Can Architects Contribute to Making a Difference in Post-Disaster Reconstruction? Post-Disaster Housing and the Role of Architects: a Case Study in Rural South India.

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Abstract[1]

The key to the acceptance of post-disaster housing lies in meeting people' wishes and needs, and in integrating local know-how into the course of a project process (a premise intensively discussed in theory). After the 2004 tsunami in rural Tamil Nadu, many NGOs appointed architects, assuming that these professionals would be qualified to facilitate the implementation of people-oriented housing (and villages). In this intricate set-up, however, most NGOs ignored the importance, as argued here, of defining precisely the architect's role and scope of work. This research examines three housing projects implemented by local NGOs and planned by local architects after the Indian Ocean tsunami in rural South India. However, their approaches and the architects' scope of work vary significantly. A comparative analysis examines three different projects' processes, within the same legal and cultural framework, to comprehend the villagers' perspective on the projects' process, the projects' outcome and the villagers' perceptions of an architect's role. Five phases of each project are studied, juxtaposing what and how things were done by the architect with the results obtained in the village.

This seeks to illustrate that in a, predominantly, hegemonic context, villagers need a 'mediator' advocating between two divergent cultures of knowledge: the 'local' and the 'modern'. Yet local aspirations and know-how with regard to housing need to be identified, translated and incorporated into the course of the project process. Architects, as discussed here, can be a valuable resource. However, it will be argued that a key element is, among others, a strategic interplay of the 'right' personnel in the course of a complex building process, and not necessarily the appointment of an architect. Primary data for this study was gathered through household questionnaires, informal interaction, participant-observation, and semi-structured interviews with NGO representatives and project architects. Secondary literature was studied on post-disaster housing and cultures of knowledge.

Keywords: Permanent Post-Disaster Housing, NGOs, Architect, Cultures of Knowledge.

Introduction

This paper is based on a recent field-survey of three different housing projects carried out by local NGOs following the Indian Ocean tsunami of 2004 in rural Tamil Nadu and the Union Territory of Puducherry. Each project, it was claimed, built people-oriented and sustainable houses. Architects were appointed for the three projects, as it was expected by the NGOs

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[1] Empirical data presented in this paper constitute part of the author's doctoral thesis (Tauber 2014, 2015). Field-results obtained in three villages reconstructed after the 2004 tsunami in South India provide the first part. The second part examines how these findings challenge the designing of building processes, the architect's role, and academic institutions, concerned with the design of specific courses for architects.

involved that the inclusion of these experts would lead to people-oriented projects. However, four years after completion, the author found that this expectation was unfulfilled in two of the three case studies. The plots and houses were too small, the layout and the rooms provided were inadequate, the construction was of poor quality, and the sanitary facilities and new technologies put in place were unsuitable. In short, two of the projects failed to meet the villagers' needs and thus the goals formulated by the NGOs. Hence, the key question in this context is, are architects the best response?

The demand for professionals of the built environment has been growing in the past ten years due to the increase of large-scale, post-disaster housing programmes in various regions all over the world. Since the tsunami of 2004, the profession of the architect has been "recognised of critical value to long-term recovery" (Harris, 2011: 16). At the same time, however, a controversial debate about the role of this profession has emerged. Sanderson (2010) stated that architects are the last people needed in post-disaster reconstruction as their traditional role and knowledge in the building industry is inappropriate for humanitarian responses. Zetter *et al.* question the role of the architect by defining the action of place-making as "not just the domain of the powerful or of design professionals" (2010: 210). De Soto suggests that the role of the architect in the context of post-disaster housing is to "interpret the ways of living of affected residents and the housing typologies of disaster-affected areas, to analyse those ways of living and those typologies and to translate them into technical, organisational and design solutions capable of promoting long-term development" (2010: 24). Boano *et al.* argue that the disciplines of architecture and urban design provide "significant power to reconstruct social networks, raise solidarity, empower communities and encourage partnerships" (2010: quoted in Boano et al. 2011: 306). As in most post-disaster scenarios, the relationship between decision-makers (including professionals) and the people is constituted by the knowledge and the categories defined by those in power (see Foucault, 1971; Hobart, 1993; Turner, 2009). Boano et al. discuss the potential of "experts as translators" who aim to "include the voices of those excluded by dominant forms of knowledge" (2011: 295).

Acknowledging the ability of architects to "adapt in intricate contexts"[2] this paper aims to contribute to the debate by analysing the potentials (and limitations) of this profession in rural post-disaster scenarios. The following questions will be addressed: in what set-up can the appointment of an architect be an appropriate response? What critical parameters need to be considered when assigning an architect? And, by what criteria should the architect's role and the scope of work be defined so to enable the realisation of people-oriented housing?

