NGO PARTICIPATION IN RECONSTRUCTION; KNOWLEDGE TRANSFER AND CAPACITY BUILDING FOR SUSTAINABLILITY; A CASE STUDY OF POST-DISASTER RECONSTRUCTION IN GUJARAT

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Abstract

Reconstruction, undertaken in the aftermath of catastrophic natural disasters aims at reducing vulnerability of the built environment through multi-hazard resistant construction. To ensure sustainability of the initiatives it is necessary to transfer knowledge and technology to the affected communities. NGOs participate on a major scale in post-disaster housing reconstruction as seen in developing countries and particularly in India. The rationale for NGO participation is that, with their ability to involve people in the program they would be better placed for transferring knowledge and technology to the community and thus help sustainable vulnerability reduction.

Housing reconstruction following Gujarat earthquake of 2001 is one of the largest housing reconstruction programs undertaken in India. Importantly the owner-driven and NGO driven approaches to reconstruction were seen simultaneously in Gujarat thereby creating an ideal framework to study the relative effectiveness of the latter in terms of sustainable vulnerability reduction. Based on empirical study in which extensions/additions were carried out by beneficiaries after occupation of the houses, I argue that NGO driven reconstruction does not address sustainability. A large number of NGOs construct houses through contractors without involving people. On the strength of the empirical evidence, I argue that knowledge and technology transfer takes place more in Owner-driven reconstruction when compared to NGO driven reconstruction.

Keywords: Housing reconstruction, Sustainable Vulnerability Reduction, Owner-Driven Reconstruction, People's Participation, NGO Driven Reconstruction

Introduction

Post-disaster housing recovery should not simply aim at restoring status quo ante, or building back in terms of quality and safety, but also aim at the sustainability of the vulnerability reduction initiatives undertaken during reconstruction. Thus the choice of the approach to housing recovery, as El-Masri and Tipple (2002) assert should integrate vulnerability reduction and long-term disaster mitigation for sustainability to meet the needs of contemporary and future generations. This makes housing one of the most challenging aspects of reconstruction, particularly when people are in a hurry to return to pre-disaster normalcy. In housing recovery programs great care and resources are invested to ensure that the construction is hazard-resistant. Construction of a few safe houses in a project mode, however, cannot ensure sustainable vulnerability reduction. Education of individuals and the community and capacity building by imparting necessary knowledge and skills should be undertaken as holistic housing reconstruction process for long-term sustainability.

Several approaches have been adopted in post-disaster housing reconstruction. These include a complete external intervention as in Managua 1972, Guatemala 1976, and San Salvador 1986

and a near total dominance of the market model in Japan (Comerio, 1998). In India, where these extremes are not feasible, a mixed model of state-driven reconstruction supplemented by the role of NGOs is undertaken. The emerging paradigm to consider provision of permanent housing as an emergency response measure (Harvey, 2007) along with food, clothing, healthcare, medicines, and temporary shelter (Otero & Marti, 1995; Özerdem & Jacoby, 2006), has led to increasing trend of NGOs participation in housing reconstruction following catastrophic disasters. While the participation of civil society in disaster relief is a spontaneous response, the involvement of NGOs in reconstruction is determined by various factors. A large number of development and service-delivery NGOs venture into housing reconstruction due to availability of funds. Additionally, international donors seek NGOs that implement programs and International NGOs local counterparts. The social service wing of Corporate Houses and political parties, and religious groups also take part in reconstruction as NGOs.

NGO participation is said to have added a third dimension to two basic approaches; viz, the self-build and contractor-driven approaches (Barakat, 2003). In India policies and schemes have been formulated for NGOs partnership/participation[1]on the assumption that NGOs are better placed to deal with field level community issues (Parasuraman & Unnikrishnan, 2000) and understand the local needs of communities (GSDMA, 2001) due to their strong links with community base [Sharma 2000]. It is expected they will mobilize people and involve them in the program through their superior social skills on issues of sustainability. But the question here is whether the NGOs with their edge over government to invoke community involvement (Sharma, 2000), have ensured knowledge transfer and capacity building for long-term mitigation.

