

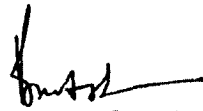
No.I-14019/4/2016 – HFA-V (Pt.)/FTS-15621
Government of India
Ministry of Housing & Urban Poverty Alleviation
(HFA-V Section)

Room No. 1, Technical Cell Gate No. 7
Nirman Bhawan, New Delhi,
Dated: 13th May, 2016

MINUTES OF THE MEETING

A copy of the minutes of the third meeting of the Technology Sub-mission held on **29.04.2016 (Friday)** under the Chairmanship of **Joint Secretary (Housing)** is enclosed for information and necessary action.

Encl: As above.


(B. M. Agrawal, IDSE)
Director (HFA-V)
Tel: 23063266

To

1. Shri Sudhir Kumar Jain, Director, IIT. Gandhinagar, VGEC Complex, Chandkheda, Ahmedabad, Gujarat-382355.
2. Prof. C. V. R . Murty, Director, IIT, Jodhpur Old Residency Road, Ratanada, Jodhpur, Rajasthan-342011
3. Prof. Sudhir Mishra, Dept. of Civil Engineering, Indian Institute of Technology Kalyanpur, Kanpur, U.P.-208016, Ph. 0512-2590131
4. Prof. A. Meher Prasad, Head, deptt. Of Civil Engineering, Indian Institute of Technology Madras, Chennai, Tamil Nadu-600036, Ph. 044-22574302, 22574260
5. Prof. Yogender Singh, Deptt. Of Earthquake Engineering, IIT Roorkee. Roorkee- Haridwar Highway, Roorkee, Uttarakhand-247667
6. Dr. Anil Sawhney, Associate Dean, RICS School of Built Environment, Block - F2, Fifth Floor, Amity University, Sector-125, Noida, U.P.-201313
7. Shri P.R. Mehta, Architects and Environment Planner, Design Action Group, 2/7 Julena Commercial Complex, Okhla Road, New Delhi-110025, Ph. 26912466, 26910496, FAX- 26914133, prmehta@dagindia.com
8. Dr. Rajiv Kumar Gupta, Principal Secretary (UD & Housing), **Govt. of Gujarat**, Block No, 14, 9th Floor, New Sachivalaya, Gandhinagar-382010, Ph. 079-2322524/2536903 (Office), 2524 (EPABX), 079-2394984 (Fax)

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9. Shri Shrikant Singh, Pr. Secretary (Housing), **Government of Maharashtra**, Madam Kama Road, Hutatma Rajguru Chowk,, Mumbai, Maharashtra-400032, Ph. 022-22023036, 22026419, Fax: 022-22025939, 22854573
10. Shri Shambhu Dayal Meena, Principal Secretary (Housing), **Government of Karnataka**, Room no. 213, Vidhana Soudha, Dr. Ambedkar Veedhi, Bangalore-560001, Karnataka, Telefax: 080-22034504/22256356, Fax: 22253718
11. Shri Lav Agarwal, Secretary (Housing), **Government of Andhra Pradesh**, AP Secretariat, Room No. 210, South H-Block, Hyderabad-500022. Andhra Pradesh. Ph. 040-23450365
12. Shri G. Mathivathanan, Commissioner-Cum-Secretary(Housing & UD), **Government of Odisha**, 1st floor, State Secretariat, Annex- B, Bhubaneswar-751001. Ph. 0674-2536903
13. Shri P. Raghavendra Rao, Addl. Chief Secretary to **Govt. of Haryana**, Town & Country Planning and Urban Estates and Housing Department, Room No. 622, 6th Floor, Civil Secretariat, Sector-1, Chandigarh-160001, Ph. 0172-2714058.
14. Dr. Shailesh Kumar Agrawal, ED, BMTPC, Core 5 -A, First Floor, India Habitat Centre, Lodi Road, New Delhi-110 003.
15. Dr. H S Gill, Executive Director (Training), HSMI, HUDCO Bhawan, Core-7A, India Habitat Centre, Lodhi Road, New Delhi-110003 with regard to Design and Planning agencies and Bureau of Energy Efficiency.
16. Dr. K. Venugopala Rao, National Remote Sensing Centre (NRSC), Department of Space, Indian Space Research Organisation (ISRO), Balanagar, Hyderabad-500037, (Fax No. 040-23877210)
17. Shri D.P. Pandey, Director General, Bureau of Energy Efficiency, Ministry of Power, Government of India, 4th Floor, Sewa Bhawan, R.K. Puram, New Delhi-110066 (Fax No. 011-26178316)
18. Prof. Chetan Vaidya, Director, School of Planning and Architecture, 4, Block- B, Indraprastha Estate, New Delhi-110002 (Fax No. 23702383).
19. Shri Sriram Kalyanaraman, MD& CEO, National Housing Bank, 4th-5th Floor, India Habitat Centre, Lodhi Road, New Delhi.-110 003.
20. Shri S. Raghupathy, Executive Director, CII, C-II- Sohrabji Godrej Green Business Centre, Survey No. 64, Kothagurda Post, Near HITEC City, R.R. Dist, Hyderabad-500084, Ph. 040-44185000/44185111, Fax 040-44185189.
21. Dr. Kamini Sinha, Head of the Department, Department of Architecture, National Institute of Technology (NIT), Patna-800005 (Bihar).
22. Prof. Shishir Kumar Sahu, Head, Department of Civil Engineering, National Institute of Technology (NIT), Rourkela-769008 (Odisha).
23. Shri S. P. Singh, Professor & Head, Department of Civil Engineering, Dr. B R Ambedkar National Institute of Technology (NIT), Jalandhar - 144011 (Punjab), India.

