Living with Hope

People wait for homes even three years after tsunami

The tsunami of 26 December 2004 devastated the lives of hundreds of thousands of people in the coastal belt of Southern India. Transitional shelters provided by the government and non-governmental organizations are still in use and often fail to meet basic humanitarian standards, bringing further misery to the lives of impoverished tsunami survivors. Three years after the disaster, this paper seeks to put forward ways in which their plight can be improved. It stresses that during the next humanitarian crisis, the response to the shelter and settlement needs of affected men, women and children has to meet minimum standards and follow good practice. This paper includes guidance on standards and practice.

Executive Summary

Thirty months after the tsunami struck, 26,626 families continue to live in temporary shelters in the state of Tamil Nadu. The provision of covered living space and land is well below minimum standards for humanitarian assistance. The shelter space in most of the camps is around 8 to 10 sq.m per person against the expected 45 sq.m per person[1]. Many of these shelters are row houses, with little space to move inside. They are made from materials such as tar and tin sheets, which trap heat and make it difficult to remain inside during the summer months. Most of the temporary shelters have been located in low-lying areas that are vulnerable to flooding and breeding grounds for rodents, mosquitoes, and other harmful insects. This was because the land farther away from the sea was mostly owned by private landlords. In certain cases, the government leased out private lands for temporary shelter construction,

Temporary shelters were provided by the government as an immediate measure to relocate tsunami-affected people to safer locations. But the urgent operation overlooked the medium and longer-term safety and health of these impoverished people. Although these were meant to be a transit home for a short period of time, it is an important learning for future emergencies that such shelters could be required for at least two years. Out of 54,000 temporary shelters, 38,880 were provided by the government and the rest by Non Governmental Organisations (NGOs). Despite the fact that most of these communities lived in thatched houses prior to the tsunami the government insisted on using fire-resistant material for the temporary shelters, citing as the reason a fire at a school in Kumbakonam just before the tsunami in which 94 children died.

Relief assistance provided by the government and non-government organisations enabled those in the temporary shelters to tolerate the summer but the November 2005 floods in Tamil Nadu left them without a roof for several weeks, as the shelters were in low lying areas. The tar sheets were weak and leaked which prevented people from remaining indoors. The government evacuated them and, in certain cases, forcibly moved them into camps as it was unsafe to continue living in these shelters. Food and relief materials were provided but the feeling of uncertainty increased as many families were hoping to have received their permanent homes by then.

As of December 2007, the state government, as well as non-government organisations, have constructed permanent homes for 35,213 of the 53,291 identified families[2] and 28039 have been handed over already. The government has stated that the remaining permanent houses will be completed and handed over to the identified beneficiaries only by September 2008. Until then, these families will have to cope with the poorly maintained sanitation facilities in the temporary shelter locations. Prior to the monsoon, during end 2007 the government requested the people who were still living in temporary settlements to live elsewhere as there was no proper water and drainage facilities in the habitations and moreover there was a risk of flooding. Most of the NGOs who had provided support to the temporary shelters had left, however those who continued to work with the communities did extend support in the area of public health.

In October 2006, the government of Tamil Nadu sanctioned a grant of Rs. 5.46 crores for the repair of transitional settlements. The funds were for repair of damaged roofs and the provision of facilities such as toilets, bathrooms and community sheds for 27,318 shelters in the tsunami-affected coastal districts at the rate of Rs.2000/- per shelter[3]. Vulnerability amongst women and those living with HIV and AIDS has considerably increased since the tsunami due to the poor living conditions at temporary shelters and the number of migrants involved in permanent shelter construction activities.

This briefing paper reviews the design and management of tsunami temporary shelters in Tamil Nadu and depicts the present living conditions of the people who continue to live in them. It then makes recommendations for basic humanitarian standards in shelter design and provision for use by government and non-governmental actors in future disasters. Humanitarian agencies did a lot but failed to initiate timely monitoring and follow-up response. Monitoring against Sphere Project indicators could have been useful in coming up with practical action to improve the living environment in the transitional camps.

Key recommendations

Review of tsunami transitional shelters and the living conditions in the transitional settlements in Tamil Nadu, India, brings out the need to:

1. **Go back to the basics/fundamentals of humanitarian work.**

   - Revisit NGO/Red Cross Code of Conduct and reconcile existing agency mandates with the 10 principles. Build appropriate capacities within organisations to plan and organise humanitarian work.

   - Apply program planning and implementation standards for humanitarian work. Refer to common standards, Sphere handbook.

     - Plan needs-based programs in discussion with affected men, women and children.
     - Regular monitoring and periodic evaluation to be organised by people with right skills.
     - Have an appropriate management structure populated with the right technical and social skills to handle shelter and settlement program.

2. **Develop perspective on post-disaster shelter and settlement response:**

   - Sheltering displaced population is a dynamic process and less of a product to be delivered. *Refer to 1.0 for more details.*

   - Evolving a coherent strategy to link various components of the process is a critical success factor to deliver a post-disaster shelter and settlement program.

   - Planning for shelter programs should include the short and long-term, as programs may last for a number of years.

   - Apart from shelter and settlement standards apply common standards in Sphere that are relevant to all sectors - water, sanitation, drainage, hygiene promotion etc.

   - It is important to develop a practical knowledge of Sphere, Red Cross Code of Conduct, Humanitarian Accountability Partnership (HAP) and other humanitarian codes and principles which guide interventions.

   - Train engineers, architects, builders to develop appropriate perspective on:

     - Involving affected men, women and children in the development of designs
     - Participative technology selection for shelter, sanitation etc.
     - Shelter delivery mechanisms should enhance local capacity and create livelihood options.
   - Coordination, monitoring and evaluation needs of shelter program etc.

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1. Introduction:

Response to large scale destruction of built and natural environment due to natural or human made hazards involves re-sheltering displaced people and provision of life sustaining services.

Re-sheltering is an evolving process that families engage in, starting first with some simple shade structure or emergency housing, then transitioning through stages into a more and more permanent
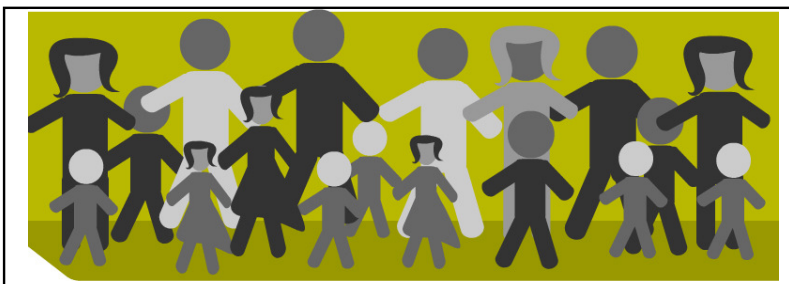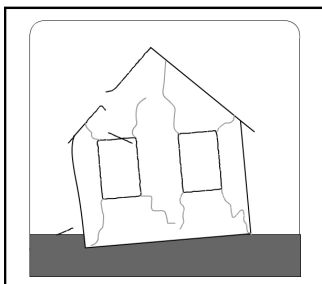
Destruction of built environment leads to displacement of men, women and children. Re-sheltering the displaced people is a priority service within the gamut of life sustaining services provided by humanitarian sector

structure. There has been practice of terming Housing rehabilitation interventions as temporary shelter, intermediate shelter and permanent shelter and see them as stand-alone interventions. Further, services like water, sanitation, health, education etc. are later brought-in as stand-alone activities. Much of the problem with post disaster shelter response stems from this disjointed understanding of the shelter needs of affected population. For programming needs it may be still required to initiate emergency programs in phases but it is important that sheltering of displaced population is strategized in discussion with all the stakeholders. Hence every responding agency, what ever they do contributes to the larger picture of early recovery of the affected population, community and economy.
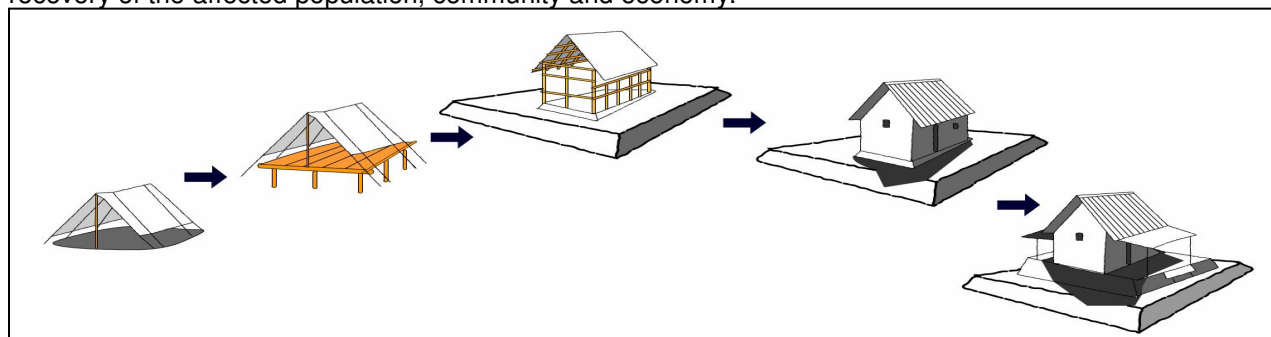
Shelter contribution that agencies provide, should be designed to be part of a family's journey from the situation of inadequate shelter back to their permanent house with additional features to make it hazard resistant: Build Back Better.

Emergency shelter specialist professor Ian Davis notes:
"Sheltering of disaster survivors is a social, technical, logistical and developmental process. It can take a galaxy of forms that comprise of
- *supply of blankets or plastic sheeting,*
- *delivery of local stockpiles of building materials and tools,*
- *voluntary evacuation to stay with host families,*
- *creation of improvised structures,*
- *temporary use of existing buildings, (such as schools)*
- *provision of shelter structures.*

If shelter is perceived in these terms as a dynamic process, it develops into a pattern of continual change, as one mode of shelter may be rapidly replaced by another within the recovery process."

Post-disaster shelter is part of the process of re-establishing normalcy, and creating sustainable communities. The role of humanitarian organizations is to support that journey of affected families and reduce vulnerability, requiring a consultative and participative relationship with the local community, based on a principle of partnership, which endeavors to be equitable and is targeted at the most vulnerable.

Effective Practice:
Navaldy in Batticaloa on the east coast of Sri Lanka is a peninsula less than 1km wide which was home to a thriving fishing community who lived in reinforced concrete frame and masonry houses with tiled or tin roofs. The tsunami leveled the buildings, the wells were contaminated with sea water and the road scoured up by the under currents. The families and individuals that survived took refuge in a Youth Hostel, and it was proposed they resettle several kilometers inland. UNHCR engaged in extensive consultation to explain their options and it emerged that their preference was to go back to Navaldy but they were concerned at the lack of shelter, access, water and power. UNHCR worked with Catholic Relief Services (CRS) to meet these needs initially providing tents and basic services, rebuilding the road and then supplying materials for temporary shelters, and subsequently materials and technical assistance to reconstruct their houses.
Source: 'QUALITY & STANDARDS IN POST-DISASTER SHELTER' Jo da Silva, Arup International Development

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Shelter provision is perhaps the most politicised sector of disaster response, it is important to recognise this as a constraint as well as an opportunity. Political structures would invariably demand a 'rapid and highly visible shelter response', often proposed with strong commercial links to supplies and manufacturers that provide them with political support. Power structures at times advocate shelter

Effective Practice:
a. Setting of Transitional Shelter Policy for post-tsunami response in Sri Lanka, this was coordinated by UNHCR and implemented by most of the international agencies. These discussions also led to establishment of various Government agencies for monitoring and administration of shelter and settlement work. Most implementing agencies adopted the strategy in their work, which helped in coordination and timely delivery of transitional shelter.

b. A different but equally effective experience was that of NGOs in Gujarat after the 2001 earthquake. The Government very quickly formed a disaster management authority which, in discussion with NGOs, came out with a number of policy decisions on reconstruction etc. Much of discussion on behalf of NGOs was lead by a network of local NGOs called Abhiyan and UNDP.

c. Similarly, deliberation and strategy documents of 'shelter cluster' after the Yogyakarta Earthquake in 2006, led to acceptance of number of policies which led to timely shelter response to affected population.

programs for select groups based on their political affiliations, which may be in direct conflict with humanitarian principles. Opportunities can be created with timely collective/coordinated engagement with the political and governance structures. Hence early establishment of shelter coordination to bring out collective analysis of needs is of paramount importance. The window of opportunity is always narrow, as political concerns are heightened aggressively by media coverage. Constructive engagement with media too may be considered as a strategy to influence policy makers.