How is NGO driven reconstruction different from other approaches? Though there is no dearth of literature on Civil Society and NGO participation and their contribution in post-disaster housing programs (Asgary, Badri, Rafieian & Hajinejad, 2006; Jayaraj, 2002; Jigyasu, 2003; Bradshaw, Linneker, & Zuniga, 2001; Sharma, 2000; Srinivasan & Nagaraj, 2006; Christoplos, 2006; Anderson, 1999; Barenstein, 2006) there is no focused study on their performance in terms of long-term mitigation. The discussions on the transformative role of NGOs and the positive impact of NGOs participation have remained normative due to lack of critical examination of their roles and outcome through empirical studies. Literature also lacks in studies on the nature and process of NGO engagement with the State, Citizens and other stakeholders. Housing reconstruction undertaken in Gujarat following the earthquake in 2001 is one of the largest of its kind undertaken in India. Interestingly the owner-driven and NGO driven reconstruction approaches were evident simultaneously. This created an ideal setting to assess the relative effectiveness of NGO driven approach in terms of sustainable vulnerability reduction.

Background and Locale of Research

On 26th January 2001 the day India was set to celebrate its 52nd Republic Day, one of the most destructive earthquakes struck Kutch district of Gujarat state in Western India at 8.46 a.m. The earthquake, measured 7.7 Mw affecting more than 7,600 villages and 14 towns. About 1.2 million houses were damaged, of which around 220,000 fully collapsed and about 917,000 were partially damaged. Kutch district, the epicenter, was worst affected (GSDMA, 2007). Social and public infrastructure sustained severe damage. In 442 villages, more than 70% of the built environment was destroyed.

The Government of Gujarat launched a comprehensive reconstruction program with loans from the World Bank, the Asian Development Bank and assistance from Government of India. The

[1] For example policies and Schemes for participation of NGOs were formed after Andhra Cyclone 1977, Orissa Cyclone 1999, Marathwada earthquake 1993, Gujarat earthquake 2001, Indian Ocean Tsunami 2004, and Bihar Floods 2008.

Gujarat reconstruction program comprised a large number of components based on the recovery needs including reconstruction and repair of damaged houses, livelihood support programs, and reconstruction of social and public infrastructure, social rehabilitation, community participation support and long-term disaster management. The main challenge however was housing recovery. Reconstruction of about 200,000 houses and repair of over 900,000 houses have been completed.[2] The entire repair undertaken by owners was through financial assistance from the government and nearly 160,000 houses were constructed by owners while remaining 42,000 were by NGOs/donors.[3] In Kutch, over 100,000 houses were constructed through the Owner-Driven Reconstruction approach (ODR) and around 35,000 houses by NGOs. Though housing reconstruction program has been brought to formal closure a year ago, the government is still persuading the beneficiaries, who either not begun reconstruction or left it incomplete, [nearly 7%].

Housing recovery posed a major challenge due to large area impacted[4], types of houses affected (Barenstein, 2006) in varying degree of damage, differential seismic risk within the affected area and different housing requirements in rural and urban areas. In order to cater to the above requirements the government announced six housing reconstruction packages,[5] extending a range of options from complete relocation to *in-situ* reconstruction.[6] . The government evolved a Private Public Partnership Program, through which NGOs could be involved in constructing houses/villages on an equal cost-sharing basis. NGOs could also construct houses without funds from government, and one room-kitchen facilities allowing the rest of the construction to be completed by beneficiaries with government assistance. Financial assistance to the ODR in the rural areas depended on the seismic zone, type of house, and consideration of cost of construction. An upper limit of the government share was fixed in the Private-Public Partnership[7]aligned with the assistance provided in ODR.

Though the government was willing to involve private sector and NGOs in housing reconstruction, the preferred choice was ODR as spelt out in the policy document (GSDMA, 2001), which outlined the main approaches towards housing reconstruction. The range of options enabled the communities to choose the place and mode of reconstruction through a participatory decision-making process. A resolution by the village council involving the voting population was required to choose relocation or *in-situ* reconstruction. Communities could choose their site as per their needs. The choice of owner-driven or NGO-driven reconstruction was also left to the affected families/communities. Though these options were available, people preferred to reconstruct the houses themselves rather than secure a house built by external agencies. However, 74 NGOs participated in housing reconstruction through various options provided for them to build nearly one-fourth of the houses constructed.