For this study, three rural housing projects implemented by local NGOs (and planned by local architects) were identified. However, the architect's scope of work and his/her role in the course of the project cycle vary significantly from the 'project management consultant', to the 'draftsman', and the 'surveyor-anthropologist'. The first name was given by the NGO (Caritas India, 2005: 3), while the other two were given by the author based on their scope of work and roles in the projects. Five phases of each project are examined, juxtaposing what, in which phase and how things were done by the project architect with the results obtained in the village. These phases are: programme formulation (definition of the legal parameters and reconstruction master programme); project formulation (definition of project parameters); planning (village master plan and house plan); construction; and occupation (houses inhabited). In doing so, it will, first of all, seek to highlight which of the three operational designs and which of the three architects were, from the villagers' perspective, a 'success'. Secondly, the study will highlight critical themes raised by the villagers and to what extent

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[2] Interview with Cameron Sinclair, Co-Founder and Director of the American NGO Architecture for Humanity, 18.07.2011 (Skype).

they fall within the architects' realm. In addition, it will explore which of the five project phases are critical and why. Finally, it will consider if, and how, architects can play a role.

Locating the field

Doing research in rural Tamil Nadu and the Union Territory of Puducherry provided an arena for studying the impact of post-disaster housing across a wide range of different projects. In Tamil Nadu, the reconstruction of 89,206 permanent houses was planned, as well as the repair of 7,670 houses. This stock was divided into two phases: 53,562 houses were reconstructed / repaired in the first phase; 32,552 of which were constructed by NGOs (Government of Tamil Nadu, 2005: 49). In the Union Territory of Puducherry, NGOs constructed 10,131 houses (out of 12,380 in total) (Government of Puducherry, 2006). Many projects were implemented as a public-private-partnership (government/NGO). However, NGOs were free to develop the Master plan of the new village and the layout, design, and construction technologies of the new houses. The government, on the other hand, provided new land (in case of relocation) and infrastructure services such as roads, electricity and water. The NGOs did not have to follow any model-house design predefined by the governments.[3] A variety of building processes was possible within the same legal context. Hence, this region proved to be ideal for the research focus of this study.

Research Methods

The case histories presented in this paper illustrate different operational designs and the different roles of the architects. Information for each of the projects was obtained from a three-stage research plan. The first stage involved studying secondary material, selecting the case studies, making contact with NGOs' key personnel and getting prepared for the field survey (preparation of the household questionnaire and semi-structured interviews). The second consisted in quantitative and qualitative data collection during the field survey gathering (from November 2011 to March 2012), through a household questionnaire, participant observation, informal conversation, and semi-structured interviews with NGOs' representatives and project architects. A field-survey was conducted with the support of five Tamil speaking doctoral students from the Pondicherry University Department of Social Work. In total, 110 household questionnaires were collected: 40 in Keezhakazakudy-Tsunami Nagar, 30 in Shanmuga Nagar and 40 in Tarangambadi-Tsunami Nagar. The results presented in this paper are descriptive (Bortz et al., 2006: 25) and they are relevant for the interviewed households only. More precisely, they do not have any statistical significance as no statistically representative sample was used. In addition, 22 semi-structured and tape-recorded interviews with NGOs' key-personnel (10) and architects (12) were conducted in English. The final stage was the quantitative and qualitative data screening, computing and analysis, as well as the preparation of tables and diagrams.

Selection Criteria of the Case Studies

Having studied substantial secondary material, it became evident to the author that the case studies should not be taken as representative of the number of projects implemented in the region. Rather, they illustrated diverse approaches, different profiles of project architects and their respective results (based on the villagers' feedback) within the same legal, political and cultural context. Thus, the criteria upon which the selection was based were: (a) location: rural; (b) type: new construction of permanent housing; (c) provider: NGO; (d) planner:

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[3] In Andhra Pradesh, Kerala and the Union Territory of the Andaman & Nicobar Islands, NGOs had to follow a housing model prescribed by the respective governments.

architect; e) project approach: people-oriented; (f) status: completed and occupied. The three selected case studies are located in the most affected districts of rural Tamil Nadu and Union Territory of Puducherry: case 1, Keezhakazakudy-Tsunami Nagar, in the Karaikal district; case 2, Shanmuga Nagar, in Cuddalore and case 3, Tarangambadi, in the Nagapattinam district (fig. 1).
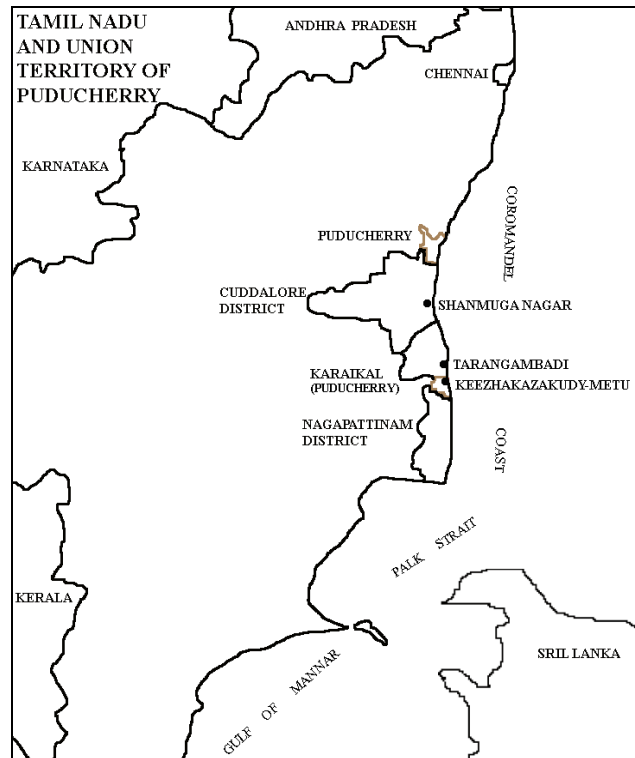

Figure 1: Location of the three case studies. Source: author.

