

Participatory Reconstruction after Natural Disasters –

How to Create Sustainable Design?

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1 Introduction

The topic of this paper is participatory reconstruction after natural disasters, and particularly the process as a tool to create environmentally, socially and financially sustainable design. In this paper participatory reconstruction means including the future residents into the planning and building process. However, there are different interpretations of ‘participatory’, and not all of them are equal in terms of reaching qualities. Truly participatory processes include the people in the process in all levels, i.e. planning, design and management (Davidson et al., 2007).

This approach has brought, and could bring, certain, indisputable qualities into the housing and community design – such as cultural and climatic appropriateness and technical details that mitigate the future risk. The positive effect on the community’s abilities – both mental and physical – is also significant (Fitrianto, 2010). Thus a community-driven process can lead to empowerment of the communities - and finally to reducing poverty (Arroyo, 2013).

A natural disaster is always a devastating shock to a community, but it is also argued to be a chance to start over, and to create a basis for long-term development. After the Indian Ocean tsunami 2004 a paradigm of ‘building back better’ was formulated, seeing disasters as an opportunity to build a better future (Fan, 2013).

Therefore the reconstruction process is extremely important: will it give the community a chance to develop, or will it hinder the people from reaching appropriate standards of living? Thus the design of a good, empowering reconstruction process is crucial. This gives new roles to the architects: they have to be able to design processes, not only physical design (Harris, 2010).

This paper will study the development of 'participation' in planning and housing processes in a historical context. The qualities reached by participatory reconstruction processes, observed through a successful case study from the reconstruction process in Aceh, Indonesia, will be also presented.

2 Towards Participatory Planning

From 'Planning as a Product' to 'Planning as Negotiation'

The approaches to urban planning process have changed significantly during the 20th century; and roughly three different paradigms have been recognised. However, a tendency to recognize negotiation - interaction - as a key element in successful urban planning has increased (Jenkins et al., 2007).

The first paradigm emerged during the rapid reconstruction and decolonisation period after the II World War: planning by design. The key planning instrument were master plans, which presented the desired future state of a city as a blueprint: precise large-scale maps illustrating the disposition of different land uses. The master plans tended to be designed and implemented by Western European standards, even when imported to the rapidly urbanizing, developing world. The architects behind the plans were seen as 'neutral experts'. This planning 'by design' - approach was widely criticised, major criticisms falling on the fact that professional focus was on the plan as a product instead of considering its effects, and on the physical design rather than social, economic or environmental issues; the comprehensive urban context (Jenkins et al., 2007).

As a reaction to rigid and often immediately out-of-date master plans a variety of alternative approaches was emerged from 1960s onwards. The overarching paradigm was called 'systems planning', a practice, which was based on rational decision-making after processing large amounts of data. The approach saw urban areas as sets of 'systems', e.g. transport and economic systems, which could be

guided through planning. The ‘systems planning’- approaches, e.g. structure planning, action planning and urban management aimed to more practical and feasible urban planning. The aim was to really implement the plan, not only to have a plan, which seemed to be the case in many unsuccessful master plan projects (Jenkins et al., 2007).

The third urban planning paradigm, ‘planning as negotiation’, emerged also in the 1960s, through the recognition that urban planning is, besides physical design, also a value-laden political activity. Negotiation was seen essential to decisions, for the interests of different groups of people were often conflicting (Jenkins et al., 2007).

From ‘Housing as a Product’ to ‘Housing as a Process’ - Approaches to Community Participation

In the course of the 20th century urban planning has developed from ‘planning as a product’ to ‘planning as negotiation’. Several of the approaches within the ‘systems planning’ –paradigm included the idea of participation in the process. Structure plans in the UK required for consultation with the public during the process, although in practise it was often procedural, limited and inaccessible to people who could not hire consultants. Community action planning aimed alternatively for more bottom-up approach. The approach was to create community based, fast and incremental processes with sustainable results. The methods and tools of community action planning have been implemented in urban planning projects in the rapidly urbanising world, but the paradigm never became widely applied (Jenkins et al., 2007).

