

# Making Rural Housing Sustainable

*A roundtable discussion organised by Development Alternatives*



## Rural Housing Scenario in India

The Government of India under the housing flagship program “Housing for All” by 2022, has implemented Pradhan Mantri Awaas Yojna- Gramin (PMAY-G) w.e.f. 1st April 2016 to provide an environmentally safe and secure house, with basic amenities to all houseless and dilapidated households by 2022. This is a huge task, especially for rural areas given the significant size of rural population living in deprived conditions.

To achieve the objective of “Housing for All” the Department of Rural Development has given a target of 10.2 million houses by 2019. Against the target of 5.1 million houses in 2017-18, a total of 3.5 million houses were completed (68.7%). At a national level, completion of homes against target still remains at 34%. The top 3 states are Uttar Pradesh (85%), Chhatisgrah (47%) and Madhya Pradesh (45%). To meet the overall target of “Housing for All” by 2022, houses need to be constructed. To meet this target, material and human resources will be required at an unprecedented scale of not less than 5 million a year.

**29.5 million** Housing for All targets for rural housing by 2022 (*PMAY-G Guidelines*)

**43.13 million** rural housing shortages in India (*MoRD, 2012*)

**68.7% Targets** achieved for construction of rural house in 2017-18 (*PIB- MoRD, 2018*)

**34%** national average completion rate under PMAY- G scheme (*PIB- MoRD, 2018*)

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*While India aims for timely completion of houses, sustainable construction of houses still remains a big challenge. India is facing even a greater challenge with monitoring the sustainable construction of houses. India must adopt sustainable habitat development approach as a trigger overall socio-economic development of the region, thus, maximising local material, labour and sustainable livelihood.*

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The key focus areas to steer the discussion of this round table towards better systematic approach towards sustainable rural housing will be:

### 1. Systemic Approach for Integrated Rural Habitat: Linkage to Sustainable Development Goals



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- Developing the green market through awareness at consumer, financier and contractor/builder levels and of local Panchayats, district and state governments
- Tracking of PMAY- G on set of indicators for SDG 1 (No Poverty), 4 (Quality Education), 8 (Decent Work and Economic Growth), 13 (Climate Action) and 12 (Responsible Consumption and Production)

## 2. Strengthening the Institutional System for Sustainable Rural Habitat

- Enabling enterprise supports like technical, financial management to local producers
- Introducing green, zone specific construction techniques into rural mason training system

### Systemic Approach for Sustainable Rural Habitat: Linkage to SDG

The focus must shift from providing just a house but also provide basic amenities and infrastructure for sanitation, water, energy and livelihood. Rural housing can serve as a driver for sustainable rural development. There is a need for cohesive integrated action between local and state level agencies. A system approach has to be developed which allows integration of following mentioned 'capital' (Figure 2) and its link to different Sustainable Development Goals.



Figure 1: Assessment of rural habitat through

<b>Physical (SDG 11)</b>	Disaster resilience, durability, culturally responsive design of Houses
<b>Natural (SDG 13)</b>	Conservation of virgin resources, energy efficiency in construction
<b>Financial (SDG 8)</b>	Bankability of physical assets, value for money, economic activity
<b>Human (SDG 4)</b>	Enhanced skill levels and livelihood generation
<b>Social (SDG 1)</b>	Equal opportunity to fulfil basic needs (house, water, sanitation, energy)

### Strengthening the Institutional System for Integrated Rural Habitat

In order to successfully deliver sustainable rural habitat, there is need to focus on 4 key elements delivery mechanism of green technologies, capacity building of artisans and communities, market creation and institutional linkages for eco-friendly building products aggregation and the availability of appropriate credit and support to enhance its demand. At local level, the major stakeholders involved are techno-social institutions, financial institutions. Artisans guild and local entrepreneur for supply of materials. Sometimes the challenges faced on ground are not addressed at State/ Centre level as similar stakeholders lack cohesive working at policy level.

For example, Ministry of Micro, Small & Medium Enterprises, National Housing Bank, Construction Skill Development Council of India and other techno-social institutions can work cohesively with MoRD to realise the goal of Housing for All 2022.