Case 1: The Project Management Consultant (Keezhakazakudy-Tsunami Nagar)

Context and Objectives

After the tsunami of 2004, the local NGO PMSSS[4] decided expand its scope and tackle post-disaster housing and signed a Memorandum of Understanding (MoU) with the Government of Puducherry. Thereby, PMSSS agreed to enter into a public-private partnership for the construction of 200 permanent houses for the villagers of Keezhakazakudy-medu at a new site, named Keezhakazakudy-Tsunami Nagar. The NGO was responsible for developing the master plan of the new site, for designing the new type of house and for the construction of the houses. The goal formulated by PMSSS for this project was the construction of "people-oriented houses and good quality homes."[5] To achieve this objective, an architect, the project management consultant (hereafter PMC), was appointed and was "responsible for handling the shelter programme throughout the various phases." (Caritas India, 2005: 3)

Project Organisation

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[4] Pondicherry Multipurpose Social Service Societies, registered in Puducherry (member of the Caritas Network).
[5] Interview with the former director of PMSSS, December 12th, 2011, in Neyvelli (TN).

A local architecture firm, based in Puducherry, was assigned for this project, and the scope of work was defined as follows in table 1. PMSS formed a village housing team that should have interacted with the PMC during the course of the planning stage on behalf of the entire village. The master plan that was developed elaborated on the concept of clusters, and one type of house was designed for the entire village. The project was built by two local contractors and completed in December 2006. The houses were allocated to the villagers through lots, only after construction completion.

Table 1: Scope of work of the Project Management Consultant. Source: author.

	PHASE I Programme formulation	**PHASE II** Project formulation	**PHASE III** Planning	**PHASE IV** Construction	**PHASE V** Post-Occupation
ARCHITECT / PMC			Conceptual design Master plan House design Tender documents/ cost estimation Pre-selection of contractors	Quality control Progress of work Certificate of completion	

The Villagers' Voices after Four Years

''*I don't know the architect who planned our village. I have never seen him. Only after construction was completed did I get to know which would be my house. I could not share my wishes with him. The house is much smaller then my old one. They forgot a puja room* (prayer room) *and they did not provide space for cooking outside! No woman in the village cooks inside the house, because of the smoke. No one in our village would build a pucca house without a puja room. If I could choose who to build my house, I would call the mason. He plans and builds according to my wishes, and does good quality work.*''[6]

Based on data obtained in the village, eight aspects of the project were considered unsatisfactory (a failure): (1) list of beneficiaries (unjust allocation of houses); (2) used technology (inner climatic conditions); (3) sanitary facilities location and technology); (4) plot size (smaller than the old plot); (5) house size (smaller than the old house); (6) house plan (layout and façade); (7) quality of construction materials; and, (8) quality of construction.

Figure 2 illustrates the breakdown of responsibilities and results of 40 household questionnaires. The three columns on the right illustrate the PMC's responsibilities as defined in the contract (Table 1).

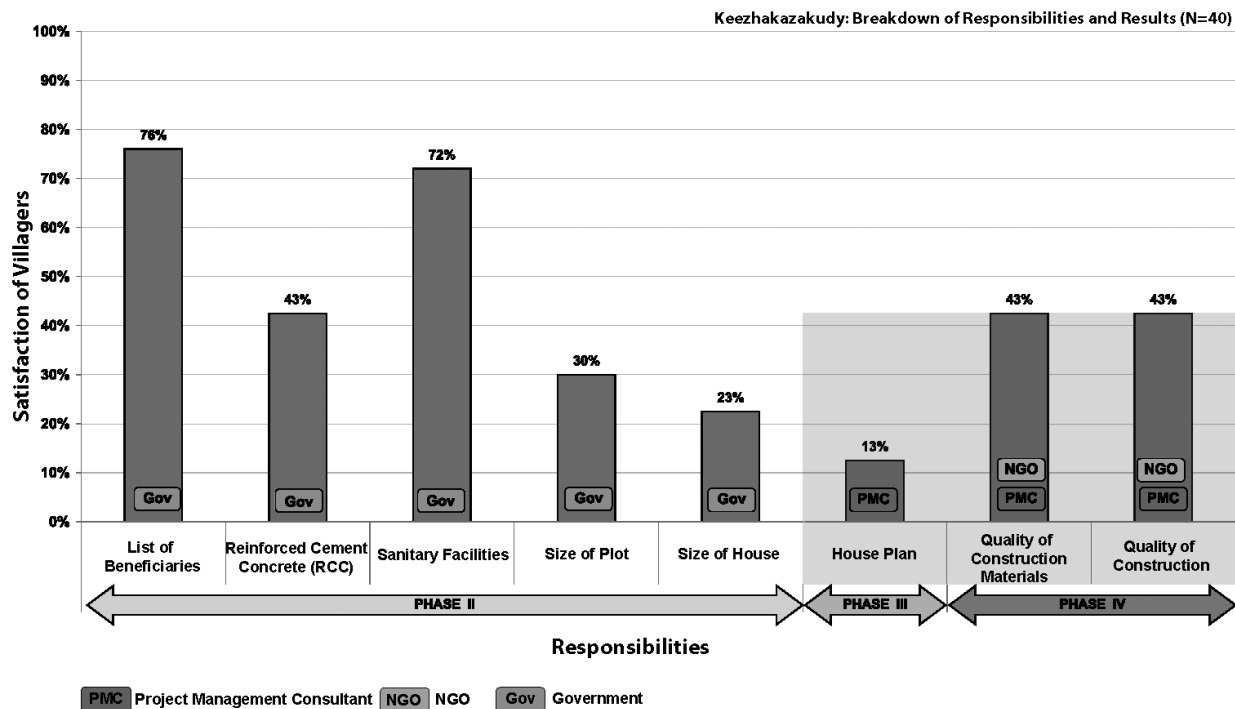[6] A fisherwoman in Keezhakazakudy-Tsunami Nagar, December 19th, 2011.