Invariably all shelter programs would include planning, engineering and construction activity, which necessitates the inclusion of specialists with an appropriate mix of management, technical and social skills in the response team.

Larger Picture: One of the most important aspects of disaster management is linking communities with policy makers, professionals, financial institutions and NGOs to identify actions needed to ensure successful reconstruction of housing and the revival of livelihoods within affected communities. While natural emergencies cannot be prevented, better preparedness will ensure that emergencies do not become disasters for communities. Disaster responses only provide temporary relief to the affected

community, but a good disaster management process will aim to also provide hazard warning and community-level risk mitigation and preparedness.

A comprehensive understanding of disaster management that includes both disaster response and preparedness requires a reorientation of the overall framework of the government's policy for regional development. Disaster management planning must include vulnerability and resource mapping, the development of early warning systems, response and evacuation strategies, access to emergency services and the integration of such activities into long term development plans.

India experiences frequent large-scale natural calamities like the earthquake at Latur, Gujarat, the floods in Orissa, Bihar and Mumbai, cyclones in Andhra Pradesh and the tsunami. The experience gained from working with these affected communities has highlighted many disaster mitigation and preparedness issues that need to be explored in depth in order to create safer living habitats. Until now, the focus has been on reacting to the disaster from its onset. But a paradigm shift in the approach to disaster management has been called for - a proactive approach that mitigates the impact of disasters by preparing the community before they happen.

Experiences in Gujarat, Tamil Nadu and elsewhere have provided us with valuable insights for managing large-scale disasters. Invariably, the challenge in the relief stage of the tsunami response program has been a lack of credible documentation to guide the rehabilitation process. Coordination joint assessments would be effective for documentation of needs, vulnerability, and resources that are required to consolidate the efforts of the government, NGOs, and other organizations working in the region.

Background - Tsunami Shelters

Immediately after the tsunami, around 50,000 temporary shelters were constructed in Tamil Nadu to provide shelter for affected people while permanent houses were being built. Of these temporary shelters, 72% were built by NGOs and INGOs on land provided by the government. Until the shelters were provided, the displaced people were housed in marriage halls, places of worship and schools.

The district administration and NGO coordination committees ensured that there was no duplication of work. NGOs and INGOs were assigned specific tasks based on need and available resources. The government brought in regulations in the already existing Coastal Regulatory Zone. Shelters were not permitted to be built within 500 meters of the sea and a stipulated design was to be adhered to for permanent house construction.

Government statistics from 28 December 2005 stated that around 1 lakh families had been displaced from their homes and accommodated in relief camps. They planned to build temporary accommodation at suitable locations, including, if safe, communities' original place of residence. After careful consideration the government sanctioned[4] the building of temporary accommodation for 50,000 families.

Collectors were empowered to build temporary accommodation based on a unit cost per family/house and were allowed to develop their own models depending on local preference. NGOs willing to put up temporary shelters were also allowed to get involved in this activity. Collectors were given specific instructions that the design of the temporary structures and the location should be acceptable to the fishermen in each habitation and it should not be seen as a Government plan to forcibly relocate the affected population. Collectors were also authorized to lease private land for temporary sites on suitable terms. The government aimed to get most of the people in the relief camps into temporary shelters by January 14, 2005.

After the relief phase, permanent shelter construction followed fervently by the government. NGOs were allocated villages and the district administration ensured that there was no duplication of efforts and that all eligible beneficiaries were helped. The state government procured a total of 589.285 hectares of land for permanent shelter construction at 206 locations in Tamil Nadu at a cost of Rs. 39.706 crores. Out of

54,105 houses, 27,479 houses have been handed over to the beneficiaries. The rest of the houses are likely to be handed over only by the end of September 2008.

The state and district level coordination bodies kept track of the shelter construction activity that was coordinated by several INGOs and NGOs. However, there were instances where NGOs were asked to leave locations for not constructing the houses in the stipulated time. In North Poiganallur, Nagapattinam, 44 beneficiaries refused to accept houses that were of inferior quality and as a result, the court passed an order to the state government to take possession of the land and arrange for construction of proper quality houses or allot any other readily available house to the identified beneficiaries.

In light of the significant number of people still living in temporary shelter, the state government sanctioned a sum of Rs.5.4636 crore for 27,318 shelters at the rate of Rs.2, 000/- per shelter for repairing the damaged roofs and also to provide infrastructure facilities like toilets, bathrooms and community sheds in and around the shelters in tsunami affected coastal districts from Calamity Relief Fund[5].

1.1. Rapid appraisal of Temporary Shelters in Tamil Nadu

Oxfam and its partner organisations coordinated a rapid appraisal of the conditions in temporary shelters with Loyola College during September 2006 to identify and highlight relevant problems faced in specific shelter locations so that government and non-government agencies could take appropriate measures to address them. One-hundred and seventy temporary shelter sites in five districts at Tamil Nadu were visited and a total of 1,347 persons were interviewed. A quota sampling technique was adopted to give enough representation to all vulnerable communities and data analysis was done in collaboration with the University of Madras.

The study covered temporary shelter living conditions in terms of quality and conditions of roofs, walls and floor, impact of monsoon, health, educational and infrastructure facilities available at shelter locations. It also studied the services made available to the people who were living in the temporary shelter areas. Since the construction of the permanent shelters is taking more time than expected, the study also looked into aspects like availability of schools, community halls, and health posts in or near the shelter locations and people who have moved or are yet to move into permanent shelters.

At the time of the survey, 74% of their roofs needed to be repaired or replaced; 69% required walls to be strengthened and 63% needed repair/replacement of their flooring. Most importantly, the roofs, walls and floors of a great majority of the transitional shelters are not in a good condition and definitely not monsoon proof. Although repairs and strengthening of roofs has been done in some parts of the state, most of the areas are still vulnerable to the monsoon. During the last monsoon, several temporary shelter areas were inundated and the government had to take measures to evacuate people from certain locations where the situation was unmanageable. Data showed that 90% of the people living in temporary shelters were affected by the monsoon 50% of them heavily.

Dhan Foundation documented the living conditions of communities in temporary shelters with the intention of collating both data and experiences of people living in temporary shelters until such time they move into their permanent homes. The document highlighted the challenges that people face whilst waiting to move into permanent homes. The preliminary phase of this document consisted of field visits to of the temporary shelters in Chennai, Cuddalore, Nagapattinam, Sirkali, Pondicherry and Kanyakumari. Interaction by a team from ARTES, a human settlements development center with the community helped to assess the emerging needs and problems of the community.

The study findings revealed that there are still temporary shelters that need urgent attention, given that more than 26,000 families would continue to occupy them until the end of September 2008.

1.2. Lessons learnt

While a large amount of money is being spent on shelters that are only temporary in nature, the fact about the transition is that it may take several years until the communities move into permanent shelters. Until such time, regular maintenance of the temporary shelters is essential.

Sustainable use of materials should be encouraged while upgrading the shelters as certain materials that are used in the temporary shelters could be put to use at the permanent houses as well. Capacity building programs would equip the community with simple construction techniques and enable them to manage minor repair works.

Ventilation for the dwelling unit is a must. Air circulation inside the house increases comfort levels, makes the house airy and reduces bad odour and the chances of dehydration and breathing problems. It also removes the feeling of claustrophobia and ailments due to headaches, nausea etc. Leaving some space between the roof and the walls prevents the roof being lifted during heavy winds and prevents excess heat during summer months. Adequate ventilation through deliberate gaps and windows reduces electricity consumption during the day time. Building materials should be locally sourced, and design should build on local knowledge and techniques so that communities can make repairs themselves.

Knowledge of how earlier houses were built and how the spaces inside and outside the houses were used before the emergency must be taken into consideration. Open spaces and meeting spaces make social interaction possible, and must be included in the design of temporary shelters. It is also essential to learn about community members' perspectives on health and hygiene related issues. The relationship of the community to public services, the market and nearby towns and villages is essential to know the functions that need to be re-created or ensured at the time of construction of temporary shelters. Documenting primary and secondary occupations of the community facilitates decisions regarding restoration of earlier livelihood patterns and creation of alternative livelihoods.

Land and property rights must be established and methods and technology can be used to increase the resilience of the site to calamities, if the site is at risk from natural hazards. For instance, construction of bunds, raising the level of the settlement to a considerable height above sea level and creation of a thick vegetation belt near the sea are some of the methods that can be used to prevent shelters from being damaged.

The temporary shelters should be in close proximity to the food distribution centres, places of work, places of worship and transport systems. The settlement unit must have the capability to develop into a self-sufficient village.

Latrines should be constructed near water taps and tanks where regular water is available. The doors and walls need to be made out of strong material, well lit with solar/electrical lights with facility to be bolted as women and children should feel safe to use these structures. Electrical fittings should have the necessary safety mechanisms to prevent short circuits and accidents.
When water cannot be made available on a regular basis, some method of organizing regular supplies needs to be created with proper timings etc. Sharing water can create conflict within the community. Digging up bore wells and the practice of rainwater harvesting has great potential in regions where the monsoons are more or less predictable.

Laying a strong foundation for the house and a plinth of considerable height will reduce the risk of flooding. Soak pits kept near the toilets and the bathrooms can also prevent water from remaining stagnant. On both sides or on one side of the street, there should be gutters, either made of mud or cement. This water is allowed to flow into soak pits or at a common collection point. Around common taps/plastic tanks, enclosures can be provided that will not allow the water to remain stagnant. The waste water needs to be directed to soak pits or nearby low-lying areas. Drainpipes

from the kitchen will prevent water from stagnating in front of the houses. This will also keep the streets clean and minimize the spread of water borne diseases.

The participation of women in designing water and sanitation is systems is essential, and deserves particular attention as the primary providers/carriers/domestic users of water are women. Creating awareness and encouraging use of toilets and bathrooms is essential. A large proportion of the communities in the disaster affected regions use wastelands for defecation. The number of toilets provided in each shelter location should be adequate for the population living in the area to avoid inconvenience and discouragement amongst the people. Access to the toilets needs to be clean and safe and a septic tank should be made available. There should be a careful consideration of the maintenance costs likely to be incurred for these and should be discussed with the communities.A sewage system is essential and should be kept away from drinking water sources. Awareness programs on health and hygiene should be organised for the community to ensure that the sanitation facilities are well maintained and used.

Solar energy may provide a possible solution to generate the necessary power for the temporary shelters. Even if the installation costs are high, it is a reasonable solution that is long lasting and provides value for money. Training should be provided to local people so that they can manage the repair work themselves and would be equipped to manage similar repair works even when they move into their permanent homes. Clarity of what is a realistic expectation of community involvement in repairs needs to be discussed and agreed early on. If there is an agreement that the costs incurred would be high, there should be efforts to make available funds from the government to community groups maintaining these facilities.

Periodic assessments of skills by qualified specialists and training and awareness programs on construction principles would serve as an alternative means of livelihood for the displaced community. This also enhances community participation and brings in a sense of ownership.

The study coordinated by Oxfam and Loyola College observed that around 74% of the roof of the temporary shelters needed repair/replacement.

Some specific lessons with respect to application of standards Refer section 3 for more on standards:
a. A coherent, sector-wide shelter strategy could have bridged the time span between temporary and the permanent shelter and led to the provision of adequate life support services and social infrastructure. Issues of allocation, entitlement etc. which cropped up late could have been overcome right at the start and not at the end as has the case has been. Sphere *Standard -1, shelter and settlement, provide adequate guidance*
b. There was a failure of monitoring and lack of consultative process for follow-up action after affected people moved into the transitional settlements. Adequate response to the emerging situation in the transitional settlements could have been addressed with timely upgrading programs. *Common standards provide adequate guidance*
c. Site selection could have been better. *Standard -2, shelter and settlement, provide adequate guidance.*
d. Adequate land was not provided. In certain camps it was as low as 8 sq mt per person, while it would have been desirable to have it between 25 and 35 Sq mt/person. *Standard -2, shelter and settlement, provide adequate guidance* and advocates for 45 Sq mt/person.
e. Provision of covered living space didn't address the need to live for long time in the transitional camps. It was almost like a mass shelter (no. of families under one roof) rather, simple decisions like individual shelter with a family toilet would have reduced the mental stress considerably. *Standard -3, shelter and settlement, provide adequate guidance.*
f. Material selection could have been better, didn't address the basic thermal protection needs *Standard -5, shelter and settlement, provide adequate guidance.*
g. Technology selection for sanitation lacked vision, understanding and commitment. *Standards on water and sanitation provide adequate guidance.*

1.3. Community led evaluation study on public health promotion program

A community led evaluation of the overall effectiveness, reach and accountability of Oxfam's Public health projects implemented in the temporary settlements and its peripheries engaging stakeholders in the Tsunami affected areas of Tamil Nadu and Kerala was carried out during August 2007. The evaluation covered the immediate response, relief and rehabilitation phases of Public Health Promotion Projects implemented by Oxfam and a few of its partner organizations in the tsunami affected districts of State of Tamil and Kerala. There was good evidence of timely and systematic assessment and analysis of PH situation in the temporary settlements. The evaluation objectives focused on assessing the impact of public health promotion activities, and the efficacy of different hygiene and sanitation promotion strategies that were employed.