24. Shri Debasish Bhattacharya, Registrar, National Institute of Technology (NIT), Agartala, Tripura, India, Pin - 799046
25. Dr. Subrata Chattopadhyay, Professor & Head, Department of Architecture & Regional Planning, Indian Institute of Technology, Kharagpur - 721302.
26. Shri Mahendrakumar Madhavan, Assistant Professor, Indian Institute of Technology, Hyderabad, Ordnance factory Estate, Yeddumailaram 502205, Andhra Pradesh, INDIA.
27. Dr. Asim Roy, Dean (Research and Consultancy), National Institute of Technology Silchar, Office of the Dean (Research and Consultancy), Silchar-788010, Assam, India.
28. Dr. Abraham T. Mathew, Dean (Research & Consultancy), National Institute of Technology Calicut, NIT Campus (P.O) - Calicut, Kerala-673 601
29. Colonel Sukhpal Singh, Registrar, National Institute of Technology (NIT), Uttarakhand, Temporary Campus-Govt. Polytechnic Srinagar (Garhwal), Distt.- Pauri Garhwal, Uttarakhand-246174
30. Prof. Krishnan Balasubramanian, Dean, Centre for Industrial Consultancy & Sponsored Research, Indian Institute of Technology (IIT) Madras, Chennai, Tamil Nadu, Pin -600 036.
31. Shri Shailesh Trivedi, Director, Centre for Research, Development and Consultancy (CRDC), CEPT University, Kastrubhai Lalbhai Campus, University Road, Navrangpura, Ahmedabad-380009
32. Ms. Sheuli Mitra, Ph.D, Dean, Research and Development, School of Planning and Architecture, Beelbad Road, Bhaury, Bhopal-462030.

Copy also to:

1. Dr. M. Ravi Kanth, CMD, HUDCO, IHC Building, Lodi Road, New Delhi-110003. Tel. No. 011-24693022, Fax. No.24697378, Email: cmd@hudco.org
(With the request to depute a senior officer for the meeting.)
2. Shri Rajesh Goel, Chairman & Managing Director, Hindustan Prefab Limited, Jangpura New Delhi-110014, Ph. 91-11-26340915 **for participation and to make necessary logistical arrangements for the meeting.**

Copy for information to:

1. PPS to Secretary (HUPA)
2. Sr. PPS to JS(H)
3. PS to JS(HFA)
4. Director (HFA-I)
5. Director (HFA-V)
6. DS (HFA-IV)
7. Team Leader, PMU

Minutes of 3rd meeting of “Technology Sub-Mission under Housing for All” held on 29th April, 2016 at Hindustan Prefab Limited, New Delhi

The third meeting of the Technology Sub-Mission under Housing for All” was held on 29th April, 2016 at Hindustan Prefab Limited, New Delhi under the Chairmanship of Joint Secretary (Housing), Ministry of Housing & Urban Poverty Alleviation, Government of India. The list of the participants is at **Annexure-I** and the list of presentations made during the meeting is at **Annexure-II**.

