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Scaling-up of climate resilient housing in Gorakhpur, India

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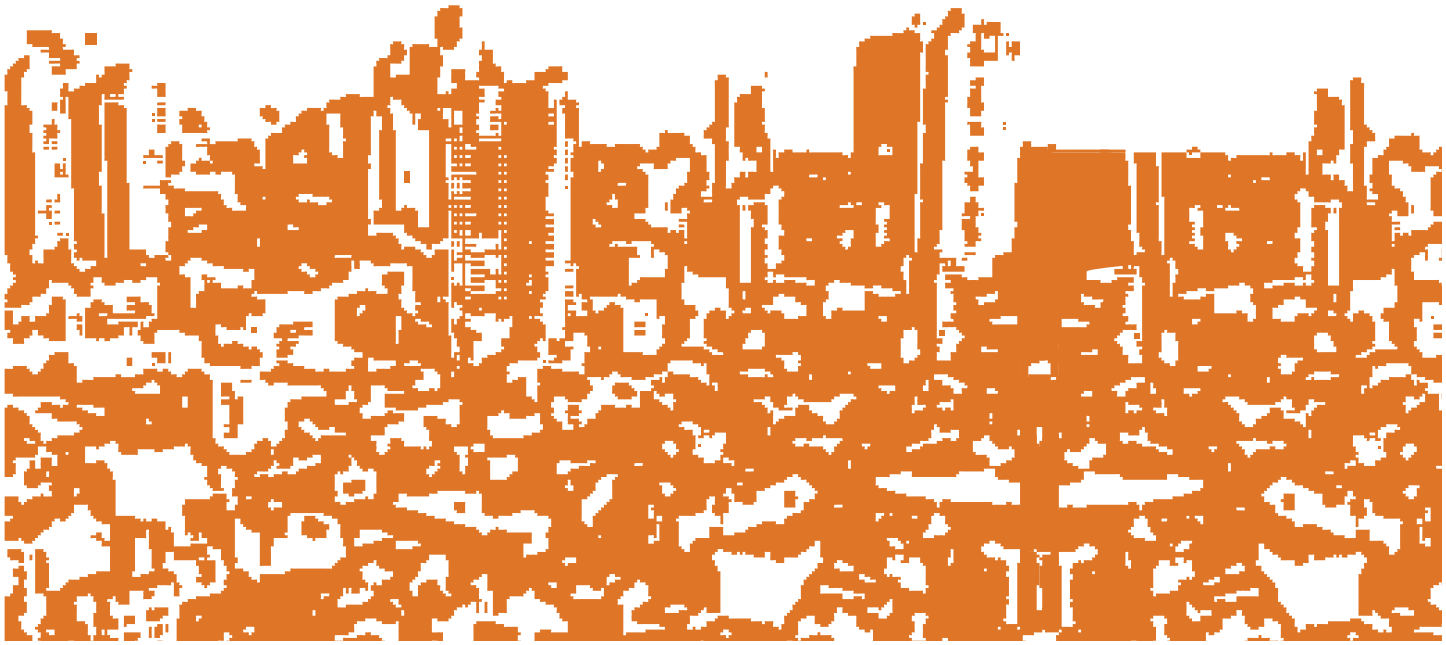

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Abstract

The poor in cities are faced with dual challenge – that of housing shortages and of increased vulnerability to climate change impacts, given the location of their houses as well as their capacities to recover. More often than not, housing for the urban poor is not only an asset, but also a place for income generation. Based on consultations with key stakeholder groups in Gorakhpur city in eastern India, this paper examines the housing vulnerability challenges faced by the urban poor. The paper analyses the existing constraints within the current financial mechanisms for home mortgages, especially for low income group households; the lack of technical capacities of the local masons on low cost and climate resilient building techniques; and the absence of information at the household level towards creating a demand for climate resilient housing construction. Recognising and revamping the micro-finance mechanisms to cater to the housing needs of this section of the population (labourers, daily wagers, petty shop owners, etc.) who do not have the necessary documentation, such as proof of income and land titles, are some of the suggestions put forward to improve the cost and accessibility of financing. Building the capacity of local masons on climate resilient building techniques – as part of the government's skills development programme – is also an important part of resilience building at the local level for the urban poor. To create a demand for climate resilient housing, there is a need for awareness generation amongst the people, coupled with policies that mandate the linking of home loans with resilient designs and techniques.

Acronyms

ACCCRN	Asian Cities Climate Change Resilience Network
BPL	Below the poverty line
CDKN	Climate and Development Knowledge Network
CSO	Civil society organisation
DFID	Department for International Development, UK
DGIS	Ministry of Foreign Affairs, the Netherlands
EWS	Economically weaker section
HIG	High-income group
IIED	International Institute for Environment and Development
INR	Indian rupee
LIG	Low-income group
MFI	Micro-finance institution
MIG	Middle-income group
NBFC	Non-banking finance company
NGO	Non-governmental organisation
NHB	National Housing Bank
SLD	Shared learning dialogue
TG	Technical group
UNDP	United Nations Development Programme

Contents

1 Introduction

"Shelter is a basic human need next only to food and clothing".
(National Urban Housing and Habitat Policy, Government of India, 2007)

Housing is considered as a basic pre-requisite for economic, physiological and psychological well-being. Ownership of housing increases the welfare of the household by enhancing productivity, efficiency and creativity (Desai 2002). Housing provides vital services like privacy, independence, security, comfort, and status (Charles 1977); it is a centre of the household's total residential environment that serves the purposes of working, eating, sleeping, and leisure (Grimes 1976). In this context, Charles maintains that demand for housing is a derived demand for these services rather than the demand for a brick and mortar structure. The National Housing Bank recognises it as being not merely a place to live but also a platform that enables a household to access other critical essential utilities and services. (NHB 2009).

In Indian cities and towns, the rapid pace of urbanisation due to rural-urban migration is putting a strain on infrastructural systems and has led to massive shortages in housing the urban populace. A major task facing the housing sector in India relates to the provision of adequate shelter for the poor. Constant and steep rises in prices, especially in secondary cities, have virtually eliminated the poor from the land and housing market. Widening disparities in income have further reduced the scope for integrating them into the formal housing market. Also, the poor do not have access to finance from the existing formal housing finance institutions owing to their low, irregular, or uncertain income and their inability to furnish acceptable collateral security. Despite various government schemes and initiatives to help the poor, the housing situation remains rather dismal – especially for these low-income group households.

The main purpose of the study is to explore the modalities of sustainable micro-finance mechanisms in conjunction with capacity building at local level, which will enable the adoption of resilient housing design features for low-income households to alleviate the future climatic extremes of heat and flooding. In this process of exploration, the study also examined the extent to which the formal sector financial institutions are able to meet the needs of housing finance for the poor, and the major problems faced by the poor and other low-income households in obtaining funds for housing from the formal financial institutions.

The objectives of this research are to:

- Identify the institutional make-up and process for facilitating micro-financing mechanisms at the household level in Gorakhpur, a city in the Indian State of Uttar Pradesh.
- Investigate the costs and benefits of different micro-financing mechanisms that can dovetail with existing self-help groups throughout peri-urban Gorakhpur.
- Identify a key stakeholder group of private masons that provide building services to low-income homeowners, generate feedback from them on building techniques identified during an earlier project, and develop a training manual.

