inclusion of new/alternative building technologies, as identified and evaluated by BMTPC for covering in relevant Indian Standards and National Building Code (NBC). After detailed deliberations with BMTPC and due consultation with their concerned experts, BIS has agreed for inclusion of the new technologies in the latest version of National Building Code (NBC).
10. Published (i) Special Issue of Newsletter “Nirman Sarika” on the theme of the World Habitat Day “Housing at the Centre”, (ii) Guidebook on Earthquake Resistant Design and Construction, (iii) Margdarshika for Masons – Rajmistry ke liye Dishanirdesh, and (iv) Pocket book on Emerging Construction Systems. BMTPC carrying out the documentation of those projects in which alternate emerging technologies have been used in Delhi-NCR, Maharashtra, Karnataka and West Bengal.
11. Published Earthquake Hazard Zoning Maps and Atlas of India in association with NDMA. A number of meetings of the Peer Group were held for preparation of third edition of Vulnerability Atlas of India. A three days Indo-Norwegian Training Programme on “Seismic Design of Multi-storey Buildings: IS 1893 vs. Eurocode 8” was organized by BMTPC jointly with Indian Institute of Technology, Roorkee (IIT Roorkee) and NORSAR, Norway at New Delhi from December 8–10, 2016. Under the guidance of the Ministry of Housing & Urban Poverty Alleviation, BMTPC in association with UNDP has brought out ‘A Handbook for Urban Managers on Disaster Risk Reduction’. The Handbook is being circulated to all States/UTs.
12. Organized a sensitization Programme on “Good Construction Practices including Emerging Technologies” in Dehradun, Uttarakhand on 27 September, 2016 for state officials. Training on Good Engineering Practices including Disaster resistant aspects in Construction were imparted to ULB/State engineers & construction professionals from North Eastern areas during the Regional Workshop on PMAY(U) for North Eastern States & UTs held on 20-21 January, 2017 at Agartala, Tripura. Mason's Hands-on training Programme on "Good Construction Practices include Disaster Resistant Construction" was also conducted on January 20, 2017 alongside the Workshop in which masons from 3 ULBs of Tripura were imparted training. One-day Sensitization program on Quality and Disaster-resistant aspects" was conducted in Bihar Sharif, Bihar on 13 February 2017, for the beneficiaries engaged in construction of their houses sanctioned under Housing for All. The masons involved in the construction & supervising engineers also participated in the programme. Conducted Sensitization Programme on "Good Construction Practices, Appropriate and Emerging Technologies for Housing" on February 23, 2017 for Engineers, Architects, planners & other related professionals of UT in Port Blair, Andaman and Nicobar Islands. The Council has developed Guidebook (Margadarshika) for 5 trades i.e. Assistant Mason, Mason, Bar bender, Concreting Artisan & Shuttering Artisan in Hindi language. Also organized two Training Programmes on use of Bamboo in Housing and Building Construction at Itanagar, Arunachal Pradesh in April, 2016 and Kaziranga, Assam in October, 2016 in association with respective State Governments.

13. BMTPC is working as secretariat of the Technology Sub-Mission under Pradhan Mantri Awas Yojana - Housing for All (Urban) Mission. The Council has been designated as one of the agencies for Scrutiny of the projects received under Housing for All (Urban) from various States. The second Open House discussion on the Technology Sub-Mission was organized by BMTPC on August 12, 2016 at New Delhi under the Chairmanship of Joint Secretary (Housing), MoHUPA. About 70 representatives from the various states and organizations participated in the discussion.

### Performance during 2017-18 (upto December 2017)

1. As a new initiative, BMTPC is constructing model demonstration houses in different parts of India using emerging technologies with the objective of spreading awareness about new technologies and disseminate technical know-how in the states. The status of the projects at various locations are as follows:

S.No.	Location	No. of DUs	Emerging Technologies	Status
1	Bhubaneswar, Odisha	32 (G+3)	Expanded Polystyrene Sheet Core (EPS) technology	Completed. The project has been handed over to BDA in Dec.2017
2	Bihar Shariff, Bihar	36 (G+2)	Structural Stay in Place Formwork System (Coffer)	The casting of ground floor slab for 12 units and first floor slab for 5 units has been completed. The panelling work for the first floor of 7 units is in progress. The plastering work in 12 units is completed.
3	Gachibowli, Hyderabad, Telangana	32 (G+3)	Structural Stay in Place Formwork System (coffer) - 16 DUs and Light Gauge Steel Frame structure (LGSF) -16 DUs	The work upto first floor slab have been completed in both the blocks. The casting of second floor slab is in progress.
4	Aurangabad Jagir, Lucknow, Uttar Pradesh	40 (G+1)	Stay in Place EPS based double walled panel System (Sismo)	The casting of ground floor roof slab for four blocks A,B,C&D is completed. The erection of the wall Panels for super structure of block E is in progress. The door and window frame fixing for Blocks A,B,C&D is completed with plastering.
5	Dehradun, Uttarakhand	32 (G+3)	Stay in Place EPS based double walled panel System / EPS based core panel system	Revised DPR has been sent to Ministry for consideration under CSMC.
6	District Kanchipuram, Tamil Nadu	40 (G+3)	GFRG panel system	Revised DPR has been sent to Ministry for consideration under CSMC.