2. The Chairman, Shri Rajiv Ranjan Mishra, Jt. Secretary (Housing), MoHUPA welcomed all the committee members and special invitees from the National Remote Sensing Center (NRSC), Bureau of Energy Efficiency (BEE), School of Planning and Architecture (SPA), New Delhi, National Housing Bank (NHB), New Delhi and CII to the meeting. In his opening remarks, the Chairman gave a brief introduction of the objectives of Technology Sub-Mission under Pradhan Mantri Awas Yojana (PMAY)-Housing for All (Urban) Mission. He especially thanked Prof. C.V.R. Murty, Director, IIT-Jodhpur, Rajasthan and Dr. Sudhir Jain, Director, IIT-Gandhinagar, Gujarat and Sh. Lav Aggrawal, Secretary (Housing), Govt. of Andhra Pradesh for their presence. He stated that there have been much deliberations on new technologies since PMAY (U)-HFA was launched last year. Recently, Rural Housing Mission with the target of about 3.0 crore houses has also been launched. Under Housing for All (Urban) Mission, there is mandate of 2.0 crore houses. Thus for Urban & Rural combined, 5 crore houses are required to be constructed in a limited period of time. Referring to the previous schemes of the Central Government, the Chairman informed that since 2005, under BSUP/IHSDP of JNNURM Mission, construction of 14 lakh houses had been sanctioned, out of which 11 lakhs houses have so far been built and the rest are under construction. He pointed out towards the huge gap between 2.0 cr. and 14 lakhs and opined that this gap could only be filled up by using faster construction technologies.

The Chairman stated that the world has moved from Millennium Development Goals to Sustainable Development Goals, under which Goal 11 “Sustainable Cities and Communities” talks about making cities safe and sustainable means ensuring access to safe and affordable housing and upgrading slum settlements. Finding innovative

technology solution and innovative design & planning are the two key areas of Technology Sub-Mission. It was informed that HSMI would be the nodal agency for coordinating with SPAs for design & planning aspects.

The Chairman felt that Bureau of Energy Efficiency (BEE) has an important role in terms of providing guidelines for construction of energy efficient houses. NRSC's expertise in satellite technology will help in planning, monitoring and geo-tagging of houses. In this connection, the Chairman also informed that Prime Minister Office has set up a Committee on Catalyzing Market for Affordable Houses headed by the Secretary, MoHUPA for taking various steps for creating eco system for promoting affordable housing. This also includes among other aspects, housing technology, development and promotion of new technology, institutionalization, demonstration of houses with new technology, capacity building of professionals, architects, new innovative planning and designing.

Regarding role of NHB, the Chairman informed that they are looking after the aspects related to land, finance, regulatory mechanism and improving governance and also supporting energy efficient housing through on of their programmes.

While concluding, the chairman informed that around 7 lakh houses had been sanctioned during last 6-7 months under HFA (Urban) and some of the States are coming on board with proposals having new precast technologies. Now, with the signing of the MoUs with IITs/NITs/SPAs, there is need to transfer these activities on ground with time lines. He emphasized Technology and Planning need to be converged with long term and short term vision.

Shri Rajesh Goel, CMD, HPL informed about the Housing Technology Park being developed in HPL Campus, in which few model houses have been constructed by the technology providers using new technologies as identified & suggested by BMTPC. A few technologies demonstrated included Monolithic RCC construction, GFRG panels, EPS panels, sandwich PUF panels, Light gauge steel frame, precast RCC components, polypropylene honeycomb panels, steel frame with EPS panels etc. Delegates took a round of the Technology Park.

3. In the post lunch session, HSMI made the presentation on importance of design and planning and role of design & planning institutions. It was emphasized to improve the utilization of the space in EWS & LIG houses optimally where the carpet area is upto 30 sq.mt. & 60 sq.mt., respectively. The HSMI would bring out the ideas and suggestions for the activities envisaged in the MoUs for the Planning & Design institutes.

4. Dr. Sheuli Mitra, Dean, School of Planning & Architecture, Bhopal made a presentation and discussed issues related to quantity versus quality, standardization versus customization and cost versus quality of houses. Dr. Mitra gave emphasis on planning of flexible space with adequate interactive spaces for the cluster of dwelling units and different set of design for individual beneficiary led construction and project by organised sector under the scheme. While on the subject, HFA Plan of Action of Madhya Pradesh was also discussed in brief. Some case studies and post occupancy assessment of earlier housing schemes were highlighted and SPA Bhopal expressed its willingness to actively contribute through the available expertise.

On the suggestion of the Chairman, it was decided to organize a one-day Workshop on Planning & Designing aspects to have an interaction with various states including architects, engineers to come out with some concrete action points.

Sh. Lav Agarwal, Secretary (Housing), Govt. of Andhra Pradesh informed about the open design competition initiated by them for design of cluster houses for 5 projects with new and innovative technologies with due consideration to soil type, layout and renewable energy resources. Out of 70 entries, 6 have been shortlisted by a jury of eminent architects & planners of the country. He further invited SPA, Bhopal and other SPAs and similar organizations for participation.