An attempt is also made to suggest a framework that would help foster an effective link between the formal sector financial institutions and low-income households in order to meet their financial needs for home ownership. The study is confined to urban, and more specifically peri-urban households (where city expansion and new construction is happening), although the framework may find applicability in the rural context, with suitable modifications, of course. It is important to bear in mind that the provision of housing to all low-income households is a rather difficult target to achieve, at least in the foreseeable future, unless shelter programmes are linked to an all-round improvement in the economic and social status of the poor.

In carrying out this study, we first reviewed the current housing situation in Gorakhpur vis -à-vis the trends in urbanisation and the changing climate. Since a large number of low-income urban households are located in Gorakhpur, either in slums or else as squatter colonies on encroached land, the problem of shelter to low income groups forms the main theme of this study.

An analysis of the trends in urbanisation and the current shelter scenario clearly demonstrates that unless innovative solutions are found, the shelter situation is unlikely to show any appreciable improvement in the foreseeable future.

2 Research methodology

This research has been conducted in three parallel phases and builds on substantive information produced from a recent study *Sheltering from a Gathering Storm*[1] and long-standing partnerships with various stakeholders that already exist in Gorakhpur. Phase I of this study investigated the institutional framework existing in Gorakhpur for facilitating and encouraging micro-financing mechanisms at the household level. Phase II, (initiated concurrently) was to assess the extent of knowledge and techniques (for low-cost and/or disaster-resistant construction) that exists amongst the local masons and builders who build homes for low-income households. In Phase III, information from both of the initial phases was used to develop materials for dissemination, sharing, and expansion.

Phase I: Using the Climate Resilient Framework (Tyler and Moench 2012), the research team identified key agents and institutions involved in facilitating financing (and micro-financing) and the design/construction of houses at the household levels. This was to understand their role in facilitating the adoption of resilient techniques in shelter systems and how actions from the right actors can create a conducive environment for scaling-up throughout Gorakhpur and elsewhere. Community (individual households) were consulted on their needs and challenges with respect to availing housing finance as well as their knowledge and inclination to incorporate flood-resilient features in their homes. Two consultations were held with a total of 14 households (their representatives), located in the periphery of the city.

Once these agents and institutions were identified, the research team investigated the economic returns to the alternative micro-financing mechanisms that were identified during the institutional and agent exploration. The mechanisms were investigated using the prior cost-benefit data collected during the *Sheltering from a Gathering Storm* project.

Phase II: This phase was conducted in parallel with Phase I – to identify and develop a stakeholder group of local masons and builders that work with low-income households so as to discuss and facilitate capacity building around resilient shelter features. Discussions with this group focused on their roles and inputs to the design process during the construction of a house, and their knowledge/skill set related to the specific resilient design features. A series of focused group discussions were undertaken with this group during the course of the project. About 17 masons were involved in these discussions in two sets of consultations.

Phase III: The information and knowledge from the two initial phases helped to develop an understanding of the technical, financial and social aspects of the housing sector for the low-income households in the city. The policy landscape relating to financial support for housing for the poor was also studied in detail. Finally, suggestions on the policy implications and institutional mechanisms to support building resilient housing for low income groups – both for the public and private sector – were developed. Throughout this process, key partnerships with builders and micro-financing mechanisms facilitators were created to ensure that these suggestions and recommendations were grounded in the realities of Gorakhpur's culture and system.

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1 *http://i-s-e-t.org/projects/shelter.html Sheltering from a Gathering Storm (2012-13) was a research project spanning South and Southeast Asia, with a focus on Central Vietnam, Northern India, and Central to Northern Pakistan. Using cost-benefit analysis, this applied research project has produced outputs that provide insights into both the economic and non-monetary benefits of adaptive, resilient shelter designs that take into consideration hazards such as typhoons, flooding, and temperature increases. This research was supported by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) through the Climate and Development Knowledge Network (CDKN) programme.*

The study was implemented with key partners that were already engaged during the ACCCRN[2] project process as well as additional new partners that were identified during the `Sheltering from a Gathering Storm' project. The partners that were included in the study are as follows:

- **Local masons'/builders' group:** This is a local group of masons and design engineers that was involved in assessing the entries for the climate resilient housing design competition hosted during the *Sheltering from a Gathering Storm* programme.
- **Savings groups/micro credit groups at the community level:** Community-level self-help groups are quite active in peri-urban communities and many of these have already established linkages with local private financial institutions for financing their income generation activities. Focus group discussions were carried out with three such groups during the course of the project. The community groups were identified based upon the information provided by the private financial organisations.
- **Financial institutions:** The local Grameen Bank that mainly serves the population in rural and peri-urban areas (where the new growth and development of Gorakhpur is happening) was linked with this initiative. Discussions were also undertaken with four other nationalised banks in Gorakhpur City to ascertain their home loan portfolio and understand the challenges they face when providing home loans to low-income households. Since the low-income group (LIG) households are usually served by private financial institutions for their financial needs, three such institutions were also interviewed. Mechanisms/options for affordable and accessible loans for LIGs were investigated.

There remain some limitations to the study, particularly as the masons' groups had not seen or used many of the resilient housing techniques in question. Since they had learnt their craft on the job (learning by doing), it was difficult to tell them about building techniques, such as `rat trap bonds',[3] through manuals.

2 *http://i-s-e-t.org/projects/acccrn.html The Asian Cities Climate Change Resilience Network (ACCCRN) programme (2008-2014) was an initiative to understand and support urban areas in developing countries towards building climate resilience. The programme's work in cities in India (Surat, Indore, and Gorakhpur), Indonesia (Bandar Lampung and Semarang), Vietnam (Da Nang, Can Tho, and Quy Nhon), and Thailand (Hat Yai and Chiang Rai) provides practical insights into the processes and outcomes that contribute to urban climate resilience. This programme was supported by the Rockefeller Foundation.*

3 *A `rat trap bond' is a type of wall brick masonry bond in which bricks are laid on edge (ie the height of each course in case of a brick size 230x110x75 mm, will be 110 mm plus mortar thickness), such that the shinner and rowlock are visible on the face of masonry. This gives the wall an internal cavity bridged by the rowlock. This cavity adds an added advantage as it adds a green building feature to help maintain improved thermal comfort and keep the interiors colder than outside and vice versa.*

3 Growth (and shortage) of the housing sector in India

India is urbanising at a fast pace according to the 2011 census reports, when the urban population was 31.2 per cent of the total population, compared to 27.8 per cent in 2001; the increase being significantly more in larger towns and cities (Tripathi 2013). A report by the Government of India (2011a) estimates that by 2031, nearly 600 million people will live in urban centres, while another report estimates that of these urban households, 91 million will be middle class, as compared with 22 million in 2009–2010. For such a large increase in urban centres and population, it is estimated that there is a need to build 700–900 million square metres of residential and commercial space, which is quite significant (Sankhe *et al.* 2010).

A large part of the housing need in India is for the economically weaker sections (EWS) of society. The National Urban Housing and Habitat Policy mentions that, in 2007, there was a shortage of 24.7 million houses, almost all (99 per cent) for LIGs and EWS of society, primarily in urban areas (Government of India 2007). Furthermore, the Technical Group on Urban Housing Shortages (TG-12), under the aegis of the Ministry of Housing and Urban Poverty Alleviation (Kundu *et al.* 2012), notes that about 19 million (18.78 million) households face housing shortages in urban India – estimates based on data from the 2011 Census and the report on urban slums by the National Sample Survey Organisation (Government of India 2010). One of the key aspects of this shortage, as identified by the TG-12 report, was that more than 95 per cent of this shortfall is for households belonging to the LIG and EWS category. Another facet of this housing shortage is the purchasing power of households where estimates in the McKinsey report indicate that, by 2030, around 38 million households will be unable to afford housing at the prevailing market prices (Sankhe *et al.* 2010).