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[2] This information is as per the latest report available from GSDMA.

[3] For the purpose of this essay all non-state agencies including voluntary organizations, registered NGOs, corporate houses, external agencies who participated in the program are considered as NGOs as per the categorization done by Government of Gujarat.

[4] Gujarat earthquake affected 21 out of the 25 districts of Gujarat of which five districts were worst affected. The total area affected in terms of housing was nearly 100,000 sq.kms

[5] Full text of these packages are available in www.gsdma.org , the official website of GSDMA

[6] A total of six packages were announced providing a range of options from relocation to *in-situ* reconstruction.

[7] In rural areas maximum of Rs. 90,000 and in urban towns maximum of Rs 125,000 and in the mega city of Ahmedabad maximum of 175,000 was provided as assistance. In NGO-driven reconstruction government shared 50% of the cost subject to a maximum of Rs. 45,000. In the third category, NGOs constructed one room and a kitchen cost Rs 45,000 while the government provided Rs. 45,000 directly to the beneficiaries for construction.

Research Methods

The sustainability and the edge of NGOs over other stakeholders have not been verified empirically. The studies on housing reconstruction approaches conducted in Gujarat and elsewhere (Comerio, 1997; Lewis, 2003; Samaddar & Okada 2006; Barenstein, 2006; Jigyasu 2002) did not go beyond reconstruction to evolve a method to study post-reconstruction sustainability. This led to the simple question regarding the outcome of housing reconstruction in terms of sustainability and evolving an appropriate methodology to study the same.

Research Questions

- Does NGO-driven reconstruction vis-à-vis owner-driven reconstruction result in capacity building and knowledge transfer lead to sustainability?
- What are the factors that lead to successful capacity building or the lack of it?

In Gujarat most of the houses were reconstructed within three years of the earthquake. After occupation of the houses many beneficiaries built additional rooms or made extensions according to their requirements. Study of such constructions would provide an ideal opportunity to verify whether knowledge and technology transfer had taken place leading to sustainability. Hence the universe for the study is the houses reconstructed after the disaster in which additional rooms/extensions were made after occupancy. The sample for the study was drawn from owner-driven houses and each of the three schemes through which NGOs participated in reconstruction. This cross sectional study conducted in second week of May 2007 consisted of both quantitative and qualitative methods. The quantitative information is based on the household survey conducted in 11 villages selected through a process of three-level sampling[8] and the qualitative information based on Focus Group Discussions, observation and informal talks with the village elders, beneficiaries and government officials who were involved in the program.

[8] The first level sampling was the selection of the most affected Taluka [administrative unit above the village level] among the 42 Talukas declared worst affected by the Government of Gujarat. Thus Bhachau Taluka where the epicentre was located and which was worst affected was chosen. The second level sampling consisted of selecting of 11 villages. Out of the 78 villages which adopted owner-driven reconstruction 6 were chosen through random sampling. Out of the 39 villages, which adopted NGO driven approach, five were selected, keeping in mind the three schemes through which NGOs participated. The third level sampling was random sampling of households in each selected village from a list of people who had made additional constructions after occupancy. Thus 60 households in ODR category and 90 in NGO driven category were selected for quantitative survey.

Research Objectives

- To examine whether NGO driven reconstruction leads to sustainable vulnerability reduction in housing recovery.
- To identify critical factors that contribute to sustainability
- To identify the type of intervention required to be undertaken by NGOs in housing recovery
- To enable appropriate policy formulation for participation of NGOs in post-disaster housing reconstruction projects

Research Results

Earthquake-resistant features were incorporated in houses built by owners as well as NGOs. In the non-destructive tests conducted to verify such features all the houses fulfilled the minimum five safety features that are required.[9] While all the houses have five features, nearly 73% have all the features.[10]

NGO-driven reconstruction did not provide scope for beneficiary participation. In ODR houses owners constructed with financial help from the government while in the NGO-driven category, contractors were hired by NGOs. The NGO-driven approach was contractor-driven, as testified by over 96% of the beneficiaries. The results of the survey with regard to people's participation in NGO- driven housing indicate that;

1. Majority of the beneficiaries were not involved in site selection and design approval. Only 43% were involved. In many cases participation meant only consultations while not getting the consent.

