

## Lessons to be learned and recommendations for long-term sustainability of post-disaster housing projects

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Previous research has shown that permanent re-construction following a natural disaster is often inefficiently managed, uncoordinated, slowly initiated and tend to overlook the long-term requirements of the affected community (Lloyd-Jones, 2006). Given that the hardest hit communities would have lost their homes and properties or would have seen their properties being significantly damaged, time leading up to receiving a permanent housing solution is a period subjected to extreme trauma and stress for disaster victims. For housing providers including local and central governments, post-disaster housing is a politically sensitive issue that requires extensive funding. Under such extreme conditions, long-term performance and the satisfaction and requirements of occupants are issues that are often overlooked by policy makers, practitioners, funding bodies, and occupants themselves. Whilst criticism is often levelled at government institutes, previous research has demonstrated that property-owners themselves tend to focus on immediate recovery and reinstatement and overlook long-term requirements in their haste to re-instate properties as soon as possible (Ingirige and Wedawatta, 2014, Wedawatta et al., 2012). Whilst urgent action is a necessity during the aftermath of a disaster event requiring re-construction, adopting a long-term approach therein is a must to provide sustainable permanent housing provisions. Revisiting post-disaster permanent housing schemes that have been occupied by the recipients beyond the short to medium-term can suggest valuable lessons for future practice. Lessons to be learned therein can shape how such housing provisions are planned, delivered and maintained in the future.

Accordingly, a survey was conducted involving original residents of 3 post-disaster housing projects; projects in which the residents have occupied their properties in excess of 10 years. Based on information collected from the relevant local authorities, the percentage of original housing recipients still occupying their houses is 79%, 56% and 73% in Case study projects 1, 2 and 3 consequently. Whilst the percentage of original recipients remaining is acceptable in Projects 1 and 3, this is quite low in Project 2. As noted by Da Silva et al (2010), initial occupancy rate post-disaster housing projects is a proxy for quality or acceptability to beneficiaries. Similarly, rate of occupancy of original recipients can be a proxy for long-term satisfaction of the recipients. Whilst a certain level of transfer of ownership is to be expected given the changes in circumstances such as economic status, employment etc, a considerably higher rate could be an indication of the level of dissatisfaction or the property provided not meeting the requirements of the recipients. This seems to be the case particularly in project 2. Launched to relocate flood victims in Rathnapura district in 2003, Project 2 is the oldest of the 3 projects surveyed and belongs to pre-tsunami era. Following the Boxing Day tsunami in 2004 and the massive housing projects that ensued to house those affected, both policy and practice on post-disaster housing have seen extensive transformation. Higher percentage of original occupants remaining in their houses in the 2 housing projects belonging to the post-tsunami period could be an indication of the fact that the process has now become more occupant friendly, compared to the context before.

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In general, respondents included in the survey expressed their satisfaction over a wide number of aspects surveyed. Sample approached in the study were the original recipients who have been the victims of a disaster event and have received a permanent house as part of the selected project. There obviously is some bias here as the least satisfied recipients may have already left their houses. However, the survey provides a good account of the satisfaction levels of those who are still occupying their houses, thus an indication of the level of performance of the housing project. Although level of satisfaction was positive in many aspects, the level of satisfaction was not strong in majority of those aspects. For e.g. although the recipients were in general satisfied about plot size, provision for alterations, size of the house and number of rooms, the level of satisfaction was minor when the Likert options are statistically analysed. When the factors included in the survey are categorised as 1. Physical and technical, and 2. Socio-economic and 3. Infrastructure and services, the aforementioned particularly applies to physical and technical aspects of the house. Recipients were dissatisfied about quality of building materials and quality of workmanship in project 3, which is a donor-driven project. Overall, further improvements seem to be required in delivering a house that satisfy requirements in terms of physical and technical aspects of the houses.

The aspects about which the occupants were most satisfied about included availability of educational opportunities, religious places, transport facilities and healthcare facilities. This means that the relevant infrastructure facilities have been put in place adequately in all 3 of these projects. The exceptions are the availability of recreational facilities and public safety / security particularly in Projects 2 and 3. Adequate recreational facilities such as parks and play area and measures to safeguard public safety including adequate policing seems to be aspects that require improvement in post-disaster housing projects. Residents in Project 2 (Rathnapura) were particularly concerned about illicit drugs trade and related social issues in their settlement – thus lack of public safety. Comments from the survey participants suggested that drainage and waste disposal as aspects that require major improvement. These are in line with the general situation in Sri Lanka, as waste disposal and drainage are aspects that lack proper planning and consideration. Forming village committees in association with the relevant local authorities and first responders could be an effective way of providing a platform for the local residents to raise and address these concerns. Occurrences where such committees have been particularly effective both as a way of identifying and addressing community concerns as well as responding to future disaster events were noted in Bangladesh (Wedawatta et al., 2016).