Table 1: Housing shortage in India by category

Category	Shortage (Millions of Units)	Shortage (%)
EWS (economically weaker section)	10.55	56%
LIG (low income)	7.41	39%
MIG (middle Income)	0.82	4%
HIG (high income)	0	0%
Total	18.78	100%

Source: Report of the Technical Group On Urban Housing Shortage (TG-12) on Urban Housing Shortages 2012-17, MHUPA, September 2012

As per the latest survey on Indian slums carried out as part of the Census of India 2011, every sixth household in Indian cities is a slum household and more than a third of all slum households in the country (38 per cent) are in million-plus cities (Chandramouli 2013). This also implies that about two-thirds of the slum households in the country are in Tier-3 cities like Gorakhpur, which have populations of less than a million. The quality of housing for the urban poor is also questionable as a significant number of the houses in slums and inner city areas (old developed areas) are dilapidated. An important factor for the low quality of housing in such areas is insecurity of tenure. The same report also states that such areas are also extremely congested and most households are deficient in terms of availability and access to basic services like potable water, sanitation, sewerage, storm water drainage and solid waste disposal – reinforcing the information collected in the 65th round of surveys undertaken by the National Sample Survey Office of the Government of India in 2008–09. This survey on Indian urban slums reported that approximately 50 per cent of the slums faced water-logging during monsoons – mostly due to their location (Government of India 2011a). Since about a quarter of the country's total urban population belongs to these two categories, the issue of affordable housing for the urban poor becomes imperative.

Housing is a subject for the State in India, and there are many policies and programmes implemented by both the state and local governments. However, most of the investments for housing in India are through individual households. A significant portion of housing construction in India is carried out through the private sector, which includes individual households as well as by large builders and developers.

Most of the housing for LIG households is designed and constructed at an individual level and incrementally, often over a period of years, adding floors and rooms as savings accumulate. These houses are built by local masons who are not trained in a formal way, but have learnt their trade on the job (Government of India-UNDP 2008). And as we will establish later, these are the households that are most vulnerable to hazards – being in the most risky areas of the city as well as not having enough or the necessary resources to build back quickly. Hence there is a need for imparting specific training to the local masons who cater to this section of urban society. Secondly, inclusion of disaster-resilient measures also sometimes translates into an increase in the initial capital inputs. Access to low cost finance is another important enabling factor in order for these households to build disaster-resilient houses. Since most of these households do not possess the full array of 'requisite' documents or criteria to avail loans from the formal or traditional banks (this includes both nationalised and private banks), there is a need for alternate mechanisms and solutions. Both these issues relate to building resilience at local level (or micro-resilience) and will be discussed in detail in the subsequent sections.

Housing and vulnerability to climate change

Climate change related risks and hazards bring in an additional dimension to the vulnerability of this section of the urban population. The poor and EWS in cities live in areas that are already wanting in terms of basic services such as clean drinking water, sanitation, solid waste management, etc. These challenges are further exacerbated by the impacts of a changing climate. The urban poor – especially in developing countries – face increasing hazards of flooding and water-logging, thus increasing their risks to health, loss of assets, livelihoods, etc. (World Bank 2011).

Shelter is perhaps one of the most important factors influencing the exposure of people and assets to disaster risks (and the recovery process). Since the LIG and EWS households are constrained financially, they are often not able to invest in resilient housing. Living in un-notified areas like slums and squatter colonies and not having a clear title to the land are factors that hinder investment in housing by this segment of the population. Housing designs adapted to climate disasters protect livelihoods and assets, reducing the losses that impoverish households, thus playing a critical role in enabling vulnerable groups to accumulate the resources required for long-term sustainability. Studies indicate that even though resilient designs are not always more costly than the current designs, people from LIGs are not able to invest in these. Housing designs are generally based on the locally prevalent construction practices and the skill set or knowledge levels of the local masons.

Challenges to housing for the poor and vulnerable

In the recent research project, *Sheltering from a Gathering Storm*, the economic returns of climate resilient shelter in Gorakhpur, India were investigated.[4] The alternate (resilient) designs[5] suggested by architects and rated by communities, integrated key features on reducing the losses associated with increased flooding and temperature extremes. While the research proved that the designs have high-economic returns, adoption of these key features has not been institutionalised. The suggested design features, such as rat trap bonds, which offer cooling affects in the home while also being cost-effective, are not being used in traditional construction because of knowledge and skill gaps. While several research studies bring out the challenges for providing housing for the economically weaker sections, the above mentioned study specifically looked at the additional challenges to promote flood (or disaster) resilient housing in affected areas, as discussed below.

Access to finance

Access to affordable finance is one of the key constraints faced by low-income households when considering an investment into building a house. Trends of investment in housing as percent of total investment in the economy are very low. The current financing mechanism prevalent in the country mostly targets middle and high income sections of the society while the households falling under low income and economically weaker sections category find it difficult to secure formal housing finance. Commercial banks and traditional means of housing finance typically do not serve low-income groups, whose income may vary with crop seasons or is below the 'viable' threshold to ensure repayment, or which cannot provide collateral for loans.

Security of tenure

Most of the slums and low-income group houses are built in low lying areas in the cities and the poorest are often most vulnerable to climate hazards like flooding and water-logging. The slums and squatter colonies are more often than not public lands and cannot be owned by individual owners. This lack of clear title to the land on which their homes are built acts as a disincentive to the house owner to invest in improving the house, since they could be evicted or re-located. At the same time most of the financial organisations also baulk at the prospect of providing mortgage financing to such home owners (Merrill and Mesarina 2006).

Local skill sets for resilient designs (capacity building)

As mentioned earlier, local masons are one of the key stakeholders in housing construction for low income households. Most houses for this section of the population are built by local masons who (along with the households) decide the designs based on current practices and their knowledge and skill levels. Capacity building for masons at the local level is critical if resilient housing designs are to be promoted.

Awareness generation

Households, especially from the low income group, are not aware of the new designs and practices of construction and are dependent upon the local masons for the design of the house while constructing a new one. Awareness at the household levels is needed to create demand for resilient and low cost construction.

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4 Source: ISET website http://i-s-e-t.org/projects/shelter.html

5 For more information, see http://i-s-e-t.org/resources/other/resilient-housing-india.html

Availability of land

Availability of land is one of the key constraints, particularly in the Indian context. Urban areas in India already lack the land to meet the housing requirements of the rapidly growing urban population. The seriousness of the problem can be judged from the trend in the increasing share of the land cost to the total cost of houses. Land costs constitute a high proportion of the total cost of houses and are considerably higher in cities. Moreover, given that there is a policy to boost the manufacturing sector (Make in India) there is a huge demand for land by this sector. With the increase in the manufacturing sector and the increasing population in Tier-2 and Tier-3 cities, there is a definite growth in the demand for low-cost and affordable housing. Hence, it is imperative to ensure proper development of the housing sector as well, lest it give rise to more slums and unauthorised settlements in the urban centres and settlements around the new industrial zones (KPMG 2014).

