प्रधान मंत्री आवास योजना-शहरी
Pradhan Mantri Awas Yojana-Urban

GLOBAL HOUSING TECHNOLOGY CHALLENGE INDIA

150 YEARS OF CELEBRATING THE MAHATMA

स्वच्छ भारत
एक कदम स्वच्छता की ओर

AFFORDABLE SUSTAINABLE HOUSING ACCELERATORS - INDIA (ASHA-INDIA)

OPERATIONAL GUIDELINES
ON
INCUBATION AND ACCELERATION SUPPORT TO POTENTIAL FUTURE TECHNOLOGIES

October, 2019

सत्यमेव जयते

Ministry of Housing and Urban Affairs
Government of India

"सबका सपना...घर हो अपना"

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List of Abbreviations

PMAY-U	Pradhan Mantri Awas Yojana - Urban
MoHUA	Ministry of Housing and Urban Affairs
TSM	Technology Sub-Mission
ASHA-India	Affordable Sustainable Housing Accelerator – India
GHTC-India	Global Housing Technology Challenge-India
IIT	Indian Institute of Technology
CSIR	Council of Scientific and Industrial Research
NEIST	North East Institute of Science and Technology
IT	Information Technology
MVP	minimum Viable Product
IPR	Intellectual Property Rights
TEC	Technical Evaluation Committee
IOT	Internet of Things
BIM	Building Information Modeling
BMTPC	Building Materials & Technology Promotion Council
GFR	General Financial Rules
A&OE	Administrative & Other Expenses
PIMC	Programme Implementation & Monitoring Committee
CPWD	Central Public Works Department
BIS	Bureau of Indian Standards

1. Background

1.1 Ministry of Housing and Urban Affairs (MoHUA), Government of India has been implementing Pradhan Mantri Awas Yojana, Urban (PMAY-U) Mission to provide all weather pucca houses to eligible urban households/ beneficiaries by the year 2022. Within the ambit of the overarching PMAY (U) Mission, a Technology Sub-Mission (TSM) was set up to facilitate the adoption of innovative, sustainable, eco-friendly and disaster-resilient technologies and building materials for low-cost, speedier and quality construction of houses. Construction of houses at this scale is an opportunity to trigger a technology transition from conventional resource intensive practices to alternative, green and innovative construction systems through the introduction of cutting-edge technologies, building materials and processes.

1.2 In this regard, MoHUA launched 'Global Housing Technology Challenge-India (GHTC- India)' to identify emerging, disaster-resilient, environment friendly, cost effective and speedy construction technologies which would form the basis of housing construction in India.

1.3 The challenge has three components viz. i) Conduct of biennial Expo-cum-Conference named Construction Technology India ii) Identifying Proven Demonstrable Technologies from across the globe to construct Light House projects iii) Promoting Potential Future Technologies (domestic) through Affordable Sustainable Housing Accelerator – India (ASHA India).

1.4 Guidelines for providing Incubation and Acceleration Support to the Potential Future Technologies under ASHA-India are covered in this document.

2. Scope

2.1 The Affordable Sustainable Housing Accelerator – India (ASHA India) initiative will support the potential future technologies developed in India by the way of incubation and acceleration.

2.2 The aim of ASHA-India is to catalyse research and development in housing construction sector, building materials and related products by providing a suitable platform to promote and showcase India's vibrant and dynamic community of innovators. Potential Future Technologies will be invited from technologies developed in India.

2.3 The two categories which are eligible for participation under Potential Future Technologies are following:

i. Pre-Prototype Technologies for Incubation Support:

This category is for those potential future technologies and business ideas that are at early stages and undergoing iterative design and development but are not yet market ready. Such technologies and business ideas require further hand-holding through longer-term incubation to reach at viable business proposition and should be from the domain of *construction systems, materials and components.*

ii. Post-Prototype Technologies for Acceleration Support:

This category is for those potential future technologies that have completed prototype stage and are at various stages of readiness and requires up-scaling, investment, publicity and market support. Such technologies may require acceleration support through accelerator workshops and master classes on certification and standardisation, pitch development and market scaling and should be from the domain of *construction systems, materials and components, natural resource efficiency improvers, self-help innovations, and digital technology solutions.*

2.4 The ASHA-India Initiative will further help in developing design guidelines, construction manuals and other necessary documents relevant for the effective transfer, use and implementation of new technologies from the lab to the field.