5. School of Planning & Architecture, New Delhi made a presentation highlighting expertise of the institution in housing sector and confirmed to provide the support in the areas of standardized designs for EWS/LIG, tailor-made layout designs or any planning and design support required by any state in the country.

6. Representative of CEPT opined that housing is a complex area. Housing is a personal issue for user, therefore our focus should be on customization, adaptability, future expansion, end user considerations and also need to find out the reasons for non- occupancy.

7. Representative of IIT-Kharagpur informed that they are also working on customization, adaptive principles based on user profile, social cultural background etc. and are ready to assist the HFA Mission as envisaged in the MoU.

8. Representative of Indian Green Building Council informed about the existing 13 different rating systems and about their recent initiative on the green rating for the affordable housing. He handed over the guidelines prepared for affordable housing rating system which is going to be released shortly.

HSMI was assigned the work of preparing a handbook on design and planning of the buildings, in consultation with institutions relevant in the area. In this connection, it was suggested that HSMI may take some good layouts of on-going or completed projects from the Mission Directorate.

9. Sh. Lav Agrawal, Secretary (Housing), Govt. of Andhra Pradesh informed that, Govt of A.P. has mandated to use new technologies for construction of mass housing in the state under the overall technical consultation with ED, BMTPC. Further, he made presentation on some of the projects, where new technologies are being used. It was informed that seven technologies have been recommended by a technical committee under the chairmanship of ED, BMTPC. It was further informed that a portal has been created for geotagging and monitoring the progress of the houses being constructed. He also acknowledged the importance of having right kind of design of house based on locally available information and selection of appropriate technologies.

10. Representative of the Bureau of Energy Efficiency (BEE), New Delhi informed that they have developed a comprehensive ECBC code on energy efficient multi-storey

commercial buildings, which is available on the website of BEE covering the lighting system, electrical equipment systems, guidelines for reducing the energy consumption, standard & labeling programme They are working on the star rating programme on Energy Performance Index (EPI) based on the working of the building on energy consumption. It was informed that the 10 states namely; Andhra Pradesh, Rajasthan, Punjab, Haryana, West Bengal, Telangana, Puducherry, Uttarakhand have adopted the ECBC code. 15 states have modified the code and are in process of notification.

Representative of Govt. of Orissa informed that they are in the initial stages of implementing HFA in the state. Presently, in association with BMTPC, a demonstration project of 32 houses using new technology is about to start in Bhubaneswar. Also, Orissa is considering to make use of new fast construction systems in their mass housing projects.

Representative of NRSC discussed about the software developed for geo-tagging through satellite technology in which each house is mapped with photograph and data of the beneficiary alongwith latitude and altitude.

Considering the big target to be achieved by 2022, the Chairman insisted on adoption of fast track strategy in the field and emphasized to work on capacity building, ULB capacity, community capacity, comprehensive strategy and development of long-term vision of the country.

11. Prof. C.V.R. Murty, Director, IIT-Jodhpur made a comprehensive presentation on various aspects of the Technology Sub-Mission and its future activities. A copy of the suggestions made by Prof. C.V.R. Murty is at Annexure-III. Highlights of the presentation are given below

- Setting up of National Housing Technology task force on permanent basis
- National Centre for Safe Housing (Education, prototype testing facility at national level)

- Dissemination of Knowledge consisting of Indian Housing Encyclopedia, Enthusing young India & Taking Housing to Communities, mass communication through AIR and Doordarshan

It was proposed to constitute a National Housing Technology Task Force comprising of core group of experts, which will interact regularly and give their input to Technology Sub-Mission on different aspects including selection and introduction of new technologies, capacity building, R&D requirements, implementation, environmental issues, etc.

Prof. S.K.Jain, Director IIT Gandhinagar emphasized on capacity building with available local practices. Agreeing with the suggestions of Prof. C.V.R.Murty, Prof. Jain also emphasized the need for full scale testing of technologies for overall safety of structures. He was of the view that Govt. agencies are very defensive in adopting new technologies, they need to be involved. Agencies like CPWD need to train masons. Considering the present scenario, he felt confined masonry is most suitable for low rise housing, and shear wall RCC construction for high rise buildings.

Both Prof. Jain and Prof. Murty felt that for regular interaction of the Core Group a suitable secretarial arrangement would also be needed.

