

6. Post Disaster Housing Reconstruction: Comparative Study of Donor Driven vs. Owner Driven Approach

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Abstract

In addition to human casualties one of the most visible and striking effects of any major disaster is the destruction of homes. The construction of houses will be a major activity in the reconstruction phase of any disaster. The quickest and the most effective way to rebuild homes after a disaster is to employ what is known as the “Donor Driven” approach. In this approach the government or an external agency funding the project will lead the reconstruction process with the help of consultants and contractors procured for the project. The major limitation of this approach is that it may lead to housing that does not respond to the need of the victims. As an alternative, the so called “Owner Driven” approach has been used by some donor agencies as well as the government in many disaster situations. In this approach the disaster victims reconstruct their homes themselves. The role of the external agency is limited to the provision of financial and technical assistance.

Past research on the suitability of these two approaches in various disaster situations is limited to very few cases. The massive reconstruction programme implemented in Sri Lanka after the Indian Ocean Tsunami used both these methods with varying degrees of success. Therefore, lessons learned in Sri Lanka would be a useful contribution to this growing body of literature on different approaches to post disaster housing reconstruction.

This paper aims to contribute to this discussion through a questionnaire survey conducted among beneficiaries of the Tsunami housing programmes in the Matara District of Sri Lanka. The study found that owner driven approach has a number of advantages over donor driven approach. Nevertheless, the donor driven approach cannot be totally dismissed as unsuitable because it has scored very highly on some important parameters relevant for disaster situations.

6.1 Background

Disasters cause a substantial amount of damage around the world every year [7]. In recent years several major disasters have occurred in coastal areas worldwide. On the 26th of December 2004, a major Tsunami occurred in the Asian region killing nearly 250,000 people around the Indian Ocean. The Joint Report of the Government of Sri Lanka and Development Partners [3] issued, in December 2005, highlights that the Tsunami on 26th December 2004 killed 35,322 people and destroyed US\$ 900 million worth of assets and infrastructure in Sri Lanka.

One of the major challenges after a disaster is how the redevelopment activities should be undertaken. To rebuild the nation after a disaster, Governments adopt different reconstruction strategies. Different reconstruction strategies give different outcomes. Serious decisions must be made on how risks could be reduced to acceptable levels and these decisions have to be reflected in the reconstruction and recovery strategies that should be adopted. Identifying the most suited and applicable strategy for each situation is of utmost importance in order to provide better assistance to the victims and to avoid possible future vulnerabilities and environmental degradation.

Therefore, the aim of this research is to analyze the strategies used in post Tsunami reconstruction work in Sri Lanka. The main objective of the research is to identify the post Tsunami housing reconstruction strategies used, their applicability to Sri Lankan context and their level of success.

6.2 Disaster Management & Reconstruction

6.2.1 Disaster management

Disasters are not totally discrete events. Their possibility of occurrence, time, place and severity of the strike can be reasonably and in some cases accurately predicted by technological and scientific advances. It has been established that there is a definite pattern in their occurrence hence we can to some extent reduce the impact of damage though we cannot reduce the extent of the damage itself. This demands the study of disaster management in a methodical and orderly approach [5].

Disaster management has a different emphasis in different disciplines. According to Central Emergency Relief Organisation [2], disaster management is a collective term encompassing all aspects of planning for and responding to disasters, including both pre-disaster activities and post-disaster activities. It may refer to the management of both the risks and the consequences of disaster.

Disaster management can be divided into four steps as: Emergency Response and Relief; Recovery and Reconstruction; Mitigation; and Preparedness [8].

6.2.2 Reconstruction strategies

According to Kishore [6], any reconstruction programme has to meet a range of complex and often conflicting needs of affected people. The i-Rec Conference held in 2004, has identified that reconstruction programmes often fail to take in to account the desires of the disaster affected populations. If proper attention is not given to the needs of affected people there is a possibility that the newly constructed facilities become obsolete from the day the construction is complete. Therefore, reconstruction strategies should be implemented after studying the desires of the affected people.

According to Asian Disaster Reduction Center [2], post disaster reconstruction is a complex issue with several dimensions. Government, non-governmental and international organisations have their own stakes in disaster recovery programmes and links must be established among them, as well as with the community. SMEC Group of Companies [8] mentioned that, reconstruction is one of the most demanding forms of activity after a disaster, because it operates in conditions of uncertainty, often in remote locations and within severe time constraints. Therefore, proper planning is of utmost importance to reduce future vulnerabilities and to improve long-term sustainability. A good housing reconstruction strategy will take into account the social need together with long-term disaster mitigation and sustainability. Barenstein [9] has studied these strategies following the earthquake that hit Gujarat in India on 26 January 2001. Barenstein [9] identified five approaches, namely; the owner-driven approach; the subsidiary housing approach; the participatory housing approach; the contractor-driven approach in situ; and the contractor-driven approach ex nihilo, that were used during the reconstruction. The author compared these five approaches and discussed the issues related to implementation of each of these methods.

