THE 2004 INDIAN OCEAN TSUNAMI: LONG-TERM HOUSING RECOVERY

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Despite a growing body of literature on how land use plans and housing policies help reduce or eliminate long-term threats of natural disasters in urban areas, there is limited understanding of how these impact rural communities in developing countries. Scholars propose that examining recovery from a structural improvement perspective emphasizes the importance of physical or material assets to the survivors (Bates & Peacock; Arlikatti et al. 2010). But restoration of physical infrastructure lost during disaster events, is important to disaster survivors insofar as it also facilitates economic and socio-cultural recovery. Scholars post that disaster recovery especially in rural communities of developing countries should thus be treated as an opportunity to address long term developmental goals that are intertwined with sustainable livelihood recovery, reduction in social and physical vulnerabilities and improving household capabilities (Haas, Kates & Bowden 1977; Arlikatti & Andrew 2012).

RESEARCH OBJECTIVES

This discussion aims to examine whether the post-tsunami housing recovery projects initiated by the state and local government with the help of NGOs and INGOs in South India in response to the 2004 Indian Ocean tsunami were measurably successful in,

1) Building communities back better? – Earthquake and tsunami resistant building codes, stronger building materials, adherence to coastal regulations zones to keep residents out of harm's way, improvements in household assets – Physical measures
2) Whether the types of housing assistance programs had differential impacts on the populace? – Did those receiving housing repair and rebuilding assistance for in-situ projects (on their previous home plot) perceive recovery to be different from those that were part of the resettlement programs – Socio-economic measures

DATA COLLECTION

The findings presented herein come from analyzing longitudinal panel data of tsunami affected households in the Nagapattinam District of Tamil Nadu, India in 2005, 6 months after the tsunami struck and again in 2008, 3-1/2 years later. The data published by the state Government of India reported that in this district more than 6,000 lost their lives, almost 2,000 were injured, 196,000 people displaced, and over 28,000 housed in relief camps (Prater et al., 2006). Additionally, at least 39,900 residential structures were damaged, making it a relevant study site. The first survey was administered between May and July of 2005, where 1,000 households were randomly selected from15 coastal villages and one urban settlement (see Arlikatti et al. 2010 for details of the sample selection process). The data collection was undertaken by Good Hope Foundation a local research group with Tamil speaking interviewers trained and supervised by the researchers. Using the same instrument with additional questions related to perceptions of housing recovery a second survey was conducted in the summer of 2008, targeting respondents from only seven villages due to funding constraints.

Specifically, to examine the differences between households that were resettled (Donor-driven) and those that received in-situ housing assistance for repair (Owner-driven), a series of questions asked the respondents (1) the size of their home, (2) the extent of damage to their home7, (3) the amount of aid they

received, (4) the distance of the household's physical home from the HTL, (5) the improvements to their communities related to safety, access to medical facilities, transportation, aesthetics, trees etc. and (6) the percentage of children and elderly, female, and economically active members in the household and other demographic information. Of the 558 longitudinal panel respondents only 330 households were identified as being beneficiaries of either the Donor-driven resettlement program (N=138) or the Owner-driven in-situ housing program (N= 192) respectively. Of these 8 percent of the households identified themselves as scheduled caste, 5 percent as backward caste, and 87 percent as the most-backward caste. While some households worked as agricultural laborers or farmers (16 percent), most of them were directly involved in fishing activities (47 percent boat-owners and 34 percent laborers). About 72 percent of the households earned between Rs.26000 – 40000 ($1=Rs.50) or below annually. The average household size was about 4 and 52 percent were female-headed households.

FINDINGS

We found the experiences and perceptions of households in our sample varied by the types of assistance provided by the government and NGOs. While repairing, rebuilding, and retrofitting damaged homes in-situ can provide households with familiar environments as well as access to employment, schooling, and medical services, relocating into new settlements offered households brand new homes with designs and structural improvements such as potable water closer to homes, better sewage facilities and general sense of safety being away from the ocean.