4 The case of Gorakhpur

Gorakhpur, a mid-size (and fast growing) city in the eastern part of India's largest State – Uttar Pradesh, will most likely see an increase in both rainfall extremes and temperature extremes by the 2050s. The current population of Gorakhpur is close to 700,000 and the city is spread out in a geographical area of about 147 sq km divided into 70 administrative wards (Government of India 2011b). Gorakhpur is located in the mid-Gangetic plains between the Rapti and Rohin River basins, and the city is bowl-shaped with a low-to-flat gradient with high groundwater tables. Though flooding and inundation are recurring problems – records dating back to the early 1800s show regular flooding throughout the last two centuries – recent years have shown a marked increase in severity and impacts. The 1998 floods were unprecedented and had significant influence on how locals prepare and react to floods. It has been observed that in the last decade or so, floods and inundations are occurring even at moderate rainfall levels (Wajih *et al.* 2010).

Vulnerability in Gorakhpur has multiple facets that have been exacerbated by anthropogenic causes, including poorly planned urbanisation and poorly designed and constructed buildings. However, with the onset of climate change (specifically, changing rainfall and temperature patterns) the characteristics of the impacts of floods are changing (and increasing) over time. Results from the participatory appraisal of flooding and its impacts in Paneli village in 2012, explain that floods impact various facts of life and the overall cumulative effect traps poor communities in a poverty cycle[6].

Historically, there were 103 water bodies that served as natural drainage to the city. With urbanisation, less than a third of the water bodies remain at present. Housing practices are changing in Gorakhpur with a slow shift from traditional (*kuchha*) to a modern concrete (*pucca*) housing construction. Despite more modern housing construction, many of these are built without design considerations or regulations, resulting in houses that remain vulnerable to floods. Though shifts have been made in reaction to the 1998 flood, there is still a lot to be done in reducing vulnerability to floods at the household level. According to the *Vulnerability Atlas of India*, developed by the Government of India's Building Material Technology Promotion Council (BMTPC), about 21 per cent of houses in the Gorakhpur district are highly susceptible to floods (BMTPC 2006). While a majority of these vulnerable houses are in rural areas, urban and peri-urban households face the perennial problem of waterlogging. Vulnerability to flooding and waterlogging extends beyond the household level and is changing due to several anthropogenic factors. While meteorological and morphologic factors persist, poor urban planning, unregulated development, failed embankments, drainage congestion, and other development-related factors have exacerbated vulnerability. Furthermore, a large part of the city elevation is below the river, and this has resulted in the waterlogging of lands and periodic flooding. The bulk of the waterlogging problem – affecting about 40 per cent of the city – is to the south and west. However, the drainage system for the entire city is impacted. Waterlogging has worsened in recent years in Gorakhpur, partly due to changes in rainfall and aggravated by the degradation of water bodies and unplanned development (eg land encroachment).

Climate change brings a new dimension to the problem as more intense and untimely rainfalls add to the fluctuating flooding regime. In recent years, floods have occurred earlier than normal, catching people off-guard and causing more damage. Climate change is likely to increase the intensity of rain events around Gorakhpur over the next 50 years. Rainfall intensity is a measurement of the total rainfall (mm) per year over the total rainfall per each storm in mm/ hour, and it is projected that by the 2050s, small intensity rain events might see a 10-20 per cent increase. Of those more severe events,

6 *Source: Shared Learning Dialogue conducted with villagers of Paneli, Gorakhpur in September, 2012*

climate change might increase rainfall intensity by 2-25 per cent. Overall, climate change will impact rainfall amounts, resulting in continued and potentially worsened flooding scenarios (Opitz-Stapleton and Hawley 2013).

Another facet of changing climate is the increasing levels of heat and of the heat index. Projected changes suggest that more than five months of the year will see average heat indexes above human body temperature threshold. The heat index is a measure of the decreased efficiency of perspiration to cool the human body in a humid environment. Thus high temperatures with high humidity will have a greater adverse impact on the body than high temperatures alone. The expected 1.5°C–3°C increase in temperature will translate into a 5°C–7°C rise in the heat index.

These changing climatic conditions will increase the vulnerability of poor and low-income communities and households who are already impacted by the existing waterlogging, flooding, and temperature-related stress conditions. While flooding interventions are a common access point to creating a reduction in losses, little emphasis has been placed on the critical importance of integrating temperature reduction measures in shelter designs, even though shelter is a place where many households seek refuge from the heat during the day and night. The adoption and integration of resilient features that reduce temperatures and flooding in homes is imperative to creating adaptive capacity.

The City Resilience Strategy[7] identified housing and related issues as one of the key areas where vulnerability needs to be addressed in Gorakhpur (Wajih *et al.* 2010). Flood and climate-adapted shelter designs protect livelihoods, assets and reduce the types of climate disaster-related losses that impoverish families, thus playing a critical role in enabling vulnerable groups to accumulate the resources required for long-term adaptation. Also, following disasters, the construction of temporary and permanent shelters is one of the largest costs for governments and disaster response organisations and this could be reduced or eliminated with design improvements.

In the peri-urban and rural areas of Gorakhpur, the impact of flooding is felt more, while the urbanised core city areas suffer mainly from waterlogging. The 1998 floods had a significant influence on building practice subsequently. However, despite more modern houses, many of these (especially those of the low income households) are built without design considerations or regulation, resulting in houses still remaining vulnerable to floods. For the people living in slums and LIG colonies, housing conditions exacerbate these stress conditions mainly due to the structural design – low plinth heights, exposed brick walls or mud walls, and also due to the congestion (large number of houses per unit of area) and lack of storm water drainage systems. One of the key reasons for this is the lack of technical capacities available at the local level (amongst the local masons) to include hazard resilient features in the construction of houses.

Box 1: Shared learning dialogue (SLD)

The shared learning dialogue process, which brings together different stakeholders and various types of knowledge that is both scientific and local, has been used as a process tool as part of Gorakhpur's ACCCRN activities. SLDs are founded on principles of meaningful public participation – bringing together stakeholders with different interests and perspectives, different information, knowledge, and power – in a public arena of debate on a level playing field (ISET *et al*. 2012). As part of this project, SLDs were conducted with different stakeholder groups at various stages of the project.

Housing and construction practices

The housing scenario in Gorakhpur is similar to most of the country. Gorakhpur is a small city and a majority of households own the residential units where they live, though there are also households that rent. This is quite true of any

7 *The City Resilience Strategy for Gorakhpur city was developed as part of the three-year project: Asian Cities Climate Change Resilience Network (ACCCRN) on building climate change resilience in urban areas.*

small cities in the country, and is quite opposite to the situation in large metropolitan cities like Delhi or Mumbai, where the majority of households live in rented accommodation.

In the last decade, the housing scenario in rural and peri-urban areas of Gorakhpur has altered very rapidly. From census analysis and field observation of peri-urban and rural areas of Gorakhpur, it is observed that 73.93 per cent of houses have *pucca* (permanent) walls and roofs, while 23.47 per cent of houses have *kuccha* (semi or non-permanent) walls and roofs. The housing units in rural areas of Gorakhpur have predominantly one or two rooms; more than 62 per cent of houses fall into these two categories. In the urban areas of Gorakhpur, about 50 per cent of housing units have one or two rooms per housing unit (Government of India 2011b).

