

15 years after reconstruction: Lessons for *Building back better*

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Summary

This short article is extracted from a recent study to revisit three disaster-reconstruction sites in India, two earthquake sites and one affected by a super-cyclone. This visit came 15 years after the original visits by the author in the immediate aftermath of the disaster(s).

The author's latest visit finds the majority of those houses reconstructed by external agencies to be in poor condition. Risks to future disasters outweigh the benefits achieved. With rising numbers of natural disasters globally, the author observes that focus and determination is required to ensure sustainability in future reconstruction practice. Architects and other built environment professionals need to understand the local culture of building and work in association with it. The building back process should not be a rush to plant 'disaster-resistant' shells on the ground. Instead the transition from relief to reconstruction should be used in a way that enables communities to engage and learn vital skills for managing their assets and develop safely. External agencies should invest in extended but cost-effective community development practices so that building back better becomes a culture of safe construction in the community.

1. The revisit

Professionals, people and institutions from across the world have contributed generously towards the relief, recovery and reconstruction efforts following natural disasters in developing countries. However, once the media moves out there is very little information and feedback about the full impact of their technical and financial assistance provided in the affected areas particularly in the long term.

A revisit was carried out during 2008-09 to three districts in India that were largely reconstructed after major natural disasters in the 1990s. This was an opportunity to compare present day observations with surveys carried out immediately after the disaster event, thus getting an understanding of long term impact. As shown in the map these sites were Uttarakashi (Earthquake, 1991), Latur (Earthquake, 1993) and Jagatsinghapur (Super Cyclone, 1999)

TABLE 1: Facts about the three disaster sites revisited

place (district)	magnitude of disaster	date	duration	human casualty	other Loss
Uttarakashi (Uttaranchal)	Earthquake 6.6 (Richter scale)	1991 20 Oct	45 seconds & then aftershocks	800 +	3,000 livestock Nearly all housing
Jagatsinghapur (Orissa)	Cyclone 100 Kmph winds Tidal Surge 15 Km inland	1999 29-30 Oct	2 days & then flooding/ rain for several days	9,000 +	450,000 livestock; 1,800,000 Ha crop; Ponds polluted Nearly all housing
Latur (Maharashtra)	Earthquake 6.3 (Richter scale)	1993 30 Sep	53 Seconds & then aftershocks	8,000 +	Housing in 66 villages totally destroyed

MAP 1: Location of disaster sites revisited



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Picture 1: Uttarakashi is in the middle Himalayas. Steep slopes and damaged roads and bridges hampered access to remote villages severely disrupting relief efforts. Moving reconstruction material in such terrain is more problematic and expensive as compared to the plains.



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Picture 2: Jagatsinghapur is a low lying Delta and relief efforts could not reach villages for several days after the cyclone due to lack of road access and wide-spread flooding.

PICTURE 2
Jagatsinghapur



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2. Building back after the disaster

More than 900 agencies from across the world (government, non-government and private) contributed to the reconstruction process across the three districts. Nearly 6 million square meters of new floor space was constructed. [This is roughly equivalent to the floor space built within the Thames Gateway development.] The majority of new buildings built during the reconstruction process were houses. In addition thousands of Kilometers of road was laid and other infrastructure newly built or repaired (village wells, ponds, public buildings, toilets and other community facilities.)

According to a senior government official in Latur 'it was the largest construction project the district has ever seen to be completed in such a short span of time'. The reconstruction agencies were under huge pressure to build quickly and move people from transitional shelter into permanent houses. Across the three sites cement, steel and CGI sheeting were distributed as part of compensation packages. Such was the scale of demand that materials, machinery, skilled workers and even water for curing concrete were all in short supply and much more expensive to obtain than in normal conditions. Identifying the sites for relocation of some villages and collating accurate records of beneficiaries and entitlements required time, caused delays and added pressure to rebuild at a faster pace. This experience was common to reconstruction at all the three districts. In many instances agencies brought in tools and skilled labour from other states to 'camp' near the sites until reconstruction was completed.

