CARITAS

“Building Back Better” or Safer?

Lessons Learned

Aceh Review

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Abstract

The Tsunami Relief and Rehabilitation Programme, set up following the devastating tsunami of 26 December 2004, allocated large international financial support to the reconstruction of houses lost in the disaster. The interpretation of "Building Back Better" differs from one community to the other and between NGOs, creating various discrepancies and questionable results. The principle of "Building Back Safer" is more appropriate in a post disaster situation – trying to avoid a repetition of the same disaster. Recommendations are provided about settlement planning, management and water and sanitation solutions. The need for education and training of the settlement management communities is stressed, so they can be actively involved in the design and construction of their new houses. The construction of new houses should be part of the overall livelihood programme and include empowering of the affected communities.

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Photo Front Page:
The photo shows a transitional shelter of excellent quality and adequate WatSan. Some of the occupants have extended their house while others have painted them. Good quality transitional shelters, which can last 3-5 years, are necessary when safer permanent houses cannot be easily realised due to external circumstances.

INTRODUCTION

The "Building Back Better" concept was originally expressed by Caritas (India) and presented as the modality for the 2004 tsunami reconstruction aid programme. Both victims (beneficiaries) and the local authorities definitely wanted to receive better houses back than what was lost, but the interpretation of the meaning "better" differs from one community to the other and from one NGO to the other. The issue raised here is whether it should not have been "Building Back Safer" instead because the "Building Back Better" notion created various discrepancies and questionable results.

The following paper gives a review of the situation in Aceh as seen by some Caritas field staff. Comments are provided by the Shelter Advisor with relevant associations to the situation in Sri Lanka.

The "Building Back Better" notion was made possible because of the large financial donations received for the 2004 tsunami victims as compared to any other previous disasters. It was estimated that Euro 7000 would be available (promised) per survivor, while for other disaster rehabilitation programmes only one-hundredth (Euro 70) is the norm. For chronicle disasters, such as droughts or war, only one-thousandth of that amount is normally available per victim (Euro 7).

"Building Back Better" is a sensible requirement in a post-disaster situation because the government, donors and aid organisations want to avoid that the same people become victims of a similar disaster. In that case, "Building Back Safer" is a more precise definition of the objective.

With the large amount of funds following the 2004 tsunami, many local government standards have been increased[1] and some donors tried to outperform other aid organisations in some or all of the "better" criteria. This situation led to a real bonanza for many of the 2004 tsunami beneficiaries, as they not only received a new boat and engine, but also a house two to four times the value of their lost property.

Several problem areas have developed due to the large amounts of funds available and partly due to the pressure of the local governments to start building immediately.

- The cheapest option was not always chosen; a careful balancing of design and implementation options by the donor agents was not always realised.
- In some locations, a full verification of the beneficiaries was impossible. Moreover, the large donations to the tsunami victims created excessive differences with others (neighbours) who already had suffered from years of war, but were excluded from the donations[2].
- Donors needed to identify victims to offload their funding[3]. This caused in some cases competition between the donors[4], each one trying to outdo the other with bigger houses or better standards of finishing quality. As an indirect result, victims started shopping around for the NGO that gave the best houses[5].
- The villagers, although very resilient due to long periods of war and other disasters, sat back and stopped participating in the reconstruction programme, waiting for more donations.
- Squatters or renters who were victims cannot necessarily handle own property.
- Enormous differences were created between the tsunami victims and others.

[1] In Aceh, the local government (BRR) increased the minimum house size from 36 m^2 to 42 m^2.

[2] This is particularly the case in the north of Sri Lank and to some extent in Aceh as well.

[3] This was more the case in the Aceh region. In Sri Lanka, the government often allocated donors to affected villages.

[4] In one particular case, this caused one donor to try to outperform all other donor organisations in the country.

[5] The various Caritas organisations are in this paper also referred to as NGOs.

The verification process of the victims allowed them to become beneficiaries. Neighbours who were not affected by the tsunami would not get new houses or otherwise benefit from the donations. Especially in the zones affected by years of internal conflict, the impoverished communities saw that some people were donned with new houses and goods, while others got nothing. This created a lot of resentment.

While all rehabilitation projects have spin offs through employment, the cost of living sharply increased directly after the disaster, putting the non-receivers further at a disadvantage unless they were employed in the reconstruction.

One of the aid criteria of the Caritas organisation is "Do No Harm". In creating the vast differences between the victims and the non-victims, and on top of that giving the victims back better and more than what they lost in the tsunami, is doing harm to the non-victim population. In several rehabilitation programmes, the local Caritas organisations tried to incorporate other members of the population into the rehabilitation process.