The Indian Ocean Tsunami provides an opportunity to study the different approaches used in housing reconstruction, their success and related issues. According to Wegelin [10], Indonesia's Reconstruction Master Plan for post Tsunami reconstruction set two core standards for tsunami victim household support. Each surviving household would be entitled to a grant of US\$3,000 per home to

rebuild the house if it needed to be rebuilt from scratch and US\$1,000 for damaged houses that could be renovated. Unlike in Gujarat, Sri Lanka used only two distinct approaches in housing reconstruction; they are, the Donor Driven approach and Owner Driven approach [10].

The Donor Driven reconstruction programme is handled completely by the donor agencies as relocation of affected families within the buffer zone from the buffer zone became a necessity. All affected families were entitled to a house built by a donor agency in accordance with Sri Lankan government standards, in a new location. In addition, the donor provides all common infrastructure for the new settlement, while the Sri Lankan government provides the services up to the relocation site [10].

Houses that were damaged partly or fully outside the buffer zone were included in the Owner Driven reconstruction programme. The Sri Lankan government provided a cash grant to the affected homeowners for the reconstruction of their houses at the same site. The owner of a partly damaged house received a cash grant of Rs.100,000 and the owner of a fully damaged house received a cash grant of Rs. 250,000 [10]. The Owner Driven approach enables the affected communities to undertake construction work themselves with external financial support and technical assistance.

6.3 Methodology

Firstly a comprehensive literature review was carried out on disaster management and reconstruction strategies by referring to books, reports, journals and research publications. The Tsunami, which hit Sri Lanka on the 26th of December 2004, has been selected as the case study for this research. A detailed documentary survey was carried out on post-Tsunami reconstruction activities in order to identify the different housing reconstruction strategies adopted. Also 100 newly constructed or repaired houses have been inspected in the District of Matara in order to get a clear idea of issues such as buildability, sustainability, etc.

Both structured and unstructured interviews were conducted among officers of 11 Governmental and 6 non-Governmental Organisations, to collect information on post Tsunami housing reconstruction strategies, their suitability and applicability. A questionnaire survey has been administered among 531 Tsunami victims in the District of Matara, to identify the level of satisfaction of the housing they obtained. The profile of the sample used in the questionnaire survey is given in Table 6-1.

Table 6-1 Profile of the sample

Category	No. of Dwellers	%
Donor Driven Housing Relocation Programme	261	49 %
Owner Driven Housing Resettlement Programme	255	47 %
Received only Temporary Housing	21	4 %
Total	537	100%

6.4 Results

With all the findings from the questionnaire survey, unstructured interviews conducted among Tsunami victims, together with observations of the researcher and the views of officers of the relevant Governmental and Non Governmental Organisations, the success of the housing reconstruction programme has been measured separately for the Donor Built Programme and Owner Driven Programme using the parameters given below.

- Coverage
- Adequacy and sufficiency of the relief received
- Timeliness
- Overall satisfaction of the victims
- Other issues based on the observations of the researcher (Buildability, Sustainability, Extendibility)

6.4.1 Coverage

According to the statistical information 74.3% of the housing units have been completed and 18.63% of the housing units are still in progress by September 2007 [11]. The tsunami housing reconstruction progress in Sri Lanka is therefore at a fairly successful stage when considering the total planned duration of 3-5 years period. Beyond this, the present housing coverage in Matara district has been summarised below under two housing reconstruction strategies, in order to identify the degree of success of the housing reconstruction programme.

In the case of donor driven housing programme in Matara district a total of 62 sites were assigned for relocation of which 48 sites have been completed. However, 10 sites are currently still in progress and 8 have not commenced yet. When concerned with the number of houses required for Matara, it had planned 1,678 units and already 1,856 housing units have been completed. In addition, 371 housing units are still in progress and 423 houses have not begun as originally schedule at the decision making stage. In conclusion it can be said that more than 100% of total housing requirement have been achieved at present in donor driven housing programme in Matara district, with an excess of 178 housing units [11].

Up to end of September 2007 96.7% of all housing units, including fully and partly damaged housing unit in owner driven housing programme, have been completed in the district of Matara. The remaining 2.7% is in progress and 0.6% of housing units are yet to begin. In the case of owner driven

housing programme housing progress in fully and partly damaged housing units are summarised separately, as follows, in Table 6-2.