Oxfam took proactive measures to adequately protect those living in temporary shelters from the impact of monsoon through preventive mitigation measures, which included strengthening of roofs, walls and floors of temporary shelters; sand filling to raise the floor level of the temporary settlements in low lying areas; construction of elevated latrines, storm water drainage, aprons at water points, wall to divert tidal and rain water flow and raised walk way for accessing sanitation units; electric up gradation and emptying of leach pits. Community cooking sheds with lighting and fire safety provisions were provided in Kanyakumari district to help the women to cook safely and hygienically even during monsoon. At Kollam, temporary shelters made of tin sheets were equipped with lightning arrestors in Kollam.

On consultation with the Kerala government officials, Oxfam extended support in the area of public health promotion at Allepey. During monsoon the toilets in the temporary shelter areas at Nagapattinam district were submerged in the water. Oxfam through their partner organizations distributed Non food items and also reconstructed the sanitation structures. Water was pumped out from the temporary shelters disinfectants were sprayed in order to prevent the outbreak of diseases. At Kanyakumari, Oxfam provided water storage tanks in temporary shelter locations to enable the people store water for drinking and cooking purpose and the community well was cleaned to provide more water to meet domestic needs.

Partners have taken up advocacy efforts with the Panchayat Raj Institutions, govt. and other key players in order to make available basic facilities for the affected population. Few partners created a database of information on various government departments and their services and oriented the committees on how to access these services. However, the community participation in these advocacy efforts was minimal.

300 temporary shelters were provided by Oxfam in Kollam, Kerala within 22 days of the disaster and these were upgraded based on seasonal variation and emerging needs. Need for monsoon preparedness and strategies to help improve the sanitation condition in the temporary shelters have been constantly being expressed by Oxfam and partners at the time of district level coordination meetings. At Cuddalore, Tamil Nadu, thatched shelters were provided to 180 families. People were sensitized on precautionary steps to be taken, in case of fire. The thatched huts were not row houses, but individual houses and were immediately occupied by the affected families.

Oxfam continuously monitored the water and sanitation committees that were formed in the temporary settlements. At Kerala, tin sheets were used for temporary shelter and during summer the community complained of excess heat. Oxfam provided fans and cross ventilation and further provided a second layer of thatch roof in these shelters. At Tamil Nadu where tar sheets were used for roofing and walls, a second thatched roof layer was provided to serve as an insulation from heat.

Following Oxfam's suggestions the Government of Kerala incorporated Sphere Standards for construction of *Temporary Shelters*, a toilet facility for 15 persons each (Sphere Standards: 1 toilet for 20 persons) has been provided. However due to lack of space the Government was able to provide only an area of 160 square feet (Sphere Standards: 175 square feet) for each

Temporary Shelter. Considering the fact that Alappad is one of the most populated places, this may seem a genuine constraint. A running water tap is provided for every two shelters, situated just outside the entrance. Toilets and bathrooms have been built in rows, a few meters away from the shelters. In low lying areas, the shelters were built after raising the level of the ground with leftover sand from a mineral mining company situated nearby. Water supply is from overhead tanks connected to the Panchayat water supply source.

1.4. Challenges & Lessons learnt:

The affected families who resided in different areas before tsunami were shifted into temporary settlements. Therefore organizing these families to maintain the community area clean was a challenge, as the people believed that temporary shelters were only an ad-hoc arrangement and they would be shifted into permanent shelters soon. However, this attitude changed over a period of time.

Facilitation of community in construction of culturally and technologically appropriate sanitation facilities will ensure utilization and maintenance of these facilities. It is evident that most of the facilities were created to withstand only for a few months and awareness on importance of hygiene did not necessarily lead to practice.

Women and children were involved more in the public health promotion activities. The reason for this was because it was found easier to mobilize them. While this did prove successful in behaviors being sustained in women and children even after people moved out of temporary shelter locations.

Men were not involved in the program design and there were no specific strategies to increase their participation in place. Though this was attempted later on in the program, it failed. The lack of hygiene practices being followed by men posed a threat to negating the good practices being followed by women and children in the family. In future, both men and women staff should be hired in proportional numbers for effective implementation of the public health promotion program as engaging an all women's team to wok at the field level was found to limit the engagement of men in such programs.

At Kerala, the inaccessibility of communities due to road blocks by the sand mounds during high tide affected the timely delivery of materials for construction of Water and Sanitation facilities. While Oxfam and partners have tried to meet Sphere Standards, the lack of available space or permission from the owners at some shelter sites has limited the construction of required number of sanitation facilities.

Waste management was one of the most challenging issues addressed in the temporary settlement areas. There was little or no provision for waste management services on the coastal areas prior to tsunami. Apparently, most of the temporary shelters sites were the solid wastage dumping areas pre-tsunami and this posed a health hazard to the people who lived in the temporary shelters. Although these areas were cleared, people in the neighboring areas continued to dump their waste here due to lack of was disposal system in place. Since most of the temporary settlements were located in coastal areas with sandy subsoil and shallow groundwater, disposal of sewage was a problem since normal soak pits for onsite disposal have not worked properly.

Changing long established hygiene practices took considerable time since open defecation was a standard practice in the coastal villages.

The scale of the tsunami response program with around 450 aid agencies and civil organizations working in the affected areas during the initial months particularly in Cuddalore and Nagapattinam districts, has a lot of challenges in addressing issues related to coordinating public health related issues.

The community did not have a sense of ownership on the community latrines and bathrooms, which affected the maintenance of these facilities. At areas, where the toilets and the water source were at

a distance, were not put to use, especially by women and adolescent girls. Toilets constructed using thatch leaves were not put to use in most of the areas due to lack of privacy.

Coordination with NGOs and government should be initiated early on in the program. It has been learnt that it's extremely difficult to get governments to take ownership of the facilities created and be responsible for their maintenance later on in the program. This needs to be negotiated before these structures and facilities are put up. In the context of the tsunami, many NGOs used the approach of 'construct and hand over to communities', which failed due to the lack of involvement of the local administration. There should also be negotiations for budget allocations given to the village/ district level administrations for maintenance and upkeep of water and sanitation facilities. A clear mapping of roles needs to be negotiated and agreed to- with this information also being made available to community organizations for effective follow up.

Distribution of Non food items (NFI) and other relief packages did aim to give due respect to the dignity of affected persons. However, the involvement of people in deciding on what exactly they require could have been done better. For example, the distribution of hygiene materials like sanitary napkins for women could have involved them in procuring items that they were comfortable using.

The availability of water needs to be ensured prior to setting up of sanitation units. In some instances, when the strategy adopted was to look at resolving the issue of unavailability of water after having set up structures, it seldom had any positive outcome. Having unused structures prove to be more of a health hazard which needs to be avoided.

Cash for work was an effective strategy in maintaining the dignity of affected persons. However the need to device appropriate and innovative cash for work options was essential. It is important to understand cash for work as being much more beyond cleaning of debris and similar activities.

Temporary shelter dwellings which used locally appropriate technology, resources and materials was most widely accepted and appreciated. Though this did have challenges like fire hazards in the case of materials like coconut thatch which is most widely preferred and used in the tsunami affected regions of South India, adopting these with required safety precautions could be most effective. Even in cases where fire resistant materials were used for construction of temporary dwellings, this was found to be highly unmanageable and required maintenance work to be undertaken periodically which could not be done by the communities themselves. Also, given the heat conditions, ultimately even shelters made from materials like tar sheets, etc were provided thatched roofing's later on. Structures were built to last a few months- without considering lessons learnt from previous disasters.

The SPHERE standards usually referred to in the public health program are often only concentrated on technical standards. There needs to be adequate focus on looking at all the relevant sections of SPHERE in an ongoing manner. This needs to be inbuilt in the monitoring and reporting systems.

Community monitoring systems was found to be an effective way of increasing the ownership of the program. However, these have to be established early on in the program. Staff capacities in understanding community monitoring mechanisms need to be ensured. There is a risk of misunderstanding community participation in monitoring processes with a totally community managed monitoring mechanism.

Community watsan structures like bathrooms/ toilets were difficult to be maintained since only a few people ended up taking all the responsibility. It is better to have units for each family or to a group of families as decided by the communities themselves.

Women and children tend to use the watsan structures like toilets and bathrooms more- so it would be good discuss whether there need to be more number of units built separately for them.

The needs of differently abled people/ elderly people need to be specifically addressed- like having more space in the cubicles, building ramps, etc were found beneficial- however- it will necessarily have to be based on individual needs depending on the nature of disability.

Water storage containers distributed should factor in the wear and tear likely to be involved. Some aspects like additional lids, additional taps/ pipes for water storage tanks, etc. should be factored in if necessary.

Regarding the location of watsan/ other temporary structures, it would be essential to check the water table underneath- for example checking the water availability under sand dunes before constructing temporary dwellings over them would be essential.
Factors like waste disposal systems, drainage systems etc. have to be necessarily planned for prior to erecting temporary structures.

It is best to go with what people are most comfortable using- the lack of consultation with people before deciding on watsan options have a high risk of the structures not being used despite subsequent 'awareness' programs being conducted.

Involvement of the community in all aspects of program design, implementation and monitoring is crucial. Involvement of community leaders, men and women in community groups formed for taking the responsibility of maintaining public health facilities is found to be very effective. (This needs to be backed up with appropriate facilitation by staff to ensure that the interests of vulnerable persons in the community are not sidelined). There was a felt need in the program to also train these community groups on technical, financial and management aspects. The role of these groups should be based on informed choices being made by the members and should be discussed in detail right at the outset. IEC and BCC (behavior change communication) materials could be prepared by the implementing teams along with the community.

The use of PHAST guidelines (Participation, Hygiene and Sanitation Transformation guidelines) are relevant throughout the program. There is a need to continuously reflect on where we are with regard to the SPHERE, Red Cross Code of Conduct and HAP principles in all our program reviews and ongoing monitoring and evaluation activities.

2. Shelter and Settlement Response: An intervention in two increments[6] before reconstruction:

Working in two phases or increments before reconstruction is accepted as an effective shelter response practice. It starts with rapid shelter response termed as 'emergency shelter'. The next increment comes in the form of transitional shelter which involves relatively broad based discussion with various stakeholders.

2.1. Emergency relief; Emergency Shelter

In post-disaster situations the primary purpose of shelter is to contribute to survival by providing protection from the environment: rain, wind, cold or sun and some level of security and privacy. The imperative with emergency shelter is the speed at which it is available; too late simply means increased risk of loss of life. At its most rudimentary level emergency shelter might be plastic sheeting[7], or blankets which are distributed together with other non food related items (NFIs). Accommodation in mass shelter (school, religious place, public building etc.) or distributions of family tents[8] are other forms of emergency shelter provision. Some times this may take shape of planned camp. Critical question is how do one decide on which is the best options. A rapid assessment of needs, resources and capacity in consultation with all the stakeholders including affected people can help arrive at appropriate decision. It can be particularly complex to do an emergency response to refugee situation. Take expert help! If preventing loss of life from environmental exposure is considered as the key performance indicator for emergency shelter, the situation in regions known to experience very low temperature during winter will need specialized inputs. 'In Pakistan, post October 2005 earthquake, there was an inconclusive debate

as to whether the risk of burns, smoke inhalation and fire from heating stoves posed a greater risk than cold temperatures.'[9] It is always useful to find localized solutions in discussion with affected population. There is always a need for strong logistics capacity for delivery of shelter NFIs of appropriate specifications.