Better village planning in a safer location and with good infrastructure works would be a benefit for all the population. However, many of houses were delivered without completed WatSan or resolving the village infrastructure. The reasons for this are various, such as different implementation capacities of the NGOs and the local governments that were supposed to realise those infrastructures.

Any new large-scale disaster will most likely NOT generate a similar amount of donation per victim. Aid organisations, donors and local governments may need to work with less capital for rehabilitation. This implies that the aid will be limited to a few essential aspects only. In disaster mitigation or disaster risk reduction (DRR), a choice needs to be made on the best solutions for the least amount of money to avoid that the same population will again be subject to a similar disaster[6].

"Building Back Safer" is a criterion that has often not been complied with in all aspects, such as tsunami safety or WatSan-related hygiene.

The transitional shelters constructed were in many cases already better that the houses they lost, but the victims received in addition another house made from durable building materials.

AN EXAMPLE OF A TEMPORARY SHELTER THAT HAS BEEN IMPROVED BY THE BENEFICIARY

[6] When making an analysis of the Aceh reconstruction situation, it shows that not all houses are adequately earthquake resistant, mainly due to poor site supervision of the contractors. In addition, many houses are built back in the same location, not being safer if a similar tsunami strikes.

FOCUS GROUP DISCUSSIONS

Two group meetings with Caritas members working in the Aceh region were organised on this subject. Obviously, the outcome of the discussion is from the viewpoint of the participating NGOs who tried to assess the viewpoint of the beneficiaries, based on their field experience.

Present were staff from Cordia Medan (new Caritas NGO), Caritas Czech Republic, CRS, Caritas Swiss and two non-Caritas organisations, Aceh Peoples Forum (APF) and JRS. Because this is only a small selection, the information may be incomplete and could be extended with additional points. While the villagers were regularly consulted on these issues throughout the site visits in Aceh (and Sri Lanka), the opinion of the government on these issues was not formally obtained, but is presented as perceived by the NGOs.

The table lists the issues discussed. The numbered items are explained and further elaborated upon in the report.

OVERVIEW TABLE

Theme	Position of the Government (BRR)	Position of the NGO or Donor	Position of the Beneficiaries
Speed (1)	High importance.	Important and big numbers. Early completion of programme.	Important if transitional shelter is not of good quality.
Infrastructure (2)	Better site planning. Provision of site and town plans.	Space for communal buildings and areas, shops, industry and services.	
Land (3)	BRR to provide.		
Roads (4)	BRR to provide.	Access to site needed before starting.	
Water Supply (5)	BRR to provide.	Provision of clean water or combination with rainwater harvesting.	Needed.
Sanitation (5)	Villager to provide.	Providing a more hygienic solution.	Like tiles.
Buffer Zone (6)	Formal buffer zone and village planning.		Subject to new land allocation and government decisions.
Settlement and Community (7)		Prepared to build in a new location when land is provided. Consider the specific needs of the community (e.g. women, sanitation).	Build in same location.
House Design (8)	Different standards, specifications for timber or brick houses.	Provide a house that the locals accept and will use. Durable materials (brick, concrete, metal roofing).	Want a good-looking house: porch, cement plaster, painted, flooring and sanitation tiles.
	Choice is by beneficiary or NGO. Size is less relevant.	Increased quality in technical aspects, as well as in finishing details.	Good quality external finishing. Chooses the largest house from what NGOs offer.

Theme	Position of the Government (BRR)	Position of the NGO or Donor	Position of the Beneficiaries
Standards	Supposed to present good standards. BRR building codes apply to all housing.	Adapt the standard government design to the specific needs of the population (e.g. house layout).	Want a house of durable materials, such as brick, cement block and concrete.
New Standards	Standards revised.	Comply with BRR standards.	Want electricity.
Eco-Friendly Climate Design (9)	Reduce timber use.	Reduce timber use, eco-friendly. Cost reduction if possible.	Increased quality demand based on observation of other NGOs.
Earthquake-Safe Construction (10)	Standards following earthquake code.	Earthquake-resistant important.	Assumes that new house will be more earthquake-safe.
Tsunami-Safe Construction (11)	No standards are enforced on tsunami-safe design.	Tsunami safe or resistance not really considered.	No consideration for tsunami safe.
Community Participation (12)		Empowering of the community. Participate in the design phase and agree prior to implementation.	Accept what NGO proposes.
Ownership (13)	First built houses on own land.		Want to be able to extend the house in the future.
Own organisation (14)	Provide directives and realise implementation.	Develop management and personnel capacity of the NGO to handle future projects better.	Obtain income from construction activities and sales of materials.
	Increase income and implementing capacity.	Increase the available office space and equipment to handle future projects and disasters better.	
		Establish good relationship with the government.	