It can be seen that 89% of fully damaged houses have been completed and 99% of partly damaged houses have been completed. However, the money disbursements do not inevitably denote that the reconstruction of the housing units are completed from the Rs. 250,000/= given to fully damaged house victims in 4 installments and Rs. 100,000/= given to partly damaged house victims in 2 installments. It was observed that when dwellers failed to show progress of the work within the stated requirements then the victims have been unable to collect the next installment according to disbursement schedule. They then had to wait for further money arranged from top up grants, loans and other assistance from third parties to complete their homes. This had less of an affect in owner driven housing programme especially in fully damaged houses.

Table 6-2 - Progress in Owner Driven Housing Programme

	Fully Damaged Houses		Partially Damaged Houses	
	No. of Houses	%	No. of Houses	%
Completed	1250	89%	4821	99%
In Progress	142	10%	25	0.50%
Not Started	11	1%	25	0.50%
Total	1403	100%	4871	100%

6.4.2 Timeline

To carry out the research across several parameters a scale has been used as “very satisfied”, “somewhat satisfied”, “somewhat dissatisfied”, and “very dissatisfied”. As shown in Table 6-3, the greater proportion of victims were in the categories of “somewhat dissatisfied” or “very dissatisfied” scales in both housing reconstruction programmes. It is not certain whether this issue is due to the fact that reconstruction has been designed to complete within 3-5 years of timeframe and still it has only taken nearly 3 years.

Furthermore, when concern about the views of the victims on the timeliness of the delivery of permanent houses that the Table 6-3 shows a fairly satisfied response to owner driven housing programme when compared to donor driven houses. In the case of owner driven programme it has taken less time to arrange the financial assistance and other aspects. However, the donor driven programme has taken more time than the owner driven due to the need to acquire lands, design, establish the contractual arrangements and the actual construction - the whole procedure needed due to the large scale of housing projects.

Table 6-3 - Satisfaction level regarding Completion Timeline

Reconstruction Strategy	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Donor Driven	0%	7%	42%	51%
Owner Driven	5%	25%	43%	27%

6.4.3 Dwellers view on their permanent residence

One of the most visible and outstanding effects of any major disaster is the devastation of homes which destroys livelihoods, protection and privacy. So that, without reference to the timeline and cost of the reconstruction activities it is essential to evaluate the dwellers' views to gain an overall satisfied output. Under this heading, the dwellers' views were gained on their permanent residences while covering the nine salient factors and conditions generally assembled with housing programmes in both donor driven and owner driven, which are mentioned at the beginning of this chapter. The scale used was the previous one used in the above, that of "very satisfied", "somewhat satisfied", "somewhat dissatisfied", and "very dissatisfied".

6.4.4 Quality / strength / durability

As shown in Table 6-5, in the case of donor driven programme, only 5% of the dwellers were very satisfied and 15% were somewhat satisfied while 47% were somewhat dissatisfied and 33% of the dwellers were very dissatisfied. For many reasons the dwellers were not satisfied with the strength, arrangement of structure, quality of materials used, improper land fillings and cuttings and bad construction of the houses. Also, due to increase in the number of intermediate dealers, each transactions has resulted in minimising the amount of money for a single housing unit. Finally, it was also affected by the contractors' duty to reduce cost targets, which reflected in them to selecting low costs and poor quality materials, offensive method statements, etc. Most observed projects ranged from small to several defects and some houses were left. In most case the dwellers involvement to construction activities was less and the 5% who were very satisfied had succeeded mainly due to the dwellers participation.

Throughout the survey 55% of the dwellers of the owner driven programmes were very satisfied and 34% were somewhat satisfied. Dwellers in owner driven houses argued that high level of quality standards can be achieved from inception to completion when this is done with the participation of the resident. Most often the owners have recognized that better design and structural stability, with superior quality maintenance of their new residence, is important to their future vulnerability. Financial assistance gained from the state was reinforced by the top up grants provided by the private donors in most of owner driven programme plus further money recovered from loans, own money, relations and friends assistance, etc. So comparing the outcomes of the survey it should be noted that the owner driven programme gained a better result than donor driven programme in respect to quality, strengthen and durability of their permanent residences.

6.4.5 Functionality

In the case of functionality, according to Table 6-5 the majority of the donor driven programme (41%), was very satisfied and according to Table 6-6 majority of owner driven programme (52%), was somewhat dissatisfied. Most of design in donor driven houses was done by the qualified architect concerned with Sri Lanka's culture on basic amenities. Some of international participant involvement caused restriction in local complimentary designs. It is a common intention when constructing a house by the owner to try to achieve a better quality of house with the present finances, with basic amenities or less and retain part to be done in the future after it is occupied. It is what that has been observed in most owner driven houses.