3. Guidelines for Incubation Support to Pre-Prototype Technologies

3.1 Selection Process

a) Potential future technologies seeking incubation support were first identified during Construction Technology India-2019: Expo-cum-Conference of GHTC-India and further shortlisting was done by MoHUA. These shortlisted technologies shall be eligible for getting incubation support through ASHA-India;

b) Subsequently, for next batch of potential future technologies willing to get incubation support, MoHUA/ Incubation Support Institutions will seek online application in prescribed format. Pre-incubation technologies and/ or business ideas will be required to register and apply online through GHTC-India website or the website of the Incubation Support Institutes for this purpose. The selection process shall preferably be completed within 6 weeks from the receipt of the application.

c) It is mandatory for Individuals desirous of availing incubation support that they must incorporate a private/ public private limited company (as defined in the Companies Act, 2013). This condition may be relaxed in the initial term, provided they incorporate a company within 6 months to 1 year of starting incubation for which they will be required to produce a declaration.

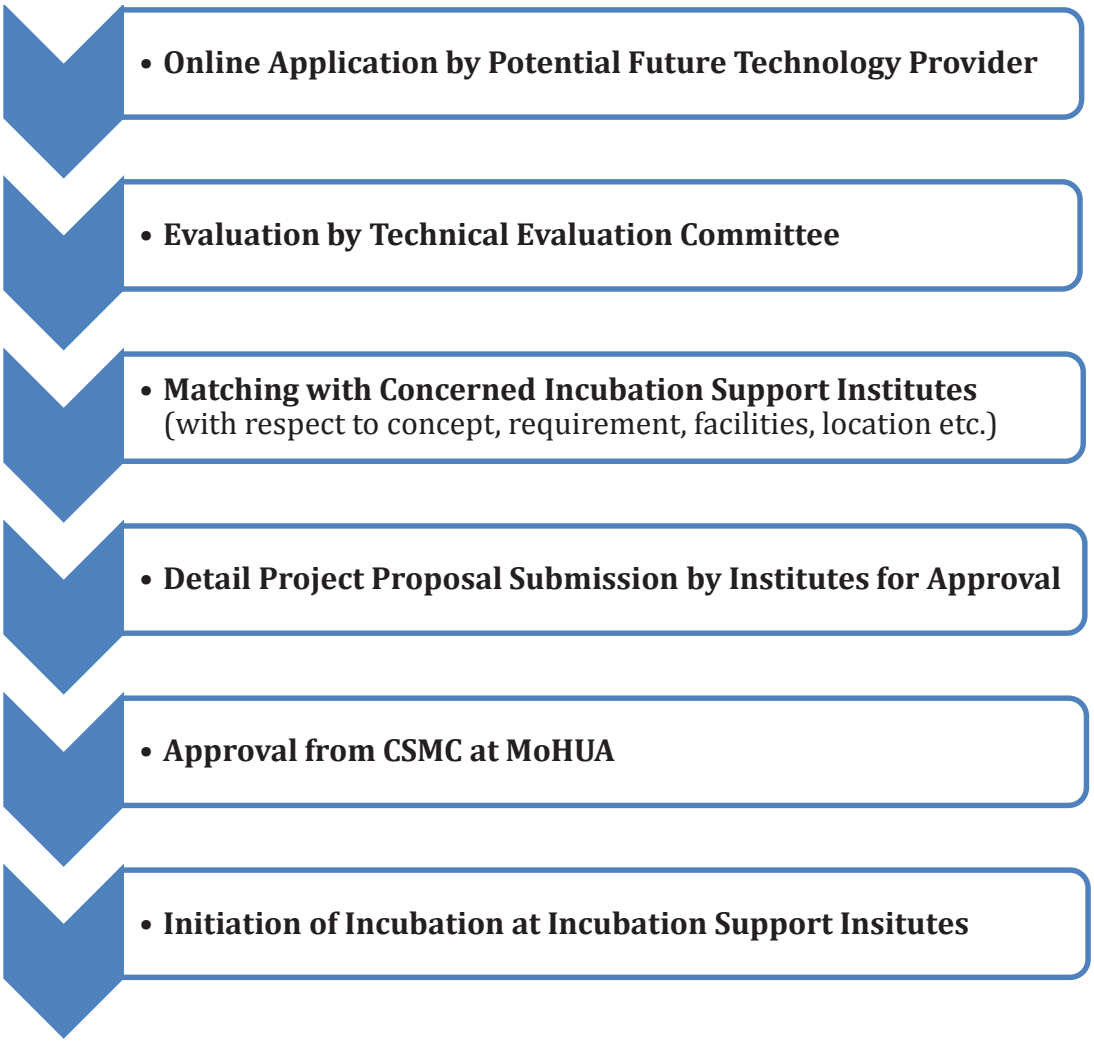
d) A company if supported by any other government Departments/ Organization or private organizations may be co-incubated jointly by ASHA-India as well as the other government Department/Organization or private organizations. However, participating company will be required to apply online through GHTC-India website or the website of the Incubation Support Institutions.