> **Effective Practice:**
> In Pakistan, October 2005 earthquake, sandbags filled with dirt and rubble were used effectively to create insulated walls, whilst above 5000ft distribution of reconstruction materials was prioritized so as to encourage reconstruction of at least one room which could be kept warm, before the winter set in, and to help people stay at home rather than evacuate to lower ground where they would not necessarily be better off in tented camps. Simple structures created by individuals from salvaged or local materials can often provide more effective protection from the elements than tents in the short term, and enable people to stay on their own land and begin re-building.
> Source: 'QUALITY & STANDARDS IN POST-DISASTER SHELTER' Jo da Silva, Arup International Development

2.2. Transitional Shelter

As a priority the emergency shelter response (relief NFIs, mass shelter etc.) have to be rapid and culturally appropriate, which provides adequate support to affected population before the next incremental response is mobilized. The next increment of shelter response is transitional shelter; a vital habitable space which has enough durability to last till more durable shelter and settlement solution is reached. The aim is to deliver a **habitable (culturally appropriate) and durable cover living space**, that helps affected families get back to normal way of living (restoration of livelihoods). This type of response requires adequate consultation with various stakeholders and has to be part of a larger sheltering strategy. Hence needs some investment of time for negotiations and discussions. The general rule is that don't rush decisions at this stage, once the decision on design, location etc. is reached implement with good speed and capacity. The transitional response has to be organized and coordinated response of the shelter sector in discussion with other sectors like watsan etc. The cluster approach; current coordination system is a good platform to quickly initiate technical, legal and social discussions around shelter and reach a broad based consensus on the shelter sector response. Reconstruction and housing response post disasters of recent past have shown that it takes long time, some time few years before people get a durable solution. Hence it is important to monitor the living condition in the transitional shelters and look for the up-gradation needs.

3. Decision making on shelter and settlement response:

Various perspectives on social, technical and emergency programming feed into making effective decisions on shelter response. Decision on shelter and settlements for communities should be formulated in the light of local conditions (climate/ natural hazards/ shelter and building traditions/ living patterns/ cultural concerns/ local building materials/ land ownership patterns/ the economic base/ social system, political and administrative structure). Some times this level of capability is not readily accessible to humanitarian agencies. The Shelter and Settlement chapter of Sphere manual gives just enough guidance to fill any gap on account of staffing capacity and capabilities; a **decision support tool** to produce effective decisions. Coordination with other specialist organizations[10] can further enhance access to appropriate decision on design and program delivery.

In providing shelter assistance to the displaced men, women and children would bring-in number of stakeholders' interests and priorities. It is always very useful to list these stakeholders and their respective priorities (see annexure-8 for collective accountability checklist). E.g. affected people would expect shelter to be habitable and durable while host population may want that the displaced people not to use their resources like water, health facility etc. Such an exercise can help evolve more inclusive and informed sheltering strategy.

It is essential to make a contextual decision; therefore rapid assessment is necessary to understand the nature and scale of disaster, climate, environment, political situation, local construction practice, local

community capacity and local resources. There is also a need to ensure standards in planning, commitment of resources, bearing in mind that challenges are not technological but rather our barriers in providing timely shelter response are organizational. Application of **common standards (Sphere minimum standards)** in conjunction with shelter and settlement standards helps find sustainable, timely and practical sheltering solutions - a **practical way of delivering the housing rights.** It is equally vital to look at cross-sectoral links. Progress in achieving standards in one area often influences and even determines progress in other areas. For an intervention to be effective, close coordination and collaboration are required with other sectors. E.g. provision of access to safe drinking water and environmental sanitation in resettlement site ensures better living conditions hence higher rate of occupancy.

Case study: Cross sectoral link:
The IDPs of Kargil war in the state of Jammu and Kashmir in India where being provided full 3 month ration in a single distribution; 4 distributions per year. When ever the distribution happened their only tent would be filled with food leaving very little living space and a lot of food would eventually deteriorate due to poor storage conditions. Authorities were urged to delivery monthly ration instead of three month ration at a time.
What other strategies could have been deployed to assist the IDPs?

'Humanitarian responses are more effective when they are based on an understanding of the different needs, vulnerabilities, interests, capacities and coping strategies of men and women.'[11] Invest adequate time and resources in mapping capacities and vulnerabilities, which can be a good input for the evolution of appropriate design. In most rural communities, people have been building their own houses and settlements in response to their specific needs. It is always useful to understand the existing pattern of settlement and house design in discussion with affected men, women and children. It will help understand gender specific needs and their existing roles in house and home making.

Shelter and settlement programs are fairly complex and require specialists of various kinds. Having an appropriate decision-making structure within humanitarian organizations that includes specialists to plan and implement shelter and settlement programs is an area in urgent need of attention.

4. Minimum humanitarian standards for shelter, settlement and non-food items:

Post-disaster shelter needs when responded to with adequate process and appropriate means can be a valuable resource to secure health, privacy, security and overall wellbeing of the disaster affected population. *Shelter response plays a pivotal role in post-disaster situations both in saving lives and in re-establishing livelihoods and communities promoting early recovery.* Shelter is increasingly being seen not as a stand-alone product, but as an integral part of a settlement which includes the physical and social infrastructure needed to support communities, including water, education, health and employment. To apply the Sphere 'guidance' in shelter and settlement planning to secure '**adequate shelter**' as a right[12] of affected populations. Sphere standards can help define adequate shelter for various emergency contexts. Sphere minimum standards are not absolute, rather they to be used as a benchmark to initiate a consultative process (refer collective accountability[13] matrix in annexure-8) with various stakeholders to agree on '**adequate shelter**' for any given context. The outcome of such a consultative process would be a shared shelter response strategy (ref. 5.0 for shelter strategy) for various agencies, which ensures minimum quality in the shelter response of all the implementing agencies, which can be monitored by the coordinating agency.

There are six Sphere minimum standards for shelter and settlement, each accompanied by several qualitative and quantitative indicators and supported by guidance notes to facilitate interpretation for the specific context. Standards 3 and 4 form the basis for shelter designs with 5 and 6 influencing material selection and construction choices, while 1 & 2 help evolve an appropriate framework for 'adequate shelter' along with other services required by the disaster affected population. Standard 1 & 2 also help understand the cross-sectoral linkages like provision of water, sanitation etc. Further analysis reveals that

Standards for Shelter and settlement follow the logic of **planning level** and systematically cover various **planning considerations** like covered space, design, construction and environmental impact. 'Strategic planning' the standard-1 is the unifying element.

Non-Food Items; Basic goods and supplies are required to enable families to meet personal hygiene needs, prepare and eat food, provide thermal comfort and build, maintain or repair shelters. Provision of non-food items have to part of the sheltering strategy.
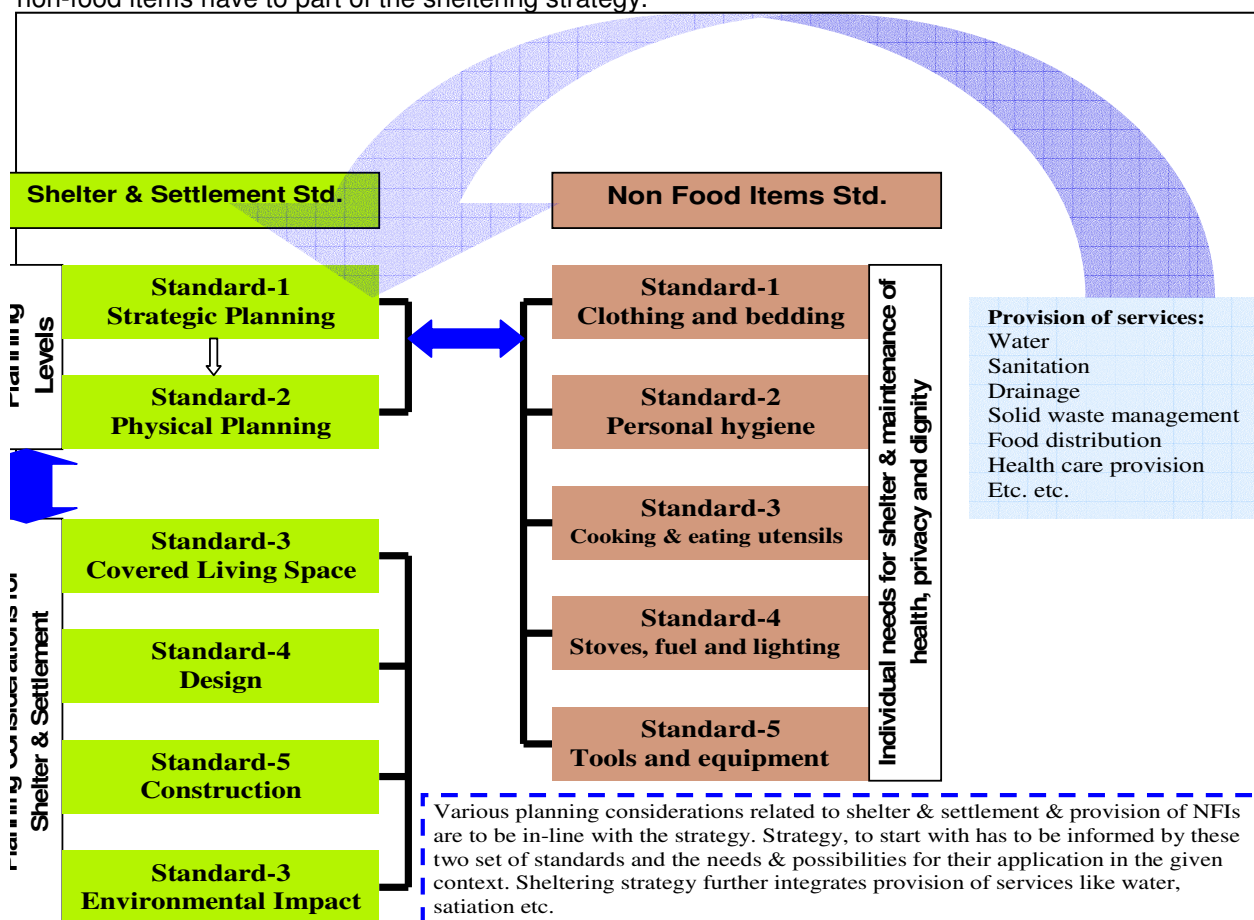
4.1. The six standards for shelter and settlement are:

Std. 1- Strategic planning *(page 215 Sphere Manual)*
Existing shelter and settlement solutions are prioritized (return to original site or settle with host community or families) and the security, health, safety and well-being of the affected population are ensured. Collective settlement (large buildings or temporary planned camps) should not become a default response.
Std.-2- Physical planning *(page 215 Sphere Manual)*
Planning should be guided by existing social networks; ensure safe and secure access to water, sanitation, health, solid waste disposal, graveyards and social facilities; appropriate privacy and separation between individual shelters, and safe areas for vulnerable groups
Std. 3- Covered living space *(page 215 Sphere Manual)*
Provides sufficient covered space for dignified accommodation, appropriate privacy, and allows essential household activities and livelihood support activities
Std. 4- Design *(page 215 Sphere Manual)*
Design is acceptable to the affected population and provides sufficient thermal comfort, fresh air and protection from the climate to ensure dignity, health, safety and well-being.

Std. 5- Construction *(page 215 Sphere Manual)*
Construction is in accordance with safe local building practices and maximizes local livelihood opportunities
Std. 6- Environmental impact *(page 215 Sphere Manual)*
Adverse impact on the environment is minimized by the choice of location, the material sourcing and construction techniques.

4.2. Standards for Non-Food Items:

'The most individual level of response to the need for shelter and the maintenance of health, privacy and dignity is the provision of clothing, blankets and bedding. People also require basic goods and supplies to meet their personal hygiene needs, to prepare and eat food, and to provide necessary levels of thermal comfort.'[14] Standards for provision of non-food items (NFIs) provide guidance on:

- **Material** shelter NFIs – those contributing to the physical sheltering of a family like, tents, plastic sheeting, material and tools for construction/maintenance etc.
- **Household** shelter NFIs – those used inside a family shelter like, blankets, clothing, lighting, cooking utensils, hygiene kit, water containers, fuel, stove, heater etc.

Five standards for NFI's are:

Std. 1- Clothing and bedding (Page 230, Sphere manual)
The people affected by the disaster have sufficient clothing, blankets and bedding to ensure their dignity, safety and well-being.

Std. 2- Personal hygiene (Page 232, Sphere manual)
Each disaster-affected household has access to sufficient soap and other items to ensure personal hygiene, health, dignity and well-being.

Std.3- Cooking and eating utensils (Page 233, Sphere manual)
Each disaster-affected household has access to cooking and eating utensils.

Std. 4- Stoves, fuel and lighting (Page 234, Sphere manual)
Each disaster-affected household has access to communal cooking facilities or a stove and an accessible supply of fuel for cooking needs and to provide thermal comfort. Each household also has access to appropriate means of providing sustainable artificial lighting to ensure personal security.

Std. 5- Tools and equipment (Page 236, Sphere manual)
Each disaster-affected household responsible for the construction or maintenance and safe use of their shelter has access to the necessary tools and equipment.