From 1970s onwards more people-centred approaches have been developed, based on the self-help housing paradigm by architect John Turner. One of Turner’s key ideas was to see housing as a process, not a product, challenging the practise of conventional housing. His thoughts were closely linked to a series of anthropological studies from the mid 1960s, which saw positive qualities in the informal settlements. Turner initially defined self-help as labour, i.e. people building their homes themselves. Later the stress was on self-management, emphasising ‘dweller control’, i.e. people’s control over the design and construction process as a way to build capacities in a community (Jenkins et al.,

2007). Turner's ideas have been widely promoted and internationally sponsored, e.g. by the World Bank (Jenkins et al., 2007). However, the World Bank implemented a top-down approach, 'sites and services', to self-help housing, which lacks Turner's idea of 'dweller control', seeing the people mainly as producers of core housing (Arroyo and Åstrand, 2013).

At present the qualities reached through bottom-up self-help processes, such as 'organised self-help housing' have been recognised. 'Organised self-help housing' - paradigm emphasises Turner's idea of 'dweller control' over the construction process as a tool to build capacities in the communities (Arroyo, 2013). Currently there are many researchers considering participatory planning - where the future residents themselves are included in the planning process - as a key to sustainable design (Davidson et al., 2007).

A Case Study: Reconstruction Processes after the Indian Ocean Tsunami (2004) in Banda Aceh, Indonesia

After the tsunami the Indonesian government started a large-scale planning project - including a new city built inland to relocate the affected people along the coastline. Furthermore, all construction was banned within 2,4km distance from the coast. This was first of the several mistakes made in the reconstruction process: ignoring the tsunami survivors' will to rebuild their cities and villages where they had been before. The people affected by the tsunami lived from the sea, and relocation inland would have destroyed their livelihood. The plan of the government was campaigned against, and finally dismissed (Fitrianto, 2010).

A more reasonable policy was developed, yet ignoring the people living in smaller, difficult-to reach villages along the coast. It was these villages where Uplink, an Indonesian coalition of non-governmental- and community-based organisations, started a participatory reconstruction process in 2007.

In the reconstruction process of Banda Aceh humanitarian aid was delivered from door to door, ignoring the survivor's capacity to help in the reconstruction process. Fitrianto (2010, p.30) describes the loss:

It was as if a second tsunami had hit the communities. The careless aid delivery and misused funds undermined the survivors' confidence, initiatives, and self-reliance – nonphysical assets that had been spared by the waves.

Uplink's approach was different. The planning desk was moved to the field, in order to look for on-site solution. The first reconstructed building was *meunasah*, a traditional community centre, which was used for getting the communities together for the planning process. The affected communities formed an organisation called JUB, *Jaringan Udeep Beusaree*, 'A network of living together'. The organisation was significant in restoring social networks, and finally in coordinating the reconstruction process.

After providing temporary shelters constructed mostly of recycled materials, Uplink performed community survey and mapping, identifying the residents of the area, and the structure of the *kampungs*, villages, in order to reconstruct them much like they were before the tsunami. According to Fitrianto (2010, p. 32), 'the maps formed a bridge from the community's past to its post-tsunami future'. The spatial planning was collaboration between Uplink and JUB. The keys of the design were future risk mitigation and a traditional principle, *gampong loen sayang*, 'my beloved village', a philosophy of balancing cultural, environmental and spiritual life by minimising the impact of human presence. Mitigating future risk was about providing better access to the roads, and ensuring clear views to the sea and the hillside. *Gampong loen sayang* meant incorporating green architecture, tree planting, eco-farming, proper sanitation system and green energy to the project.

The houses were designed with the future residents. First only men attended the meetings, but after Uplink's insistence, also women joined. The key element of the design was earthquake safety, and thus promotion of traditional typology, the houses on stilts. There was a huge demand on building materials after the tsunami, and the market prices were soaring. Also the risk of deforestation was real. Uplink's solution was to use both soil-cement blocks produced on-site by the community and wood from a certified workshop from Indonesian Borneo.

Construction management was also essential for the success of the project. A committee was formed in each village to supervise the housing construction and infrastructure, and the homeowners were in charge of the construction of their own homes. The funding of the reconstruction was allocated in two parts to the families, and the reimbursement of the labour costs were delivered when finishing each stage of construction: foundations, walls, roof and finishing. For building

materials a voucher system was used. To provide technical assistance, Uplink's engineers lived in the communities, and the architects visited to supervise the construction. Also community members were trained to assess quality, and to act as building inspectors. Fitrianto (2010, p.36) describes the reconstruction process in Banda Aceh:

We found that although participatory reconstruction, tied to community development, is slow in the beginning, it picks up speed with experience, becomes efficient through training and is sustainable precisely because time is invested in developing experience and skills within the community.