e) Technologies developed through funding from Government of India or any other central or state government organization or any other source may be granted incubation after due diligence. The desirous inventors will be also be required to apply online through GHTC-India website or the website of the Incubation Support Institutions.

f) Incubation Support Institutes shall proactively encourage innovators and entrepreneurs to apply for incubations support.

g) Incubation Support Institutes shall develop their own action plan along with milestones and measurable indicators and submit the same to MoHUA for approval

h) The Details Project Proposal for Incubation Support shallbe submitted by the Incubation Support Institutesto MoHUA for approval. The Proposal shall typically include concept details of the technology/ideas, incubation requirement, relevance and innovation component, timelines, project phasing, financial plan, outcome etc. Once the proposal is approved, financial assistance to the Incubation Support Institute shall be released by MoHUA. The process has been summarized in the diagram below:



3.2 Incubation Support Institutes

a) Incubation Support Institutes will be established in the following five institutions under ASHA-India initiative:

i. Indian Institute of Technology (IIT), Bombay
ii. Indian Institute of Technology (IIT), Kharagpur
iii. Indian Institute of Technology (IIT), Madras
iv. Indian Institute of Technology (IIT), Roorkee
v. Council of Scientific and Industrial Research- North East Institute of Science and Technology (CSIR-NEIST), Jorhat, Assam in collaboration with CSIR-CBRI, Roorkee

b) Incubation support will be rendered within the existing systems of host institutes with functional independence to meet the objectives of ASHA-India under GHTC-India.

c) The above institutes will actively coordinate with each other for various activities to avoid any duplication of work, share best practices, testing facilities amongst others. All institutes will collectively provide a platform to identify, assess, validate and incubate technologies and solutions that can help to build better, faster, more sustainable and cost-effective houses across the country. Existing IT system shall be used for effective management and coordination of ASHA-India program.

d) The role of Incubation Support Institutes shall inter-alia include the following:
   - To provide pre-incubation validation of ideas and proof of concept in the domain of construction systems, materials and components;
   - To provide workspace, access to library, workshops, laboratories and testing facilities, IT services, and assigning of mentors to ensure pre-prototypes reach a minimum viable product (MVP). Appropriate charges may be levied from the funds received from MoHUA as per the policies of the Incubation Support Institutes;
   - Post reaching a minimum viable business model, to provide assistance with securing Intellectual Property Rights (IPR), business model advice and networking support as appropriate.

