Aceh post-tsunami housing reconstruction

A critical analysis of approaches, designs and socio-cultural implications

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Introduction

Banda Aceh is the provincial capital and largest city of the Aceh region, a western part of the Indonesian archipelago. The city was formerly known as Bandar Aceh or City of Aceh but then it changed to Kutaraja or ‘the king’s fort’ after the Dutch colonisation of the region in 1873. Following Indonesian independence, on 28 December 1962, it was changed again to Banda Aceh. As the provincial capital city, Banda Aceh become the centre of the provincial government’s administration, as well as the centre of economic, political, social and cultural activities in the region.

Banda Aceh was among the most devastated areas affected by the December 2004 Indian Ocean earthquake and tsunami which struck the Aceh province, one of the largest natural disasters in Aceh’s history. The disaster had a tremendous effect on the housing and settlement sector. Some Acehnese lost their land as the tsunami washed it away and even changed Aceh’s coastline. Others found it hard to locate their lots in the ruined land; many of them had no proof that the lost land was theirs.¹ Up to 139,195 homes were destroyed or severely damaged, along with 73,869 hectares of land, which had provided varying degrees of productivity.²

The tsunami disaster triggered international aid for large-scale post-disaster housing reconstruction carried out by a combination of
national and international organisations as well as Indonesian governmental agencies. That in turn led to noted changes in urban space.

In 2006, former US President Bill Clinton visited Aceh’s disaster areas. He recommended several propositions to define the ‘building back better’ concept in Aceh’s rehabilitation and reconstruction. They included recognising community-driven recovery, promoting fairness and equity, planning future disaster readiness, bringing local resources into action, using good planning and coordination, being clear about the roles of donor agencies, expanding the roles of NGOs, promoting the propensity to become an entrepreneur, making competition healthier and building resilience. This concept was planned to be achieved within a four-year period of Aceh reconstruction. However, Steinberg argued that the ‘building back better’ could not be adequately and fully realised in the given time frame and that it might take up to 10 years to complete. The rehabilitation and reconstruction phase was completed in 2009, by which time 147,000 new houses had been built.

This chapter aims to increase understanding of the socio-cultural consequences of post-disaster housing reconstruction, and thus contribute to improvements in the planning and building of new housing for populations hit by natural disasters. It therefore argues for more careful attention to understanding the relationships between the tangible parameters of location, environmental configuration, and forms and sizes of housing on the one hand, and the intangible aspects of socio-cultural phenomena informing people’s sense of well-being and happiness on the other, in order to promote better practices in reconstructing communities over the long run in post-disaster contexts.

**Literature review**

Housing is one of the most important emergency provisions to be made in disaster-struck territory. More specifically Rodriguez, Quarantelly and Dynes add that in post-disaster responses all types and forms of affordable housing recovery are crucial. Permanent housing is the last stage of the housing reconstruction response. It is the core issue of post-disaster reconstruction study. Regrettably, post-disaster intervention sees the housing reconstruction process primarily as a macro issue of urban settlement and far less as a micro issue of comfortable living for individual families. Furthermore, most studies of post-disaster housing reconstruction focus on immediate actions and the policies, strategies, approaches, processes, technologies and costs involved, while less
attention is given to the long-term socio-cultural impacts of the housing design in future. In addition, scholars also opt for macro approaches in studying the reconstruction of housing in post-disaster situations. This has resulted in significant macro knowledge and theory developments for post-disaster management. Only a few studies have analysed the socio-cultural consequences for society at large and for individual families. The essential social and cultural impact of plan layout and the outdoor-space design of housing, as well as the way these affect society, are often neglected in post-disaster processes.\textsuperscript{10}

There are several common approaches used in post-disaster housing reconstruction: top-down, bottom-up or a combination of the two. Different terms are used for referring to the top-down approach, such as centralisation, governmental, contractor-driven and traditional donor approach. This approach is undoubtedly simpler and less time consuming. Davidson et al. argue that in this approach prompt decisions, quick processes and minimum delay are possible.\textsuperscript{11} The absence of owner/tenant participation makes new houses available to survivors within a few months. However, this approach has several social and cultural drawbacks as it does not seem to be interested in the lifestyles, needs and wishes of individual survivors. Too often reconstruction authorities do not include traditional contexts and local values in their top-down approach.\textsuperscript{12} Many case studies of natural disasters around the world are approaching post-disaster rehabilitation and reconstruction in a top-down way.