The housing typology is a detached house on stilts. The villagers present the result of community mapping. Pictures <http://www.architectureindevelopment.org/project.php?id=297>

The Challenges of Reconstruction

Davidson et al. (2007) describe three different challenges in social housing projects in developing countries: first, too strict building regulations that make the housing unaffordable for its targets, secondly, definite start and finish dates that hinder incremental growth and third, the vulnerable social situation of the poor. They also find added challenges in reconstruction processes in post-disaster situations, such as the chaotic scene with various projects and scarce resources, the urge to complete projects quickly for the recovery and demand of the donors, and the challenge of adding qualities and reducing vulnerability.

Davidson et al. (2007, p.100) also discuss the term 'participation', and the many interpretations of it:

In fact, there are many ways in which users/beneficiaries can participate in post-disaster reconstruction projects but not all types of participation ensure the best deployment of their capabilities. The systems approach shows that there is a continuum of possibilities for participation; at one extreme, users are involved in the projects only as the labour force, whereas at the other, they play an active role in decision-making and project management.

Davidson et al. (2007) use 'The Ladder of Participation' (by Arnstein 1969, modified by Choguill 1996) to describe the levels of participation. The ladder starts from 'manipulate', 'inform' and 'consult', ascending to 'collaborate' and

finally to ‘empower’, which is seen as the highest level of participation. Davidson et al. (2007) define ‘empowering’ as ‘genuine power in up-front decision making processes’.

Moreover, the attitude towards the affected people is linked to the level of their participation. Survivors of disasters should not be seen as helpless and dependent victims, but as ‘agents of change’, who can rebuild their own lives and communities, with assistance from the outside (Archer and Boonyabanha, 2011). There is also a risk of excluding some members of the community from the process, for example women (Fitrianto, 2010) or children (Bartlett, 2008).

Natural disasters have debated to be a chance to ‘build back better’ (Fan, 2013). Nevertheless, the concept of ‘better’ has been interpreted in many ways. During the reconstruction processes in Aceh after the Indian Ocean tsunami, Myanmar after cyclone Nargis (2007) and Haiti after the earthquake (2010) the slogan has been used for many purposes, to label various, not only sustainable reconstruction activities. (Fan, 2013) Nevertheless, the successful case studies show that there is a chance of really building back better, to implement qualities in the design, whilst creating more resilient communities (D’Urzo 2010, Nield 2010, Fitrianto 2010). Archer and Boonyabanha (2011, p.351) crystallise the situation:

Disasters always bring tragedy, but they also open up an opportunity for change in a community. Disasters offer a chance to turn a negative and desperate situation into a longer-term positive outcome. Having a clear understanding of the opportunities that arise as a result of a disaster and how to make most of them through the rebuilding process leads to a greater ability to provide future support and prevention.

3 Reaching the Qualities

A Good Process

In order to reconstruct in a socially, environmentally and financially sustainable way, the reconstruction process should be carefully designed. There are three principles that recur in the recent literature and I considered important in order to reach qualities. First, the process should be participatory. The affected people should be involved in planning, housing design and construction management. Moreover, the people should have a genuine power in making decisions, enabling the empowerment of the affected communities (Davidson et

al., 2007). As a result the people should have ‘dweller -control’ over the process (Arroyo, 2013). This is also a way for the people of becoming ‘agents of change’, not only helpless victims of the disaster (Archer and Boonyabancha, 2011).

Secondly, there should be a strong link between immediate relief and long-term development, i.e. the processes should be designed to last a long time-span (Harris, 2010). There should be phases from instant relief and temporary shelters to permanent housing. The temporary shelters should always stay temporary, and the permanent housing should be carefully designed.

Third, the projects should be affordable for their targets. Despite the clear phases, there should be a possibility for incremental growth and expendability over time. The reconstruction should fit the actual needs - the houses that need only repairing, should be repaired, not completely reconstructed (Davidson et al., 2007). The keywords for a good process would thus be empowering participation, long time span and flexibility.

