Nirman Bhawan, New Delhi -110 011
Dated: 15th September, 2015

## MINUTES OF THE MEETING

**Subject:-First meeting of the Technology Sub-mission held on 28.08.2015 - minutes regarding.**

A copy of the minutes of the first meeting of the Technology Sub-mission on Sustainable Technological Solutions for Faster & Cost Effective Construction of Houses suiting to Geo-Climatic and Hazard Conditions of the country, held on 28.08.2015 under the Chairmanship of Joint Secretary (HFA) is enclosed. Comments, if any, may be furnished to the Ministry within a fortnight.

( Rahul Mahna )
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To

1. Shri Sudhir Kumar Jain, Director, IIT, Gandhinagar, Gujarat.
2. Prof. C V R Murty Director, IIT, Jodhpur.
3. Prof. Sudhir Mishra, Dept. of Civil Engineering, IIT, Kanpur.
4. Prof. A Meher Prasad, Head, Dept. of Civil engineering, IIT, Madras
5. Prof. Yogender Singh, Dept. of Earthquake Engineering, IIT, Roorkee.
6. Dr. Anil Sawhney, Associate Dean, RICS School of Built Environment, Amity University, Noida
7. Shri. P R Mehta, Architects and Environment Planner, Design Action Group, New Delhi
8. Principal Secretary(Housing), Govt. of Gujarat
9. Principal Secretary(housing), Govt. of Maharashtra
10. Principal Secretary(housing), Govt. of Karnataka
11. Principal Secretary(housing), Govt. of Andhra Pradesh
12. Principal Secretary(housing), Govt. of Odisha
13. Principal Secretary(housing), Govt. of Haryana
14. Dr. Shailesh Kumar Agrawal, ÉD, BMTPC, New Delhi

**Minutes of the 1st Meeting of the Technology Sub-mission on sustainable Technological Solutions" under Housing for All (Urban)" held on 28th August 2015 at NBO Conference Hall, Room No. 120, G-Wing, NBO Building, Nirman Bhawan, New Delhi**

The first meeting of the Technology Sub-mission to consider various activities under proposed mission of Housing for All(Urban) in general and the modalities of going forward in particular, was held on 28th August 2015 at Nirman Bhawan under the Chairmanship of Joint Secretary and Mission Director (HFA). The list of participants is at **Annexure -1**.

2.      The Chairman welcomed all the committee members and while giving an overview of the HFA mission and the envisaged role of the Sub-mission, suggested that since this was the first meeting of the Sub-mission, the members could first come with their own suggestions on the way forward. Chairman emphasized that it was necessary to work out certain tangible outcomes or objectives with regard to the form and manner of partnership with the State Governments who are ultimately to come with proposals indicating the areas where they need the expertise of the technical institutions. The areas could include even long term research projects. Chairman also mentioned that the Ministry was also simultaneously engaging with the Planning institutes who have also expressed willingness to collaborate with the Ministry in the HFA mission. The Chairman, thereafter, solicited the views of the members.

3.      Prof Yogendra Singh, IIT Roorkee, opined that there was need for caution to ensure that in the name of the mission, large number of unsafe buildings do not get built up. He suggested identifying and forming experts groups who can draft guidelines/ undertake studies for new technologies.

4.      Prof PR Mehta, Design Action Group, Delhi mentioned that for considering new options for affordable housing there was need for a relevant procurement policy. Similarly, for different technologies there was need for having reasonable preliminary estimates and tendering document in place. He also elaborated that while the idea of a Model Tendering document which is technology neutral is good, but for that performance parameters need to be in place. Chairman in his intervention while acknowledging the points made by the member mentioned that it is necessary to identify agencies which can do documentation. The Ministry has already identified eight new technologies and released a Compendium when the mission was launched. The next step would be to prepare enabling documents for these eight technologies which allow States to deploy these eight technologies.

5.      Prof A. Meher Prasad, IIT Madras informed the members that they are working with State Government of Tamil Nadu on a range of activities in housing sector. He further mentioned that they will send the details of their partnership involving IIT, Madras and the Tamil Nadu Government. Chairman opined that this could be used as a template in an appropriate manner by other State governments and IITs/NITs. The member also indicated that Codes, Designs and procedures and Capacity building could be some areas where the Technology Sub-mission could play a role.