Housing vulnerability

Rising populations and improper construction practices have significantly enhanced the vulnerability of houses and livelihoods. Even without climate change altering the frequency and intensity of Gorakhpur's extreme rainfall events, flooding is likely to increase in severity and frequency in the city because of urban and peri-urban development (GEAG 2009). During community consultations, it was also noted that the pattern of flooding and waterlogging has significantly altered in the last couple of decades due to changes in land-use patterns and other anthropogenic activities. Poor drainage system and low water retention causes water stagnation in agricultural land and sometimes even in homes. Waterlogging can occur for more than 20–30 days during the monsoon period, which causes heavy losses to agriculture, shelter, indoor assets, and the education or working days of poor and vulnerable people. As per the official records from Tehsil and the District Disaster Management Authority (DDMA), on an average, the floods impact more than 600 hundred villages and 0.5 1 million people annually (DDMA 2013). The data from DDMA indicates that about 20–25 per cent of the area in peri-urban villages is marooned on a regular basis. The flooding in Gorakhpur is quite a regular event as floods impact some part or the other in the district in eight out of ten years.

The recurrent flood situation has also changed the mindset of people regarding housing design. The SLDs (see Box 1) conducted in the peri-urban areas of Gorakhpur clearly indicate that the 1998 flood played a catalytic role in changing housing designs in peri-urban parts of Gorakhpur. People said that all *kuchcha* houses were completely ruined in the 1998 floods and consequently, most people, poor and rich, have shifted from *kuchcha* to *pucca* house construction. Another fundamental design change that was adopted in large scale was raising the plinth level of homes. Despite the shift to `modern' housing construction methods in Gorakhpur, vulnerability to flooding and waterlogging still remains and is being compounded by changing climate, rising temperatures and variable precipitation patterns. According to the Vulnerability Atlas of India, 53.4 per cent of the area in Gorakhpur is prone to floods, out of which around 80 per cent can be provided with a reasonable degree of protection through various measures. This can be done by reconstructing houses for low income groups in flood-prone alluvial areas.

Most of the peri-urban and rural houses designed in the area are constructed with the advice of local masons and use easily available materials. Many houses have been constructed incrementally over a period of time and there are several factors that lead to poor quality construction, making them vulnerable to disasters. These are:

- income levels of home owners;
- unregulated, poorly designed and constructed houses (both traditional and modern);
- constraints in the availability of good quality materials;
- changing occupational patterns; and
- limited technical capacity and minimal design regulations in rural areas.

The poor housing stock has led to devastating consequences during floods and other risks. In the last decade, the housing scenario in rural and peri-urban areas of Gorakhpur has changed rapidly. Although the new buildings are constructed using modern materials, design and construction is based more on experience rather than on engineering design, as per building codes. As a result, even modern housing types are also vulnerable to floods.

5 Housing schemes for low income groups

At the national level, there are two government ministries that deal with the subject of housing – the Ministry of Urban Development (MoUD) and the Ministry of Housing and Urban Poverty Alleviation (MoHUPA). The Ministry of Rural Development (MoRD) also implements a couple of programmes related to housing for the rural poor through the state rural development departments. There are other agencies, institutions and organisations such as the Building Material Training and Promotion Council, the National Institute for Urban Affairs, the National Housing Bank, etc. that support these ministries and state governments through research, analysis, capacity building and financial assistance.

The Uttar Pradesh State Government has specific departments, such as the Urban Development Department, the Rural Development Department, and the Housing and Urban Planning Department, which implement both national and state government programmes related to housing. For the cities, the District Development Agency is responsible for planning and zoning the new development and expansion plans of urban areas in that district, while some of the housing programmes targeted for urban poor are implemented by the municipal corporation.

The overall guiding policy for housing in the country is provided by the National Urban Housing and Habitat Policy, 2007 that was notified by MoHUPA. The policy's focus is on providing affordable housing for all citizens in the country. Broadly, the policy specifies earmarking land in the housing projects (by state governments or under national programmes) for the provision of affordable housing for EWS and LIGs. For technical aspects related to building norms and codes, the National Building Code is the main and universally binding document for building standards related to housing in India. Though most of the public sector housing programmes do consider the local weather and climatic conditions for building houses, the changing climate and its impacts on local weather are not considered in any of the housing programmes (Singh *et al.* 2013).

At the national level, there are specific programmes for the provision of housing to the urban poor. Rajiv Awas Yojana (RAY)[8] and its component Affordable Housing in Partnership (AHP)[9] are aimed at creating slum-free cities. Under RAY, the central and state governments provide a major share of housing construction cost (up to 90 per cent), with the beneficiaries only contributing a maximum of up to 25 per cent of the cost of constructing a dwelling unit. It was also realised that the government programmes alone would not be sufficient to meet the housing shortages, and this led to a specific scheme, AHP, wherein private sector participation is sought to create additional affordable housing stock for the EWS and LIG households. However, both these schemes were discontinued in May 2015,[10] and have been included in a new scheme called the Pradhan Mantri Awas Yojana (PMAY) that will be more streamlined and better targeted to achieve the objective of 'Housing for All' by 2022. Under PMAY, 18 million slum households and 2 million non0slum urban poor households will be covered during the period 2015-2022[11].

8 *http://mhupa.gov.in/ray/ray_index.htm*
9 *http://mhupa.gov.in/W_new/AHP-Guidelines.pdf*
10 *http://mhupa.gov.in/W_new/Ray_Discontinuation_19_05_2015.pdf*
11 *http://mhupa.gov.in/User_Panel/UserView.aspx?TypeID=1493*

Indira Awas Yojana (IAY) is a cash subsidy scheme for the rural poor (households living below the poverty line (BPL) or their families), and for some other categories such as scheduled castes, scheduled tribes, widows, etc. for the construction of housing dwelling units using indigenous material and designs.

The experience from Jawaharlal Nehru National Urban Renewal Mission demonstrated that the construction of new housing stock to meet the housing shortage is not feasible. Since a significant part of the housing shortage (26 million - about 20 per cent) is caused by the congestion factor, construction of additional rooms would partially meet this need. The availability of finance at affordable rates to the urban slum dwellers and urban poor for incremental housing would thus provide a boost to the various national and state government-led housing programmes.

To meet the objective of making available affordable finance to the LIG and EWS category of households, the Central Government launched the *Interest Subsidy Scheme for Housing the Urban Poor* (ISHUP) programme, which provided an interest subsidy of 5 per cent per annum to the EWS and LIG category of borrowers on loans of up to INR 1 lakh availed from banks and housing finance institutions. However, due to the lack of willingness on the part of the banks to extend loans to the EWS category, the number of loans disbursed was significantly low. To rectify this, ISHUP was remodelled into a target-based programme called *Rajiv Rinn Yojana* (RRY) in October 2013.[12] The Uttar Pradesh State Government announced targets for various districts and the provisions and guidelines for this scheme.[13] Under the scheme, the upper ceiling of loans with an interest subsidy of 5 per cent has been increased to INR 5.0 lakh (US$7,692) for the EWS households and INR 8.0 lakh (US$12,308) for the LIG households, though the interest subsidy will only be applicable for loans up to INR 5.00 lakh.

State government programmes

Lohiya Awas Yojna

While all the above programmes are funded by national government and are implemented by the state governments, there are specific initiatives by the respective state governments to provide affordable housing to the economically weaker sections of the population. In Uttar Pradesh specifically, programmes like *Lohia Awas Yojana*, *ASRA Yojana*, etc. have been initiated for the disadvantaged groups such as EWS, widows, slum dwellers, etc.