Aspects the occupants were most dissatisfied about were the issues related to their economic status. Occupants expressed their dissatisfaction about the availability of space to carry out livelihood, ability to use home for income generation, and availability of employment and income generation opportunities. This suggests that there is an urgent requirement to consider the livelihoods of housing recipients and employment opportunities in the region when planning post-disaster housing projects. Adverse socio-economic changes including reduced employment opportunities, income, and empowerment of women have been noted as issues with post-disaster resettlement projects (Burnell, 2011). A number of respondents reported having significant land for cultivation before the disaster event and losing this land due to the event. Being farmers traditionally, they now have lost the ability to engage in their usual farming activities as the limited land area in the current settlement does not permit such activities. Employment opportunities for women too was noted as particularly low. If a strategy to provide vocational, self-employment training and support was integrated in to the housing project, there is potential for these aspects to be improved. Post-conflict re-construction work facilitated by the United Nations Human Settlements Programme (UN-Habitat) in Northern Sri Lanka where the construction and repair of 17,945 houses were completed seems to be an instance where these aspects have been considered and addressed (UN-Habitat, 2015). It is clear from this case as

well that a fundamental requirement is active community involvement from the very beginning; in order to identify their occupations, how the houses should facilitate their income generation, and alternative income generation activities, required training etc. Whilst extra work is required upfront, such an approach can improve sustainability of resettled communities and reduce dependency on aid, government in the long run. Tafti and Tomlinson (2015) concluded that the two sectors central to the recovery of households – housing and livelihood – as disintegrated following a different sequence. Lower-income groups were found to be the hardest hit by this fragmentation. Further, Burnell (2011) in her review noted that the shelter sector lacks clear definition ‘with little progress being made to incorporate livelihoods and sustainability into its core principles’. This seems to have been the case with the surveyed projects as well.

The focus group discussion with the policy makers and housing providers shed further light on survey findings. In particular, the following observations were made by the resource persons participating the focus group discussions.

- Focus of post-disaster projects in Sri Lanka is often on the technical side of things, and social aspects including behaviour of people are not afforded due consideration.
- The need to consider long-term requirements like family expansion and the ability to expand houses at a later stage.
- At the local level, houses are normally constructed by workmen who lack formal training and expertise. These workmen should be provided with necessary technical knowledge as currently this aspect is largely ignored. This is specially the case is owner driven projects.
- Lack of consideration of people’s livelihood activities in planning and development of post-disaster, as well as social housing projects.
- Lack of a masterplan in housing re-construction.
- As part of the masterplan, the need to pre-identify land for potential resettlement projects as post-disaster housing is required in the country on a continuous basis. Then these developments can be part of a coherent development initiative rather than sporadic resettlement projects.
- Whilst necessary policies are available at a national level, regulations and enforcement strategies are required to ensure implementation.
- The need to monitor progress of housing projects, review completion reports, and monitor post-occupation performance continuously by a central authority.

Much of these issues are in line with the survey findings. Additional issues such as the need for regulations to enforce policy, need of a masterplan etc were identified and discussed.

Key recommendations to emerge from the study include;

- True and active community involvement in the process from the very beginning of the process. It is clear that recipient requirements needs to be clearly identified and addressed from the beginning, as opposed to just providing ‘a house’. It is also worth remembering that most of the recipients have had permanent houses before so do come with expectations as opposed to social housing where the recipients may not have had a permanent shelter before.
- Income restoration of housing recipients to be integrated within every housing project. 70% of the survey participants had their previous homes fully damaged whereas the rest have suffered partial damages whilst suffering further economic damages. 55% of the participants stated that their economic situation is now worse off that it was before, with only 21% stating their economic status is now better off. This is consistent with the dissatisfaction expressed as discussed above about income generation opportunities. Therefore, assessment of

occupations of the housing recipients, facilities required to undertake their income generation activities, potential alternative employment, vocational training required and financial assistance have to be integrated within the overall re-construction programme. Consideration of recreational facilities

- Drainage and waste management was noted as an issue in these housing projects. In future projects, sustainable waste management technologies needs to be considered and implemented.
- Whilst the residents were generally satisfied about the infrastructure facilities in the projects surveyed, this was not the case with regard to recreational facilities such as parks and play grounds. This suggests that there is a need to include such facilities within post-disaster projects.
- Development of a masterplan for post-disaster housing re-construction integrating current best practices and lessons learned from previous projects.

Detailed analysis of the survey and focus group findings will be made available via the project website [www.post-disaster-reconstruction.info](http://www.post-disaster-reconstruction.info).

## References

- BURNELL, J. 2011. What works well in shelter after disaster? Sharing of initial findings and thoughts. Oxford: Centre for Development and Emergency Practice, Oxford-Brookes University.
- DA SILVA, J., LUBKOWSKI, Z. & BATCHELOR, V. 2010. Lessons from Aceh: Key Considerations in Post-Disaster Reconstruction. Rugby: Ove Arup Partners Ltd and Disasters Emergency Committee.
- INGIRIGE, B. & WEDAWATTA, G. 2014. Putting policy initiatives into practice: Adopting an “honest broker” approach to adapting small businesses against flooding *Structural Survey*, 32, 123-139.
- TAFTI, M. T. & TOMLINSON, R. 2015. Best practice post-disaster housing and livelihood recovery interventions: winners and losers. *International Development Planning Review*, 37, 165-185.
- UN-HABITAT 2015. Indian Housing Project: Rebuilding Homes; Transforming Lives. Nairobi: United Nations Human Settlements Programme (UN-Habitat).
- WEDAWATTA, G., INGIRIGE, B. & PROVERBS, D. 2012. Impacts of flooding on SMEs and their relevance to Chartered Surveyors - Final report of Developing Flood Expert Knowledge in Chartered Surveyors - DEFENCES research project. London: RICS Education Trust.
- WEDAWATTA, G., KULATUNGA, U., AMARATUNGA, D. & PARVEZ, A. 2016. Disaster risk reduction infrastructure requirements for south-western Bangladesh: perspectives of local communities *Built Environment Project and Asset Management*, 6, 379-390.