New land had to be found and purchased to relocate some villages. There were several reasons for this. Some sites were geo-technically too risky to rebuild on. The earthquake had generated a lot of fear in people and many people did not want to return to the site where houses had collapsed

or people had lost loved-ones. The lack of skills and equipment to clear rubble also discouraged people and agencies to make use of some existing sites. Obtaining land can be a tricky issue and several villages were split into two or more clusters of housing depending on the availability of land to relocate new houses. There were often disagreements about new locations where distances from traditional fields, water sources or schools increased for some families. There were other instances where families did not like the traditional 'status-quo' of the new layouts and decided to form a separate cluster of housing at new sites of their own choice. In effect relocation provided both opportunity and difficulty for different families in different villages.

In almost all cases it took between 3-4 years after the disaster before families were able to move into permanent new dwellings where they were being provided by external agencies.

3. Fifteen years later

The disasters have had a lasting impression on people and more than a decade after the event villagers (young and old) express fear and trauma of that time. Nearly everyone responded that an earthquake (or cyclone) can and will come again. They also accept that they are much more aware and alert to the natural hazard as a result of the disaster.

Picture 3a/3b: Comparison of a traditional and new layout for the village. 15 years later the general response on new layouts is that people like the spaciousness but find that the social behaviour of the villagers has changed, 'Villagers live further apart and it is more difficult to mingle as in the old village'. Even where villages have split into more than one cluster they consider it a single village. The villagers of 'Sankral' (Latur) regret they disagreed and split into more than one site and would like to return to a single location, but that's not possible anymore. In most instances the abandoned sites continue to lie unused, except for occasional visits by villagers to salvage materials'. Villagers regret most, losing precious agricultural land for building houses. This has affected their income.



PICTURE 3a and 3b
Traditional and new
layouts



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A majority of villages we visited had agency built houses. However, reliable means of drinking water, sanitation, electricity supply, smoke-less cooking fuel, public transport were not present in all the villages. The one noticeable difference from 15 years ago was the shorter journey times due to better roads and widespread presence of mobile phones.

We observed the disaster-resistant housing carefully and found numerous adaptations and variations in their use and condition; it will be true to say that the situation changed from village to village as the following examples show.

In an instance from Jagatsinghapur district we found a man building a house in thatch and bamboo and we ask why he hasn't built a cyclone resistant building (in concrete and brick) like the agencies built.' (Picture 5). He responded that there can always be a bigger cyclone than the previous one and as long as he can get to the cyclone shelter in time the worst that can happen is that the house in thatch and bamboo will be washed away. These materials are available from the local farm and he does not have the money for a building with bricks and concrete.' In another village in this district we observed a number of houses that started in brick and concrete but money soon ran out so people have completed them using thatch and bamboo (Picture 6). On the coast people have taken the initiative to screen thatch and bamboo buildings from heavy winds from the sea using brick walls and trees (Picture 7).



PICTURE 5, 6 and 7
(clockwise)

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In Uttarakashi 'ring beams' promoted in hand-outs on safe construction have captured the public imagination as a safety device to resist earthquakes, however many that have been built since are simply token replicas as locally available masons are not trained to design and cast engineered structures (Picture 8). Red bricks are sought after but towing them uphill is expensive so people transport bags of cement and cast their own concrete bricks near the house. Timber and stone, the traditional material is now hard to obtain due to forest regulations so people collect any material they can find and buildings are often a mix of new and traditional materials (Picture 9) from the fields, market and where possible, the forest. The condition of buildings built by agencies varies a lot. The poorest communities have little financial and technical capacity to build and maintain buildings in materials such as burnt-brick and concrete. As a result their buildings are suffering from a lack of maintenance. They blame the agency in-turn 'for not being around to repair their houses as they don't have the money or means to do it themselves'. In fact a majority of the respondents commented that 'they are not sure if the houses built by the agencies will survive another earthquake.'