2. Only one-third of the beneficiaries were involved in the entire reconstruction process but they mainly provided labor and were not involved in decision-making. The most important reason for not being able to participate in supervision and monitoring of the construction was that the houses were allotted only after construction completion in the relocated villages.

3. In completely relocated villages no one was involved in the reconstruction phase; while in the *in-situ* reconstruction, beneficiaries provided the labor force. While the scheduled

[9] In a flat roof house, in total there should be 6 earthquake-resistant features namely plinth band, lintel band, corner reinforcement, sill band in the windows, proper cement mortar, and position of windows. Lintel band is an essential requirement. The presence of five features which includes lintel band is considered to provide reasonable safety against earthquakes for the purpose of saving lives. In the slope roof houses, in addition to the six features which are required in a flat roof house, gable band is also needed. In slope roof houses lintel and gable band are essential. The presences of five features, which include lintel and gable bands, are considered to provide reasonable safety against earthquakes to save lives.

[10] In order to arrive at a summary of the earthquake resistant features for a reasonably seismic safe construction requirements of minimum five features are considered. However in flat roof houses the mandatory requirement of a lintel band, and in slope roof houses the mandatory requirement of lintel and gable bands have been included in the five features to make the house seismic safe. The study is not a quality audit for safety. The study considers only the presence of the features. Verification of the quality of the features is beyond the scope of this study. However, verification of the engineering features was done by a team of a surveyor and an engineer.

castes and scheduled tribes (SC/STs) provided only labor, the other backward classes (OBCs) did monitoring as well. [11]

The additional rooms built and extensions made were not merely based on physical needs but were also dictated by cultural and social needs. While all the 150 houses had one additional room/extension more than half [52%] had a second additional room and nearly 17% of them had a third.

The reasons attributed to such constructions are;

1. Requirement of additional facility and open space [storage, open veranda]
2. Need for kitchen outside the house to protect it from smoke blackening
3. Necessity of an additional room due to marriage of the son
4. Need for a petty shop or a sitting room, etc.

The following table captures the above discussion succinctly:

Table 1. Percentage Distribution of Total Additional Rooms by Type and Construction Approach

Approach	Type of additional rooms			Total
	Shed/Veranda	Room	Kitchen	
ODR	23.8 (25)	60.0 (63)	16.2 (17)	100.0 (105)
NGO	38.7 (58)	16.0 (24)	45.3 (68)	100.0 (150)
Total	32.6 (83)	34.1 (87)	33.3 (85)	100.0 (255)

Note: Figures in parentheses indicate absolute number.

In the majority of ODR houses, additional constructions were rooms. In NGO built houses, the extensions were mainly sheds/verandas or kitchens. Beneficiaries and FGDs have revealed that construction of rooms in ODR houses is to augment housing space. In NGO-driven houses maximum additional constructions were kitchens, followed by sheds. Beneficiaries constructed kitchens outside the house despite the fact that NGOs constructed kitchens as part of the house. The tradition in Kutch is to build kitchens outside to avoid smoke inside and blackening of the house as firewood is used as cooking fuel. The sheds were constructed because houses constructed by NGOs were square, urban-type box-houses, which did not have open space for daily activities.[12] NGOs designed and constructed houses without consulting the beneficiaries and without understanding the way of life of the local people. The urban type layouts and designs prepared by city-based architects were mainly responsible for these additional constructions in NGO-driven houses.

Though data was collected about the three additional constructions for the purpose of safety analysis only the first additional room is considered as all the houses have a minimum of additional construction and the construction in terms of use of materials, quality and safety were

[11] Scheduled Castes ("SC"s) and Scheduled Tribes ("ST"s) are Indian population groupings that are explicitly recognized by the Constitution of India as deprived classes.

[12] In Kutch shed/veranda is known as Chali. The open space is a multi-purpose space. It is used like a living room where menfolk receive guests and friends, where household economic activities are undertaken, where men and women in the family sit and chat etc.

observed to be the same in all the additional constructions. Considering the five necessary features, the summary of seismic safe extensions is as per the following table.