4.3. Standards and practice:

The indicators associated with various standards define the critical success factors or level of service to be achieved. Guidance notes associated with each indicator captures the best practice related to the standards.

S. no.	Standard and indicators for shelter and settlement	Tips for effective practice	Performance Requirements
4.3.1	**Standard 1: Strategic Planning** Existing **shelter and settlement solutions are prioritize** through the return or hosting of disaster-affected households, and the security, health, safety and well-being of the affected population are ensured. The 10 key indicators or 'critical success factors' for standard 1 echo some of the primary concerns of humanitarian action like households return to the site of their original dwellings, find livelihoods linked durable solutions that minimize risk etc. **These indicators are to be applied while preparing the road map for sheltering displaced men, women and children**	**Important aspects of preparing a road map for sheltering displaced men, women and children can be:** 1. A Shelter response strategy should ideally link short, medium and longer shelter and settlement priorities of affected population. 2. Challenge is, to make strategy reasonably explicit yet have the desired amount of flexibility so that it could be used by diverse actors to provide solutions to range of affected groups over the entire recovery period. Number of different sheltering strategies can be deployed to makeup the overall strategy; a basket of strategies minimizes the risk of exclusion of any of the disaster affected groups. 3. Low investment high impact work: There is always a need to mobilize a highly experienced multidisciplinary team to formulate strategy as impact of their work is going to last much beyond the short time frame for which they are engaged. 4. No strategy can be cast-in-stone, it may have to change if the circumstances demand, if the desired out put is not being achieved etc. Hence every strategy has to be monitored against agreed measurable indicators, which could come from the emergency profile. Remember: 5. Exit strategies should be part of the response strategy.	Strategic planning is needed at all levels National to local. Depending upon the level, scope/concerns and criteria would vary. Like: (a) At a broader level it may become strategy for the entire shelter sector, e.g. Post tsunami Shelter strategy in Sri Lanka, developed and coordinated by UNHCR is an 'effective practice' example of use of Sphere standards and response to the local policy environment to fulfill post disaster shelter needs. (b) At the level of organization strategy could be selection of option/s to fulfill Short, medium and long term settlement needs of affected population or adoption of shelter delivery mechanism in response to the context. (e.g. Self help built strategy by NRC in Sri Lanka to support IDPs in rebel held territory) What ever the level, it is critical that strategy binds together the **awareness of context** and understanding of the **transitional settlement needs.**
4.3.2	**Standard 2: Physical Planning** **Local physical planning**	Like strategic planning, physical planning is a very short term activity requiring minimal investment but has a long term impact. Like, a well	**Site selection** and **site planning** are two important components of physical planning practice. Practice of

practices are used where possible, enabling safe and secure access to and use of shelters and essential services and facilities, as well as ensuring appropriate privacy and separation between individual household shelters.

The Sphere indicators or critical success factors' for physical planning are specific planning considerations like;
- respecting existing social networks
- Access to services like water, sanitation, solid waste management, social infrastructure etc.
- Adequate land allocation; 45 sq. meters per person.
- Topography that facilitates natural drainage. Guidance notes clarify that the land should have 1% to 6% slope.

planned temporary settlement on a carefully selected site could serve for many years before durable housing solutions are implemented.

2. It has been recognized that a large proportion of people affected by disasters spend at least part of the post-disaster period in temporary settlements, which may eventually become a permanent settlement.

3**. Access to services and facilities:** Most important physical characteristics of emergency settlements are their location, population size, layout and population density. Location determines many factors such as access to water, environmental health risks, climate, soil type and topography.

4. **Physical plan** becomes a framework for various services to flow into it. Provision of life sustaining services like water, sanitation, education, food distribution, health and hygiene promotion and their performance is very much linked to the quality of physical planning.

5. While **selecting site for transitional shelter** or reconstruction, look for the problems.

- 'People choose where they live on a fairly rational basis.' hence
- If there is no one living on the site you are considering now you need to ask why is it empty?
- Is there a flooding risk?
- Is the site unhealthy?
- Are there other problems with the site? Like disputed ownership etc.

6. **Water distribution and excreta disposal** are critical success factors for any settlement. Hence transitional settlement design could

site selection and site planning is to provide various services including housing, water, sanitation and to address safety and security concerns including reduction/mitigation of risks from natural hazards. **The essential feature of any emergency settlement is the disaster-affected community itself. Remember that only part of the affected population settles in carefully selected and planned settlement, do consider supporting population that have adopted other forms of settlement like host family accommodation, dispersed self settlement etc.**

Key priorities for Site selection: The performance requirement would include getting commitments from the government in making available these facilities.

Agreeing clearly on what is the role of the government, local bodies like Panchayats, NGOs, etc
- There is sufficient water for household cooking, hygiene and sanitation.
- Drainage of sanitation and surface water: the gradient should be no less than 2% to enable run-off, but to avoid soil erosion should not exceed 6 %.
- The site is not less than three meters above the anticipated water table in the rainy season.
- The soil type allows for digging and water penetration.
- Elevation in relation to latitude is correct: day and night temperatures are suited to the available shelter and clothing.
- Vegetation: there are grasses, scrubs and trees

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be centered around a water and sanitation plan. Refer standards for water, sanitation and drainage page 51 to 101 of Sphere manual.

7. Adopt 'ecological land planning' principles:

o Land planning must be more than responding to mere shapes and features but also response to the processes them selves
o Essential processes that shape the land are: Waves, wind, glaciers and runoff, without doubt running water heads the list.
o Land planning must conserve the ecosystems that have a symbiotic relationship with that particular piece of land.
o Land planning can be based on the aim of optimal utilization of site based resources. Conservation of resources becomes the natural response to utilization of resources whether it is apparently required or not.

for shade and to avoid soil erosion.
o Environmental health and hygiene promotion: see Water Supply and Sanitation, and Health Services.
o The site is at least 10km from protected or environmentally fragile areas.
o The site is not close to a potential source of natural hazard like volcano.
o Access to the site for heavy trucks is less than 5 km from an all weather road. Light four wheel drive trucks are able to reach distribution sites.
o The site is near to existing social and economic facilities if possible.
o Land rights and permitted use are firmly established prior to occupation.
o Water rights, and the right to use other natural resources, wood, stone, sand are arranged immediately before, or at the same time as, the site
o The site is not prone to tidal waves and flooding. etc.

o **Integration with or separation from local/host communities:** The degree of integration or separation influences social relations, local markets for labor and goods, political developments, security and sustainability. This issue of paramount importance while responding to refugee situation.

			Key priorities for Site Planning
			o The site provides around 30 m² space for each person. This includes infrastructure (roads, sanitation, schools, offices, water systems, security/fire breaks, markets, storage facilities, shelter locations), but excludes land for agriculture (crops and livestock). Sphere advocates provision of 45 m² which includes some land for crops and livestock.
			o Clusters of living areas or village groups are established; there is empty land for future expansion, graveyards, wood lots and playgrounds.
			o There is easy access to services on the site by roads and bridges.
			o There is appropriate space for markets, offices, workshops, warehousing, distribution of donated commodities, staff housing, solid waste disposal, health facilities, religious services, community and nutrition centers, and water points.
			o There are firebreaks at every 300 meters (may vary depending on the level of risk), 50 meters wide. Ensure that roads are wide enough to serve as firebreaks.
			o There is a graveyard for each population group and graveyards are appropriately located.
			o Quarantine camps are established at least 300 meters from any population to minimize the spread of infectious

			disease such as cholera. o Decisions are based on sound judgments using appropriate maps. o Open spaces of various sizes are provided for various activities of men women and children. o Achieve Social cohesion, which is influenced by the location, size and layout of the emergency settlement. Respect existing social networks.
4.3.3	**Standard 3: Covered Living Space** **People have sufficient covered space to provide dignified accommodation. Essential household activities can be satisfactorily undertaken, and livelihood support activities can be pursued as required.** Some of the critical success factors for provision of covered living space are: o The initial covered floor area per person is at least 3.5 sq.mt or 37.5 sq. ft. o The covered area enables safe separation & privacy between the sexes, different age groups…. o Essential household activities can be carried out within the shelter o Key livelihood support activities are accommodated where possible	It is a public health priority to provide covered living space as early as possible to the displace population. Remember that conception of space has to go much beyond the absolute measurements, depending on climate and culture, open and covered space get used in very different ways. Gender analysis for use of spaces is a critical input to develop appropriate participative design. The provision of space has to be such that affected households can get back to normal ways (culturally appropriate) of living at the earliest. Getting the timing right in provision of different types of cover space is the critical aspect of shelter and settlement practice: o Emergency shelter provision has to be rapid. o Transitional shelter provision has to be agreed with various stakeholders as part of a strategy for provision of durable solution/housing. Hence provision of transitional shelter/settlement has to be quick with adequate coordination/preparation. Reconstruction/housing provision always takes time hence there is need for provision of transitional shelter/settlement. Housing is linked to number of policies related to land, environment etc. hence	In practice "Shelter" and "housing" are two terms associated with provision of habitable covered living spaces. The distinction between shelter and housing in humanitarian terms is primarily one of scale and timing. Emergency shelter (the first of the two phases before reconstruction) typically refers to providing material or other assistance to families whose homes have been made uninhabitable or unsafe by disasters and conflicts. The goal of emergency shelter is to ensure that affected families have a safe living space immediately after the event. Emergency shelter needs to be smoothly replaced with transitional shelter (the phase two before reconstruction). Reconstruction in form of housing is a longer range and more durable solution to the need for a safe and healthy living environment disrupted by the disaster event. The goal is to assist disaster affected communities and their families in the reconstruction of permanent homes.

		various stakeholders get involved in decision making which requires substantial time for formal negotiations.	
4.3.4	**Standard 4: Design** **The design of the shelter is acceptable to the affected population and provides sufficient thermal comfort, fresh air and protection from the climate to ensure their dignity, health, safety and well-being.** The indicators for design standard suggest the primacy of **process of engaging with disaster survivors**. They effectively capture the link between design criteria like material and services to achieve design principles of thermal comfort, habitability, durability etc. The scope of indicators also covers retrofitting and repairs of the damaged housing and built environment.	Design is a process: Design principles like habitability, durability etc. can be converted into design criteria through a sustained consultation with affected men, women and children. One time consultation for design development might not be enough; consultative process has to be sustained though the entire implementation period, which may span over many months. There is always a need for staff with skill sets that can span technical and well as social understanding. Every element of agreed design should be such that end users can maintain and adapt it as a practice in their existing context. Development of house and settlement design for reconstruction can be easy if facilitators can crystallize the local dwelling and settlement 'type' (for more details on the idea of 'concept of type' please refer annexure-1). Such an exercise can help bring-out patters made of spaces and elements that should be included in the reconstruction design.	**Development of design brief that addresses concerns of diverse stakeholders is central aspect of the shelter and settlement practice.** Key steps are: o Factor priorities of users (men, women, children and any other specific needs of vulnerable groups and individuals); participative design development. Selection of appropriate construction technology, material etc. is one of the outputs of the participative process, which is closely linked to donor and organizational priorities. o Factor priorities of donors into the 'design brief' o Factor organizational priorities into the 'design brief'. Facilitation of the participative process of Design brief development and ensuring its inclusiveness is one of the prime concerns of organizations. o Technology Selection, risk reduction etc. are some of the other concerns of organizations responding to shelter and settlement needs.
4.3.5	**Standard 5: Construction** **"The construction approach is in accordance with safe local building practices and maximizes local livelihood opportunities."** **The indicators or critical success factors for construction practice are predominantly about sourcing and using local**	In pursuit of protecting people from future risks through shelter and settlement interventions many a time experts choose very robust technologies which in normal times might be beyond the means of affected population. It is of paramount importance that shelter and settlement practitioners work to wards adopting sustainable 'technology solutions' and take appropriate action to establish the new construction practices; adaptation.	**Construction is the heart of shelter response, timely delivery of construction project hinges on:** o **Early identification of project goals** o **Realistic assessment of internal and external capabilities and capabilities** o **Choice of project delivery mode to meet project goals and**

	resources (materials, labor, construction practices etc.) and their impact/performance over medium and long term.	Sphere indicators for choosing right kind of technology and shelter delivery mechanisms are: o **Locally sourced materials and labor are used without adversely affecting the local economy or environment.** o **Locally derived standards of workmanship, materials and construction are achieved.** o **Construction and material specifications mitigate against future natural disasters.** o **The type of construction and materials used should enable the maintenance and upgrading of individual household shelters using locally available tools and resources.** **While facilitating technology selection for shelter, water, sanitation etc. etc. important questions to be probed are:** **Is the technology:** o **Safe,** (Have experts proved it and does community perceives the same.) o **Effective,** o **Useful,** o **Sustainable,** (Is it good for the resource base of the immediate region) o **Affordable,** o **Acceptable to the end users,** o **Wanted** (Are the end users demanding for it)and o **Adoptable** (on a medium and long term basis, can the end users be able to use it within their existing context)	**leverage Team capabilities** o **Project planning, scheduling, Budget…..** o **Monitoring at various levels including participative monitoring.** o **Periodic evaluation** What ever might be the approach or mode (for more info on various approaches please refer annexure-3) to delivery of shelter/housing, construction would have to be organized as an activity. Organizing deployment of labor remains central part of construction. **The different ways of organizing construction are:** **a) self-help construction:** where families undertake the **work** required **themselves** generally supported by direct and contracted labor **b) direct labor:** where the aid organization **hires** and **manages** individuals generally used when no contractors available **c) contracted labor:** where a **contractor** is **engaged** to undertake the works generally used for complex or specialist works For more details on refer annexure-5
4.3.6	**Standard 6: Environmental Impact** **The adverse impact on the environment is minimized by settling the disaster-affected households, the material sourcing and construction techniques used.**	**Sphere project** identifies the environment as a cross-cutting issue in humanitarian assistance. Organizations providing emergency assistance need to assess and incorporate measures to reduce environmental impact of their activities. For Checklist-Based Guide to Identifying Critical Environmental Considerations in	**The environmental impact of post-disaster sourcing practices and large-scale demands on natural resources such as Land, water, timber, sand, soil can be managed though planning. Some of the important planning consideration could be:**