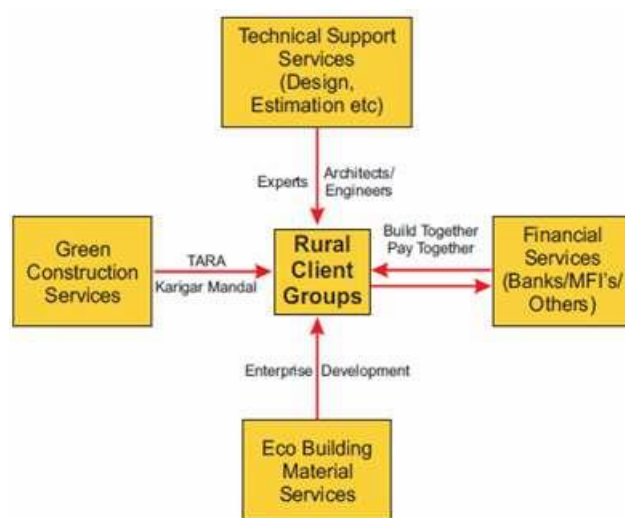
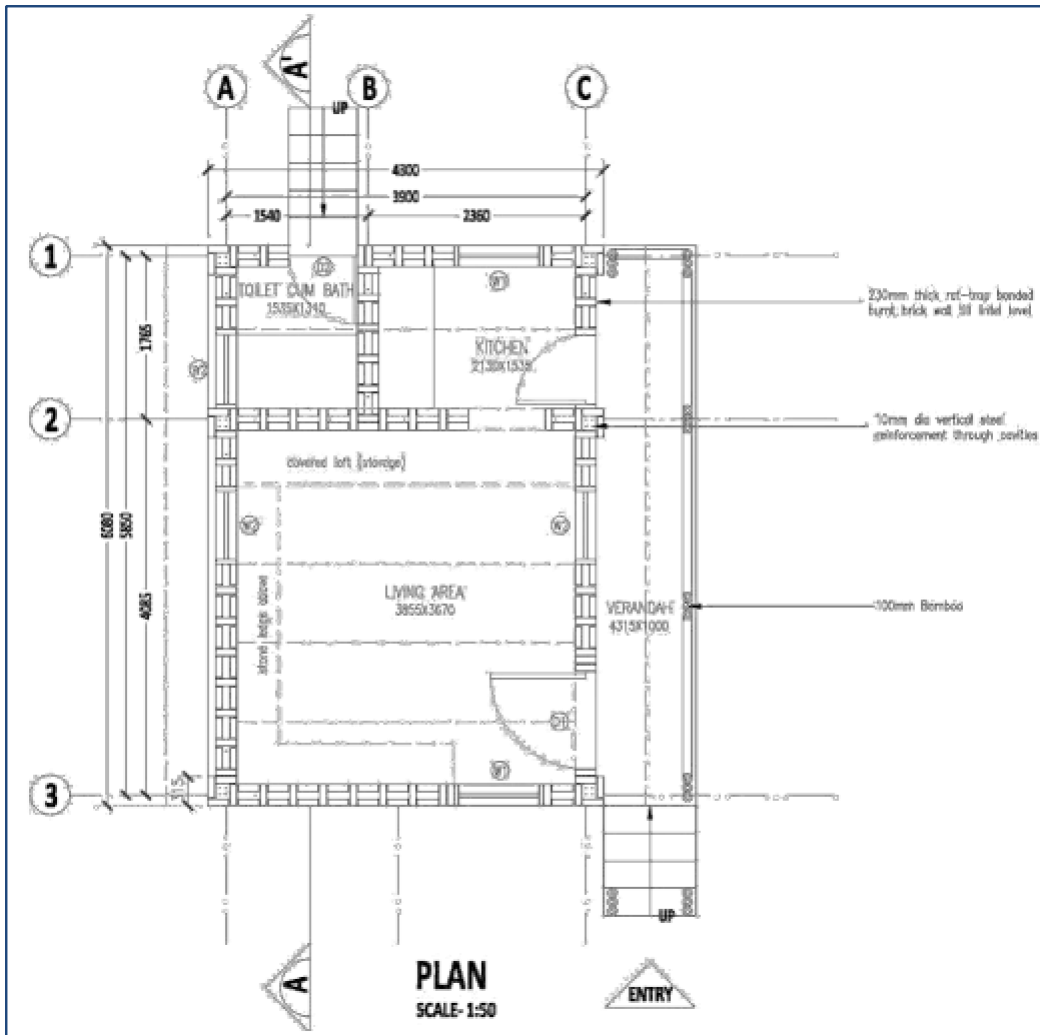