The chairman gave a word of caution that all technologies will not be suitable and available in all the locations. After studying the local typologies, the task force may suggest the appropriate technologies. IITs/NITS/SPAs should work on knowledge network, organize seminars, quizzes for students. Proposals at state/regional/national are invited from the institutions which could be funded from MoHUPA/HSMI.

12. Executive Director, BMTPC, Dr. Shailesh Kr. Agrawal shared the outline of the knowledge portal being developed by BMTPC and requested NIITs, IITs to give their suggestions for improvement of the portal. Regarding e-learning initiative of the government, Dr. Agrawal informed that development of modules for online courses are

in-progress. He also informed about the discussion of MoHUPA with CPWD and other public agencies on use of new technologies in their future projects.

ED, BMTPC gave brief status of the activities undertaken in Technology Sub-Mission alongwith the new technologies being identified and information about the demo projects. He discussed about the following activities which can be taken up by the IITs/NITs/SPAs on immediate basis. He also apprised about the activities with cost norms which were approved by CSMC. **(Annexure IV)**

- Immediate plan of action on organising awareness programmes and workshops on new technologies for sensitizing the concerned departments of the State Government and involvement of Institute in implementation of "Housing for All" Mission in the state.
- Organising brain storming sessions with states for identification, selection and implementation of new technologies in mass housing projects.
- Development of comprehensive capsules on new technologies
- Study of prevalent construction practices including Identification of best technological global practices and suggest state specific 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.
- Handholding of the state through capacity building programmes at ULB level for DPR preparation, Planning and design aspects, preparation of quality manuals etc.
- Capacity Building programmes on intervention of green technologies.
- Taking up short & long term R&D projects leading to technology development.

On the suggestions of the Chairman, SPA, Bhopal agreed to develop a handbook consisting of Do's & Don'ts on planning and design, model layouts, design of housing unit & layout design. IIT Jodhpur and other institutes were also requested to give their technical inputs. It was decided that SPA, Bhopal will submit a proposal in this regard. The work would be completed by June end. ED, HSMI would be coordinating this.

The Chairman advised HSMI/SPAs to prepare an advisory note on planning and design aspects urgently for circulation to the states during the CSMC meetings.

13. Shri Rizwan A. Khan, NIT Jalandhar made a presentation on the research areas, major equipments and facilities relevant to HFA which NIT Jalandhar possesses and activities in which NIT would likely to be associated with in future. It was suggested to organise training programmes on research and innovative technologies for housing section in various areas.

14. NIT, Rourkela informed about their focus areas of activities for contribution in HFA which included training, technical audit, long term R&D projects, green buildings, Third party inspection etc. He also shared the facilities available in the institutes, faculty strength and some research projects which they are interested to take up. Representative of National Institute of Technology, Silchar in his presentation emphasized on use of locally available material, especially bamboo.

15. Representative of National Institute of Technology (NIT), Agartala informed that implementation of Housing for All is in-process in the state. There are two types of approach, stand alone houses and cluster approach. He emphasized on considering solution for the transportation problem, prototype housing for long-term beneficiaries, optimum use of manpower, project management in urban areas, introduction of green building concept and energy efficiency in houses.

16. Representative of National Institute of Technology (NIT), Calicut informed about the areas of activities of the institute. They are facing problem in construction of houses in the coastal and tribal areas. It was also informed that they have trained 300 unemployed youths in the field of plumbing, carpentry, masons, landscaping for which funds have been received from Kerala Urban Development Finance Corporation.

17. Ms Kamini Sinha, HoD, Deptt. of Architecture, National Institute of Technology (NIT), Patna informed that the 2 months skill development programmes are organized for masons, plumbers, electricians etc. for which funds are received from the State

Govt., training programmes on new technologies for masons are also being organised, GYAAN programme for training of resource persons courses are also being organised by them, for which they seek help from the Ministry. They are in process of consultation of international & national experts for their inputs. The chairman advised them to share the training material with all the institutes, NITs & IITs. It was informed that they have recently set up an earthquake clinic in which free consultation is given to public on safe construction. Courses on ECBC are also being conducted with BEE.

18. Representative of IIT Hyderabad informed that they are focusing on structural steel as the primary material for construction.

19. Representative of NIT Uttarakhand informed about the challenges they are facing in their state like earthquake, landslide and water management and use of local material in the construction sector. They are in-process of organizing workshops on earthquake design, water & waste management system for students in consultations with experts in relevant fields. It was emphasized to consult the experts from IIT-Roorkee, State Govt. & other private engineering colleges in Dehradun. Being a new institute, it was suggested by Prof. C.V.R. Murty that at this stage, they should conduct training programmes for masons and other artisans. The chairman suggested them to sensitize students and conduct training programmes with state Govt. NIT, Patna was requested to help NIT Uttarakhand on developing training materials.