For the LIG and MIG categories, the latest initiative by the current government is *Samajwadi Awas Yojana,* wherein it is proposed to build about 3 lakh (0.3 million) affordable houses in urban areas across the state.[14]

The state government has also launched the *Aasra* housing scheme for the urban poor, in which preference has been given to minorities. This replaces the government's earlier housing scheme for the urban poor, known as *Manyavar Kanshiram Shahri Garib Awas Yojna*. In the *Aasra* scheme, preference is given to those living in minority-dominated slums whose monthly income is up to INR 6,000. Registered rickshaw pullers, OBCs (other backward castes) and SC (scheduled caste) people who do not own any houses, and released manual scavengers are also eligible. However, a mandatory condition is that no family member of the beneficiary owns a house in an urban area. Beneficiaries are selected through an invitation to apply and then a lottery draw. The allottees do not have the right to sell the houses for 15 years, but can transfer to their legal successors. The infrastructure facilities will be developed from 25 per cent of the total budget under the scheme.

12 http://mhupa.gov.in/RRY/RRY%20Scheme%20Guidelines_English.pdf

13 http://awas.up.nic.in/

14 www.masterplansindia.com/housing/5-latest-housing-schemes-launched-samajwadi-awas-yojna

6 Issues and challenges in the housing sector – perceptions from city stakeholders

Community

Consultation with community (LIG and EWS) groups reiterated findings from the earlier studies. Two consultations were held with communities located along the periphery of Gorakhpur City that is quickly getting urbanised. In all, about 14 households were consulted during these two consultations. The key points of discussions were about housing design and the mode of finance. While the design of the house with this community was not an important factor, it is often dictated by the amount of finance available. Most of the families preferred a two-room house (with many reasons for this, but the main obstacles were finance and the available land). It was interesting to note that people generally build their houses incrementally – over a period of time. For example, even if the structure is complete, the plastering of walls or the flooring will be done later when they have the available money.

People from the EWS households, in general, are averse to taking loans. If they have to take loans, they prefer going to private moneylenders rather than the banks, even though the interest rates are much higher. This behavioural pattern – though illogical – sounds reasonable from the community's point of view, as explained below.

Getting finance from the banks or from established housing finance companies is a complicated process even for middle class households with regular jobs/incomes. For the EWS households this becomes a herculean task. Their greatest difficulty is to prove their net-worth to the bankers and to show a proof of regular income. In the absence of proper land records, sometimes even the ownership of land is difficult to prove and hence arises the inability to access low-cost loans. Even those households who are able (financially) to upgrade to better homes with resilient features would not do so in the absence of clear tenurial rights.

EWS households are mostly daily wage earners and there were many who did not have a bank account, though this has changed recently with the government of India making it mandatory for all households to have bank accounts. Due to the nature of their livelihood/income generating activity, proving their eligibility in terms of loan repayment capability is a difficult, if not impossible, task.

There is a proliferation of private moneylenders in the city (and it was learnt that there are many such registered and unregistered companies in other cities as well) who give short-term loans. These loans usually have interest rates ranging from 20-36 per cent per annum and the repayment is collected on a weekly basis. These companies do not ask for any documentation and the group guarantee is normally all they seek. The loans are disbursed at the doorstep of the person seeking loans and the repayments are also collected from the house every week. This is a much easy and convenient system for poor people and they seem to be quite happy with this. In the discussions it was noted that almost 70 per cent of the households (in that particular community) had availed such loans at one time or the other.

A significant decision taken by the central government that would perhaps change this behaviour is the one that mandates a bank account for all households. Before this decision, there was a large section of society that was deprived of banking services. But the discussions with the community brought out the fact that now every household in the community had at least one bank account. This new situation can be used to change the perception of the banking community towards extending loans to this section of society, though this will need to be researched and discussed with the banks first.

Masons

The local masons almost exclusively work in housing construction –especially for the EWS households. These masons characteristically are self-taught and have learned their trades while on the job. For example, a labourer working with the expert mason learns the techniques over time and starts constructing houses on his own. The focus of discussions with this group was on the type of housing designs prevalent in the region (and specific features for flood and heat resilience that they practice/advise), as well as their knowledge on specific techniques such as rat trap bonds – that, while reducing the material and construction cost, also help in temperature control.

Housing in Gorakhpur is changing from row houses to multi-storeyed apartment buildings, being constructed by large corporate houses and construction companies. It was found that many masons from the group (with whom we interacted) work for these large contractors – and this was viewed as a long-term source of work. Some of the masons, however, were also involved in building houses for people around their locality in the peri-urban areas, where they provided inputs on design and structure.

Most of the households do not show any preference to a specific design, except for the number of rooms and according to their budget. Although the house owners demand specific features such as stairs or the number of shelves, it is the masons who provide inputs towards specific design features that are prevalent in the area/region, such as double roof/ledges, etc. These masons are not trained in any professional institute and, as mentioned, have learned their trade on the job, by observing and doing.

Though this group (masons) does not specifically know about climate change, they observed that rainfall patterns are getting erratic and that the warmer periods are currently more prominent. The pleasant weather associated with the months of post-monsoon before the onset of winter is now almost negligible. However, they do not build or suggest any specific design features to the home owners that would reduce their vulnerability, except maybe the height of the plinth which is also subject to the availability of the owner's resources.

Financial organisations

The team met with both nationalised and private banks as well as many non-banking finance companies (NBFCs). The local commercial banks, such as the State Bank of India, Punjab National Bank, and many others, including Purvanchal Bank, are in the housing finance mainstream. While the national and large private banks provide credit/loans based on certain norms, the NBFCs work on the model of thrift and credit societies. Both these groups provide loans for various purposes; the large nationalised and private banks are governed by the Reserve Bank of India norms of providing housing loans which attract lower interest rates than the commercial banks or personal loans. However they are more security-oriented and concerned more about their repayment schedules, as most of the loan portfolios in housing are non-performing assets. Although commercial banks and rural banks are availing refinance from the National Housing Bank (NHB), interest subvention schemes up to loan of INR 5 lacs (US$7,700) are also being introduced by NHB, even then affordable houses lending is not up to the mark.

The NBFCs mainly provide finance for entrepreneurial or income generating activities[15] and generally have a single rate of interest. Almost all the NBFCs in this area prefer working with women and their modus operandi is to form a women's group for income-generating purposes in the specific area/locality to which they lend money. This is mainly because the group members stand as guarantors of the loan to each member, making their loans secure. In reality, the local (on ground) official of the NBFC is not concerned about the use of the loan, as long as the repayments are confirmed. A couple of home owners admitted to filling out loan applications for a productive purpose, but actually using it for constructing or extending their homes. Hence there is enough scope for housing finance even in this category of households, but very few interventions have been done either by any commercial/rural banks or by micro-finance institutions (MFIs). Existing MFIs in the area, such as Cashfore, Bandhan, SKS, and many others are not taking an interest in micro-housing finance in Gorakhpur, as their organisational directives do not allow them to provide loans for non-productive assets.

15 *Discussions with the community and staff at the NBFC revealed, however, that as long as repayments are being made, they do not really check the purpose or the use of finance provided.*

7 Climate resilience features for low-income housing – lessons from the community

The rising population and accelerated rate of housing construction in the city, and its peri-urban areas, has a serious impact on flood and waterlogging problems and can cause deteriorating living conditions. Moreover, given that Gorakhpur has a fairly flat topography with minimal rise and fall over the land, even a small disruption in the natural flow of water can impact the flooding and waterlogging regime in the area. During the last few decades, the nature of flooding and waterlogging in the area has transformed due to changes in land use patterns and other anthropogenic activities.