2. The Council has also received requests from Government of Assam, Punjab, Jammu & Kashmir, Kerala, Manipur and Jharkhand for undertaking Demonstration Housing Projects in their States. BMTPC has submitted the proposal to Ministry for in principle approval of the projects.

3. DFID and NHB is working on “Making affordable housing market work for faster & sustained economic growth” in eight identified low income States in India and one of the strategies is to test innovative technologies and approaches for Green construction. Under this strategy, NHB and DFID have become partners with BMTPC in demonstration housing projects being implemented in three States namely Odisha, Bihar & Uttar Pradesh and providing partial financial support.
4. BMTPC in its pursuit to evaluate and identify appropriate housing technologies suiting to different geo-climatic and hazard conditions of the country has identified three more construction systems for further evaluation. Earlier Compendium of Prospective Emerging Technologies containing eight Emerging Technologies was brought out by BMTPC. Now the same has been updated with additional 8 technologies. The Second Edition of Compendium of Prospective Emerging Technologies for Mass Housing containing technology details of sixteen emerging technologies was brought out by the Council.
5. BMTPC established a Permanent Display Centre on Emerging Building Materials & Construction Technologies at Department of Architecture and Regional Planning, IIT Kharagpur.
6. As an ongoing activity, the Council has so far under PACS certified and emerging 16 new construction systems. Under Performance Appraisal Certification Scheme (PACS) apart from emerging technologies, new products and materials are also being certified. Technical Assessment Committee (TAC) in its 12<sup>th</sup> meeting held on 3<sup>rd</sup> July 2017 has approved issuance of PACs for the Rising EPS (Beads) Cement Panels. Besides renewal of PACs has been approved for the (i) PVC Profile Doors, (ii) Under Ground Water Storage Tank (SUMP), (iii) Plasto-Crete Panel, (iv) Insulated Roof Panel, (v) Formwork for Monolithic Concrete Construction, (vi) Walltec Hollowcore Concrete Wall Panel, (vii) Soundproof Drainage Piping System, (viii) Speedfloor System and (ix) Plastic Honeycomb Toilet Structures.
7. The Council organised a Seminar on Utilisation of Construction and Demolition Waste on November 8, 2017 at Hyderabad jointly with Greater Hyderabad Municipal Corporation. A National Workshop on “Processing and Use of Construction & Demolition Waste” with theme ‘Deconstruction & in-situ processing for Ecology and Economics’ was organised on November 21, 2017 at New Delhi.
8. The Council participated in the World Habitat Day 2017 celebrations organized by the Ministry of Housing & Urban Affairs. The Council organized a Painting Competition for Differently Abled Children on the theme “Housing Policies: Affordable Homes”. The exhibition of the winning entries was also organised on the occasion. On this occasion, publications namely, (i) Special Issue of Newsletter “Nirman Sarika”, (ii) Seismic Retrofitting of masonry Buildings – A Compilation of Case Studies, (iii) Margdarshika for Barbenders, and (iv) Margdarshika for Shuttering Artisans, were also brought out by BMTPC. An Android and iOS Mobile Application

on Earthquake Hazard Maps of India, developed by BMTPC, was also launched by Hon'ble Minister of State (I/C) for Housing & Urban Affairs on 5th October, 2017 at New Delhi.