Meanwhile, in bottom-up approaches, communities are involved in different roles in the process, which enable them to rebuild their houses. In this approach, communities build their new houses themselves, although further financial and technical external help may be needed.\textsuperscript{13} Non-governmental organisations, policy makers and scholars have encouraged the use of this approach.\textsuperscript{14} This type of bottom-up approach is popular because it empowers and offers the greatest possible success to communities. The beneficiaries of the house turn from being a passive ‘victim’ who has received humanitarian aid into an active participator.\textsuperscript{15} There are other advantages to this approach. It tends to be less costly due to fewer labour costs. People will be able to occupy their new home before building it is finalised and before it is furnished.\textsuperscript{16} It also builds community resilience and strengthens communal social bonds. Furthermore, Barenstein finds that bottom-up approaches help to re-establish confidence and pride among traumatised survivors, by encouraging them to be actively involved and participate in the building of their own new homes; in addition, seeing their needs and wants
materialised makes people stronger. However, this approach does have some disadvantages and risks. It may take more time and mostly cannot be achieved without extensive facilitation. Community structures are often disrupted in a post-disaster situation as people are spread all over the place in emergency barracks and tented camps. This makes facilitation processes for the bottom-up building communities more difficult. There is also the risk that that technical quality is not always secured; in a number of cases traditionally built buildings have collapsed. Although participation planning may be more time consuming, better sustainability and satisfaction will be realised by individuals and communities, both in the short term and the long term.

On the other hand, the combined top-down and bottom-up approach claims to realise maximum results and to reduce building failures. Post-earthquake housing in Bam, Iran, is one example of a project using this approach. The co-operation of government agencies, communities and beneficiaries was managed by a special government agency, responsible for assuring the involvement of all government authorities as well as the integration of survivors’ participation in the process. This project put survivors as the main actors of the reconstruction, and acknowledges that as one of the major principles in the master plan for sustainable reconstruction and development in Bam. However, this approach only covers the macro planning of reconstruction with little consideration for micro planning at the domestic level. Therefore, the success of the approach in ensuring housing satisfaction for beneficiaries still needs to be assessed.

Meanwhile, sponsors of post-disaster reconstruction often find it appropriate to implement the concept of ‘building back better’, which means that new post-disaster buildings should be better buildings in the broad sense of the word than the ones of pre-disaster times, offering survivors a better living environment, including their homes. ‘Building better than before was the basic premise applied to housing and settlements held in the area.’ Building new houses and infrastructures was not only a technical affair. Above all, reconstruction and rehabilitation should help and develop new hopes and dreams for a better future. However, this concept needs to be reaffirmed. Who can assure that the new form, order, situation and condition of the building are better than the previous one, especially in terms of the appropriateness of culture, local context and values that have been formed, evolved and survived in society over a long time – hundreds of years in some cases. Moreover, the word ‘better’ can have multiple understandings; therefore, the tag line ‘building back better’ might cause further problems.
Methodology

This chapter examines the socio-cultural transformation processes of the Acehnese communities in post-tsunami times and the expected long-term consequences of post-disaster new houses. These post-tsunami new houses gave survivors new homes. Often living space in these new homes was quite different the usual pre-disaster house space. It is important to find out which possible relationships exist between changing family practices and culture on the one hand and changing types of houses and space arrangements on the other. Research based upon one single methodology will not be sufficient. It should be complemented with studying the relevant documents, making observations on the spot and studying floor plans as well as evaluating constructions and former functions. In addition to observation and documentation, anthropology can also be of great help, asking how residents perceived and appreciated the spatial changes in their new home, and how they went about perceiving those changes, living a relating to others. An open-end in-depth interview technique was used for this purpose, with the aim of getting detailed qualitative information from micro-level respondents. The ownership/renter status (either of individual property rights, or as a renter, newcomer or inheritor), type of family (nuclear or extended), respondent status (gender, age, married/unmarried, occupation, level of education) and information about the donor agency were also recorded during the interview.