1. SPEED OF IMPLEMENTATION

Speed of implementation is a general requirement in a disaster rehabilitation programme, especially for the people living in barracks where the housing conditions are poor. The local pressure on the labour and building material markets, combined with partly destroyed infrastructure, made it very difficult to speed up the process. Moreover, a number of verification conditions had to be complied with, and approval of the design and site layout needed to be obtained from the BRR[7].

Notwithstanding the above, the NGOs were constantly pressed to start building even without having received site access, beneficiary lists or BRR-approved plans. When not starting immediately, they were threatened with losing their village reconstruction assignments.

- Some NGOs were mobilising staff and materials before approval of designs and sites were obtained.
- Some NGOs started to build the access roads to the sites themselves.
- Some NGOs were given sites that were completely unsuitable to build on or sites that were refused by the beneficiaries.

[7] BRR = Badan Rehabilitasi dan Rekonstruksi (Reconstruction and Rehabilitation Agency of Indonesia).

- In 2007, two years after the disaster, some NGOs started to consider buying land for renters and squatters in order to enable them to build for these categories[8]. The BRR is only in 2007 developing regulations for these people.
- Some NGOs needed to demolish the newly constructed houses because these were found to be in the way of a new major road construction project.

In some cases, the NGO needed to start with road development themselves (in 2007). Otherwise, they could not start with the large-scale reconstruction projects in the relocation areas.

The larger the disaster, the larger is the political pressure to see fast results[9].

LAYING OF A ROAD FOUNDATION CLOTH ON SWAMPY SOIL BY THE NGO

After a large disaster, a review needs to be made why the disaster was so large and plan measurements to avoid a similar disaster in the future. Taking fast action without following adequate planning procedures can easily lead to wrong decisions on site location or road planning. Developing new sites without due consent of the beneficiaries may lead to non-occupation of the houses.

Although the political pressure is understandable, humanitarian NGOs should have the safer location of the beneficiaries as first priority and be able to insist on proper planning and coordination.

Recommendation

In order to allow proper planning of reconstruction after a large disaster, it is necessary to accommodate the victims in such a way that they can start to rebuild their lives from their transitional shelter accommodation. Good quality transitional shelters with WatSan, which can easily last 3-4 years, are necessary, especially if planning of new housing estates is required. Pressing hard on fast reconstruction will lead to excessive price increases in the construction market and after the boom lead to deflation of the same market.

After major disasters, the priority is good quality transitional shelter, as well as community organisation to adequately plan safer housing.

[8] In Sri Lanka, the purchase of land for people who lost their house, but could not be relocated in the buffer zone, was taken up in an early phase of the programme.

[9] The political pressure was actually from two sides, the original donor and the local government. In this context, the original donor that supplied the funds must be informed and create awareness of the possibilities or impossibilities of fast implementation.

2. INFRASTRUCTURE

The linkage between housing and infrastructure becomes more important with the densification of the houses in resettlement processes. Resettlement is often required after a large disaster because of the creation of buffer zones, the need for new roads, and mitigation of regular flooding. Adequate planning and land reservation for communal services is important for livelihood and the overall settlement quality for the future inhabitants. As observed in the current reconstruction process, the victims provide little input in this area, but agree to proposals for community buildings, schools, clinics, markets, etc.

Recommendation
With new settlement planning, space needs to be reserved for communal services, either in the planned settlement or in the immediate periphery of that settlement. It is advisable NOT to construct all the communal services at once, but wait until a good needs assessment has been realised. If the communal spaces are not utilized, they can always be changed into additional housing complexes in a second development phase.

It was repeatedly observed that the local government and the villagers are asking for more than what was lost in the tsunami. This was caused by the impression that vast amounts of funds were available from the NGOs and that these funds could be spent to the demands of the local population and politicians. Although communal infrastructure services can be realised serving both the victims and their neighbours, the donations to the NGOs need to be justified to the original donors[10].

Recommendation
A disaster rehabilitation programme should make a clear statement on what to rebuild from donor money and what not. A proper formulation is: "Rebuild what is lost in the disaster or build what is lost in the resettlement process".

In some cases, the requests from the local authorities or people far exceeded the lost items.

It may be possible to build clinics, schools, vocational centres or other public services, but usually the cost of operating these facilities for several years, far exceed the construction costs.

EXAMPLE WHERE THE REPLACEMENT OF A SIMPLE PRE-SCHOOL RESULTED IN A LARGE MULTI-PURPOSE SCHOOL BUILDING WITH DORMITORIES

Recommendation
When planning schools or new health clinics, a firm commitment needs to be made with the government and the local population on how these services are going to be financed. Personnel, equipment and supplies planning needs to be realised and a division of expenses to be paid by the community and government established before building investments are committed.

[10] Humanitarian NGOs have a much wider institutional objective than disaster rehabilitation. In many cases, funds were allocated to non-tsunami activities to create a better balance inside the affected communities.