20. Sh. Rajesh Goel, CMD, HPL in the end offered to partner with states, institutions, or any other organization in construction of demonstration projects using new technologies.

On request of the Chairman, Prof. C.V.R. Murty, Director, IIT-Jodhpur gave summarising remarks emphasizing the need of channelizing the energies of the various organisations having similar competence and sharing of best practices by different institutions with each other. He suggested all the academic institutes should share all their available documents related to the subject with BMTPC so that they are shared with states and institutes through a separate URL. Regarding using new technologies,

he was of the view that design calculation must be submitted while submitting proposal with new technologies. Cost efficiency, compliance of the standards, consistency in terms of planning, design, technology & implementation should be kept in mind during the construction of houses. There should be clear mandate for state Governments, institutes ,architects, engineers, execution agencies and other stakeholders about their responsibility towards Housing for All Mission.

After detailed deliberations, the chairman flagged the following points for follow up action:

- i) BMTPC to develop a URL through which networking of the state govts., IITS/NITs/SPAs and other stakeholders will be done on the activities related to Technology Sub-Mission.
- ii) All the Planning and Architecture institutes to send their suggestions on design and planning aspects to HSMI. SPA Bhopal and NIT Patna to send a document containing Do's & Don't, layout plan, design, etc. within a week. HSMI to coordinate with these institutions and compile the information.
- iii) Compilation of approved layout design, design competition work will be done by HSMI. Good layouts and design of the approved projects under HFA may be taken by HSMI from the Mission Directorate.
- iv) Ministry will consider setting up a National Task Force on Housing Technology under Technology Sub-Mission which will advice on continuous basis on various aspects of planning, design and use of technologies and other related aspects and would be suitably provide required support by BMTPC.
- v) All the IITs & NITs, who have signed MoU to send proposal to organise workshops involving students on various topics related to in housing sector innovative technologies. They should also organise national level quizzes, Seminars, Design Competitions and Sensitization Programme for students on Sustainable Goals, Climate Change, etc. Prof. Murty was requested to suggest the mechanism and subjects for such programmes. ED, BMTPC would do overall coordination.

- vi) IITs/NITs and SPAs may submit their research proposals for sanction under Technology Sub-Mission. BMTPC to circulate the activities with cost norms, as approved by the CSMC, which can be taken up by the institutions.
- vii) ED, BMTPC would specially coordinate with HFA mission and the States so that some of new projects agreed in the CSMC are taken up with these technologies depending upon the suitability.
- viii) ED, BMTPC and ED, HSMI would plan and take up suitable activities like conduct of open house, special consultation/workshops on identified themes and bring out the learnings from these for the benefits of the mission. They should submit their action plan urgently.
- ix) ED, BMTPC and CMD, HPL should follow up with the major construction Ministries/departments/agencies for institutionalization of the application of these technologies through inclusion in Schedule of Rates, code etc.

List of Participants

Members:

1. Shri Rajiv Ranjan Mishra, Joint Secretary (Housing), MoHUPA – **Chairman**
2. Dr. Shailesh Kumar Agrawal, Executive Director, BMTPC, New Delhi – **Member Secretary**
3. Shri Sudhir Kumar Jain, Director, IIT, Gandhinagar, Gujarat
4. Prof. C.V.R. Murty, Director, IIT Jodhpur, Rajasthan
5. Shri Samit Ray Chaudhuri, Associates Professor, Representative of IIT Kanpur
6. Dr. Manish Shrikhande, Professor, IIT, Roorkee
7. Shri Rajendra Poomag, Project Engg, Govt. of Gujarat, Representative of Principal Secretary (Housing)
8. Sh. Sanjay R. Lad, Chief Engineer-II , MHADA Representative of Principal Secretary (Housing)
9. Shri Lav Agarwal, Secretary (Housing), Government of A.P.
10. Ms. Shrisha Nemani, Team Leader, HUDD, Govt. of Odisha
11. Er. Virender Yadav, Executive Engineer, Housing Board Haryana, Govt.of Haryana
12. Director (HFA-V), Nirman Bhawan, New Delhi

NIT/IIT/SPA:

1. Dr. M.K. Madhvan, Associate Professor, IIT Hyderabad
2. Ms Haimanti Banerji, Professor, IIT Kharagpur
3. Dr. Shankha Pratim Bhattacharya, Dept. of Architecture, IIT, Kharagpur
4. Dr. Prasun Chakraborty, Dean (AA&IR), NIT Agartala
5. Prof Shishir Kumar Sahu, Professor & Head, NIT Rourkela (Odisha)
6. Dr. Rizwan A. Khan, Lecturer, NIT, Jalandhar (Punjab)
7. Shri Mokaddes Ahmed, Professor, NIT Silchar ,Assam
8. Dr. M. V. L. R Anjaneyulu, Professor, NIT, Calicut,
9. Dr. Kamini Sinha, HOD, Deptt. of Architecture, NIT, Patna (Bihar)
10. Dr. Asim Roy, Associate Professor, Dean NIT Silchar, Assam
11. Dr. Kranti Jain, Asst. Professor, NIT, Uttarakhand
12. Ms. Smita Kaloni, Asst. Professor, NIT, Garhwal, Uttarakhand,
13. Prof. Chetan Vaidya, Director, SPA, New Delhi
14. Dr. P.S.N. Rao, Head – Deptt. of Housing, SPA, New Delhi
15. Dr. Sheuli Mitra, Dean, R&D, SPA, Bhopal
16. Shri Mehul R. Shah, Faculty, CEPT University, Ahmedabad, Gujarat
17. Shri Rajendra Singh Pradeshi, Principal Coordinator, CEPT University, Ahmedabad,

Other Invitees:

18. Shri V.Rajan,GM – Market Research, NHB
19. Dr. Venugopala Rao, NRSC, ISRO, Balanagar, Hyderabad
20. Shri Girja Shankar, Assistant Energy Economist, Bureau of Energy Efficiency, New Delhi
21. Shri K Sriram, Indian Green Building Council
22. Shri Anindya Sarkar, Team Leader, SLTC, ASCI, OUHM-AWAAS
23. Shri Ashwini Dubey, Consultant, GIZ
24. Shri Ishan Bhatia,Executive, IGBC
25. Shri N.P.Shetti, Executive Engineer , MHADA

BMTPC/HSMI/HPL:

26. Shri Pankaj Gupta, Dy. Chief, BMTPC, New Delhi
27. Shri J.K. Prasad, Chief – BM , BMTPC, New Delhi
28. Dr. H. S. Gill, ED(Training), HSMI, HUDCO, New Delhi
29. Dr. Manika Negi,Fellow, HSMI-HUDCO
30. Shri Surendra Singhai, GM ,HSMI,HUDCO, New Delhi
31. Ms. Atithi Pant, Consultant, HSMI
32. Ms. Harpriya Kaur, Consultant, HUDCO HSMI
33. Shri Rajesh Goel, CMD, HPL, New Delhi
34. Shri Satish Kumar Jain, GM (Engg.),HPL Jangpura,NewDelhi-110014
35. Shri Neeraj Gahlawat, Consultant (Engg.), HPL New Delhi

Annexure-II

The following presentations were made during the meeting:

1. Presentation by Dr. H.S. Gill, Executive Director, HSMI.
2. Presentation by Dr. Sheuli Mitra, Dean, School of Planning & Architecture, Bhopal.
3. Presentation by Sh. Lav Agrawal, Secretary, Govt. of Andhra Pradesh.
4. Presentation by Prof. C.V.R. Murty, Director, IIT-Jodhpur.
5. Presentation by Dr. Shailesh Kr. Agrawal, Executive Director, BMTPC.
6. Presentation by Shri Rizwan A. Khan, NIT Jalandhar.
7. Presentation by Dr. P.S.N. Rao, School of Planning & Architecture, New Delhi.

Points for consideration of MoHUPA as part of Technology Mission for HOUSING FOR ALL

1. National Housing Technology Task Force

(MoHUPA to constitute with limited number of technical persons)

(a) Current Projects

1. Documenting Housing Projects
2. Region Specific Technologies
3. Human Resources available at the national and state levels

(b) Future Projections

1. Cast the future needs
2. Map available resources and technologies
3. Identify Gaps on a regional level
4. Suggest initiatives to meet the requirements
 - :: Human Resource Development
 - >> Education in NITs and IITs, and SPAs, CEPT, ...
 - >> Housing as a *FOCUS* in *IITs and Polytechnics*
 - >> Develop books on:
 - Earthquake Safety Assessment of Housing
 - Earthquake Retrofitting of Housing
 - Earthquake Resistant Design and Construction of
Masonry, Reinforced Concrete and Steel
Buildings
 - :: Technology Development
 - >> Study of India Housing Typologies
 - >> Research at NITs and IITs with key parameters as:
 - Reducing Inventory
 - Standardisation of Housing geometries
 - Precasting of lift-able components
 - Minimal work at site
 - Vendor development
 - Buildings on hill slopes