This study takes 18 post-tsunami new houses as case studies. These were selected from among 50 houses that had been surveyed during fieldwork in July–August 2010 and October 2011–January 2012 in four sub-districts in Banda Aceh and part of Aceh Besar: Meuraxa, Jaya Baru, Kutaraja and Peukan Bada. These four sub-districts were amongst the most badly devastated areas affected by the tsunami; in Meuraxa and Kutaraja out of tens of thousands of inhabitants only some 1,000 survived. Aceh’s post-tsunami housing reconstruction projects concentrated on these four zones, and big donor agencies also concentrated their efforts there. The case studies were selected through observation in the locations, consultation with local leaders and studying donor agencies’ report and documents. The 18 houses had been (re)built by different donor agencies between 2005 and 2007, and had been renovated and/or modified between 2006 and 2011. The agencies involved were: BRR (Badan Rehabilitasi dan Rekonstruksi Aceh-Nias; the Aceh-Nias Rehabilitation and Reconstruction Agency), ADB (Development Bank), World Vision, Turkish Red Crescent, Muslim Aid, Lions Club, Al-Imdaad South Africa, Cooperative for Assistance and Relief Everywhere.
The analysis of the transformation of the houses was focused on three time periods:

1. pre-tsunami houses
2. post-disaster aftermath of 2005 until 2008 (the phase of donor-sponsored house building)
3. the years following the end of the rehabilitation and reconstruction process (living experience in post-disaster built new houses), 2009–11.

The important variables used for the analysis were total destruction or severe damage of pre-tsunami houses, major changes of house space (number and size of house rooms before and after the tsunami), important typology change (from traditional stilted/semi-stilted houses to ground-level houses), and permanent house structures versus semi-permanent ones. The analysis also compared the newly built houses in 2005–08 with how some or many of them had been renovated or modified by 2009–12. These modifications and renovations were important because they show how the socio-cultural life of new house residents in the studied communities has been affected. They also show how physically changed houses were not culturally neutral phenomena as they have longer-term socio-cultural impacts on life in a community.

Findings and discussion

Through the 18 case studies, this study found that there were major, moderate or minor modifications, and some properties underwent no modification at all. This study also found that the kitchen was the most frequently modified space: it was changed in all of the houses that were modified. Other high-priority additions or modifications were the family room, living room, bedrooms and veranda. As to basic human needs, toilets ranked high. Meanwhile, in terms of future development plans, the most important spaces in the house to be improved in the future were the kitchen/dining room, the family room, the bedrooms, the veranda and the service area (including the toilet). Eating together as a family is an important practice for the Acehnese, so the top priority given to the kitchen/dining room is very understandable. As the beneficiary
households were represented by men at planning meetings, women’s views were not represented and the importance of the kitchen area was not expressed or appreciated.

**Housing reconstruction approaches**

Most of the houses in the case studies that were built following the top-down approach needed and received major improvements or had rooms/spaces added by the owner. Houses built following the bottom-up approach had only minor additions or improvements. The combined top-down and bottom-up approach showed end results similar to the top-down approach; considerable changes or modifications were also made.

Uplink donated houses were built following a participatory bottom-up approach: beneficiaries were involved in planning, constructing and monitoring. In this approach the beneficiaries’ input started during the initial planning stage and continued all the way through construction. When the beneficiary was not capable of being involved in the construction process, for example when beneficiaries were women or young children, other professionals did that for them. Although the construction work was carried out by others, beneficiaries were still involved in planning and monitoring. When beneficiaries wanted to modify the plan/lay-out of the donated house beyond the terms and conditions set by the donor, for example by adding more rooms at their own expense, such a modification could be incorporated in the original plan of the donated house before construction began. Similar cases were found in other houses where the beneficiaries of the house could also incorporate their requested modifications in the original plan of their donated house before construction began. But in these cases, the donated houses were built first and modifications were carried out later, because the beneficiaries’ financial funds became available later. In these conditions, the beneficiaries’ needs for basic as well as socio-cultural spaces were better accommodated.