Table 2. Earthquake Resistant Features by Construction Approach

Approach	Total number of houses	Houses with earthquake resistant features			% of total houses
		Flat roof	Slope roof	Total	
ODR	60	8	19	27	45.0
NGO	90	-	8	8	8.9
Total	150	8	28	35	23.3

In 60 ODR houses considered for the study, 45% had earthquake-resistant features that were seen in the additional constructions against a mere 9% in the NGO-driven category of the 90 houses studied. The abysmal performance of the NGO-driven houses in terms of future vulnerability reduction vis-à-vis government implemented ODR is one of the salient and startling findings of the survey.

Understanding the need for earthquake-resistant features is the prime reason for incorporation of the same features in construction. In ODR as well as NGO-driven category, 63% of them incorporated additional constructions, as they understood the earthquake-resistant features. Nearly 18% ODR and 37.5% NGO-driven category included seismic resistant features as per the suggestion of their engineers/masons. Nearly 19% in ODR category included these features in additional rooms simply because they had constructed their original houses with these features. No such case was found in the NGO-driven category.

Table 3. Percentage Distribution of Reasons for Incorporation of Earthquake-Resistant Features in Rooms by Construction Approach

Approach	Incorporation of earthquake-resistant features in additional rooms			Total
	Due to technical suggestions by engineer or mason	Due to the understanding of safety needs	As it was in the original house, it was replicated	
ODR	18.5 (5)	63.0 (17)	18.5 (5)	100.0 (27)
NGO	37.5 (3)	62.5 (5)	0 (0)	100.0 (8)
Total	22.9 (8)	62.8 (22)	14.3 (5)	100.0 (35)

Note: Figures in parentheses indicate absolute number.

Though many cite understanding earthquake-resistant construction for its incorporation, understanding does not automatically result in its application. Among those households that do not have seismic-resistant features in additional constructions, both ODR as well as NGO- driven category, more than 80% knew at least about one feature. Therefore, why hasn't this knowledge been translated into action? Lack of knowledge, lack of technical guidance, and lack of resources were cited as the reasons by those who had information about what the salient features may be to make a house seismic-safe. While the owners cited lack of knowledge and technical guidance as the main reason, the NGO-driven households cited lack of resources as the main reason followed by lack of knowledge. The following table summarizes the household reasons for non-compliance.

Table 4. Percentage Distribution of Reasons for Non-Incorporation of Earthquake Resistant Features in Extension by Construction Approach

Approach	Non incorporation of earthquake-resistant features in extension when it is in original house				Total
	Do not know	Lack of knowledge	Lack of technical guidance	Lack of resources	
ODR	51.5 (17)	6.1 (2)	15.1 (5)	27.3 (9)	100.0 (33)
NGO	17.1 (14)	17.1 (14)	3.7 (3)	62.1 (51)	100.0 (82)
Total	27.0 (31)	13.9 (16)	7.0 (8)	52.1 (60)	100.0 (115)

Note: Figures in parentheses indicate absolute number.

Does a lack of resources mean beneficiaries understand and have the necessary knowledge for earthquake-resistant construction? It calls for further probing when two-thirds of NGO-driven households cited lack of resources as a cause, despite nearly 60% of the families in this category are above the poverty line. [13] In Focus Group Discussions, it was revealed that beneficiaries were not involved in NGO-driven reconstructions, as they had no idea of the cost of incorporating seismic-safe features in contrast to the owners. In a sense, lack of funds and lack of knowledge are not mutually exclusive. Here, it is necessary to recall our earlier discussion about the lack of participation by the beneficiaries.

Discussion and Conclusions

The study failed to establish that NGOs enabled beneficiaries to acquire necessary knowledge and capacity for earthquake-resistant construction despite their superior social skills and their philosophy of people's participation. Lack of the people's participation in the construction is the most important reason for not acquiring the necessary knowledge. In circumstances that did permit them to enable people's participation, they could have undertaken capacity building through education and training for knowledge transfer, but such a capacity-building exercise was not undertaken by the NGOs. The performance of ODR households, though short of the requirement for reducing future vulnerability, is better when compared with NGO-driven houses. In other words, Owner-Driven Reconstruction could not transfer knowledge and technology to all the beneficiaries and yet was better than NGO-driven reconstruction. Such a comparison becomes significant, when governments are not considered capable of mobilizing people providing the rationale for NGO participation.