2. National Center for Safe Housing

(MoHUPA to identify one center)

1. The center will focus on a spectrum of issues related to Housing
 - :: Education
 - >> Degrees
 - >> Continuing Education for practitioners
 - :: Prototype Test Facility for Developing Safe Housing
 - >> Structural Elements
 - >> Non-structural Elements
 - :: Research
 - :: Policy
 - :: Implementation

3. Dissemination of Knowledge

(a) Indian Housing Encyclopedia

(MoHUPA to empower the National Housing Technology Task Force)

1. Web-based documentation of housing of India as official repository of formal information on housing (government approved or peer-reviewed private documents)

- :: Housing Typologies of India
- :: Good housing practices worldwide

(b) Enthusing young India

(MoHUPA to empower the NITs and IITs; and SPAs, CEPT, JIISA, CCA, ...)

1. Indian Habitat Seminar Series

- :: International speakers to travel to major cities in India
- :: Indian Housing Vulnerability
- :: Disaster Resistant Housing
- :: State-of-the-art knowledge
- :: Gap areas in Technology

2. International Seminars on Housing

3. National Housing Quiz

4. Housing Technology Demonstration Units at regional locations

5. Housing Architecture, Design and Construction Competitions

- :: Themes - Masonry, Reinforced Concrete and Steel Structures
- :: Two Sections: College and companies

(c) Taking Housing to Communities

(MoHUPA to identify another group to further this cause)

Regular programs on housing on All India Radio and Doordarshan Television (like agriculture program)

- :: Guidance on technology, materials and vendors

Roles

S.No.	Organisations	
1	Academia	
	:: IITs	(a) Research (b) Prototype House System Mandatory Testing - Housing Technology Validation :: Stability against vertical load :: Thermal tests :: Internal Fixtures (c) Education :: Degrees
	:: NITs	(a) Development :: Manuals & Documents (b) Youth Development: State level Quiz, ...
	:: ITIs	(a) Certification (b) Training of Artisans
	:: SPA, CEPT, ...	(a) Documentation of Typologies: (Field Work)
2	R&D	
	:: CBRI, SERC, ...	(a) Research of New Housing Technologies (b) Development of New Housing Technologies
3	Industry	
	HPL, ...	(a) New Technology Demonstration Units (b) Research

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

Sl No	Major Activities	Sub Activities	Proposed payment norms
1	2	3	4
1	Identifying specific solutions and appropriate design considering local conditions and requirements	<p>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 m² for:</p> <p>a. Single storeyed b. Multi storeyed</p> <p>The deliverable would be architectural drawings, structural drawings, detailed estimates and specification, analysis of rate in case of alternate technologies/non-scheduled items. The entire activity need to be developed in a form of a package which can be readily emulated by the States.</p>	<p>1. 5 lakhs for single storey house 2. 7.5 lakhs for multi-storeyed up-to G+4 3. 10 lakhs for G+5 and above</p>
2	Preparation of Manual and Guidelines.	<p>Preparation of model DPR using conventional and new technologies for all 3 verticals as per scheme guidelines of PMAY:</p> <p>a) In-Situ Slum re-development b) Affordable Housing in partnership c) Beneficiary led individual House construction or enhancement</p>	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: i. DPR preparation and appraisal ii. Good construction practices iii. Disaster resistant construction iv. Emerging technologies v. Green technologies vi. Urban planning & habitat design vii. Quality control and assurance Imparting 2-day training for: i. Master Trainers ii. Stakeholders (ULB/ State Structural Engineers/ Architects/ Planners/ Consultants/ Contractors) The training modules and training could also be in the local State language as per requirement.	Rs.1 lakh for each module 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 documents for suitability and adoptability as per geo-climatic conditions. It may comprise the following: i. Evaluation, validation, acceptance criteria and certification ii. Preparation of specifications, analysis of rates and SOR iii. Preparation of design manual, construction manual, standards iv. Preparation of Model Tender v. Construction of Demonstration Houses vi. Handholding of stakeholders involved in the State for mainstreaming 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 2. Creating a Centre of Excellence for testing innovative materials and system 3. Quality assurance plan of new materials and systems 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): 1. Emerging Technologies 2. Green Technologies 3. Good Construction practices 4. Disaster Resistant construction 5. Habitat planning & design 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.