Combined top-down and bottom-up approaches did not ensure housing satisfaction either, as one of the case studies found, that of houses built by P2KP in Lambung Village. In that project, village planning was carried out through a community participatory approach (bottom-up) while construction of the houses was carried out in a top-down way (by contractors). At a macro level, housing reconstruction in that village had been successful through land consolidation planning (LCP). However, it was unsuccessful in the micro settings in terms of
individual houses. As a result, the beneficiaries modified the houses to meet their socio-cultural needs. They also made future development plans to accommodate the specific needs and wants of their family.

**Transformation of construction typology**

Figure 3.1 shows how construction typologies of houses in Aceh have changed and developed historically before and after the tsunami. Before the 1950s stilted houses were popular. The space underneath the house could be used for various purposes. Then the typology changed into the semi-stilted house of the 1950s–1970s. From the 1980s up to 2004, right before the tsunami, most of the houses were ground-level style. During the period of post-tsunami rehabilitation and reconstruction all typologies of houses came back. Donor agencies did not adopt one single type of house only; they opted for all the types that had existed in Aceh before the tsunami. Aceh’s post-tsunami rehabilitation and reconstruction officially ended in April 2009. This study found that all donated stilted and semi-stilted houses built in Aceh from 2004 to 2009 had been transformed into ground-level houses at the time this study was conducted between 2010 and 2012.

Muslim Aid has another reason for building their donated house in stilted house style. They believe that by reviving the old traditional style they help to preserve the local culture. However, in the end, most of the houses were transformed into ground-level houses, not only to meet the socio-cultural needs of the occupants but also for technical and safety reasons. Responding to Aceh’s culture does not and should not necessarily mean that old-fashioned styles should be copied. The response should be integrated into contemporary contexts, conditions, situations, needs and wants.

Resolving post-disaster housing reconstruction challenges by simply duplicating traditional forms can indeed accelerate the process. In addition, simplifying the designs of smaller-sized houses may lower construction costs. These also help to speed up the process of building a massive number of houses and getting numerous roofs over survivors’

![Figure 3.1](image-url)  
**Figure 3.1** Historical transformation of housing typology.
heads in short delivery terms. However, it does not guarantee that the beneficiaries’ needs and wants will be fulfilled in their new houses, especially in terms of the socio-cultural context.

Building back better

This study also examines the ‘building back better’ phrase used as a common concept in post-disaster reconstruction, which can be interpreted building or creating something new that is better than what was there before. This concept is applied to both tangible and intangible aspects of reconstruction. How far can this concept be applied to Aceh post-tsunami housing reconstruction? This study found that building back better was not an effective concept for Aceh post-tsunami housing reconstruction. Almost all respondents who were interviewed wanted to bring back their house like it was before the tsunami and did not want something different or new. The respondents’ unfamiliarity with the ‘building back better’ slogan indicates that it was an inner circle credo, understood by the financiers, builders, architects and sub-contractors but not by the recipients of the homes. It has benefited the facilitators – such as donors, builders, architects, planners and sub-contractors – has not reached the residents of Aceh, and the tsunami survivors specifically. This situation also implies that survivors have not really been integrated into the reconstruction processes of their own new housing. They were not fully involved in planning and building the new houses that were claimed to be better than ever before. If the new houses really fulfilled what was promised, why should the owners and their families have to modify and enlarge their donated house in the first place? Why have they reshaped their new houses and brought back their idealised pre-tsunami memory?

The donated houses of the case studies were too small, even smaller than the houses before the tsunami. The donor agencies did not adequately develop the design of ‘an expandable house’ as initiated by the BRR:

The minimum standard for new housing was the Type 36 Plus house, meaning that the structure of the house was based on an expandable house concept, with a core house measuring 36m² and consisting of two bedrooms, one living room/dining room, a kitchen, a bathroom and a terrace.27

The ADB, Uplink and Al-Imdaad South Africa only included one bedroom in their houses. Moreover, most of the donors did not provide for
a proper kitchen and a veranda. Provided spaces were not at all better than before the tsunami. One house beneficiary (male, 45, fisherman) spoke about this question during an interview:

This house is not good enough for my family. We sent a request to the donor and asked for larger spaces, especially for a larger kitchen. But our wishes were not met, unfortunately. We did submit all required data and documents, an application letter, our family card, our identity card, but all in vain; our request was not approved.