NGOs with diverse backgrounds participated in housing reconstruction. These included Development-NGOs, service-delivery NGOs, advocacy-NGOs, religious organizations, clubs & societies, national and international NGOs. Many NGOs neither had any post-disaster housing reconstruction experience nor were they involved in any disaster mitigation activity prior to Gujarat earthquake. Availability of donor funds, or public contribution and high visibility of the housing reconstruction activity drove many NGOs to undertake housing reconstruction. This lack of experience and expertise in disaster mitigation and housing reconstruction among many NGOs that undertook housing reconstruction are also important reasons for NGOs not being able to address the issue of long-term sustainability.

[13] The families in India are generally classified into Above Poverty Line (APL) and Below Poverty Line (BPL) families based on income, expenditure, and standard of living for the purpose of government subsidies, assistance and the issue of ration cards.

The studies by Barenstein (2006) and Samaddar and Okoda (2006) point out to dissatisfaction with NGO constructed houses and therefore the high rate of non-occupancy of NGO-constructed houses. Jigyasu (2002) discusses the lack of consideration of the need and cultural requirement of the beneficiaries by the NGOs. This study in addition to the above indicates that the processes adopted by NGOs to construct houses were only on product-mode and lacked conscious and systematic efforts to mobilize, educate and train the communities. These additional dimensions suggest NGOs failed to build knowledge and capacity for long-term sustainability.

To summarize, it could not be proven that NGO participation in reconstruction helps mobilize communities, transfer knowledge and technology, and build capacity for long-term disaster mitigation. NGOs have squarely failed to address the issue of participation, gender equity; empowerment, sustainability, and need-based planning and yet advocate these as essential aspects. Ironically, they did not deliver on these fronts.

Donors should shift from product mode funding and provide more flexibility in utilizing funds for capacity-building activities. The donors should align with the policy of the government, with respect to long-term sustainability. The build-and-disappear approach of the NGOs should be replaced with a systematic withdrawal approach. NGOs should not only have a clear entry policy and a target but also a clear exit policy, exiting only after ensuring knowledge and technology transfer and capacity-building for future sustainability. This may require the NGOs to stay in the reconstruction area long after physical reconstruction is complete. Government should set up a regulatory authority comprising representatives of NGOs and government for selection of capable NGOs and monitoring their output.

Housing reconstruction is not a brick and mortar program. It is not even about building safe houses. It is about orienting the affected communities to the hazards, vulnerabilities and mitigation so that they will be able to sustain vulnerability reduction in the future. Additionally the success of a reconstruction program depends on what happens after withdrawal of government and NGOs from the affected area. Government and NGOs should enable sustainable vulnerability reduction and in the process also build houses for the beneficiaries.

Key Lessons Learned

- As people do not participate in the NGO driven reconstruction, neither knowledge transfer nor capacity building takes place through these mass housing projects to ensure sustainable vulnerability reduction.
- Mere awareness about the need for disaster resistant reconstruction is not enough.
- The beneficiaries need to understand the actual method of safe construction and the cost implications.
- NGOs should conduct need analysis, understand the socio-cultural requirements of the affected and ensure a mechanism to effectively involve the beneficiaries in designing, planning and monitoring reconstruction.
- Each beneficiary should know about the house that is allotted to him before the start of the program so that he can actively participate in the reconstruction process.
- NGOs have different capabilities and resources and hence only those that have the experience and capacity to address the issues of long-term sustainability should be involved in housing reconstruction.
- There should not be just entry policy for NGOs but also a clear exit policy.

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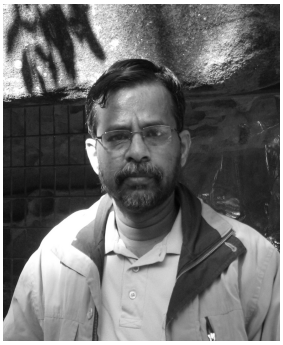
Author's Biography



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