	Indicators for standard six list 5 critical success factors to minimize negative environmental impact of humanitarian response. Emphasis has been given to assess the availability of resources and plan their usage with aim to minimize any long-term depletion of natural resources.	Emergency Shelter Site Selection, Construction, Management and Decommissioning visit http://www.benfieldhrc.org/rea_index.htm -Post disaster the rate of use of resource (particularly building material) accelerates, e.g. **In Sri Lanka approximately 120,000 houses were lost in the Dec. 2004 tsunami, whilst in the previous year (2003) only 5,000 new houses had been built in the whole of Sri Lanka.** **-**Gaps in response can lead to depletion of resources in the vicinity of the disaster affected area. **Like…. The displaced will need fuel for cooking and possibly for heating. Lack of supply may lead to cutting of surrounding forest. Apart from supply of appropriate fuel, dispersal (two camps of 5000 people instead of one camp of 10000) of displaced population over a larger area may be considered to minimize the impact on natural environment.** The hazardous event may have significant direct impact on the local environment seriously undermining the livelihoods like; post cyclone/hurricane, sand casting in agricultural land. There is always a need for assessment followed by adequate response.	○ **Green Procurement** ○ **Use of appropriate technologies** ○ **Localization of appropriate technologies** ○ **Ecological land planning** **Green Procurement:** Environmentally responsible or 'green' procurement is the selection of products and services that minimize environmental impacts. Many humanitarian agencies subscribe to such policies. **Appropriate technologies:** Selection of green or energy efficient technologies. Improving energy efficiency is a valuable near-term step that can deliver increased productivity, a reduction in pollution, lower consumption of natural resources, and improved financial performance - all this without affecting the desired benefits/performance. Calculation of carbon emission of various building materials is one of the useful indicators of energy efficiency. Introduction of new or appropriate technologies and their mainstreaming is a complex issue. It might be useful to ask a question; do you have time to introduce and work on adaptation of a new technology. **Localization of appropriate technologies:** Localization is the adaptation of a technology to a location/place and time. Soil based technologies like Compressed Stabilized Earth Blocks may be an appropriate technology for a given region but still would need significant efforts to get it mainstreamed into the local construction practice.

			Ecological Land Planning: Land planning must be more than responding to mere shapes and features but also response to the processes that shape it. Essential processes that shape the land are: Waves, wind, glaciers and runoff, without doubt running water heads the list.

5. Shelter and Settlement Needs Assessment; getting started for restoration shelter and livelihoods:

Humanitarian emergencies can be sudden and demand urgent action, but adequate information for sound decision-making is rarely available. Needs assessment seeks to bridge the information gap in a timely manner so as to ensure that those in need receive the assistance they NEED. Assessment becomes a communication channel between affected populations and aid agencies. Communication can be improved by the use of tools[15] for information gathering and analysis. Humanitarian response is primarily about providing needs of the most vulnerable hence there is requirement for needs assessment.

(What Should Be) – (What Is) = Need

Key Information generation priorities could be:
- Is it an emergency?
- Who needs help?
  - Which group is affected?
  - Which sub groups are worst off? (gender/age/ethnicity)
- What is their situation now?
  - How urgent is action needed?
- Where are they now? Where did they live before the event?
- What resources do they have?
  - (Own resources often overlooked)
- What resources do they (collect disaggregated[16] data) need?

A farmer's house would be considerably different in design from a fisher folk; similarly if we have a farming community and fisher folk community, their settlement would differ in location, scale of open spaces etc. Hence livelihoods analysis is an important aspect of shelter needs assessment. Spatially, shelter and settlement should accommodate livelihood options of the displaced population.

The next step to convert information into transitional settlement strategy is to: Prepare an Emergency Profile (context analysis), which also contains the population profile. Sustainable livelihoods framework is one of the useful tools for develop of Population profile. 'Settlement and shelter are extremely important productive assets. Shelter, for example, provides a space in which to work and rest, and to care for children and elderly people. It makes available a place to care for animals, and to store tools, water, or goods produced.'[17]

5.1. Developing Preparing Emergency Profile[18]:

Emergency Profile is the vital piece of analysis that feeds into the post disaster decision making, particularly for transitional shelter and settlement. It is an essential input into Strategic planning, which normally is a responsibility of senior managers. To keep the strategy on right track, emergency profile should be high on the agenda for monitoring by senior managers. In practice, shelter needs assessment data should feed into the emergency profile.

To develop an Emergency Profile a Five step Assessment framework can be used:

a) **Who all are involved:** stakeholders include displaced population, local population, local and national Community Based Organizations (CBOs) and NGOs, the aid community. In normal circumstances who is/are the actors responsible for provision of housing.

b) **What are the references to build a response:** Existing relief and development plans, emergency response polices etc.

c) **What are livelihood options of the affected population** (Population Profile)**:** profile how different population groups live and work assess 'capital', identifying resources and opportunities

d) **What capacities and capabilities are available: I**dentify opportunities and constraints of resources (human resources, organizations, skills etc.)

e) **What Resources are available within the affected area and else where**: Such as sites, infrastructure, water supply, fuel, building materials, transport, warehousing etc.

6. Sheltering Strategy:

Shelter strategy, as mentioned earlier is to devise the roadmap for the affected families and communities to achieve a durable solution which is built on phased interventions. **The data and analysis generated from the needs assessment feeds into the making of the strategy.** Sphere standard 1 (*page 211 Sphere Manual)* for shelter and settlement provides comprehensive guidance for strategic planning. Strategic planning is covered in detail in section 8.3 '**Standards and practice'.**

Strategic planning is needed at all levels, for a sector wide strategy it is important to be inclusive, all the key actors including Government and affected communities have a role in setting the agenda. Challenge while formalizing the strategy, is to make strategy reasonably explicit yet have the desired amount of flexibility so that it could be used by diverse actors to provide solutions to range of affected groups over the entire recovery period. Some of the issues that need to be explicit and may be prescribed are the policy frameworks and minimum standards for Shelter and settlement planning from the point of view of short and long term habitability of transitional settlements and shelter. Sphere minimum standards provide an apt framework which needs to be contextualized as per local climate, geography, national laws, risk and hazard profile etc. preferably in discussion with affected population, governance structures, institutions etc.

Some of the aspects of Sheltering strategy could be:
   a. Context analysis.
   b. Selection of option/s to fulfill short, medium and long term shelter and settlement needs.
   c. Preferred shelter delivery mechanism in response to the context. (e.g. Self help built strategy by NRC in Sri Lanka to support IDP in rebel held territory)
   d. Agreement on minimum standards.
   e. Agreement on indicators to track the emergency context and implementation of the strategy.
   f. Guidance on legal/policy framework applicable for shelter, settlement, environment etc.
   g. Awareness on roles and responsibilities of various Governance structures related to shelter, settlement, environment etc.

Sample summary of a strategy (adopted from original sketch by Dr. Tom Corsolis, www.sheltercentre.org)
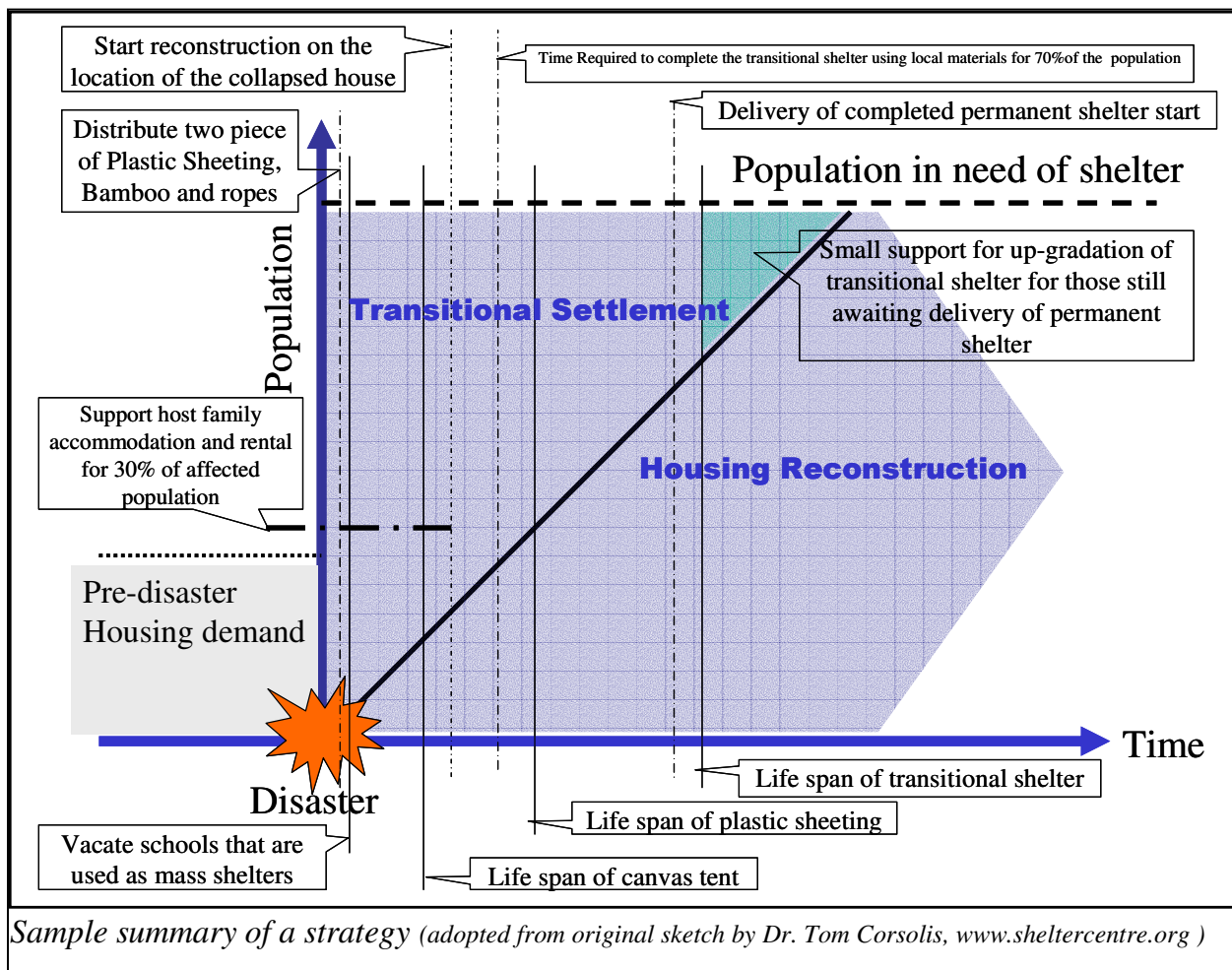
Strategies along with the processes put in place to implement them would have to be tracked and changes affected from time to time. Hence to start with a comprehensive narrative report is always useful in presenting the ideas with reasonable clarity. It is also useful to capture the essence of the strategy as a summary, which becomes a useful visual tool for communication with various actors. The exit strategy needs to be derived on the basis intensive consultations with various stakeholders, including the participating communities. This should be reviewed and adapted as necessary in various stages of the program factoring in the changing context.