Donated post-tsunami houses were not at all better than houses before the tsunami, either technically or socio-culturally, as the case studies suggest. Even when the owner had modified the family’s house in such a way that it became similar to their pre-tsunami house, the atmosphere of the modified house had not become the same. One respondent expressed this feeling by saying, ‘The modified new house could not bring back what we felt in our former house’ (male, 62, entrepreneur). Another response came from a female, 42 years old who works as graveyard keeper. In terms of materials and construction, the shape of the house, the appearance and spaces provided were better than the former house. But the owner still felt that their previous house was better psychologically. When comparing cooking, for example, she said:

In the previous house, we cooked using fire wood. Now the donor has given us a clean kitchen with a gas burner, which looks better indeed; however, although our former kitchen was dirty, full of black dust and stain from the firewood, our food tasted better.

All respondents interviewed in this study clearly expressed the view that community togetherness was better before the tsunami than after. Neighbourhood contacts are fewer and intimacy is reduced. This is because there are fewer facilities for moderating contact and communication. There are no markets or Meunasah (small prayer houses), which serve important roles in communal society, such as the central religious institution of the community where meeting or community gatherings occur, amongst other times when matters of public interest have to be discussed. 28 In addition, the donated new houses have a small veranda or none at all, which makes socialisation even more difficult. New residents from other cities or regions came to live in the neighbourhoods, which has also contributed to the decrease community togetherness.
One respondent in this study found the new situation better as his house is built on a higher ground which provides better protection against floods. He is also satisfied with the rehabilitation of infrastructures; roads and drainage system in his neighbourhood are improved. But his satisfaction is limited to the macro level only, leaving aside his satisfaction or dissatisfaction with space provided in his new donated house as well as overall housing reconstruction aspects.

Conclusion

Results from this study show that donor agencies in most of the house-building projects in post-tsunami Aceh did not pay much attention to local concerns, socio-cultural family practices and the use of house space. Responding to a local culture does not necessarily mean that one should copy its original style. Housing styles must be made compatible with contemporary situations, conditions, needs and wants and how they are perceived. Just focusing only on physical house forms is not enough; local concepts around domestic space issues are much more important. Donor agencies have not shown that they understand these issues. They copied traditional Acehnese house forms into their donated new houses as that was thought to be the right thing to do, but they did not realise that traditional house forms had already been changing over the years, long before the tsunami, into more modern housing forms.

Reconstruction authorities and donor agencies in Aceh had not properly interpreted and included relevant local post-tsunami living values and norms. Ignoring socio-cultural family practices evidently led to unsatisfactory houses which failed to fulfil people’s needs and wants. When unsatisfactory houses are built the unsatisfactory living conditions they engendered had an impact not only on socio-cultural family practices, but eventually on community welfare as well. And when the social practices of individuals and communities change, then this might also have an impact on the welfare of the larger society. This wider phenomenon has also been overlooked by the reconstruction authorities and donor agencies. Too many post-disaster housing interventions have been concerned with the statistical macro issue, neglecting the real needs and wants of survivors. Post-tsunami housing projects mostly focused on short-term goals, policies, strategies, actions, technologies and economic conditions that often did not make decision making easier. Meanwhile, the ‘building back better’ credo that was intended as guideline for post-tsunami housing projects did not work out the way it should have. The
survivors had never heard the term before. It is unfortunate that they were not informed about the concept that they should have been part of.

This study proposes new post-disaster housing reconstruction attitudes and a new type of action based upon real local down-to-earth contexts and concerns, by prioritising the housing needs and wants of stricken communities and traumatised individual survivors. It highlights the importance of integration of non-physical aspects of family practices – such as cultural living needs and wants, lifestyles and habits – into the physical design of housing. Contributing to architecture and planning disciplines, this study targets the architects, planners, builders, agencies and construction professionals as the main actors of post-disaster reconstruction.