6.      The representative from the Government of Haryana said that there was need to have prototypes as demonstration projects showing low cost effective models to instill confidence. This was suggested as States are generally satisfied with conventional technology because process of tendering, S.O.R.s are all in place while for new technologies to be tried there was always reluctance in view of legal and structural requirements.

7.      Dr Anil Sawhney, Amity University, Noida suggested R& D Projects based on new Technology, identifying new technologies, Knowledge management, designing capacity building programmes in States, data generation through state action plan, etc are areas that could be looked into. He also emphasized on the importance of design and the need for having Architects as part of the State Housing Boards. Dr Anil Sawhney indicated that holding design competitions on different themes relating to construction would not only spread awareness amongst stakeholders but also result in developing a pool of designs which States and other agencies could leverage. He also emphasized on the importance of putting into practice post-occupancy questionnaires to ascertain user satisfaction which is currently a neglected area in the Indian context.

8.      Prof Sudhir Misra, IIT Kanpur agreed that the MoU between IIT Madras and the State Government of Tamil Nadu could serve as a model document for similar agreements between other State Governments and IITs/NITs. He also emphasized on the importance for having a clear protocol and standards in place for tendering new technologies for different housing components. He also expressed concern that there are no quality control protocols and the need for having a regulatory system in place. Professor Mishra also opined that while success stories are normally always spoken about, there is a need to document failure lessons as it is a more effective trigger for improvement. Professor Mishra mentioned that perhaps a protocol for certifying sustainability, etc should be laid down as there was need for having measurable, quantifiable parameters. Professor Sawhney suggested that international protocols could be studied for adopting, adapting to the Indian scenario.

9.      Shri Bhatkar, Chief Engineer, MHADA mentioned that if the Ministry formulates tender documents for eight emerging technologies that have been identified in the Compendium, then the State Governments can use them. He also suggested that the Minsitry should empanel agencies for the purpose of construction. Chairman intervened and said that it is not envisaged for the Sub-mission to empanel agencies. The Sub-mission can certify technology, prepare base documents but the financial or technical viability of the contractor is the State Government's/its agencies responsibility.

10.     Shri Rakesh Shankar, Mission Director, AHM, Government of Gujarat stated that the State was keen to explore the possibility of transfer of technology relating to the construction industry from any of the IITs. He emphasized the need for sensitizing the contractors in order to give an impetus to any initiative relating to new or alternate technologies. He felt that going in for construction suited to the geo-climatic conditions of the particular region was essential as also the need to optimize costing. Private sector should partner the State in one such project so that, both, confidence and awareness would spread among the population.

11.     Secretary (Housing), Andhra Pradesh was of the view that it was important for administrators to take the lead in adopting new and alternate technology, wherever feasible, while the Ministry can only play a facilitating role in that endeavour. He informed about the Pre-fab technology in collaboration with BMTPC. Similarly, GFRG technique has already been used in a housing scheme. He suggested exposure visits to cities like Bangalore or abroad where such technologies have been adopted or displayed. It was also suggested that each State should have a pool of engineering experts in their operational team for providing facilitation to ULBs whenever needed. For any prefab or other new technology usage social acceptance at user level is highly important so advocacy up to level of common understanding is needed. IITs/ NITs could partner with States in the field, workshops could be organized with private builders and contractors, focusing on testing protocols. The State Government could fund such workshops, he added.

12.     The members also discussed the setting up of Regional hubs as envisaged in the Technology Sub-mission. It was broadly agreed that six such hubs could be set up covering Eastern, Western, Northern, Southern, Central and North Eastern regions of the country It was agreed that these Regional hubs could be anchored at the IITs/NITs. Keeping in view the fact that most of the faculty will find it difficult to devote their undivided time and attention to the HFA Sub-mission related work, a proposal was mooted to create technical cells at the Regional hubs which would be under the Regional hubs. These cells will work exclusively for HFA mission and its related

activities with the designated IITs/NITs providing guidance as well as ensuring oversight. The composition and structure of the technical cell was also circulated in the meeting and broadly agreed (**Annexure-II**). A list of activities that could be taken up as included in Annexure-II was also considered based on the mandate of the Sub-mission's mandate. Members were requested to urgently revert with their views, if any, before these are finalized.