3.3 Milestones & Technology Readiness Levels

The potential future technologies requiring incubation support may be at various levels of Technology Readiness as described below. Therefore, while preparing the Project Proposals, it shall include details of the technology readiness levels for information and approval to MoHUA and other stakeholders.

Stage 1: Infrastructure support to develop innovative ideas

a) **Production of basic concept:** At this level scientific research begins to translate into applied research and development. Activities may include paper studies of a technology's basic properties.
b) **Conceptual stage**: At this level invention begins, once the basic principles are observed, practical inventions to be created. Applications are limited to analytical studies.
c) **Preliminary stage:** Active research and development is initiated, activities might include components that are not yet integrated.

Stage 2: Converting design to Prototype & Testing

a) **Detailed Design:** Basic technological components are integrated to establish that they will work together.
b) **Bench/ Lab Testing**: At this level the technological components are integrated for testing in a laboratory.
c) **Prototype:** A model or prototype is developed that represents a near

desired configuration. Activities include testing in a simulated operational environment or laboratory.

d) Field Test: Prototype should be at planned operational level and is ready for demonstration of an actual prototype in an operational environment. Activities include prototype field testing

Stage 3: Marketing

a) Pre-production: Technology has been proven to work in its final form and expected conditions. Activities include developmental testing and evaluation of whether it will meet operational requirements.

b) Operational: Actual application of the technology in its final form and under real-life conditions, such as those encountered in operational test and evaluations. Activities include using the innovation under operational conditions.

3.4 Duration of Incubation Support

a) The potential future technologies shall be incubatedfor a period of maximum twoyears. A conditional extension of one year may be provided on case-to-case basis if required, without any additional financial support from funds received from MoHUA.

b) Incubation support shall continue till the PMAY (U) Mission period. Further support may be continued with the approval of the Competent Authority.

3.5 Services and facilities for providing Incubation support

a) Incubation Support Institutes shall provide workplace, research and guidance, mentoring, financial advice, networking and branding support, access to testing and other facilities including library. Incubation support Institutes may create further facilities, which may be essential for validation of technologies and making the technology market ready. Such facilities may also be included in the project proposals.

b) Incubation support institutes shall further provide selected entities with reasonable access to safe, secure, comfortable working atmosphere, with round the clock operations, and availability of facility management for any instant need.

c) Incubation support institutes shall endeavor not to duplicate similar resources already available but supplement existing facilities. Access to infrastructure facility at Incubation Support Institutes for recreational activities like gym, sports facilities and hostel facilities shall be governed by the policies of the individual Institute.

d) Incubation Support Institutes shall endeavor to leverage their faculty expertise, research facilities, alumni networks and new faculty members with the desired domain expertise to support the objectives of ASHA-India.

4. Guidelines for Acceleration Support to Post-Prototype Technologies

4.1 Selection Process

a) Potential future technologies seeking acceleration support were first identified during Construction Technology India-2019 Expo-cum-Conference of GHTC-India and shortlisted by MoHUA. These shortlisted technologies will be provided with acceleration support through ASHA-India.

b) Subsequently, for next batch of potential future technologies willing to get acceleration support, MoHUA will seek the application through the GHTC-India website annually. Post-prototype technologies will register and apply online for this purpose. The applications will typically include concept, requirement, relevance and innovation component, timelines, project phasing, financial plan and the outcome.

c) Individuals desirous of availing acceleration support must incorporate a private/ public private limited company (as defined in the Companies Act, 2013). A company if supported by any other Departments/ Organization shall be granted incubation on submission of 'No Objection Certificate' from the competent authority after due diligence. However, participating company has to apply online through GHTC-India website.

d) The Technical Evaluation Committee (TEC) at MoHUA will evaluate the applications received through GHTC-India website based on pre-defined criteria. These applications will be provided to TEC by MoHUA after the preliminary examination. The TEC proceedings and recommendations will be approved by MoHUA.

e) During the shortlisting process, MoHUA through TEC or any other assigned committee/officer will conduct field verification to ensure the successful experiment/ implementation of the technology in their respective area/ location. The field verification report will be submitted to TEC/MoHUA during the process of evaluation.