3. LAND

Land in the New Housing Area

Land for new settlements is often limited, especially when the affected area needs to be abandoned for housing purposes. Due to the ever-increasing population and high land costs, the tendency of new relocation areas usually involves a compacter settlement design, smaller plots and higher buildings. The acceptability of a smaller housing plot often depends on whether or not the former land can be retained and used for agricultural or other purposes, and if the new house complies with the safer location.

Recommendations

- *Increasing or reducing the housing plot area for relocated beneficiaries should not be part of the aid strategy of NGOs; this should remain the responsibility of the local government. Land compensation for landowners and/or providing new land for people who were renters or squatters are issues to be resolved by the local government.*

- *When the newly provided plots are smaller than the former land size, NGOs should consider building more storeys than the lost house, considering the realities of continued population growth and expansion. Building in a way that allows the house to be extended vertically is important.*

New Land for People Who Previously Owned No Land (Renters and Squatters)

In some cases, NGOs have provided land for displaced squatters and renters, victims who according to the regulations were not initially entitled to receive a permanent house because they did not lose any property. Renters, and even more squatters, tend to live near their area of income generation.

For victimised renters, receiving a house would only be "better" if the house is located near their means of livelihood. If not, the beneficiaries will be faced with increased transportation expenses. As an alternative, they may again seek a house near their former location, often having an increased rent.

Squatters often live on illegal locations (road reserves, beaches) and easily become new squatters if given a place away from their source of income. In many cases, the resettled squatters are unable to pay for the infrastructure maintenance costs and taxes in the new settlements. It is therefore not uncommon for squatters to immediately sell off their new property (or rent it out) and become squatters again near their former place of income generation.

There is a difference between renters and squatters; therefore, separate guidelines should be developed for each category. Because these categories are usually the most disadvantaged people in the society, they are often the development objective of many NGOs.

Recommendations

- *Providing new land to renters and squatters should preferably be undertaken by the government. When land is bought for them by the government or an NGO, future ownership, use and management of that land and the accommodation needs to be carefully considered, keeping sustainability in mind.*

- *Providing houses on new land to relocate renters should be done on approximately the same rental basis as their former accommodation; this way, some income will be generated for the maintenance of the new housing estate and infrastructure. The house rent should be indexed with inflation and administered by a community settlement co-operative. This cooperative should be supervised for some years by the land donor.*

- *When the relocation land is bought for renters with funds from an NGO or government, the donor should ensure that a coherent management of the estate's infrastructure is maintained. The relocated renting people require community facilities and need to be capacitated on how to manage their housing estate and infrastructure properly; for both activities, funding should be allocated.*

- *The transitional shelters specified in the Sphere document are usually of similar quality as the housing lost by the squatters. For squatters, the provision of reasonable quality transitional shelters (lasting between three to five years) is recommended. The period of occupation in the transitional shelters needs to be utilised to find more durable and safer solutions for these people in coordination with the local government.*

- *Apart from adequate infrastructure services in the transitional camps, budgets need to be available for support of these communities in the negotiations with the local government. Building new houses on new land for squatters is not recommended unless the community can guarantee income generation for infrastructure and maintenance.*

> *The priority in disaster rehabilitation should lie in the provision of good transitional shelter from which people can get themselves organised to re-establish their livelihood. Shelter is only one part of their livelihood.*

It is important to provide good quality temporary housing when it can be foreseen that the rehabilitation process will take a long time.

Legal issues with renters and squatters need to be resolved before allocating land and new property to people who never had property before and are socially not organised.

GOOD QUALITY TRANSITIONAL SHELTER IS OFTEN AS GOOD AS (AND SOMETIMES BETTER THAN) THE HOUSES THE PEOPLE LOST

4. ROADS

Settlement roads are usually not seen as personal improvements by the beneficiary, but more a responsibility of the local government (municipality).

The settlement committee should be influential in the organisation of the internal road network and access from outside. The particulars of one-way streets, cul-de-sacs, vehicle parking on roads, separation of different types of traffic and public transport all have advantages and disadvantages. In most cases, the settlement committee members have no opinion regarding the various options unless they are extensively briefed on the advantages and disadvantages of both short- and long-term use and maintenance. Equally, experts sometimes favour a particular option and tend to promote their own solution[11].

Recommendation
Both the advantages and disadvantages of decisions related to the settlement road design need to be explained by objective specialists who are knowledgeable in these matters, without these experts pushing their own ideas. If, to the opinion of the experts, the community tends to take wrong decisions, further analysis and meetings with other specialists will be required to explore the options.

[11] In one case, the "expert" wanted the new village planning to be in circles, as it looked good on the drawing board. However, none of the villagers had helicopters to appreciate the design.