Exit strategies have to be part of the response strategy: Always a complicated issue because in so many assistance programs humanitarian support tends to build dependence. Right from the design stage of a project an exit strategy could be formulated so that every program is working, from day one, towards a sustainable, medium to long term process. Factors that can contribute favorably to making a good exit strategy are:

1. Capacity Building of individuals and organizations should be a key element / an essential that encourages development of knowledge, skills and experience in the project components, etc.
2. Enough time to build self sufficiency and self reliance. Sometimes projects have life spans that do no allow for sustainability. Time frames should be realistic.
3. Working toward success! The project designers should try to encourage success and therefore determine all that will be required to lead to that success. If the program is looking forward to a successful sustainable outcome, then exist strategy will be easier to formulate. The exit strategy needs to be derived on the basis intensive consultations with various stakeholders, including the

participating communities. This should be reviewed and adapted as necessary in various stages of the program factoring in the changing context.

7. Design shelter and housing:

Helping the communities to recuperate from the disaster is a tough challenge. Being one of the largest natural disasters of its kind that has affected the southern coast of India, the tsunami has raised new issues surrounding the process of rehabilitation, relocation, guidelines for construction, coastal regulation, land allocation and restoration of livelihoods etc.

Technical guidance was provided by experts to a few NGO's working in the region with an understanding that physical conditions, construction practices and design of temporary shelters have far reaching consequences on the overall quality of life of communities in the tsunami affected regions. Rehabilitation should essentially empower the community, rather than leave them with a continued dependence on external help.

7.1. Evolving Appropriate Design:

Evolving appropriate design is seen as important step and critical information to feed into the planning of shelter delivery. It is an opportunity to factor the needs/concerns of the affected population, hence to be developed in discussion with them. It is also an opportunity to do risk reduction hence it has to be deliberated with specialists and various stake holders including the affected population.

The essentials steps are:
a) Set performance standards for shelter and settlement. Discussing this with implementing partners and provide the necessary support for them to be able to achieve these.
b) Develop a design brief.

Both the steps can happen simultaneously, there might be requirement to go back and forth. It is important to note that evolution of design is a process which needs to be facilitated. To handle this process, there is always a requirement of specialists who have negotiation skills, both in technical and social domain.

7.1.1. Performance standards of shelter and settlement[19]:

From the point of view of affected men, women and children it is important that Shelters are habitable and durable, while the risks at settlement are managed. Sphere minimum standards for shelter and settlement give some guidance. *E.g. Construction and material specifications mitigate against future natural disasters*- key Sphere indicator std-5, Shelter and settlement. Refer 8.0, Shelter and Settlement Standards for humanitarian response.

Shelter should be of adequate quality. The specific objectives of transitional shelter could be (depend on the context):

- To be structurally sound and provide adequate protection from the environment
- To contribute to personal safety and security, health and well-being
- To enable normal household duties and livelihood activities to be undertaken.
- To bridge the gap until durable housing is organized.
- To provide psychologically assurance of progressive recovery towards normalcy.

In short, the shelter needs to be habitable and durable. From the occupant's viewpoint habitability and durability are their primary concerns, whereas a shelter program manager who is trying to balance a budget, and is under donor or government pressure to build quickly has many other factors to consider.

7.1.2. Concept of Habitability:

Twelve qualities which contribute to habitability are; weatherproofing, temperature, ventilation, light, privacy, space, cooking, water and sanitation, vector control, safety (including fire and toxicity), security (personal and possessions), structural integrity. Adaptability of the shelter is an integral part of habitability as it enables individual families to tailor a basic shelter to meet their particular needs, for instance by altering internal partitions or building extensions.

Climatic conditions are one of the threats to survival and health of displaced men, women and children. Family shelters, settlement and other buildings constructed should be designed and supported to meet the worst weather conditions. 'Thermal comfort' is an idea linked to climatic conditions, vital for achieving desired level of habitability in any structure. Maintaining thermal comfort[20] for occupants of buildings or other enclosures is one of the important goals of design which contributes to the quality of habitability. Thermal comfort is maintained when the heat generated by human metabolism is allowed to dissipate thus maintaining thermal equilibrium with the surroundings. Thermal comfort is a complex concept but for emergency rapid planning and design the way forward is that the site planner/engineer/ architect should have a good sense of the climate that they are dealing with and workout performance requirements for the emergency and transitional shelter. One option is to observe the typical buildings used locally and by referencing bio-climatic charts get a sense of what type of local climate one is dealing with in terms of emergency shelter requirements. *A typical chart is included in Annexure-6*

7.1.3. Concept of Durability:

Durability relates to the performance of the shelter over time. In case of transitional shelter it is the time required for re-construction or re-settlement. Durability is a factor of: structural integrity, material choice, repair and maintenance, adaptability. Provided the basic structure is sound, and if materials are sourced locally and tools provided or loaned so that there is scope to maintain, repair and upgrade shelters incrementally, their lifespan can be increased considerably and more cost effectively than by providing more durable materials at the outset; the intended design life is therefore less critical. Material choice also plays a significant part in cultural acceptability, opportunity for related livelihood programs, and impact on the environment, which is covered in the Sphere Standards 4, 5 & 6 for shelter and settlement.

7.1.4. Performance Specification for Shelter and Settlement:

The quality of habitability and durability is virtually a universal requirement. To define them for particular context, it is necessary to have a specific qualitative performance statement and quantitative key performance indicators to be developed for each quality to suit the particular situation. This has to be based on local consultation with beneficiaries and key stakeholders, with reference to guidelines and input from shelter specialists. The matrix below can be used to come-up with a comprehensive framework for performance of shelter and settlement, which feed into the design brief as well as used for monitoring and evaluation. The significant aspect about this matrix is that it factors concerns of affected population as well as shelter and settlement experts. While the concerns of donors and implementing agencies can be factored during development of design brief.

Sl.#	Criteria for habitability defined by the affected men, women and children. *The outcome depends on how various component of settlement and shelter are designed; Dependable variable*	Key performance indicators (Keep it simple) as agreed by various stakeholders	Elements of Settlement													Elements of Shelter										
			location	Layout	Access/roads	water supply	Sanitation services	Health facility	Schools	Food distribution	Drainage	Solid waste collection	Livelihood option	Play areas	Fuel Supply	Form	Foundation	Frame/structure	Roof	Wall	Windows	Doors	Partition	Extension	Floor	Electrical wiring
	Structurally Sound																									
	Weather proof																									
	Temperature																									
	Ventilation	e.g. Performance statement: sufficient ventilation should be ensured to minimize internal temperatures and humidity. KPIs: -Roof height at eaves minimum …mt. -Minimum openings ...mt. sq. -Internal temperatures do not exceed ...degrees.																			*	*	*				
	Light																									
	Privacy – Access to sanitation facilities																									
	Vector Control																									
	Safety (fire, toxicity)																									

	Security																								
	Cooking																								
	Access to Water and Sanitation																								
	Internal Space																								
	External Space																								
	Provision of tools																								
	Commitment to maintain the structures																								

7.1.5. Developing Design Brief[21]:

The challenge for shelter advisors and programmers is to translate habitability and durability criteria into a design brief or more appropriately a performance specification. Development of design brief that addresses concerns of diverse stakeholders is central part of the shelter and settlement practice. Key steps:

- Bring-out and factor priorities of users (men, women, children and any other specific needs of vulnerable groups and individuals),
- Initiate a participative design development. Selection of appropriate construction technology is one of the outputs of the participative process, which is closely linked to donor and organizational priorities.
- Factor priorities of donors into the 'design brief' Adapt this to the local context where necessary in consultation with various stakeholders
- Factor organizational priorities into the 'design brief'. ***Important: Some of the key organizational priorities are defined by the common standards, chapter-1 of Sphere standards.***

Diagram is adopted from original done by Jo da Silva, Arup International Development

8. Shelter and Settlement delivery; an opportunity to develop inclusive livelihood strategy in upgrading temporary shelters during relief phase.

Shelter delivery to the affected families can be organized in number of ways. Most agencies aspire to adopt participatory approaches in planning and implementing humanitarian programs. In practice in shelter sector, a range of delivery mechanisms have been deployed from time to time.
- How and why do agencies decide on one kind of delivery mode?
- What effect is has?
- What are the challenges and constraints of various methods?

These are some of the aspects of Shelter practice which are still in needs of more research. To a great extent the success of any humanitarian initiative hinges on shelter delivery. One of the important intents of shelter delivery approach could be to maximize opportunities for livelihoods. *(Also ref. section 4 on needs assessment).*

8.1. Approaches and Modes for shelter delivery:

Two discrete **approaches** and five distinct yet linked **modes** of post disaster shelter delivery are part of the post disaster shelter delivery. Two approaches are:
- o Agency Managed-Donor Driven
- o Beneficiary Managed-Owner Driven

In practice many a time the two are mixed which lead to confusion in priorities. It is important to understand that human resources of very contrasting skills and attitudes are required to apply the two approaches.

Features of Agency Managed Shelter Delivery	Features of Beneficiary Managed Approaches
o Agencies Decide what to offer o Common believe that the Beneficiaries don't have much capacity. o Logisticians and Administrators take the lead. o Designs were done by chartered architects and engineers from mainstream commercial construction industry. o Contractors, mostly outsiders are brought in o Beneficiaries are kept in dark about their eligibility, cost, technology etc. o Beneficiary participation is at times contrived with an aim to reduce risk of rejection etc. **Assumptions/Presumptions:** o The community mobilization process is a long drawn process and will delay the completion and there by result in time and cost overruns o The affected communities are completely helpless and lack any skill to manage their own reconstruction o It is very hard to get people to contribute o Community participation means unnecessary interference from the people. o People misuse the funds. o Agency people are competent and more reliable.	o Beneficiaries decide what is good for them o Agencies trust in the traditional knowledge base and the latent potential in beneficiary community's ability to help themselves o Beneficiaries and the hosts work in tandem and design and manage the program. **Assumptions/Presumptions:** o The affected communities have inherent capacity and latent potential to plan and rebuild their own lives. o Agency can have a shelter program with has required level of flexibility to respond to diverse needs of affected families. o Humanitarian agency has the capacity to mobilize/organize the community, facilitate technology selection, participatory evolution of design etc. o Community and the individual families will be ready to take the responsibility to manage construction project. o The agency has capacity to do capacity building and facilitate participatory monitoring. o The agency and the program will be flexible enough to respond to the needs emerging out of the participatory monitoring.

The modes of shelter delivery can be diverse depending on context the choices are made by experts. Various modes can be mixed to create broad based program in response to needs of target groups. The five modes of shelter delivery are *(for detail ref. annexure-3)*:

1. Providing transitional or temporary shelter.
2. Repairing damaged housing or retrofitting
3. Building new housing.
4. Adopting 'building yard' approach: making sure that building materials and skills are locally available. This can be developed as a micro enterprise for a local structure like self help group (SHG) etc.
5. A 'finance facilitation' approach, families organize construction with financial help from humanitarian agencies.

8.2. Engaging Labor:

Any approach or combination of approaches selected would have component of construction by labor. Understanding and organizing labor is one of the critical inputs in planning for shelter delivery. Shelter delivery plans have to be very clear on modes of engaging labor[22]. There are three ways of engaging labor though they can be combined within the same project.

a) **Self-help labor:** where families undertake the **work** required **themselves** *generally supported by direct and contracted labor. It is one of the potent ways of creating livelihood options for the affected population.*

b) **Direct labor:** where the aid organization **hires** and **manages** individuals *generally used when no contractors available*

c) **Contracted labor:** where a **contractor** is **engaged** to undertake the works *generally used for complex or specialist works*

The Advantages and disadvantages of different ways of engaging labor are listed in annexure-5

8.3. Shelter delivery mechanism:

Shelter delivery mechanism for any shelter program can be crystallized by combining the **approach/s** and **mode of engaging labor**. Direct delivery by NGOs / working in collaboration with the government with a clear definition of roles would be helpful. The matrix below can be of assistance in working out a shelter delivery mechanism:

Mode of Engaging labor	Self-Help Labor	Direct Labor	Contracted Labor
Mode for delivery of Shelter			
1) Providing transitional or temporary housing.			
2) Repairing damaged housing or retrofitting			
3) Building new housing.			
4) 'building yard' approach,			
5) 'finance facilitation'			

Annexure-4 features an example of the use of the above matrix from the shelter response to SIDR cyclone, 2007' Bangladesh.