Climate change brings new dimensions to the problem and further extends the risk of floods and related damages in extreme rainfall events. After 100mm of rainfall in 24 hours (a common rain event in Gorakhpur), flooding occurs in many low-lying areas of the city. Climate change will likely increase these types of high intensity precipitation events over a shorter duration by 10-20 per cent (Opitz-Stapleton and Hawley 2013). These recurrent floods have increased housing costs (with a need to invest in higher/raised plinths) and have affected the livelihoods of rural and peri-urban poor people (loss in wage days). Moreover, with the construction of embankments, the risks of water logging have increased in the past decades, even while reducing the (riverine) flood risk considerably. Since the city's drainage cover is limited, the rainwater remains in the low-lying localities for days and weeks during the monsoon season – often even inside the homes of poor people.

To cope with and reduce losses due to this increasing trend of waterlogging, households have adopted a number of measures. Some of these were documented in the recent *Sheltering from a Gathering Storm* study in Gorakhpur. These measures are:

Double roof: This is a simple structure (much like a ledge or a loft) that is inside the house and runs along the walls of a room. It is used for storing grains and other items. In some houses, this ledge is also present on the outside walls and is used primarily for storing fodder and fuel (wood and dung-cakes).

RCC or RBC roof with staircase: A reinforced cement concrete (RCC) or reinforced brick concrete (RBC) are modern roofing practices and are generally very common in higher-income households. Though mostly prevalent in urban areas, these are now being adopted by rural households as well. People felt that RCC/RBC roofing allowed them better protection against heavy rains, as well as providing a place they could go to with their belongings to safeguard from the floods, if and when water entered their homes. For this, people also mentioned that having a staircase was a must and is considered to improve their ability to cope with floods.

Raised plinth: The 1998 floods in Gorakhpur changed the housing scenario in one aspect at least, and that was the plinth height. Raising the plinth level of the house to at least the inundation levels of the 1998 floods became a norm. Plinths are raised in various ways – mainly depending upon the finances available. A mud-fill is the cheapest way to raise the plinth to desired levels, and almost all poor households resort to this technique. For households from higher-income groups, raising the plinth using brick walls or RCC pillars is a more normal practice. The brick plinth is filled with debris or mud to give the house a stronger base.

Additions/modifications inside the house: Several small measures were either added or constructed inside the house to give additional reprieve during the floods and waterlogging periods. Construction of a concrete shelf on the wall (either open or with doors), hooks on the roof, etc. are some examples of these measures.

Raised door: Another interesting coping mechanism adopted by low-income households who cannot raise the plinth to adequate levels or have old houses where plinths cannot be raised, is to construct a low height wall (barricade) on the main door of the house, to prevent flood water from entering their homes.

Based on the community feedback on the costs and benefits of the above measures, a qualitative cost-benefit analysis was carried out. Almost all of the above options (barring a few such as raised plinth with mud fill) were adjudged as providing more benefits (avoided losses) than their respective costs.

8 Financing a home – challenges for the low income households and financing institutions

The NHB report on the Indian Housing Finance System (Vora 2000), the report of the Committee on the Global Financial System (2006), Saravanan and Nagarajan (2007), the UN Human Settlements Programme Report (2008), the Asian Development Bank (ADB) Report on Private Sector Housing Finance Project in India (ADB 2008), and Nenova (2010) all describe housing finance to mean the financing of a home purchase. In the present study too, the term housing finance is used to refer to the home loans extended to households for the purpose of purchase or construction of a housing unit, and is used interchangeably with the term mortgage credit.

A household with incomes between INR 1,00,000 (US$1,538) and 2,00,000 (US$3,076) per annum is considered as low income or LIG category in India, and households with annual incomes of INR less than INR 1,00,000 are categorised as EWS.[16] In Gorakhpur as well, the aspiring low-income households earn around INR 70,000 to INR 200,000 per year. These households aspire to better lifestyles and living conditions as they lack access to many necessities, such as better housing, sanitation, healthcare, and education facilities. Many of these are linked to urban governance while some aspirations, such as better (and resilient) housing, can be met by a combination of factors. Since most of the government-supported housing programmes are targeted towards BPL households, this other group of aspiring poor (low-income households) can be served better by being provided with affordable finance. Most of the households from the EWS and LIG category have incomes or earnings that are far less than the resources required for a house. Thus the role of housing finance becomes very important. Since the loan requirement for a LIG or EWS housing is small, the financing (amount and process) should also be different (from the regular home finance products offered by the large banks and home finance companies). Financing for the houses for this group of people needs specific and special products that would encompass the characteristics of both micro-finance (small loans) and housing finance.

During the discussions with both micro-finance organisations and low income households, it was realised that the demand for micro-finance for housing is indeed quite high.[17] While the demand for housing finance is high, availability of the same (affordability and accessibility) is one factor that has been given much attention in the literature on housing finance – especially in the context of developing countries like India. The reason being that, in the face of competing developmental priorities, deliberate efforts are needed to make funds available for the housing sector. This is why developing nations such as India need government interventions towards the provisioning of housing, as well as towards regulating the interest rates on housing finance.

16 *http://mhupa.gov.in/W_new/EWS_OFFICE_MEMORUNDUM_14_11_2012.pdf*

17 *Since the private micro-finance organisations in Gorakhpur were not strict with the utilisation as long as they receive regular repayments, in several instances the loans availed for enterprise development had been used for constructing or repairing homes.*

The rate of interest on housing finance (affordability) is an important factor affecting the market for housing finance. It has received much attention in the literature for its impact on lenders and borrowers alike. Interest rates on home loans, i.e., the cost of borrowing, is expected to negatively affect the demand for housing finance. Chandrasekar and Krishnamoorthy (2010) conclude that affordability factors such as home loan interest rates and house prices, and the availability of home loans are crucial in the demand for housing function. However, demand for housing finance is greatly influenced not just by the rate of interest on home loans, but also by other terms and conditions whereby credit is available. Besides the rate of interest, credit terms such as the down payment required, the maturity period of the loan, repayment schedule, flexibility in the repayments, etc., are determinants in the demand for housing loans. These terms become even more crucial for low-income group people (with variable monthly incomes) to access home loans.

The experience from micro-finance is being adapted (in the few cases where housing micro-finance has been provided) to provide financial services in a way that allow poor and low-income earning people to finance their housing needs. Housing micro-finance offers small, incremental loan products that match the way people from the LIG and EWS categories build their homes (in small increments over time), as well as their earning patterns (daily or weekly wage earnings with repayments modified to suit this fund flow). The loans provided by these housing micro-finance organisations have been used for renovation or expansion of an existing home, construction of a new home, land acquisition, and basic infrastructure (eg water and sanitation). Both successes and failures have been experienced in the housing micro-finance sector (IFMR Capital 2014).

Lack of documentation – both for the income of the client, as well as for the title of land/house – is one of the biggest constraints faced by the housing micro-finance companies. This leads to higher interest rates and becomes out of reach for many households – thus shrinking the market. The informality of income sources as well as the instability (for example due to seasonal occupation such as that of a mason) also have a detrimental effect on the eligibility to access loans in the current framework of the housing micro-finance companies. For instance, it is observed that people with lower but regular income (eg in government service) are more likely to be eligible for home loans than those with higher but variable incomes (private sector).