5. WATSAN AND GARBAGE MANAGEMENT PROVISIONS

WatSan includes safe drinking water, rainwater harvesting, recycling or processing of sewerage, biogas and solid waste management. These points, however, are not immediately seen by the beneficiary as a better house or an improvement, yet they involve considerable investments to achieve[12].

Making new deep wells is not an individual activity and care should be taken to avoid drawing in seawater.

The community members must be aware of the implications of the WatSan decisions for the operational and management cost to the settlement. Sewerage and solid waste management are particularly critical areas on which the quality of life within the settlement will depend.

Meetings with the beneficiaries indicated that little knowledge existed about alternative sanitation methods providing a cleaner or safer environment. Some communities said that no sanitation was required because they used the bush or the river for defecation.

A WELL SPOILED BY THE TSUNAMI AND NOW USED ONLY FOR WASHING – VILLAGERS NEED TO EITHER BUY FILTERED WATER OR TRAVEL LONG DISTANCES TO FIND DRINKING WATER.

SEMI-DIGESTED EFFLUENT FROM MANY SEPTIC TANKS WILL BE DISCHARGED INTO THE OPEN DITCH WHEN THE HOUSING (RIGHT) IS OCCUPIED. CURRENTLY THE DITCH DOES NOT DRAIN PROPERLY DUE TO THE EARTHQUAKE. WHEN THESE ISSUES ARE NOT RESOLVED, DISEASES WILL BE THE RESULT.

In one project, the NGO had supplied septic tanks (digesters) while the local municipality needed to resolve the further processing before discharging the effluent into the open channels. Although sufficient land existed to realise secondary treatment (photo left) by means of a biological filter bed, the shop-keepers wanted to rent out the land strip for commercial purposes.

[12] In northeast Sri Lanka, the aid organisations were supposed to realise the settlement infrastructure, whereas in Aceh the settlement access and infrastructure were to be realised by the local government.

Recommendation
During the planning phase of the (new) settlements, the options for water and sanitation need to be always planned together with the housing project to allow hygienic, safe and cost-effective operation or low-cost maintenance for the future. Separation of responsibilities for WatSan implementation should not be done unless it is absolutely guaranteed that good, sustainable solutions will be completed by the time the houses are ready for occupation.

Rainwater harvesting is an excellent method to supply large quantities of good quality drinking water from metal and zinc-aluminium roofs.

In urban environments, the installation of grey water collectors (for toilet flushing or gardening) can be considered, to reduce the general need for water[13]. In higher density urban areas, household waste can be used for biogas, providing cooking energy and reduce parasites from the effluent.

None of the projects visited considered garbage management. This obviously will lead to the usual situation where garbage is visible everywhere and clogging the open drains. Poorly managed garbage and public drains is one of the main sources of insects, rats and diseases, such as TB, dysentery, typhoid, dengue and malaria.

GOOD APPLICATION OF RAINWATER HARVESTING, COMPLEMENTED WITH A SHALLOW WELL FOR WASHING WATER

When a villager asked a community worker what to do about the garbage, some thinking was required. After a moment, she came back with a box of matches.

6. BUFFER ZONE

The planning of the new housing sites was the responsibility of the BRR. Due to the lack of available land, most villagers opted, after more than a year, to be housed again on their original plot. Many beneficiaries are not very much concerned about the recurrence of another similar tsunami. Most new houses are ground-level-only and reconstructed in the same location as before the tsunami[14].

- Permanent house designs expected to last more than 50 years will be regularly subjected to various magnitudes of earthquakes (average 6 per year in Sumatra).
- The availability of new land for housing is very limited. The steep rocky hills rise immediately beyond the low, flat coastal land, providing no elevated area on which housing can be safely built.
- When given a choice of type of housing of equal size – on columns or on the ground – the beneficiaries said to prefer ground-level houses, even if the cost difference was absorbed by the NGO or aid organisation.
- The BRR has produced some guidelines on reconstruction and settlement planning, considering a recurrence of a tsunami, but these are not followed.

[13] Obviously, safer water and sanitation solutions will cost money for installation, but will save money and the environment on the longer term. Providing the cheapest solution is not a good option, and especially not when other construction is overdone. In order to get a consensus about the safer solutions, extensive education and community awareness is required.
[14] This is significantly different with the situation in Sri Lanka where ample land was available behind the buffer zone.

A House in a Safer Location

This implies houses being built on higher land, further away from the shore, on more solid ground, away from possible flood hazards, etc. Relocation may cause more travel distance from home to the workplace, being a disadvantage. Therefore, a farther (safer) house location might be compensated with transport facilities. When relocating people away from their original habitat (such as may be the case with fishermen), measurements should be developed to compensate the effects of the resettlement.