6.4.6 Space availability

According to the survey results, it is recognised that an equally fair distribution can be seen in Table 6-5 in donor driven programme, in the case of space availability, as this depends on several aspects such as members in a family, livelihood pattern and living standards. According to Table 6-6 the majority of the owner driven programme (59%), were very satisfied due to most of dwellers have identified their requirements with sufficient space for the number of family members. Most fully damaged houses in owner driven programme have been observed as two storey houses by providing a better space in a vertical arrangement. Inadequately financed home owners have constructed their houses with less amenities and allocating insufficient space, which has resulted in 15% of dwellers in the somewhat dissatisfied category.

6.4.7 Aesthetics

As shown in Table 6-5, the majority, which is 52% of the dwellers of donor driven programme were somewhat satisfied and 22%, were very satisfied. In the case of owner driven programme 31% of dwellers were somewhat satisfied and 34% were very satisfied, while 34% were somewhat dissatisfied according to Table 6-6. In both cases, it has been observed that some middle class people were not satisfied, as they lived in better quality houses before the tsunami. In most cases, it has been identified that donors have got better looking houses which were designed by the qualified architect. However, most owners have designed their houses according to their own concept of better appearance.

6.4.8 Flexibility to make any changes in the future

As shown in Table 6-5 and Table 6-6, the majority, which is 54% of the dwellers of the owner driven programmes, were somewhat satisfied and the majority of donor driven programme amounting to 56%, were somewhat dissatisfied with the flexibility to make necessary changes in the future. It has been noted that most of the dwellers in donor driven programme do not have any intention to change it presently as the original deeds had not been handed over to them. In some cases also the allowable land area is not enough to increase horizontally or that the design of the vertical alignment would not allow further developments.

6.4.9 Agreeing to change the design as required

In the case of the agreeing to change the design as required, in owner driven programmes 45% of the dwellers were somewhat satisfied and 33% were very satisfied, while donor driven programme 56% of majority were somewhat dissatisfied. Dissatisfaction of dwellers in the donor houses were high due to that involvement of victims in the design stage could not be seen throughout the survey. Only in a few projects had the victims been allowed to inspect their houses at the construction stage and that they couldn't support any change to the design. So in conclusion it has been noted that owner driven programmes provide a high satisfactory level compared to donor driven programme in respect to the support given to change the design.

6.4.10 Land size

In the case of land extent, the majority of donor driven programme (47%) was very dissatisfied and the majority in owner driven programme (52%) was very satisfied. It has been observed that the larger number of people who have moved to donor driven houses were not satisfied, as they had lived with an adequate size of land area before the Tsunami. Now, however, the majority of donor's housing area provided ranges from 6 to 12 perches – which is tiny when compared with pre tsunami owned land. Also there were no ground areas to most donor driven houses, which have been granted to multi storey housing schemes but with some common area for social activity. It is obvious that most of the owners were satisfied with regards to their previous land extend, but a few cases have been identified as restricted areas to construction activities because of the buffer zone concept.

6.4.11 Location

According to Table 6-5 and Table 6-6, the majority (66%) of dwellers of the owner driven programmes, were very satisfied and majority of donor driven programme (41%), were very dissatisfied with the case of location. Most of the people in the Matara district who were affected to the tsunami were occupied in the fishing industry and most of their livelihood activities are based around the sea. The majority of owner and donor dwellers responded as it was a major opportunity to be located near to the sea. Yes, some of middle class people in both owner driven and donor driven programme observed that the relocation to inland villages is better than the previous coastal location, considering social and cultural issues.

6.4.12 Overall facilities provided (electricity, water connection and sanitation)

The results of the survey demonstrated that overall the facilities available in the donor driven programme and owner driven programme are in better position. These are shown in Table 6-4 categorised into three basic services (electricity, water connection and sanitary facilities).

Table 6-4 - Services in the house

Services	Donor Driven		Owner Built	
	No. of Houses	%	No. of Houses	%
Water	246	94.25	253	94.12
Electricity	231	88.51	234	91.76
Sanitary	210	80.46	210	82.35

Although the above facilities are connected to both programmes in adequate manner, for several reasons the dwellers satisfactions for those facilities are not the same. According to Table 6-5 and Table 6-6, it shows the satisfactory level of two different housing programmes in the case of the overall facilities. In the owner driven programme 41% of the dwellers were very satisfied and 39% were somewhat satisfied, while in the donor driven programme 39% were somewhat dissatisfied. It has been observed that at the beginning the facilities are connected to donor house, but the outputs malfunctioned due to various issues and unexpected conditions.