f) Potential Future Technologies in the post-prototype category will be accelerated with the objective of providing rapid and strategic learning, and a platform for exposure, networking and business opportunities.

g) Technologies must apply through an entity legally registered in field of construction activities in India as a basic eligibility criterion and must conform to one of the following four domains:

   i. **Construction Systems, Materials and Components:** This includes innovations in structural systems such as beams, columns and slabs and components such as walling, flooring and material innovators.

   ii. **Improving the Efficiency of Natural Resource Use:** Smart solutions in water, sanitation, energy, or waste recycling which help in the efficient management and use of natural resources.

iii. **Self-Help Innovations:** Micro-finance innovations or technical expertise solutions in self -build situations.

iv. **Digital Technology in Housing/Internet of Things (IoT):** Tools such as Building Information Modeling (BIM), virtual monitoring, virtual reality, building simulations, quality control and assurance, smart safety and security solutions, smart materials, smart housing solutions, smart live auditing, products such as Apps for aggregation of products and services or software for project management amongst others.

h) Technologies that have already received Incubation Support through the five incubation support institutes are eligible to participate in this category. However, such technologies will have to apply afresh under this category by registering and applying online through GHTC-India website.

4.2 Acceleration Support

a) Acceleration of the shortlisted technologies will be conducted by MoHUA through BMTPC being a technical partner of MoHUA and in collaboration with Knowledge Partners to GHTC-India, if any. Acceleration support will be provided for the following:
   i. Conduction of accelerator workshops based on the needs such as standardization and certification;
   ii. Assistance in getting market support;
   iii. Up scaling and mechanization of products;
   iv. Supporting in IPR related issues;
   v. Access to venture capital;
   vi. Product pitching;
   vii. Skill training and capacity building and;
   viii. Linking with implementation of pilot/demonstration projects.

b) Shortlisted potential future technologies shall be consulted through appropriate communication channels by MoHUA to determine their specific acceleration needs. The assessed needs shall be used to curate the accelerator workshops, including faculty, domain experts and subjects of the interactive sessions.

c) It is mandatory for the shortlisted potential technology/ providers to physically attend the accelerator workshop on their own cost.

d) The Accelerator Workshop will typically consist of Master Classes by industry experts, Interactive Sessions with field leaders on specific acceleration subjects, support towards Pitch/ Proposal Refinement amongst others. Shortlisted technologies shall further receive sessions with assigned mentors for guidance on specific issues identified as part of the need assessment during accelerator workshops.

e) The MoHUA shall monitor the activities of the acceleration process including compliances through BMTPC with the overarching goals of ASHA-India.

4.3 Duration of Acceleration Support

a) At least one acceleration workshop will be conducted in a year.

5. Funding Mechanism

5.1 Funding for Incubation Support

A. One Time Grant to Incubation Support Institutes

i. The fund release mechanism to the Incubation Support Institutes will be as per the existing guidelines of PMAY (U), MoHUA will provide a maximum of Rs. 10.00 Crore to a maximum of 20 such proposals for each Incubation Support Institute during the entire period of Incubation.

ii. The funds shall be used for providing infrastructure and operational support at the Incubation Support Institute, and for providing Incubation support to the approved project proposals. The Incubation Support institutes shall be responsible for maintenance of all infrastructure facilities created for the purpose till the PMAY(U) Mission period. The funds at the Incubation Support Institute shall be utilized within 2 years or till the end of PMAY (U) Mission, whichever is earlier.

iii. The funds (Central Assistance) will be released by MoHUA to the Incubation Support Institutes in three installments as follows: -

a) **1st Instalment of 40%**of the project(s) cost will be released to the Incubation Support Institutes on approval of the project by CSMC.

b) **2nd Instalment of 40%**will be released to the Incubation Support Institutes based on utilization of 70% of the earlier (1st Installment) instalment and commensurate progress as per the milestones and Utilization Certificates (UCs) in the prescribed format as per General Financial Rules (GFR) 2017.

c) **3rd and final instalment of 20%**shall be released to the Incubation Support Institutes on receipt of satisfactory completion report of projects.