A housing loan is quite different from other types of loans (personal loans, business loans, etc.). While most of the time a house is considered a non-productive asset, it is in fact the one that secures the life and livelihood of poor and economically weaker sections. It was observed that even though the loan provided by MFIs was only for a small shop or a milch cattle, these businesses are operated from the house itself – thus making the house a necessary requirement for a successful/sustainable business. Secondly, if improvements in health (and resulting reduction in medical expenses), safety and security, etc. are considered, the house becomes almost a prerequisite for people from economically-weaker sections to break the poverty cycle. Hence there is a need to expand the operational ambit of MFIs and to include housing loans in their portfolio. Even the Reserve Bank of India has recently increased the limits of lending by the MFIs.[18]

18 www.livemint.com/Industry/LM4OfETppTduXTLQD6BovL/RBI-eases-lending-norms-for-microfinance-companies.html

9 Discussions and conclusions

Constructing a house is perhaps the single largest investment made by a low- or middle-income group household. As such, the loss of a house during disasters generally results in this group of people being pushed further down the poverty spiral. The two key issues that would enable the large-scale adoption of climate resilient housing amongst the vulnerable sections of the urban population are: i) finance (affordable and accessible); and ii) skills/knowledge available at the local level (both amongst the masons and households).

Institutional framework for financial support

The mortgage scenario – especially for housing – is dismal in India. This problem is more acute for low-income families seeking affordable houses. Only the middle- and higher- income groups have access to home finance. Financial organisations need clear guidelines from RBI on the mortgageability of lands on which houses are to be built, especially the land which is inherited or is in *Abadi* areas, where many shareholders of a combined family reside together. In such cases, ascertaining the legal right, share or mortgageability is very difficult. In this direction, a policy level intervention from the state government and revenue department is required. Assuring secure tenure and designing cost recovery mechanisms were also recognised as crucial to the success of low income group housing schemes (Mathur 2009).

To give a boost to its flagship programme of *Housing for All*, the government is likely to increase the interest subsidy component to further help the poor acquire houses in urban areas. As mentioned earlier, this programme envisages the provision of about 20 million houses in 500 cities for the urban poor in cities and towns by 2022.[19] Further to this, in a recent development, the Ministry of Housing and Urban Development has identified 305 cities and towns across nine states where housing for the poor will be built.[20]

Under the special mission on housing for all – *Pradhan Mantri Awas Yojana* (the Prime Minister's Housing Scheme) – that was launched on 25 June 2015, the central government will provide support to the tune of INR 100,000 and INR 230,000 for different components including in-situ slum re-development, credit-linked subsidy schemes, affordable housing in partnerships, and beneficiary-led individual construction/home improvements.

However, this alone will probably not be a sufficient enough measure to provide housing for all or enable the inclusion of resilient features in the housing designs. The home micro-finance has not yet been scaled up in the country due to various reasons, but most of these can be overcome with a strong focus on governance and supportive policies. Diligent application of government policies, smart subsidies, planning, public-private partnerships, and technical assistance for housing micro-finance would be required to further develop the low-income housing and housing finance markets. Moreover, since a significant portion (about 30-35 per cent) of the house cost is fees and taxes (KPMG 2014), there is a need for policy intervention in the costing mechanism as well, especially for the low-income group housing.

19 *http://timesofindia.indiatimes.com/india/Housing-for-all-Interest-relief-for-urban-poor-likely/articleshow/47697220.cms*

20 *http://epaperbeta.timesofindia.com/Article.aspx?eid=31808&articlexml=Housing-For-All-Centre-identifies-305-cities-towns-31082015008032).*

Bandyopadhyay and Saha (2009) report a significant positive association between the ratio of equated monthly instalments (EMI) to income and the probability of default. This is particularly crucial at the times of rising interest rates. Factors like the presence of additional collateral, the number of co-borrowers and the incomes of co-borrowers were found to reduce the likelihood of defaults.

The home micro-finance needs to be different from both traditional housing finance and the way the current micro-finance (for small and micro-enterprises) is being offered. While most loans are flexible in terms of the loan amount, their repayment schedules are fixed. The repayment schedules need to be tailored to earning capacity, mode and timing (weekly, bi-weekly, monthly, etc.), especially for the LIG households. Also, since this group of households may have difficulty in providing collaterals, the cost of the loan is higher. There needs to be a subsidy component for housing micro-finance so as to ease this burden.

Institutional framework for providing technical competency to masons

The government of India, through its new Ministry of Skill Development and Entrepreneurship[21] has launched the *National Skill Development Mission* for skill development in the country.[22] The National Policy for Skill Development and Entrepreneurship 2015, which was also launched the same day (15 July 2015), aims to scale up skill training efforts to meet the demands of employers and drive economic growth. By linking entrepreneurship development to this skill development drive, the policy also aims to impart the necessary skills to the underprivileged as a means of overcoming poverty.

The government's skill development programme is supported by both public and private sector organisations and will be implemented through the National Skill Development Corporation[23] and the National Skill Development Agency.[24] For specific trades and skills, there are bodies which plan for, develop and carry out training programmes throughout the country. The Construction Skill Development Council of India (a Section 25 company),[25] is the body responsible for undertaking capacity building in the masonry and other construction practices. The state governments also have specific agencies for the capacity building of workers and craftsmen.

Inputs from this research would be provided to the Construction Skill Development Council of India, as well as the Uttar Pradesh Skill Development Mission (UPSDM),[26] to develop specific training programmes for masons in flood-affected areas. While a training manual is being developed as part of this programme, a proper hands-on training is imperative for skills such as masonry to be effective.

Secondly, it is common that low-income households aspire for the type of house built by higher-income groups. However, financial constraints may lead to a maladapted design that is at risk from floods and waterlogging. The adoption of new designs that are flood-resilient (and cost-effective) will need large awareness-generation programmes among people in flood affected areas. Since most of the households in this category depend upon local masons for design inputs, it is imperative that masons be trained on resilient techniques and design elements that they can incorporate in the houses being constructed. With the push for developing skills in all sectors in the country through the establishment of a dedicated ministry, this seems a very plausible action.

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21 www.nsda.gov.in

22 www.firstpost.com/business/economy/pm-modi-launches-skill-development-mission-hopes-to-make-india-hub-of-skilled-manpower-2344090.html

23 www.nsdcindia.org

24 www.nsda.gov.in

25 www.csdcindia.org

26 http://up.gov.in/upsdm.aspx

In areas that are affected by recurrent floods, the government should encourage such investments by individual households through supportive policies for low cost loans, preferential loans (for resilient designs), deferred payments or subsidies, and also technical assistance in the form of free availability of designs. Local banks and other financial institutions should develop specific loan packages, including micro-finance or group-finance schemes with low interest rates for such people. To encourage and facilitate the banks to offer such schemes, the government should provide support to banks and financial institutions, such as refinance or guarantee schemes.

Interventions at community level

Learning from this project clearly underlines the importance of the role of community when it comes to providing housing to LIG households. Interventions at the community level would pave the way for conditions that are conducive to the implementation of the policy and the technical solutions suggested above.

Firstly, the credit/finance can be made more accessible to these households if/when they are organised as a group and the credit risk is shared by the group. This is already being practised by many micro-finance organisations (though mainly for income-generation activities), and this model could easily be incorporated for housing micro-finance. This could reduce the need for documents such as proof of income, identity and address, etc. that almost all financial organisations demand. Also, the credit products can be customised according to the group that is accessing credit – for example the daily wage earning community could have a weekly repayment schedule, and so on. Many studies on the micro-finance sector also support the above argument, stating that there is a strong need for the involvement of community organisations and they have identified the role of NGOs and CSOs in making affordable credit for low-income housing more accessible (Arya 2013).

Secondly, awareness generation at community level would increase the demand for affordable and resilient designs, thus pushing more and more masons into learning these techniques. The recent initiatives at state and national level for skill building would aptly complement this demand for building the skills of masons on resilient housing designs.

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