Recommendation

NGOs should ensure that reconstructed houses are built safer or in a safer location. When this is in a location other than where the houses were lost, adequate measurements should be developed to enable the beneficiaries to continue with their former manner of livelihood or to be assisted in developing other employment and income generation. For resettlement projects, a budget needs to be reserved for this re-deployment activity, which also may require an extended project period.

With regard to a possible recurrence of a large tsunami in the future, it has been observed that many houses are being rebuilt on the same location, even in the same style, as before the tsunami, making them equally vulnerable to a new tsunami of similar size.

Recommendation

NGOs should respect the wishes of the beneficiary, but they should also clearly point out the risks involved in remaining and rebuilding on the old location. NGOs should not rebuild on the same location when the overall situation after rebuilding remains equally unsafe as before, but rather seek improved solutions together with the local government and the beneficiaries.

> *When people are properly housed in transitional shelter, adequate time can be dedicated to finding safer locations or safer housing solutions.*

In Meulaboh, where an entire village was wiped away by the tsunami because it was located on a peninsula, some substantial buffer zone development was ongoing. However, the large concrete crosses were already sinking into the sand. This measurement does provide some protection against erosion, but not for another tsunami.

On top of the lack of future tsunami protection, it was noted that the reinforced concrete column and beam connections of some of the new houses under construction were not correctly executed, making them vulnerable with the next earthquake.

BUILDING OF EROSION CONTROL WALL ON THE MEULABOH PENINSULAR – THIS BREAKER WILL NOT PROTECT THE HOUSES AGAINST A TSUNAMI.

7. SETTLEMENT AND COMMUNITY

The choice of the resettlement area is realised in coordination with the BRR, but due to long delays in decision-making, remote areas or inadequate terrain offered to them, many communities opted for going back to their former house location. In many circumstances, the NGOs tried to respond to the needs of the communities in the area of appropriate WatSan. The recommendations above refer.

SHOPPING COMPLEX IN MEULABOH PROVIDING BOTH HOUSING AND LIVELIHOOD

The development of market structures and shopping complexes can be considered when these were lost in the tsunami. Between the shops easy accessible staircases are being constructed that may provide safety in the event of another flooding. In another project, ramps were constructed to the ground floor enabling people with wheel chairs easy access to their house.

Recommendations

- *In urban areas, the local authorities need to look after the interest of the communities. However, isolated communities need to be educated in settlement management, including communication methods, organising meetings, conflict management, decision-making and community finance for community services*[15].

- *Community management training of the settlement committee needs to include the operational and maintenance aspect of the settlement's infrastructure and services in order to maintain an affordable and sustainable service package. The community leaders must be made aware of the level of community participation required for each type of service. The responsibilities and costs for the government services must be defined. The task of the NGO is in these cases to ensure that the decision-making processes are carried out to the interest of the beneficiaries and in coordination with the local government*[16].

[15] Ample training material exists in this area. UNCHS (UN Habitat)/DANIDA training modules are specially developed for this kind of settlement management training.

[16] Community management training can be realised in coordination with local government settlement officers.

8. HOUSE DESIGN

More Durable and Better Building Materials

Some building materials are perceived as being "better" by the population (reinforced concrete, bricks and cement blocks) because they are used by rich people. These heavy materials require additional reinforcements and good quality control to resist earthquakes, a practice which is not easily replicated in self-help construction.

GOOD QUALITY BRICK AND TIMBER COMBINATION CONSTRUCTION, NOW CALLED SEMI-PERMANENT HOUSES

The first reconstructed houses were of good quality and in most cases better than what the people lost in the tsunami. Because these houses had a stone foundation and a timber upper structure, they were considered as "semi-permanent" and the victims asked for full brick constructions. The impression existed among the beneficiaries that sufficient funds were available to build the more luxury "permanent" houses.

The perception of the villager on the quality of a house depends largely on the quality of the finishing of the floor, walls, ceilings, sanitation, and door and window fittings. The wide variety of available options resulted in many cost and quality differences between the completed houses. These are not laid down in public standards. However, the BRR insisted on the use of floor tiles.

Recommendations

- *The NGOs should agree in an early phase of the reconstruction process on building size and items to be included or not, in order to eliminate competition and quality differences. NGOs should not compete on quality finishing.*

- *The definition of the recommended surface of the new houses should be precise with regard to the inclusion of walls (internal room or external plinth size), kitchens, sanitation, veranda, etc. The minimum free height of each type of room should be provided to determine the building volume.*

- *The NGOs should confer with each other before the projects commence and define recommended finishing standards of all surfaces and fittings of the houses to be realised. In this way, quality differences between NGOs will be minimised and tenders will be more comparable.*

Understanding Options

Initially, the villagers mainly wanted to get some basic assistance – "Give us roofing sheets and nails." However, with the large funds available, this changed to wanting a permanent house, being even more than what was lost in the tsunami or earthquake. Their reference depends on what they know from the house they lost or what they have seen in their neighbour's houses. Most villagers do not understand floor plans, but they tend to agree

with the proposals from the NGO, assuming that the NGO knows better. A meaningful discussion on the design can be achieved only after the villagers have seen a real-size model house. Although the principle of the model house was followed in several projects, in one project the villagers had stopped the construction of cement-block houses because they were not satisfied with the design and the quality of the work. The work could only be continued after the NGO agreed to fill all the holes with concrete. Apart from technically not being necessary, it substantially increased the cost of the house.