Figure 2: Breakdown of the responsibilities and results in Keezhakazakudy-Tsunami Nagar. Source: author.

Case 2: The Draftsman (Shanmuga Nagar)

Context and Objectives

The locally-registered NGO, Bless, had already been working with the community living in Shanmuga Nagar for many years and came forward to construct 62 new dwellings (31 semi-detached houses) on the same site. The conception of the master plan, the design and the construction of the new houses, including sanitary facilities as well as a community hall, a *balvadi*[7] and some shops were all taken on by Bless. The government was responsible for the provision of electricity and water. The goal formulated by the funding agency was the construction of a ''good house for them [the Irulas, G.T.] using an alternative technology and saying no to RCC [reinforced cement concrete, G.T.]''[8] Bless decided to work with Compressed Stabilised Earth Blocks (hereafter CSEB), developed by the local research institute, the Auroville Earth Institute.[9]

Project Organisation

A locally-based architect was appointed, who, however, had never worked with this technology before. Hence, the architect attended a training course at the Auroville Earth Institute, and the scope of work for the architect was defined by Bless, as shown in table 2.

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[7] A balvadi is a nursery school.
[8] Project funded by the French NGO Solidarité (based at Puducherry). Interview with the director of Solidarité, December 15th, 2011, in Puducherry.
[9] http://www.earth-auroville.com/

Table 2: Scope of work of the draftsman. Source: author.

	PHASE I Program formulation	PHASE II Project formulation	PHASE III Planning	PHASE IV Construction	PHASE V Post-Occupation
ARCHITECT / DRAFTSMAN			Master plan		
			Adaptation of house plan to CSEB		
			Cost estimation		
			Demarcation of new village layout		

Preparatory work and planning were completed after eight months. Skilled masons were appointed for the construction of the houses, and the villagers were hired as unskilled labour producing the earth blocks. During construction, the families lived in temporary huts right next to their new houses. The project was completed and occupied by the people of the village in June 2007.

The Villagers' Voices after Four Years

''With these new houses, we struggle a lot. We are not able to repair the leaking roofs and the walls as we do not have the tools and the financial means. When cyclone Thane[10] hit, we were evacuated as water entered the houses. For several days we had to stay in a school nearby. When coming back, the water was gone. However, our floors and walls were still damp. We never wanted such houses. We asked for a normal house made out of bricks and plastered. However, we had no say. Who would I like to build the house with? Either with my family members, as we used to do, or with the mason.''[11]

In Shanmuga Nagar, the field survey revealed seven aspects of the project as unsatisfactory (or a failure): (1) the CSEB technology[12]; (2) the sanitary facilities (unfamiliar with the technology); (3) the size of plot; (4) the size of house; (5) the house plan (semi-detached houses/layout/design); (6) the quality of construction materials; and, (7) the quality of construction. Figure 3 shows the breakdown of responsibilities and results obtained from 30 household questionnaires. The column in phase III shows the draftsman's scope of work.