13. Summing up the views of the members, Chairman indicated the following areas and activities that could be initiated:

(i) Mapping the institutional strengths and capacities of IITs/ NITs in a structured way and making it available to all stake holders (web based).

(ii) BMTPC should evolve a mechanism for effective knowledge sharing among various stakeholders.

(iii) Developing a methodology for documentation in the area of construction of both conventional as well as new technologies from the perspective of their present structural condition, maintenance system, feedback from beneficiaries, etc.

(iv) Developing a Protocol for Testing, model Tender document and Schedule of Rates (SoRs) for the identified eight types of Emerging Technologies. [IIT, Kanpur may take the lead and facilitated by BMTPC].

(v) Developing a Training road map and separate modules for all stakeholders including training of Master Trainers with help of Regional and State Training Institutes at State and ULB level.

(vi) Promoting awareness for new and alternative technologies among users and other stakeholders on aspects of quality and sustainability.

(vii) Members were requested to send their comments on the tentative list of activities identified based on the ToR of the Sub-mission that was circulated in the meeting, at the earliest.

(viii) IIT, Madras to share the details of the MoU signed by it with the State government of Tamil Nadu for the benefit of other Technical institutions and State Governments.

(ix) Setting up of six Regional hubs as indicated in paragraph 12 above along with one Technical cell at each of the hubs with the structure and composition as given in Annexure-II.

(x)     IIT, Roorkee, indicated willingness to undertake the responsibility of developing SoRs and other documentation for Expanded Polystyrene (EPS).

(x)     BMTPC will organize an open house once in every month to facilitate discussions and query resolution relating to the Technology Sub-mission under HFA, for the benefit of State Government functionaries.

(xi)    BMTPC will also develop a documentation process for any new technology detailing the steps at every stage during construction, for other potential stakeholders. The Research team of Kanpur, IIT will provide its expertise to BMTPC in this exercise.

(xii)   Dr Anil Sawhney indicated willingness to:

(a)     organizing design competition on different themes relating to construction especially in the context of the HFA mission. The Mission could consider funding appropriately any proposal received in this regard;

(b)     developing Capacity Building and Training Roadmap for the Technology Sub-mission of the Housing for All (Urban) mission;

(c)     developing of Standard template for documentation of demonstration housing project under the Technology Sub-mission; and

(d)     developing of a framework for end-user input and awareness for the Sub-mission.

(xiii)  Developing an appropriate strategy or methodology to put in place a monitoring mechanism to monitor delays during construction till completion when any new technology is adopted.

(xiv)   On some of the standard activities that could be taken up by State Governments with the technical institutions, which were circulated to the members in the meeting, based on past experience, the cost norms have been worked out and are given in Annexure-III.

14.     Chairman concluded with the remarks that while a beginning has been made to identify some tangible steps, on the areas indicated in paragraph 13 above, where a nodal institution has not been identified yet, efforts may be made by members to communicate their views so that these can be concretized.

15.     On the recommendation of the Sub-mission for setting up of the six Regional hubs and the Technical cell, the recommendation of the Sub-mission will be placed before the CSMC constituted under the HFA mission for appropriate decision. Similarly, cost norms with regard to Annexure-III will also be placed before the CSMC for a

decision and thereafter, circulated to all State Governments and technical institutes to facilitate signing of MoUs.

16. The meeting ended with a vote of thanks to the chair. Chairman suggested that in the next meeting, if required, other experts could be co-opted including from the planning institutes with whom the Ministry is separately in correspondence in connection with their role in the HFA mission.