B. Administrative & Other Expenses (A&OE)

i. 1% of the total approved project cost with a maximum of Rs. 10.00 Lakh is earmarked for Administrative & Other Expenses (A&OE). Incubation Support Institutes may utilize the allocation available under this head for carrying out various activities required for effective implementation of activities of ASHA-India;

C. Sustenance allowance to Incubatees

i. A sustenance allowance of Rs. 2.0 Lakh to each shortlisted Incubates shall be provided by MoHUA as per funding pattern of PMAY(U)

guidelines. This sustenance allowance is linked with satisfactory performance of the incubates and shall be disbursed through concerned Incubation Support Institutions.

5.2 Funding for Acceleration Support

i. Shortlisted potential future technology providers will further receive a Certificate and monetary support of INR 2.5 Lakh each by MoHUA at the end of successful completion.

ii. Funding would be provided towards organizing the acceleration workshops and related activities by MoHUA through BMTPC as per the actual.

5.3 General Directions for Funding

i. The funds utilized for purchase of lab equipment for prototyping, testing and validation in identified thrust area(s) shall be in the form of Capital and Operational fund. The Incubation Support Institutes shall procure equipment which is utmost necessary for the incubation support.

ii. The funds received from MoHUA shall not be used for the construction of new buildings or purchase of land. The funds released by MoHUA shall not be utilized for any purpose other than this program under ASHA-India;

iii. Each Incubation Support Institutes shall open a separate ledger account of the funds received under ASHA-India. The prevalent financial rules and regulations shall be applied to the funds released under ASHA-India. An Audited Statement of Accounts or the statement certified by the Incubation Support Institutes will also be provided.

6. Monitoring & Evaluation Mechanism

6.1 Incubation Support

6.1.1 Programme Implementation & Monitoring Committee (PIMC)

a) A Programme Implementation & Monitoring Committee (PIMC) under the chairmanship of by the Director of IIT Madrasshall be constituted for effective management and coordination among all five Incubation Support Institutions to meet the desired objectives of ASHA-India under GHTC-India and avoid duplication.

b) Each Incubation Support institutes will nominate a Programme Coordinators. The other members of the PIMC shall include the identified Programme Coordinators of each Incubation Support Institutes, Representative of MoHUA and BMTPC and up to a maximum of two other eminent invitees. The Programme Coordinator from IIT Madras shall be the convener of the PIMC.

c) The invited members of the PIMC shall be decided by the Chairman in

consultation with the ProgrammeCoordinators and MoHUA.

d) The PIMC shall meet at least twice in a year, or as frequently as required. The expenses towards organizing the meeting of the PIMC shall be borne by IIT Madras. The travel and other expenses of members from Government of India and the Incubation Support Institutes shall be borne by their respective organizations. The expenses towards participation of the invited members shall be borne by IIT Madras as per the norms for such committees, if felt necessary.

e) No sitting fees or honorariums shall be payable to the participants of the PIMC meetings.

f) The Incubation Support Institutes will also be required to develop monitoring mechanism for monitoring the progress of the entire process of incubation and its different activities.Suitable grievance redressal system should be set up at Incubation Support Institutes level to address the grievances in implementing the ASHA-India from various stakeholders.

6.2 Acceleration Support

a) A Monitoring Committee under the chairmanship of Executive Director, Building Material Technology Promotion Council (BMTPC). Representatives of Central Public Works Department (CPWD), Bureau of Indian Standards (BIS), Incubation Support Institutes, Knowledge Partner of GHTC-India and other co-opted members, if required, shall form the Monitoring Committee of ASHA-India after the approval of MoHUA.

b) The Monitoring Committee shall meet at least twice in a year, or as frequently as required. The Monitoring Committee shall specify the overarching goals of ASHA-India and monitor the progress of the same.

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