In Latur we came across an entire village of 'disaster resistant' geodesic domes designed in Europe. Like many other proto-types it is beyond the local capacity to maintain or replicate and when more space is required by the family, they have simply added new structures adjacent to it using a variety of material, mainly CGI sheets and bamboo (Picture 10). Our survey reveals that more than half the respondents here have little or no confidence that agency built houses will survive another earthquake. The fear of a building collapse in an earthquake persists in these communities. They have not forgotten the house collapses that killed numerous villagers in their sleep. We observed in all the villages we visited in Latur, that nearly all families have built night-shelters in metallic sheets adjacent to their homes. 'We use the house in the day but at night we sleep out in the open or in the light-weight shelters just in case there is another earthquake.'



PICTRES 8 (Ring Beam),
9 (House in mixed
construction) and 10
(Geodesic dome)
[Clockwise]

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A majority of villagers in the districts had never lived in a concrete / brick structure before the disaster and it has been a new experience to live in one. While they welcomed the change, they have not been able to replicate this construction correctly while extending their houses for more space and often the space in the house is utilised differently from what the agency had intended.

Despite these restrictions, the villagers praise the assistance provided by the agencies and, in particular, the houses as the 'best' help they received. Many villagers responded that the disaster brought many resources and technical people into their area in an unprecedented way and this has resulted in a lot of changes. They add that since the agencies have left, there is no one available to advise on repairs and deal with problems in the building. There are insufficient resources with many villagers to pay for the repairs.

We asked the villagers how many agencies returned after the houses were rebuilt. The general response is that apart from a handful of individuals, 95% of the agencies have not returned. We found examples of some agencies that stayed here for longer to assist with community development. This has required much less investment than house building and people in these villages feel more prepared for the next disaster and feel they can access useful information more easily. Speaking to one such agency they said they are continuing to assist on a number of issues including trauma, house repairs, livelihoods development and practicing relief and rescue in case of another major disaster event.

Lessons for *Building back better*

The humanitarian sector is seeking ways and means to improve standards of 'shelter' delivered by humanitarian agencies. There are several lessons from these revisits that can be drawn for *building back better* in future.

1. Consult the community on impact before implementing plans. There is a substantial transition period between emergency relief and reconstruction. Architects and other built environmental professionals should engage with communities to review the impact of any reconstruction plans on the community. Such consultation should be extended to include any socially disadvantaged groups.

2. Building back better, not necessarily faster. There are enormous pressures to build permanent buildings and re-house faster. Preparing and engaging a community takes time and (unless the weather is extremely harsh) permanent shelter may be less important than investing in the future sustainability of the community. These can include discussing design opportunities for change, strengthening social/ cultural – networks through design and layouts, providing safe building skills, new sources of income and restoring community confidence.

3. Relocation as a last resort. Relocation can adversely affect the community economy as well as their social and cultural fabric. It should only be considered as the last resort if the site is geo-technically un-buildable.

4. Local building culture. Design of houses and choice of materials should consider the local building practices. Engineered structures are only a good investment if there are adequate resources to maintain and manage the building for its full design life.

5. Assuring quality. Currently a majority of reconstruction is carried out without any long-term assurance on design and construction quality. Architects should respond to the communities as both clients and design partners. Architects should aim for a complete built environment, not just disaster-resistant shells for living. Good access, Water, Sanitation and Energy are all essential contributions to building back better.

6. Association. External agencies need to develop partnerships with local agencies and local government to extend their input in building back until there is a strong local base to build safely and monitor safety.

7. Trauma. As observed trauma lasts for many years and Architects need to work with local community workers to overcome fears about buildings, through dialogue and design.

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The study is available as a half-day workshop and training session conducted by the author. For details contact: Ripin Kalra, Senior Research Fellow, Max Lock Centre, University of Westminster, London NW1 5LS. ripinkalra@gmail.com

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