Building Resilient Communities

The Collins English Dictionary defines ‘resilient’ as ‘recovering easily and quickly from shock, illness, hardship etc.’. Because of the recurrent nature of natural disasters, it is crucial that the communities adapt to the constant risk, and learn the skills of quick recovering, i.e. become resilient. This is possible through participatory reconstruction processes. Including the affected people to the reconstruction process is a way of building capacities in the community. When the people are involved in all stages of the process, they will learn a variety of new skills. The skills will stay in the community even when the assisting organisations leave, and thus make the community more resilient. Capacity building is also related to raising knowledge, which is essential in mitigating future risks. The knowledge of earthquake and cyclone resilient building techniques and details, and ability to weight the quality of construction materials are essential in reducing future vulnerability.

Participatory planning means also building and reconstructing social networks, and thus strengthening the community. A strong community is in a better position when negotiating e.g. for land, than a disconnected group of survivors. Moreover, taking part in positive action and getting involved in creative work after a disaster

has positive effect on the mental health of the people (D’Urzo, 2010). It is also empowering for the people to see what they are capable of with the technical assistance. A well-designed reconstruction process will also affect the local economy by using local materials and labour, and thus make the communities more resilient.

Creating Sustainable Design

When the affected people - the future residents - are involved in the reconstruction process from the very first steps, they are likely to co-create design that really suits their needs. They are also likely to design culturally appropriate housing, and consider issues the foreign architects might not realise. Thus there is a smaller risk of abandoning the reconstructed houses - and the result of the process will be more sustainable.

Participatory reconstruction also enables climatically and environmentally appropriate design, as the reconstruction process will happen on-site. It is also possible to create design that really fits to the location - instead of just importing standardised, prefabricated houses. Furthermore, there is a value in applying the traditional knowledge of the communities - the features of vernacular architecture and traditional spatial arrangements - to the design. For these reasons participatory approach is likely to lead to richer and more diverse surroundings - thus also aesthetical qualities can be reached through participatory planning.

D’Urzo (2010, p.57-59) describes the reconstruction project in Sri Lanka after The Indian Ocean Tsunami:

A key to the project was to avoid one-size-fits-all approach; we developed tailored designs for families of different sizes that responded to varying climates and to urban and rural environments; designs also adapted to the particular skills, expertise and materials available in each community.

But the real key was to listen to the displaced families and empower them to make the choices they preferred. We were there to provide technical guidance and specific advice.

Open Questions

There is a dilemma between the quickest and the cheapest possible reconstruction and processes that aim to add qualities to new housing and neighbourhoods. The scale of the disasters is often enormous - is it possible to reach the required quantities by participatory processes? Is it ethically right to

build a few sustainable, resilient houses, when there's a possibility for mass-production of low-standard, pre-fabricated housing? Is it possible to combine these two approaches: large quantities with a participatory reconstruction process that aims for quality?

A participatory reconstruction process also seems to work in relatively small communities, and the successful projects are often rurally located. Is it possible to create a successful participatory reconstruction project in a city - and a project that would also address the issue of urban sprawl?

4 The Role of Architects

In participatory reconstruction processes, the architects become designers of the process, not so much of the physical design. The architect's role is more to be an enabler of the process, linking the affected people together. Because of training to think long-term, the architects should have an overview of the process and its phases from instant relief to temporary shelters and finally permanent housing - yet giving power of the decisions to the communities.

Furthermore, the architects are used to work with multi professional teams, and thus to take different roles. In order to create successful projects, the architects should be the ones linking different professionals together. This would be a way of avoiding overlapping and confused projects.

Most of all the role of the architect is to be a wise consultant, considering the questions of building disaster resilient, sustainable housing, and functioning neighbourhoods. The architects should also become teachers, who share their knowledge with the communities. Finally the role of the architect is to make him/herself unnecessary, i.e. to create a situation, when the communities have already become strong, full of capacities and resilient.

Aquilino (2010, p.10) describes her dreams of resilient communities:

What does it mean to be safe? Safety, I have learned, is not only anchored in better technologies or better buildings. Safety lies somewhere beyond shelter, in the freedom of being secure enough to relax, play, aspire, and dream for generations.

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