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[10] Village badly hit by cyclone *Thane* on December 30th, 2011; field survey started three weeks later, on January 21st, 2012.
[11] Informal conversation with an Irula woman in Shanmuga Nagar, January 22nd, 2012.
[12] Three out of 62 houses were constructed in RCC as model houses. The villagers initially hoped to get this type of house. These houses were not affected by cyclone *Thane* in December 2011. Results in figure 3 show that the villagers living in these houses were satisfied.
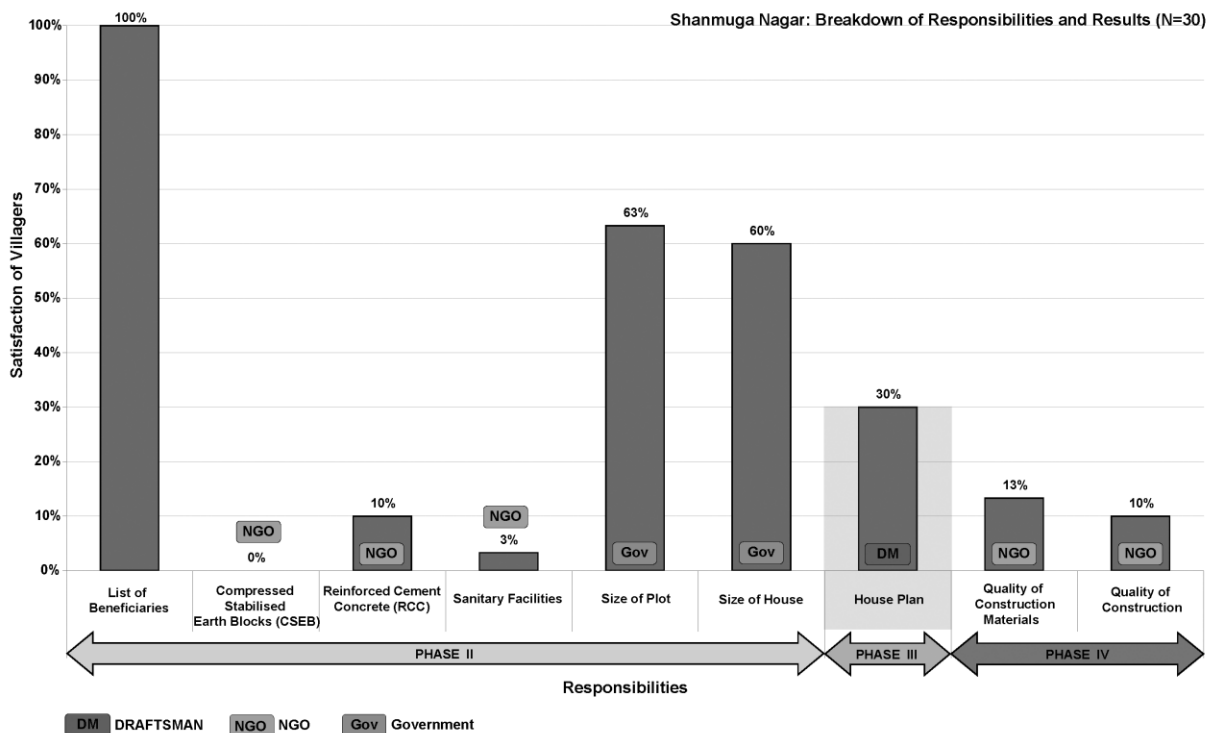
Figure 3: Breakdown of responsibilities and results in Shanmuga Nagar. Source: author.

Case 3: The Surveyor-Anthropologist (Tarangambadi)

Context and Objectives

The Kerala-based NGO, SIFFS (South Indian Federation of Fishermen Societies), decided to venture into post-disaster housing in Tarangambadi, the most affected village in Tamil Nadu*,* constructing 1,091 houses. Its response was encouraged by ongoing work with artisanal fishermen/women in many of the affected communities. SIFFS's aim was to overcome the limitations caused by three aspects typical of this type of project, namely ''callousness towards community perception, lack of attention to individual needs, and a contractor-driven method which pre-empted the possibility of peoples' participation in the process'' (SIFFS, 2009: 6).

Project Organisation

To achieve this aim, two critical aspects were examined beforehand: the order issued by the government; and, the villagers' wishes and needs regarding the new village and the new houses. SIFFS expressed its concerns with regard to the government's order. Thus, along with traditional *panchayat*[13] leaders and the fishermen/women of Tarangambadi*,* negotiations with the government led to changes to the order. For example, the "Government of Tamil Nadu had stipulated a housing density of 25 per acre. Each house was to be built on three cents and the balance of 25 cents was to be assigned for common space [...]. The studies had shown that the requirement of common space was much higher and hence, [...] the housing density was fixed at 20 per acre" (SIFFS 2009: 14). Moreover,

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[13] Along the Coromandel Coast, almost every village has a *panchayat* (council) of nominated or elected members representing various lineages, headed by a chief (*chettiyar* or *naddar)*. The council consists of adult males and is closely tied into a system of village membership and decision-making. Important matters are decided upon consensually during village meetings (Bavinck, 2003, p. 650).

the beneficiary list was not finalised by the government as in most other villages, but by the NGO's housing and social teams and the villagers. Confronting the government with new parameters was only possible with the comprehensive data-set gathered during the course of the habitat mapping (Ibid, p. 15-16). The scope of work of the locally-based architect was defined as shown in Table 3.

Table 3: Scope of work of the surveyor-anthropologist. Source: author.

	PHASE I Programme formulation	PHASE II Project formulation	PHASE III Planning	PHASE IV Construction	PHASE V Post-Occupation
ARCHITECT / SURVEYOR-ANTHROPOLOGIST		Detailed village survey of damage, topography, socio-economics, local know-how, resources, architectural data, size and use of private spaces, use of common spaces, preferences regarding reconstruction in-situ or relocation	Comprehensive master plan for "old" and "new" village (in-situ and relocation) Customised house plans Construction technology Cost estimation		

The habitat mapping took eight months. A team of architects and a social team in charge of this survey were based in Tarangambadi for the entire period. One of the results was that the villagers could choose if they wanted their house to be constructed in-situ or be relocated to the new site close by, named Tarangambadi-Tsunami Nagar. For either option, the NGO offered full support (technical and financial). In total, based on the results of the habitat mapping, six model houses were developed, constructed and adapted during the course of "face-to-face" interviews with the villagers (SIFFS, 2009, p. 21). Due to its size, the project was completed in several stages. Before starting construction, however, a house was allocated to each family in the preferred neighbourhood.