1.  Shri. Sanjeev Kumar, Joint Secretary & Mission Director (HFA), MoHUPA-**Chairman**,

2.  Shri. Luv Agrawal, Secretary (Housing), Government of Andhra Pradesh

3.  Shri. Rakesh Shankar, MD-AHM, Government of Gujarat

4.  Prof Sudhir Mishra, Civil Engineering, IIT Kanpur

5.  Prof A. Mehar Prasad, Head- Civil Engineering, IIT, Chennai

6.  Prof Yogendra Singh, Earthquake Engineering, IIT Roorkee

7.  Shri. A.K. Patel CE, AHM, Government of Gujarat

8.  Shri. N.K. Sahu, Housing Board, Government of Haryana

9.  Shri. U.B. Bahatkar, CE-MHADA, Government of Maharashtra

10. Dr Anil Sawhney, Dean, RICS, School of Built Environment, Amity University, Noida

11. Shri PR Mehta, Architect & Environment Planner, Design Action Group, New Delhi

12. Shri Shailesh Agrawal, Executive Director, BMTPC-**Member Secretary**

13. Shri Shashi Valiathan, Deputy Secretary, HFA-IV, MoHUPA

14. Shri Rahul Mahna, Under Secretary, HFA-4, MoHUPA

15. Ms. Usha P Mahavir, GM (Projects), HUDCO

16. Ms. Radha Roy, DGM (Projects), HUDCO

17. Shri Pankaj Gupta, DCE, BMTPC

18. Shri Rakesh Srivastav, SNPUPR Cell, MoHUPA

19. Shri Arup Khan, PMU cell, MoHUPA

20. Shri Gautam Banerjee, PMU cell, MoHUPA

**Proposed mandate and cost norms for the Technical cells attached with Regional hubs.**

| Sl No | Major Activities | Sub Activities | Proposed payment norms |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | Establishment of Technical Cell at each regional hub (6) | Regional hubs (6 nos.) proposed for creation under Technology Sub-Mission will act as Technical Resource Centre for Technology Sub-Mission.<br><br>Technical Cell at each regional hub may have following scope of work:<br>i. Resolving issues that may arise at the time of the preparation/ scrutiny of Project proposals.<br>ii. Random checks of the proposals as per requirement of the States.<br>iii. Organizing orientation/ Refresher Programmes for preparation/ scrutiny of Project proposals.<br>iv. Identify the type of strengthening required in terms of machinery and manpower for the testing facilities at other technical institutes participating in Technology Sub-mission.<br>v. To advise on any region specific issues that will have a bearing on the design, execution and performance of projects.<br>vi. To act as Resource Institutions to design and manage Regional Training Programmes for the City Planners, Structural Engineers, Consultants and Contractors by developing course material for different training modules.<br>vii. Preparation of Quality assurance Plan (QAP) and guidance on quality related issues.<br>viii. Evaluation, validation and certification of new/ Green technologies including code of practices, SOR and O/ M using locally available materials for cost effective projects.<br>ix. Testing and R & D<br>x. DPR preparation and implementation, using new technologies<br>xi. State specific solutions using conventional and new technologies | Rs. 50 Lakhs per annum* per cell. |

\* <u>Technical Cell at each Regional Hub (to be headed by a Professor of IIT/NIT nominated by the Institution)</u>

| | | |
|---|---|---|
| 1. | Senior Civil/ Structural engineer (M Tech)- 1 No. - | Rs 1,00,000.00 |
| 2. | Civil Engineers with 3 years experience – 1 No- | Rs 75,000.00 |
| 3. | Architect/ Planner – 1 No | Rs 75,000.00 |
| 4. | Computer Operator-Rs 25000.00 * 2 No | Rs. 50,000.00 |
| 5. | Office Support- 1 No | Rs 15,000.00 |
| | Total | Rs 3,15,000.00 |
| 6. | Admin cost @ 25% | Rs 85,000.00 |
| 7. | Total per month | Rs. 4,00,000.00 |
| 8. | Amount Per Year 4 lac * 12 Months | Rs 48.00 Lakh |
| | | Say Rs.50 lakhs |