Furthermore Table 6-7 specifies the percentage of dwellers, under each category on the two reconstruction programmes that the majority (40%) of the dwellers of donor driven programme were somewhat dissatisfied and 31% were very dissatisfied. In the case of owner driven programme 50% of dwellers were somewhat satisfied and 33% were very satisfied. It is understandable that the dwellers, who were under donor driven programme were not happier with their permanent houses than the dwellers, who were under owner driven programme in the district of Matara.

Table 6-5 - Satisfaction of the Dwellers – Donor Driven

Factors	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Quality/ durability	5%	15%	47%	33%
Aesthetics	22%	52%	23%	3%
Functionality	26%	41%	24%	8%
Space availability	20%	26%	29%	25%
Agreed to change the design as required	4%	18%	56%	22%
Flexibility to make any changes in the future	4%	23%	56%	17%
Location	16%	20%	23%	41%
Land size	6%	15%	32%	47%
Overall facilities provided	23%	28%	39%	10%

Table 6-6 - Satisfaction of the Dwellers – Owner Driven

Factors	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Quality/ durability	55%	34%	11%	0%
Aesthetics	34%	31%	34%	1%
Functionality	13%	26%	52%	9%
Space availability	59%	24%	15%	2%
Agreed to change the design as required	33%	45%	20%	2%
Flexibility to make any changes in the future	22%	54%	19%	5%
Location	66%	19%	13%	2%
Land size	52%	26%	20%	2%
Overall facilities provided	41%	39%	20%	0%

Table 6-7 - Dwellers' Total Satisfaction regarding their Permanent Resident

Reconstruction Strategy	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Donor Driven	12%	17%	40%	31%
Owner Driven	33%	50%	15%	2%

6.5 Conclusions

The recent increases in frequency and magnitude of natural disasters have raised issues of increasing vulnerability of communities. The impact in terms of human, structural and economic losses has risen in recent years. The reconstruction process has very much depended on the administrative, political, social, economic and cultural context that coupled with many other unforeseen factors will affect the speed and coverage of the recovery programmes. In order to derive a better conclusion, the research mainly focused on the degree of success of post tsunami housing reconstruction programmes based on two strategies, namely, donor driven and owner driven.

The main outcome from this survey is that dwellers in owner driven housing programme are more satisfied than the dwellers in donor driven housing programme when concerning various parameters. In other words, it can be concluded that the owner driven housing programme is more successful than the donor driven programme concerning the dwellers' view. According to the research, it has been argued that the owner driven housing programme has been prominent in terms of: quality/durability, space availability, flexibility to make any changes in the future, agreeing to change the design as required, land size, location, overall facilities provided (electricity, water connection and sanitation). When looking at these parameters, those which are superior in terms of owner driven, have proved that the dweller involvement throughout inception design to construction stage resulted better success in owner driven housing programme than those who were under the donor driven housing programme.

But contrast with the owner driven housing programme, the donor driven housing programme has been more superior in terms of: aesthetics and functionality. Furthermore, it has identified that the two main reasons behind this are that the donor houses have been designed by professional architects and

most of the houses in the owner driven programme were half built and occupied with the intention of completing in the future.

Reconstruction process should be considered as development opportunities and should open the access of different types of innovative solutions. These innovations should lead to vulnerability reduction, and should enhance human and other activities security in long term. By providing the buffer zone the government has identified the vulnerable area for future disasters and emphasised a need to categorised the post disaster housing reconstruction programme into the two strategies discussed above. However, the donor relocation programme started later than owner resettlement programme, although progress in the district of Matara in the donor driven housing is fairly high compared to the owner driven. Compared to other districts, the coverage in the both programmes in Matara district is high, but the dwellers' view on timeliness to delivery of permanent houses to the donor driven and compensation to owner driven house have been identified by a smaller number. That was seriously shown in donor driven programme. Although, there is an excess amount of donor driven houses at the present, still there are victims living in temporary houses. Also the assistance given to sub families' victims could be seen as erroneous and after 3 years most of the sub families still live in the temporary housing, yet there are larger numbers of donor houses still vacant.

It has also been observed that the dwellers' view on the State assistance throughout the housing reconstruction programme is fairly high in the owner driven houses, but view on the NGO assistance throughout the housing reconstruction programme has been fairly low compared to those donor driven ones.

By evaluating the overall information on the post tsunami housing reconstruction programme, the success of the process as well as the victims' view of two different reconstruction strategies will be helpful to decision makers to get comprehensible idea regarding their applicability and drawbacks.

6.6 References

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