The Villagers' Voices After Four Years

'We were lucky that this architect worked on our project. Many things are well done. However, there are some things that could have been done much better. For example, the orientation of the bathroom and the toilet. They should not face the neighbour's house. We had to build compound walls. And then there is the quality of construction which is, in some cases, poor; better of course than in many other villages that we saw, however, not always satisfying. Who I would like to build my house with? I would call this architect again, if he would like to plan a single small house. I would tell him about the toilet and the quality. But I think he goes for big projects in cities only. So, I would call the mason.'[14]

In Tarangambadi-Tsunami Nagar the villagers identified three unsatisfactory aspects: (1) the RCC technology (climate inside the house); (2) the quality of construction materials; and (3) the quality of construction. Figure 4 illustrates the results obtained at village level from 40 household questionnaires. Phase II and phase III columns highlight the surveyor-anthropologist's scope of work.

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[14] Informal conversation with a fisherman in Tarangambadi-Tsunami Nagar, December 29th, 2011.
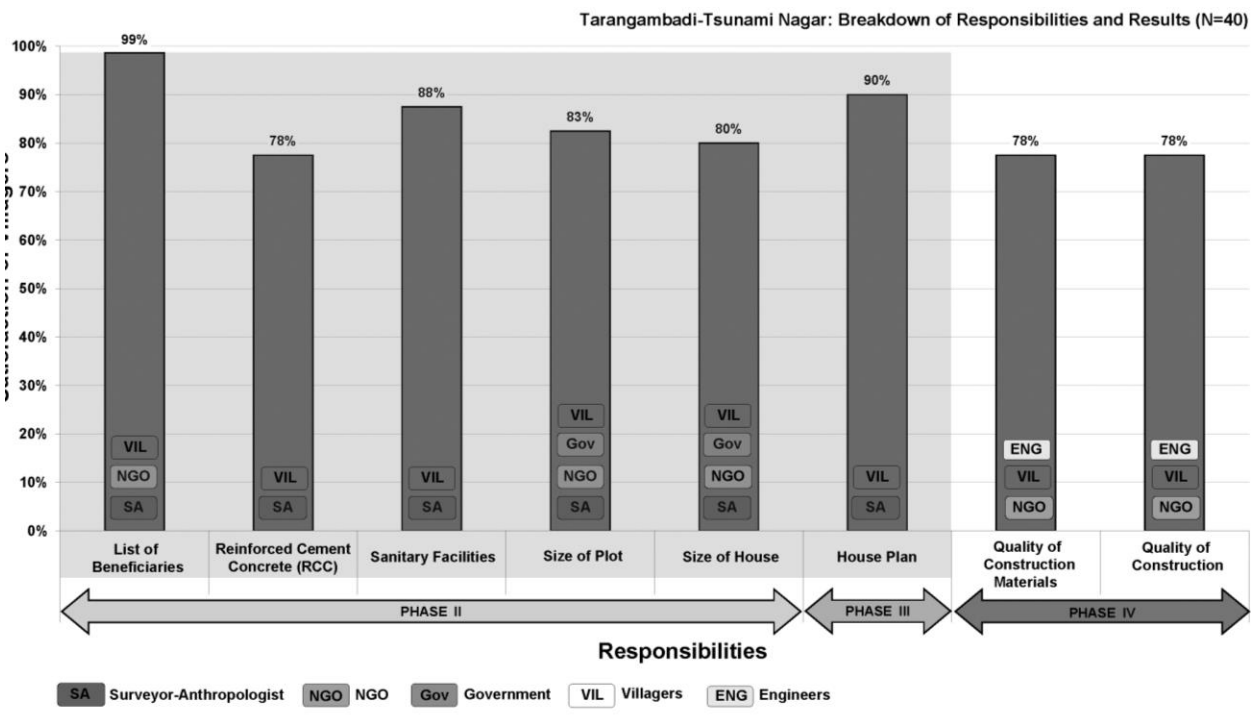
Figure 4: Breakdown of responsibilities and results in Tarangambadi-Tsunami Nagar. Source: author.

Discussion

''*Having an understanding of the character of rural habitations and their internal structure is an essential prerequisite for the successful formulation and implementation of any programme of rural development, especially those concerning the physical environment.*'' (Chandhoke, 1990, p. 1)

As previously discussed, many NGOs expected the architects to be the key to realising people-oriented projects. However, as the results demonstrate, this expectation was fulfilled only in one of the three cases presented here. While the 'surveyor-anthropologist' received the highest level of approval, the 'draftsman' and 'project management consultant' failed to meet the villagers' needs and aspirations (fig. 5).