We found evidence that housing assistance arrangements and certain changes linked to the built environment and access to livelihoods have an effect on the self-assessment of household recovery. About 47 percent of beneficiaries of the resettlement program reported that the distance of their employment from their home had increased. One reason why employment distance increased for so many resettled households is because those who were within the buffer zone of 200 meters from the HTL were moved inland i.e., their sources of employment became further from the sea. A large majority (87 percent) of the beneficiaries of the resettlement program have household members involved directly or indirectly in the fisheries industry.

Thus beneficiaries of the in-situ repairs and retrofitting program had a relatively high self-assessment of recovery which can be explained by their continued access to the livelihoods of choice and also by the housing culture in South India. For example, Shaw and Ahmed (2010) suggest that, after the tsunami, the co-habitation arrangement of households in the region "became an important survival strategy for children and elderly people who had lost a breadwinner" (p.21). It is not uncommon to see a living arrangement where extended families lived close by fostering an intra-household support system that can affect the wellbeing of household members. However, in the new settlement housing, the living space was limited. Households were co-locating their relatives in neighboring houses because the size of new homes was smaller than their previous homes. Thus, although the resettlement program provided a general sense of safety to the beneficiaries, their living space was constrained by the relatively large number of children and the elderly (*see* Andrew et al. 2013).

POINTS TO KEEP IN MIND:

There is an overwhelming need to recognize that for disaster survivors, assets do not portend just physical assets (i.e., land, houses, infrastructure), but that their recovery depends on maintaining social assets (i.e. relations with neighbors and the community, employment skills, cultural and religious norms in housing design) as well.

1. Although the current body of research indicates the benefits of the self-built or an owner-driven approach, some scholars argue that the arrangement itself may not be sufficient to assist households' recovery process (Lyons, 2009). Barakat (2003) pointed out that the self-built approach is only "possible when labor is available, housing design is relatively simple, communities have a tradition of self-building and there are no strict time pressures" (p. 33). Is it possible to encourage "owner driven" self-build approaches in post disaster contexts when there are numerous challenges?

2. Equally important is that the problems experienced by resettled households are not solely due to the investment in housing per se but to the manner in which housing is governed and procured (Oliver-Smith, Anthony 1991; Schilderman, 2004; Arlikatti et al. 2012). For example, households may place greater value on investing their time and effort on maintaining social connections and familiarity with the built environment rather than improving the housing conditions after a disaster. All the new homes are smaller and do not allow an extended family to be accommodated. How can we help design homes that cater to the family needs without dividing them or alternatively create community spaces that can help maintain and foster social connections?

3. The housing designs may be too urbanized or westernized and although using stronger building materials, may not be culturally appropriate. Eight years since the tsunami, most of the survivors in resettled communities who were given new homes complain about the poor quality of construction. Their concrete roofs are constantly leaking, the rebars exposed due to weathering from salt in the ocean breeze, and repairs too expensive. They share that before the tsunami, they were able to replace the thatch on their roofs annually and keep it from leaking as it was freely available and they had the skill to do so. But now the palm fronds are of no use to them in this regard. We need to ensure that NGOs and private contractors of large projects are monitored to maintain the standards of construction. Can we create stronger building materials that use local resources and train local craftsmen and artisans?

BROADER QUESTIONS:

1. Do we find similar concerns emerging in developed nations like the U.S. where pockets of the rural and urban poor live (e.g. along the Texas-Mexico border; the people of Bayou in Louisiana; the miners in the Appalachians etc.)?
    a. How can development be intertwined with disaster housing policy
    b. How can conflicts between indigenous land uses and community needs versus hazard mitigation in rural communities be sorted out?
    c. How can we mitigate the impacts of weak or nonexistent home insurance markets
2. How can architects, planners, material engineers, civil engineers and social scientist come together to design and build stronger disaster resistant homes that are also culturally appropriate, use indigenous materials and local artisans especially in fragile environments with the urban/ rural poor?

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