NEW BUILDING METHOD USING UNFAMILIAR TECHNIQUES

DEMONSTRATION UNIT

In many instances the community members are not familiar with new building techniques and material uses, such as may be the case with pre-fabrication. The realisation of demonstration houses on the new settlement site will provide first-hand information on the construction method and results in real feedback from the community.

Recommendation

When new construction methods are suggested, real-size demonstration houses should be realised on easily accessible sites and in coordination with the target community. Site visits should be organised by the NGO for a large number of community members, including the women, to allow the community to discuss the design as well as the building process.

9. ECO-FRIENDLY CLIMATE DESIGN

Building Better Resulted in Uncomfortable

Traditional houses built from indigenous materials have evolved over many years and are usually very appropriate for the local climatic environment. Yet people often want to have "modern" materials (reinforced concrete or cement blocks) because they are used in the house constructions of the rich, who can afford air conditioning or heating.

Often the people whose houses are affected by disasters are in the low-income bracket of the population and have few financial capacities to modify the given house to make it friendlier in terms of environmental aspects. Although the eco-friendly house design was a consideration of some NGOs, the traditional architecture or the climatic aspects of the house were not really considered.

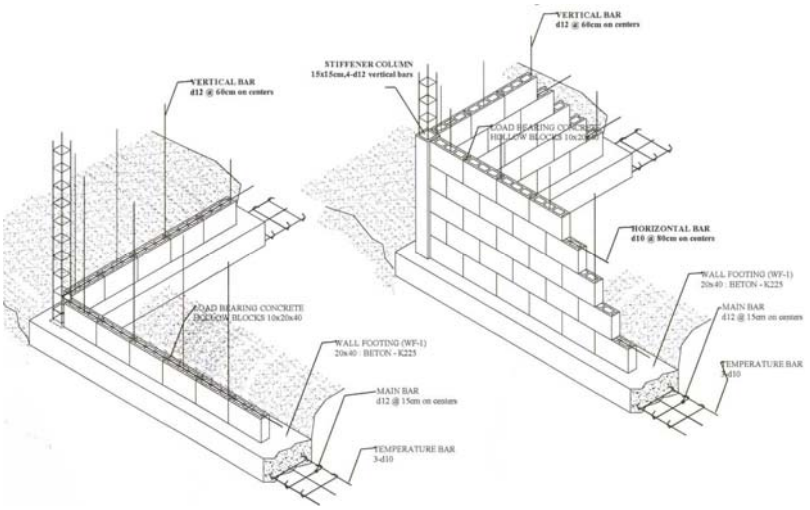
Recommendation

New houses designed differently from the original houses need to consider the climatic requirements to ensure an adequate comfort level for the future occupants. In hot or cold climates, this includes sufficient thermal insulation and the appropriate use of heat storage materials. In humid climates, this includes sufficient ventilation. The need for electrical ventilators, for example, should be avoided.

10. EARTHQUAKE-SAFE CONSTRUCTION

The criterion of a stronger house is the most common "better" qualification by both NGOs and villagers. This implies better engineering of the house than what they had before, and subsequent quality control during the construction. The BRR has guidelines and minimum technical standards. These guidelines, however, are usually not understood by self-help builders or small contractors and, if they are understood, they are usually not followed by the local contractor in order to lower construction costs.

Apart from the provision of real-size models, the detailing of the construction phases through 3D drawings will assist to create good understanding of the designs among contractors and self-help builders.



GOOD EXAMPLE OF EXPLANATORY DRAWING (SOURCE: CRS MEULABOH)

Although the local government (BRR) is the entity to control the correct application of the standards and building codes, after a large disaster they will only be able to realise such control on the basis of spot inspections, usually after the construction has been realised. Large contractors may have the professional staff to do so, but it is not in their immediate economic interest, as it will increase their construction costs.