The case studies illustrate that the architect's role and scope of work can take on a number of forms in the context of post-disaster reconstruction. However, as the data indicates, appointing an architect does not necessarily lead to the realisation of people-oriented housing. Rather, as two of the case studies highlight, architects are not considered relevant by the villagers. What are the reasons for this? The findings suggest that there is little knowledge of the process-related dimension of the relationship between the villagers, the architect and the decision-makers, and of the relationships between the various project phases in this particular set-up. Most NGOs, first of all, ignored the fact that, in this complex reality, a pre-modern, a modern and a post-modern society with diverging knowledge and building cultures (housing needs, values, and construction cycles) clashed; the 'modern' (providers) with the 'local' (villagers). It is important to make precise that the terms 'modern' and 'local', drawn from existing literature, describe a condition and do not evaluate competences of different cultures of knowledge. Coastal cultures and habitats were labelled as backward (Subramanian, 2009: 248) and decision-makers (public and private entities) formulated reconstruction parameters without any prior assessment of 'local' aspirations, pushing for the 'modernisation' of rural housing. Moreover, NGOs were ignorant about rural

housing systems and practices followed in normal times: it is the mason (depending on the economic situation of the family), and not the architect, who plays a vital role. Thus, in the context of post-tsunami reconstruction, most architects were perceived as 'outsiders'[15] and lacked the villagers' trust and confidence, fundamental prerequisites for a successful implementation. As the 'mediator' (Rieger-Jandl, 2005) or, according to Boano *et al.* (2011) the 'translator' between those in power and the villagers was the missing link, in most cases, the use of unsuitable parameters and inappropriate assigning of architects were the result.
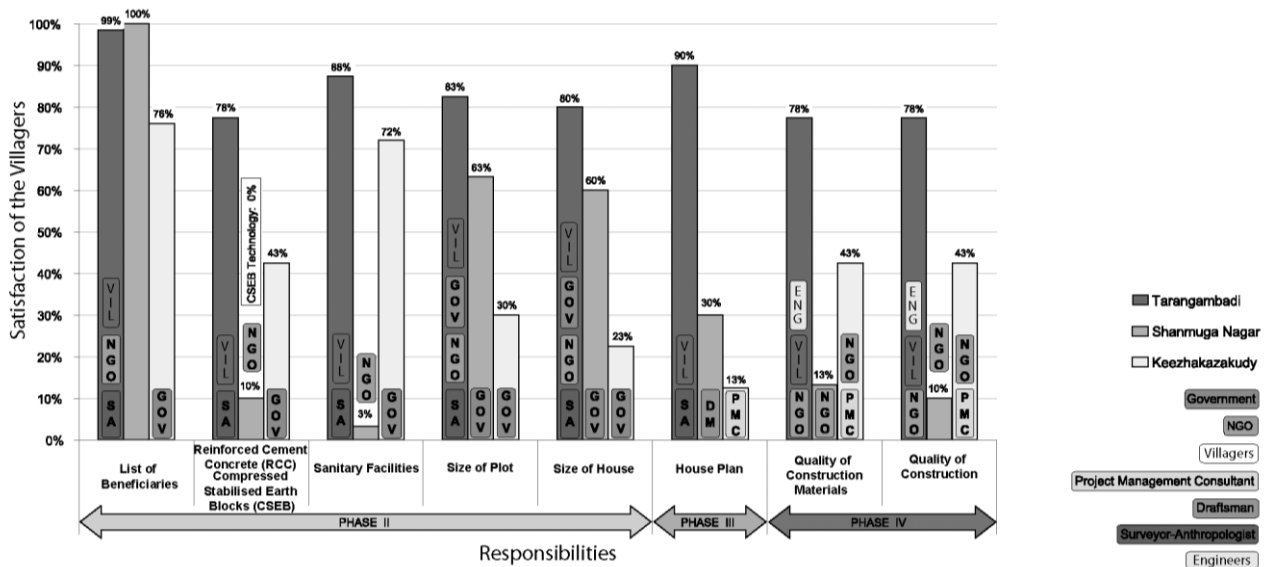

Figure 5: Comparison of results from the three villages' projects. Source: author.

It would be foolish to formulate a single theoretical model for the project process, or a single role for an architect, and to imply that this results in 'better' projects, ''since there are many notions of what is 'better' as there are participants and as there are contexts'' (Davidson et al., 2007, p. 112). The data, though, demonstrate that, in a set-up as portrayed here, there is urgent need for someone to fill the gap. In phase II, the entire project approach is designed and the parameters defined at that point, ultimately, have major implications for phase III, phase IV (fig. 6) and, finally, for the villagers' level of satisfaction. For example, the plot size significantly affects the master plan and relationship between public and private spaces. This parameter was, among others, defined by the government. The government had stipulated a housing density of 25 per acre. Each house was to be built on three cents[16] (121.40 square meters) in rural areas with a balance of 25 cents (1,011.67m²) to be assigned to common space. This order was not accepted by SIFFS, as the data obtained through the habitat mapping carried out in the old village by the surveyor-anthropologist showed 'that the requirement of common space was much higher and hence, in Tarangambadi the house density was fixed at 20 per acre' (SIFFS, 2009: 14). The villagers' degree of satisfaction regarding the house plan, as found in this study, was strongly linked to the fact that the relationship between private space and common space reflected that of their old village.

Hence, as argued here, it is critical that the local context be assessed thoroughly prior to the formulation of the following parameters: (1) a list of beneficiaries/number of houses; (2) whether reconstruction should be in-situ or a relocation; (3) the size of the plot; (4) the size of the house; (5) the sanitary facilities; (6) the construction technology and materials; and, (7) the mode of construction. How can this be achieved?