### Proposed norms for various activities under Technology Sub-Mission for Regional Technical Institutes (RTI).

| SI No | Major Activities | Sub Activities | Proposed payment norms |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | Identifying specific solutions and appropriate design considering local conditions and requirements | Innovative model Plans of DUs, layouts, Designs using cost effective, locally available materials / alternate emerging and green technologies incorporating disaster resistant measures suiting to geo-climatic condition, as per prevailing NBC/State norms for at least five different types of affordable housing units with carpet area up-to 30 $m^2$ for:<br>a. Single storeyed<br>b. Multi storeyed<br><br>The deliverable would be architectural drawings, structural drawings, detailed estimates and specification, analysis of rate in case of alternate technologies/ non scheduled items.<br>The entire activity need to be developed in a form of a package which can be readily emulated by the States. | 1. 5 lakhs for single storey house<br>2. 7.5 lakhs for multi-storeyed up-to G+4<br>3. 10 lakhs for G+5 and above |
| 2 | Preparation of Manual and Guidelines. | Preparation of model DPR using conventional and new Technologies for all 3 verticals as per scheme guidelines of PMAY:<br>a) In Situ Slum re-development<br>b) Affordable Housing in partnership<br>c) Beneficiary led individual House construction or enhancement | Rs. 5 Lakhs for each verticals |
| | | Health & Safety Manual | Rs. 3 Lakhs |
| | | Quality Assurance Manual | Rs. 3 Lakhs |
| | | Manual for Earthquake Resistant Design and construction | Rs. 3 Lakhs |
| | | Manual for Multi Hazard Resistant Construction for Single story & Multi storey houses | Rs. 3 Lakhs |
| | | Quality Assurance Plan for Single storey & Multi storey houses | Rs. 3 Lakhs |
| | | Manual for Operation & Maintenance | Rs. 3 Lakhs |
| | | Guideline for good construction practices for single and multi storied buildings | Rs. 3 Lakhs |
| | | Guidelines for Green intervention at planning and implementation stage | Rs. 3 Lakhs |

| SI No | Major Activities | Sub Activities | Proposed payment norms |
|---|---|---|---|
| 3 | Technical training of Planners, Architects and Engineers | Preparation of standardised Training modules in form of PPTs/audio-visual kits for imparting 1-day training in the following streams:<br>i. DPR preparation and appraisal<br>ii. Good construction practices<br>iii. Disaster resistant construction<br>iv. Emerging technologies<br>v. Green technologies<br>vi. Urban planning & habitat design<br>vii. Quality control and assurance<br><br>Imparting 2-day training for:<br>i. Master Trainers<br>ii. Stakeholders (ULB/ State Structural Engineers/ Architects/ Planners/ Consultants/ Contractors)<br>The training modules and training could also be in the local State language as per requirement. | Rs.1 lakh for each module<br><br><br><br><br><br><br><br>Rs.3 lakh for Regional level Training |
| 4 | Identifying and transplanting global best practices with adaptation for local conditions | Identification of best technological global practices and preparing of document for suitability and adoptability as per geo-climatic conditions. It may comprise the following:<br><br>i. Evaluation, validation, acceptance criteria and certification<br>ii. Preparation of specifications, analysis of rates and SOR<br>iii. Preparation of design manual, construction manual, standards<br>iv. Preparation of Model Tender<br>v. Construction of Demonstration Houses<br>vi. Handholding of stakeholders involved in the State for mainstreaming<br>vii. Onsite training | To be decided by the Technology Sub Mission on case to case basis for the proposal received from Regional Hub. ToR to be decided by Technology Sub Mission. |
| 5 | Set up mechanisms for testing and accepting materials including new materials in construction | 1. Testing of new materials and systems<br>2. Creating a Centre of Excellence for testing innovative materials and system<br>3. Quality assurance plan of new materials and systems<br>4. Quality monitoring of the projects using new materials and systems | To be decided by the Technology Sub Mission on case to case basis for the proposal received from Regional Hub. ToR to be decided by Technology Sub Mission. |
| 6 | Take up long term research projects in the field of slums, slum rehabilitation design technology. | R&D to facilitate Sustainable Technological Solutions for Faster & Cost Effective Construction of Houses suiting to Geo-Climatic and Hazard Conditions of the Country and it may cover the following (suggestive):<br>1. Emerging Technologies<br>2. Green Technologies<br>3. Good Construction practices<br>4. Disaster Resistant construction<br>5. Habitat planning & design<br>6. Area specific design & technologies | To be decided by the Technology Sub Mission on case to case basis for the proposal received from Regional Hub. ToR to be decided by Technology Sub Mission. |