Recommendations

- *The local government and NGOs should be able to supply detailed practical and technical information on how to build an earthquake-resistant house. This information needs to be tailored to the houses being built, written in the local language and in a modality (illustrated, step-by-step manuals, videos) that the beneficiary population can understand so they can exercise quality control of the contractor at the construction site.*

- *NGOs should focus their quality control activities on capacity building of the beneficiary population and organise practical training sessions in the early stages of the rehabilitation programme. Senior inspectors from the NGOs need to undertake spot inspections and provide backstopping to the community inspectors on problems identified. This information should be used for further training of the community inspectors.*

TYPICAL SITUATION OF INADEQUATE ANCHORING

From random field inspection of a variety of housing projects, it was clear that many newly built houses would not survive an earthquake. Although reinforcement and concrete was used, the anchoring of the different members was insufficient. In other cases, excess of reinforcement weakened the construction.

When the above applies to some of the Caritas NGOs, the basics of "Building Back Better" is not accomplished. Other, more experienced Caritas NGOs, however, did a good job in earthquake engineering and site inspection.

11. TSUNAMI SAFETY

This item was not really on the agenda of the participating NGOs, but to the opinion of the Shelter Advisor, it is an essential item for any post-disaster reconstruction project.

A substantial difference can be observed between Sri Lanka and Aceh in their perception of disaster risk reduction (DRR). Although both populations have some fatalism, the Aceh people are more inclined to take the risk and pray for the best. Religious leaders have now started an awareness programme to educate people that some disasters can be avoided or the effect minimised.

With the high political pressure to start building houses, many NGOs started to realise houses in areas with a high tsunami risk, such as rebuilding on the old foundations. It would have been better if the NGOs had first convinced the villagers that new houses should be safer than what they had before.

12. COMMUNITY PARTICIPATION

Community decision-making is a desire of both the NGOs and to a lesser extent of the target population. Important in this aspect is that the community understands what the decisions are about; this is commonly not the case unless real examples and project visits are included. The community information process is often dominated by technical staff or by village heads who decide on behalf of the community, reducing the possibility that different solutions are generated from within the community.

For the NGO or donor, it is important to be able to confirm and document that decisions with regard to housing or infrastructure projects are based on a community consensus. Improving on a participatory decision-making process is possible with a variety of techniques. It must be considered that participatory decision-making will delay the final decision, but may avoid decisions being later reversed.

Recommendation
Projects should allow sufficient time for the communication process, but accept that sometimes (male) community leaders take decisions on behalf of the villagers. Processes need to be applied to allow sufficient information exchange with both the male and female population, especially because the female population manages the household. The community participation process should be continued in settlement management training.

> *In one village, the Caritas NGO had started to build houses on columns after consultation with the villagers. After a while, the village headman decided that everybody should have ground-floor houses only. This general decision was accepted by all the villagers.*

13. OWNERSHIP

The NGOs are conscious of the fact that the core house provided will not be the final house the family will be living in; the house owner will eventually extend the house in most cases. It can be assumed that in future disaster rehabilitation projects less funds will be available for reconstruction; hence, the villagers need to be more involved in building their own houses.

Involving the beneficiaries in the reconstruction process will automatically educate them on the building technology, even if they are only unskilled labourers. This knowledge transfer needs to be exploited. If people want to extend the houses, the design information should facilitate this. People with clear ownership will extend the house, provided they have the financial means.

EXAMPLE OF HOW THE REHABILITATION HOUSE (RIGHT) CAN BE IMPROVED UPON BY THE BENEFICIARY

Future disaster reconstruction programmes with less funding will need to rely on different building methods to reduce implementation costs, such as:

- Core-house construction only; finishing to be the responsibility of the beneficiary.
- Main structural frame only; to be later filled out by the beneficiary.
- A toolset and material package with which the beneficiary builds his/her own house.
- Only financial support with the obligation to realise certain phases.
- Access to specific materials necessary for more durable construction.
- A central building market with subsidised materials for beneficiaries.
- Various training workshops in capacity building.
- Training manuals and building instructions.

Recommendations

- *Ownership can be provided if the community participation and decision-making aspect is well managed. Local materials should be available to replicate the house. Involving the house owner in the construction will enhance ownership.*

- *NGOs implementing projects in areas where commonly self-help construction are being realised should develop house designs that can be realised and replicated by the house owners. If core houses or structures are supplied, these should be extendable by the house owners and local contractors.*

- *The contractors must be stimulated to employ beneficiaries in the reconstruction process of the houses. The site officers of the NGO and the site inspectors of the community should have technical upgrading sessions to enhance their knowledge on building technology. The design drawings and manuals of the houses should indicate how the new construction could be extended and connected safely to the existing construction.*

14. OWN ORGANISATION

Both the NGOs and the BRR had as objective to improve their performance and implementation capability for future projects. The external NGO, however, needs to scale down its operations once the projects are finished, while the local NGO needs to adjust to the new financial realities. The complexities involved in these processes may be subject of another document.

SUMMARY

In disaster rehabilitation, disaster risk reduction (DRR) should be an essential part of the process; hence, "Building Back Safer".

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