Figure 1: Institutional strengthening for sustainable rural housing delivery

# Making Rural Housing Sustainable

*Development Alternatives' Experience: Learning by Doing*

## Case Study 1: Appropriate and Affordable Technologies for Rural Habitat in Uttar Pradesh



### TECHNICAL DETAILS

#### Suggested Geography

Tarai Region of Uttar Pradesh: Districts of Saharanpur, Bijnor, Rampur, Bareilly, Pilibhit, Kheri, Bahraich and Shravasti

#### Construction Technique

- Foundation: reinforced brick pedestal foundation
- Seismic band: Reinforced concrete at plinth, sill, lintel, ceiling level
- Wall: Brick column with rat trap bonded fly ash brick wall
- Roof: Precast Ferro cement roofing channel

### Project Summary

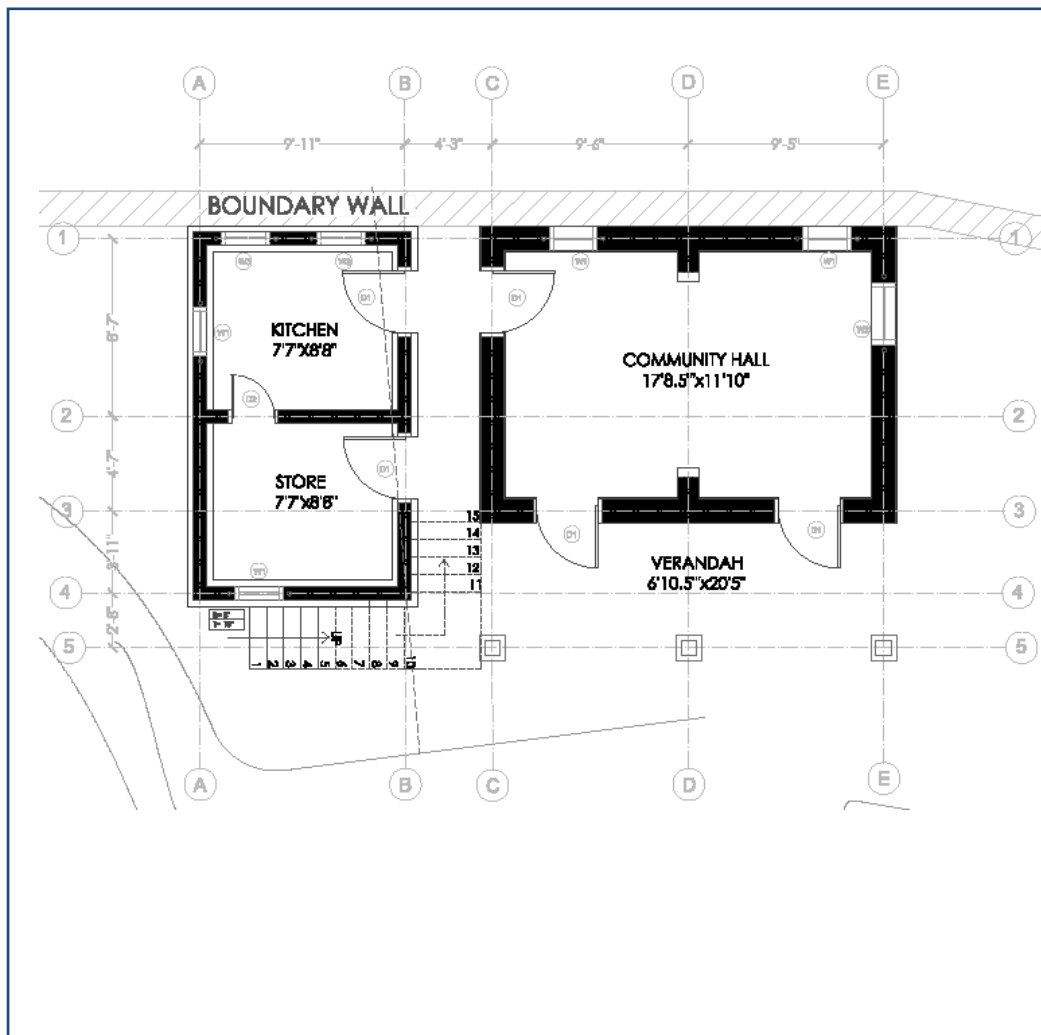
“Compendium on Sustainable Rural Housing Design, Construction Materials and Technologies for Uttar Pradesh” for rural housing construction supported by Indira Awaas Yojna in the state of Uttar Pradesh is an outcome of the process initiated by the Ministry of Rural Development (MoRD) and United Nations Development Program (UNDP) in 2016 to develop housing designs and house typologies suitable to the state of Uttar Pradesh based on the area specific resource availability.