9. The Council completed the research project for Development of Fly Ash based Advanced Ligno-Silico-Aluminous Geo-polymeric Binder useful for making Cement Free Green Concrete (CSIR-AMPRI Bhopal). The Council completed preparation of Video Films on emerging technologies i.e. EPS based Panel System, monolithic concrete construction, precast technologies, and light gauge steel framed structure.
10. The Council currently working on preparation of 3rd edition of Vulnerability Atlas of India. After collection of data from various organisations, maps of different hazards such as Earthquakes, Wind/Cyclones, Floods, Landslide Incidence have been developed. Third meeting of the Peer Group constituted for Updation and Revision of Vulnerability Atlas was held on 1<sup>st</sup> November, 2017 at New Delhi. The maps of different hazards were discussed in detail and the decisions and comments are being incorporated in the maps. The risk tables for the Atlas are also under preparation.
11. BMTPC organised Sensitization Programme on Good Construction Practices and Emerging Technologies for Housing under PMAY on August 3, 2017 at Thiruvananthapuram, Kerala. Around 90 participants comprising of State officials participants in the Sensitization Programme. Besides the above, a Sensitisation Programme was organised at Demonstration Housing Projects at Bhubaneswar, Odisha on 15 May 2017 wherein around 100 participants from State Government participated. IIT Kanpur organised a Workshop on Performance Evaluation of Housing Units on 21-22 July, 2017 at Noida jointly with BMTPC. During the workshop, "Protocol for Testing of Structural Components and Systems" developed under Technology Sub-Mission of PMAY(U) by IIT Kanpur was also launched. BMTPC participated in the National Student Design Competition on Housing for All organised by Department of Architecture & Planning, IIT Roorkee during 22-23 July, 2017. As a Jury member, the Council helped in selection of best conceptual projects in the context of Housing for All. IIT Roorkee is documenting the award winners.
12. BMTPC is working as secretariat of the Technology Sub-Mission under Pradhan Mantri Awas Yojana - Housing for All (Urban) Mission. The Council has been designated appraisal and monitoring agency under PMAY(U) for projects in various states/UTs falling in Earthquake Zone IV and Zone V. Two projects from Uttarakhand and J&K were scrutinised and site visits were made. Sensitization of State Government officials/Engineers /PMU officials regarding disaster resistant design and construction of houses in Uttarakhand were undertaken by the Council. BMTPC participated in the review meeting of the PMAY projects held at Dehradun, Uttarakhand on 28.06.2017. The Council alongwith HSMI and HPL reviewed three proposals submitted under Technology Sub-Mission, PMAY(U). Random Quality check/ Monitoring of project were undertaken of seven projects under RAY and two AHP projects under PMAY. A

revised project received under RAY from Gujarat were appraised. Site Scrutiny along with DPR desk scrutiny of projects under BLC vertical of PMAY were undertaken for the two projects (Uttarakhand and J&K).

13. Bhubaneswar Development Authority, Chattisgarh Housing Board, Govt. of Telangana and Govt of Gujarat have floated technology neutral tender. Govt. of Uttarakhand and Himachal Pradesh have approached BMTPC to assist them in adopting new technologies for mass housing. Kerala has recommended use of GFRG technology in their projects. BMTPC is hand holding DUSIB, Delhi for preparation of their tenders based on new technologies. BMTPC is also being approached by WAPCOS, NBCC, DDA and Ministry of Defence for identification of new housing technologies for their projects.
14. The Ministry of Housing & Urban Affairs, Government of India intends to launch the Global Housing Construction Technology Challenge (GHCTC) to identify the best and cost effective technologies for affordable housing in India. BMTPC in consultation with CPWD, NBCC, HPL, BIS, M/o Defence has prepared Technical Information Datasheet required to be filled by the intending Applicants through online applications. A Request For Proposal (RFP) Document has also been prepared to select the agency for Design and Development of IHCTC portal.
15. Government of Jharkhand has constituted an Evaluation Committee for their project of 40000 EWS houses to be constructed under AHP vertical of PMAY in which BMTPC has been invited as the technical member of the Committee. BMTPC is also the member of the committee constituted by Delhi Urban Shelter Improvement Board (DUSIB) for finalization of their tenders for the work of construction of multi-storeyed housing for EWS. BMTPC has been handholding these departments for identifying and finalizing new technologies including attending pre-bid meetings and other discussions.

## **Chapter – V: Financial Review**

The Ministry of HUA sanctioned grants-in-aid amounting to Rs.500 lakhs, Rs.499 lakhs, Rs. 1300 lakhs, Rs.500 lakhs and Rs.300 lakhs (till 22<sup>nd</sup> January 2018) for the years 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18 respectively and the Utilization Certificates upto 2016-17 have been submitted to the Ministry. The overall expenditure relating to the activities is Rs.1027 lakhs, Rs 821 lakhs, Rs.1131 lakhs, Rs. 1239 lakhs and Rs.1069 lakhs (upto 22<sup>nd</sup> January 2018) for the years 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18 respectively.

## **Chapter – VI: Review of Performance**

The Council, with the aim of assessing its impact and evolving an appropriate strategy for its growth and improving efficiency in its delivery of expected services, has subjected itself to four Reviews.



The last review was held under the chairmanship of the then Joint Secretary (Housing), MoUE&PA with members from Ministry and other organizations for review of BMTPC as per Expenditure Reforms Commission regarding Autonomous Institutions in 2003. The major recommendation of the Committee includes that BMTPC has made an impact in the construction and building materials industry and the same need to be continued to improve overall productivity and cost efficiency in this sector. The Assessment of work and performance clearly suggest that the BMTPC fully qualify for the type of assistance envisaged in the Expenditure Reforms Commission (ERC) recommendations on Autonomous Bodies. BMTPC should also work in the rural sector.

The Hon'ble Minister of Housing and Urban Poverty Alleviation during Board Meetings of BMTPC held on 15<sup>th</sup> February 2016 & 21<sup>st</sup> December, 2016 has also reviewed the progress of activities of the Council.