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[15] Interview with Rajendra Desai, co-founder and director of National Centre for People's Action on Disaster Preparedness, Ahmedabad, December 22nd, 2011 (Skype).
[16] 1 cent is equivalent to 40.467m².

The results obtained in the case of the surveyor-anthropologist indicate a promising approach. Thereby, SIFFS assigned the architect a role that went far beyond mere technical, managerial and design tasks (Table 5). The NGO formulated a strategy that took into account the village's "cultural, economic, technical and political dimensions" (SIFFS, 2009: 6). Habitat mapping was the main tool used to achieve that goal. The data obtained was used to transform the government's order and to design the entire project process.
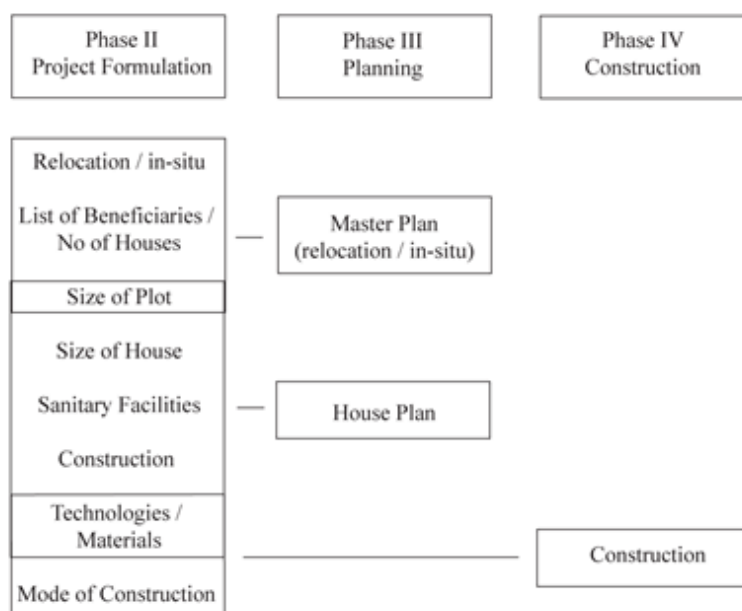

Figure 6: Formulation of the parameters and implications of Phase III and Phase IV. Source: author.

During the survey, methods from various disciplines were combined. Anthropological and sociological techniques were applied to explore the cultural aspects of housing (and the village), and to assess local resources as well as the socio-economic situation. While Rieger-Jandl (2005) suggests that anthropology offers useful tools for expatriate architects working in developing countries, this case study shows that anthropological techniques are also vital for local architects working on post-disaster housing. Techniques from the fields of geology and land surveying were used to study the topography of the village and the surrounding area, and to identify risk-zones. Architectural data was gathered by surveying the foundations of the houses left after the tsunami, and from the descriptions of the inhabitants. From this, important parameters were identified, categorised and incorporated into the planning of new types of houses. In short, the habitat mapping comprised: damage, socio-economic and resource mapping; architectural data; visual documentation, and a list of the villagers' preferences regarding reconstruction in-situ or relocation. Changes to the government's order were possible only because of the availability of this complex data-set giving insight into, and offering solutions to, technical and cultural challenges. Thorough damage assessment, for instance, brought down the number of houses to be constructed: 'The number of houses to be built was brought down from, initially 1,800, as estimated by the government, to 1,081. Finally we constructed 1,091' [17]. Furthermore, the mapping revealed that relocation to the new site first identified was not at all a guarantee of safety, as certain areas within this were frequently inundated. Based on the outcome of the 'hazard mapping' (SIFFS, 2009: 9), a second construction site was identified for relocation. In addition, villagers could opt for a new house in the new site or, if they preferred, a new

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[17] Interview with X. Joseph, project manager for SIFFS, January 31stm 2012, in Tarangambadi.

house in another spot in the old village. Also, the construction mode (phase IV) was decided based on the outcome of this survey that also assessed local knowledge and resources.

The conduct of the NGO staff in charge of procuring and storing construction materials, contracting labour, local masons, and local unskilled labour was found appropriate to this particular context. The architect instead did not play any role in this, while a team of engineers was assigned responsibility for the supervision of the quality of materials and the construction. The information obtained during the habitat mapping remained the base for finalising critical parameters and defining crucial roles at various levels over the course of the entire project cycle.

The case studies presented in this paper illustrate that post-disaster housing in rural areas is a sensitive endeavour whereby many 'levels of complexity' (Lizarralde et al., 2010: 248) need to be considered to facilitate the realisation of people-oriented housing. This study reveals that, in the course of the project process, there is a crying need to appoint the 'right' personnel having, first of all, the 'capacity to fit into existing social dynamics' (Matthews, 2006: 58), and, secondly, being able to address aspects that are critical for the realisation of people-oriented housing. Architects can be an appropriate response; however, the key to a successful project is the strategic interplay of various roles and responsibilities during the course of a complex process.

Acknowledgements

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Gertrud Tauber was trained as an architect at the Vienna University of Technology, the Bartlett School of Architecture in London and the Shahid Beheshti University in Tehran. She completed her PhD on the role of architects in post-disaster housing at the Technical University Darmstadt in 2014. She has worked with different NGOs as project manager in South India, Armenia, Belarus and Estonia.