The suggested appropriate and affordable construction techniques have lot of positive environment impact. For e.g. column framed structure proposed without using RCC structure, minimises the use of steel and concrete. Also, the suggested construction technique for wall not only provide resistance to seismic disaster but at the same time saves up material consumption when compared with English bonded brick wall. Ferro cement roofing channel provides about 60% reduction in dead weight as compared to RCC as its unit weight is 50kg per meter length.

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*Development Alternatives' Experience: Learning by Doing*

## Case Study 2: Multi Hazard Resilient Construction System for Rural Habitat in Uttarakhand



### TECHNICAL DETAILS

#### Suggested Geography

Siror, Kamad, Bharkot and Raithal in Dunda and Bhatwari block, Uttarkashi District, Uttarakhand

#### Construction Technique

- Foundation: Eccentric foundation in stone masonry
- Seismic band: Reinforced concrete at plinth, sill, lintel, ceiling level
- Wall: Concrete block in stretcher bond and compressed stabilised earth block (CSEB) in english bond.
- Roof: Precast plank & joist roof.

### Project Summary

Department of Science and Technology, Government of India, has undertaken an initiative for Technology Intervention for Mountain Ecosystem: Livelihood Enhancement through Action Research & Networking (TIME-LEARN Programme) to run a project for Delivery Model for Eco-Friendly Multi-Hazard Resistant Construction Technologies & Habitat Solutions for Uttarakhand. Under the thrust area, Development Alternatives along with its implementation partner HESCO Dehradun has undertaken initiative to enable large scale dissemination of affordable, eco-friendly and multi-hazard resistant construction technologies and water solutions, in response to specific challenges of Uttarakhand.

The construction technologies introduced in this project are affordable, relevant to context and help fulfil the purpose of hazard resistance. For e.g.: compressed stabilised earth blocks for wall construction uses locally available material i.e. soil not only making it eco-friendly but also affordable. The use of random rubble masonry uses vernacular technique of stone masonry which has been proven to withstand major seismic activity.

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**Date:** Tuesday, 31<sup>st</sup> July 2018

**Time:** 10:00 to 13:00

**Venue:** DA Headquarters, New Delhi

<b>TIME</b>	<b>SCHEDULE</b>
<b>10:00 - 10:30</b>	<b>Tea and Registration</b>
<b>10:30 - 11:00</b>	<ul style="list-style-type: none"><li>• Welcome and Expectation Setting</li><li>• Brief Introduction of participants</li><li>• Presentation on Ecosystem creation for Rural Housing in India</li></ul>
<b>11:00 – 11:45</b>	<p><b>Session 1: Systemic approach for rural habitat: tracking habitat development</b> <i>Thematic presentation followed by discussion</i> Key Questions-</p> <ul style="list-style-type: none"><li>○ What are the challenges in developing a market for consumers, green building material &amp; technologies with respect to SDG indicators?</li><li>○ Can tracking of PMAY- G with respect to SDG help sustainable rural development?</li></ul>
<b>11:45 - 12:00</b>	<b>Tea Break</b>
<b>12:00 - 12:45</b>	<p><b>Session 2: Strengthening the institutional system for rural habitat</b> <i>Thematic presentation followed by discussion</i> Key Questions-</p> <ul style="list-style-type: none"><li>○ What kind of synergy is required between rural housing sector and MSME sector to enable local producers to supply green building materials?</li><li>○ How zone-specific construction techniques can be rolled out on ground through rural mason training systems to enable multiplying effect in the rural ecosystem?</li></ul>
<b>12:45 – 13:00</b>	<ul style="list-style-type: none"><li>• Concluding session for uptake by key stakeholders, house owners, small contractors, local governments and micro credit agencies</li><li>• Vote of Thanks</li></ul>
<b>13:00 onwards</b>	<b>Lunch</b>