8.4. Resources for shelter response:

The shelter delivery mechanism has to be based on sound awareness of the available resources. It is an accepted proposition that for effective shelter delivery local resources be used; involvement of local people creates ownership, employment opportunities, and is more likely to be culturally acceptable. Nevertheless limitations in material availability, local capacity, and the scale of some events require formulation of appropriate strategies to augment local resources. Any place would have a finite capacity on supply of building materials, masons and builder etc. but emergency and transitional shelter response requires accelerated supply (large quantity over a very short period of time) of resources. In context of building materials it is useful to map the supply capacity of local environment and make ecologically balanced decision on use of particular materials[23]. In context of human resources for building activity, it is imperative to have capacity building factored into the shelter delivery plans. Most traditional communities would have gender defined roles on making and repair of houses. It would be useful to understand it and factor it in the response plans. Reliance on local building capacity has opportunity to mainstream new ideas into the existing construction practice. Same is true of working with local structures like NGOs, CBOs, who may never have done shelter project but can be systematically capacitated. It is vital that shelter delivery plans factor capacity building of local structures.

8.4.1.1. Logistics and material selection:

Logistics is the process of planning, implementing, coordinating, and controlling the flow and storage of goods, services, and related information so as to deliver:
- what is needed
- from where it is
- to where it is needed
- when it is needed
- at the lowest cost, priority would be to find cost effective solution.

Organizing humanitarian logistics is a support service, its effectiveness comes from preparedness, and appropriate program planning can further improve the service. Decision on what material gets used would have implication on logistics. As stated earlier the preference would be to use local materials for various reasons but be mindful to maintain the balance between the capacity of local environment to supply materials and the rate of use. (for more guidance Ref. std. 6 for shelter and settlement, page 215, Sphere Manual). *Ref. section 3.3.6.on standards*. Use of local materials can significantly reduce the cost of logistics and create livelihood opportunities for affected population.

Factors affecting material choice[24]
- **Distribution** plan will affect the choice of material. The best material may not be available in the area and may be difficult to obtain, especially if area is cut off after disaster.
- **Climate** will be a strong determining factor in the choice of material. *Hot climates generally demand heavy materials to slow day-time heat gain and night-time heat loss, whereas wet climates demand watertight materials and construction*
- As with many aspects of construction, **local knowledge** will be key to discerning the most suitable and readily available materials for emergency construction
- **Avoid 'quick-fix' imported solutions** to shelter that are often difficult to repair as the parts are custom made from the imported materials. Wherever possible, **use materials that are well-known and easy to find** so that inhabitants are in control of the upkeep of the shelter.

Number of guidance documents on various materials and components of shelter response, developed by humanitarian agencies (Oxfam, IFRC, MSF etc.) are already available. Documents on Timber, Plastic sheeting, shade nets, tents etc. can be downloaded from www.sheltercentre.org.

9. Provision of Services:

Shelter and settlement become a ready framework to provide services like water, sanitation etc. Some of these are lifeline services which need to be provided daily. A well planned Settlement is valuable for providing services in a structured manner. In-turn provision of services can structure the settlement layout. E.g. layout can be structured along the water supply plan. To realize the symbiotic relationship between settlement and services requires multi-sectoral team for site selection and settlement planning. Similarly cross-sectoral reference of standards can be helpful in creating right living conditions in the settlement. Improper management or selection of wrong technology for sanitation can pose a severe environmental threat, in terms of its capacity to deteriorate nature and biodiversity, as well as groundwater quality. It can pose serious public health risks, represented by the spread of diseases arising from the contamination of food, water, air, and soil. There needs to be a focus on the government committing to provision of safety net programs and basic facilities in the shelters. There is otherwise a risk of other stakeholders getting into a direct delivery mode which would not be sustainable. But, this again depends on the capacity of Government. Many disasters happen is countries and regions which have very scanty Government services to start with (one of the reason of poverty- the chief reason for devastating impact of disaster). It is good to mention about the Government responsibility but there will always be role for humanitarian agencies. Like post Tsunami Oxfam in Sri Lanka (Ampara) provided toilets in the IDP camps, did health and hygiene promotion and also organize the final disposal of excreta by making stabilization ponds, which more than often is seen as a Government responsibility.

Post Tsunami in Tamil Nadu the transitional settlements were located where the water table was very high. Selection of leach pit latrines as sanitation technology lead to contamination of the shallow aquifers. Further, most of the leach pits were over flowing in short time as the soil was already saturated with moisture. Over flowing leach pits lead to very unhygienic conditions in the transitional settlements. Source: A RedR study, conducted for Oxfam GB.

Unmet needs in any of the services too can have adverse impact on health of displaced men, women and children and the local environment. Lack of adequate quantity of water of appropriate quality can lead to water washed diseases like diarrhea. Lack of waste water management can quickly lead to breading of diseases carrying vectors like mosquitoes. Lack of provision of fuel for cooking can lead to destruction of surrounding forest. A systematic analysis of unmet needs and their impact on environment and health can provide valuable inputs into planning of services.

9.1. Settlement & Services[25]:

A large proportion of people affected by disasters spend at least part of the post-disaster period in temporary settlements, where living conditions and the constraints imposed by the location and nature of the settlement may have a huge impact on their well-being. New approach to emergency settlements which takes a broad view of the needs of the disaster-affected community, whilst considering issues such as sustainability, environmental impact, social and economic impact and security in the short and long terms. During earthquake in Gujarat India, 2001, 120 residential buildings collapsed leaving number of people homeless, after a brief temporary relocation people were encouraged to find rental accommodation, the rent and other supplies were supported by a local business house. Post Tsunami in Sri Lanka number of families lived with host families where they and the host were supported by aid agencies. Organized and planned camps are to be seen as a last resort. Concentrating large number of people has direct consequences on local resources and environment at large. Population density at times can be high, which is largely a product of population size and physical layout, which includes the area of the settlement. The major implications of housing displaced people in camps for water supply, sanitation and other services are summarized below.

Program element	Location	Population size	Layout and population density
Water supply	Quantity of water available Distance to water sources Quality of water available and need for treatment Possible sources of contamination Access for local people to the water supply	Quantity of water needed Scale of response required Large populations are more dependent on central systems	Possible pipe routes Space for water points and drainage Distribution network density
Excreta disposal	Soil type Climate Water table depth Slope Availability of local materials Possible contamination of water supplies Impact on local environment	Impact on local environment Supplies of local materials Possible pollution by off-site excreta disposal	Space available for on-site disposal systems Zones for locating toilets or defecation areas Access for latrine emptying if needed
Solid waste management	Type and quantity of resources brought into the settlement, and type and quantity of waste produced Soil type for possible on-site burial Location of off-site discharge Environmental impact	Amount of refuse to be disposed of Number of waste collection points Likely need for a centralized collection system Size of markets, health centers and other sources of solid waste	Location and number of waste collection points Space available for on-site disposal Access for solid waste collection Effect of smoke from burning refuse
Vector control	Prevalent vectors and vector-borne diseases Breeding sites already present Environmental impact of vector control program	Number of people exposed to an outbreak of vector-borne disease Level of support available for vector control program	Proximity of vector breeding sites to certain areas of the settlement Density and vector movements Breeding sites within the settlement
Drainage	Soil type, vegetation cover, rainfall, slope, flooding	Number of shelters and volume of water to be drained from site	Drainage courses, roads and open spaces Location of water points and other sources of wastewater
Hygiene promotion	Hygiene problems to be addressed Security	Social structures in place and which develop Social cohesion and conflict	Hygiene problems to be addressed
Shelter	Climate Available materials	Available local materials within walking distance Cost of delivery of materials from other sources	Exposure to the elements Fire risk Distance between shelters Hygiene problems associated with population density

While contextualizing the above for any given situation, add another column to the above table to list the management options for specific services. Provision of services on a sustainable scale and setting-up systems and procedures for their effective management and coordination

becomes a major priority and responsibility; camp management. Camp management is a specialized work. Essentially it is the day–to-day management of a camp for refugees or displaced. The exact range of tasks that the camp management agency undertakes will depend on the situation. Typically the camp management agency may be involved in:

- o **Site preparation:** It makes sense for the Camp Management agency to be involved in the layout of the site from the start. This is because the Camp Management agency will have to live with whatever solutions are found at this stage. Typically the Camp Managers will be involved in the ongoing allocation of sites for other services, as well as in the maintenance of access roads and their drainage.
- o **Shelter:** Camp managers are typically involved in allocating plots to families, and possibly also with the supply of tents or shelter material. This will normally be accompanied by a system to record who is allocated which plot.
- o **Registration:** The need to record plot allocations means that maintaining a register of those in the camp is a natural activity for the camp management agency. This register may exist in parallel with a more formal registration by the UN or the national coordinating body.
- o **Distribution of food:** Food distribution may sometimes done by a specialist food distribution agency, but is usually done by Camp Management. Food distribution fits naturally into the range of Camp Management.
- o **Non-Food Distribution:** Even where distribution of food may be done by a specialist food agency, the distribution of non-food-items may fall to the Camp Management agency. The first non-food-item distribution (typically a kitchen set, blankets, and water containers) is usually made at the same time as a plot is allocated, so this is a natural role for the Camp Management. Distribution on items like fuel, soap etc. will remain an activity to be repeated periodically.
- o **Water Supply:** In small camps the Camp Management agency may be responsible for water supply. The supply system may be installed at the start of the crisis by a specialist emergency water agency, but this agency may then handover responsibility for operation and maintenance to the Camp Management.
- o **Sanitation:** Longer term latrine programs and environmental sanitation are two tasks that may fall to the Camp Management agency. The agency may also be responsible for health education. Because of the large amount of work involved in providing latrines, a number of agencies may be involved in this initially, but the Camp Management may inherit all of their programs. Operation and maintenance of facilities is a priority, community based strategies need to be used to achieve sustainability.
- o **Waste management**: Solid and liquid waste (sullage) if not managed can quickly leave to unhygienic conditions. It is important make decision on whether a centralized system or a decentralized system would work in the given situation. Selection of appropriate technology followed by regular servicing, maintenance/monitoring is critical for maintaining the system at optimal performance levels. For more detail ref. annexure, 8 and 9.

The Camp Management agency is usually a gap filler, undertaking whatever roles there is no specialist agency for. The very minimum roles are the allocation of shelter and maintaining some sort of register for the camp and coordinating the provision of various services. The start of an emergency may see a large number of specialist agencies involved in the response. With time the specialist agencies withdraw and hand-over responsibility to the remaining agencies. The Camp Management agency will usually have a long term commitment to work in the area affected by the crisis. The role of the Camp Management agency will increase with time as specialist agencies leave. The Camp Management agency has to consider the longer term issues as they will have to live with the consequences.

While there will be a separate coordination forum, one of the responsibilities of the Camp Management agency to ensure that day to day activities on the site are coordinated. A lack of coordination between different agencies (i.e. an immunization campaign that conflicts with a

distribution) can lead to strife in the camp. Site coordination can be managed by a weekly meeting between the staff of the different agencies at the camp or through informal contacts.

The relationship with the camp population is probably the key relationship for the camp management agency. For the camp population, the Camp Management agency is probably going to be the most important service provider. Normally there will be some sort of representative structure for the camp population. Community based approaches for management of various services can be part of the strategy to ensure sustainability of the services.

Identification of support needed from various stakeholders to these committees is very essential. It should be taken care to device strategies for involvement of both men and women in the camp management activities. There is a high risk otherwise of most responsibilities to be delegated to women, adding to their wok loads. There should also be a careful analysis of community dynamics in the formation of the camp management teams, so as to ensure that the most vulnerable sections of the community are adequately represented.

10. Way Forward – Inputs for Policy Program and Practice

Shelter is critical for survival, but also provides security, protection, dignity and sustains family and community life.
Any support should incorporate:
  o self-sufficiency and self-management
  o minimize impact on the environment
  o maximize opportunities for maintaining livelihoods.
  o Reduce risks in short, medium and long term.

All the shelter interventions must be seen as part of an evolutionary process, focus should be on assisting families achieve an adequate state of long-term shelter security in terms of covered living space and service provision. Provision of minimum covered living space to ensure affected people can lead a life with dignity can be done in many ways. Using standards in planning and commitment of resources can maximize the chances of making an effective shelter response in response to the needs of men, women and children, which can lead to early recovery.

Shelter Response Practice:
A rapid needs assessment with livelihoods approach may be followed with rapid response with aim to provide minimum covered space followed by Transitional Shelter response for interim period till durable solution is implemented. Before implementation of transitional solution, contribute to formulation of the shelter sector strategy formulation, which links transitional and durable solutions and provision of services like water, sanitation etc. Organize implementation of transitional shelter program with a measured speed, aim is to deliver a **habitable (culturally appropriate) and durable cover living space**, that helps get back to normal way of living (restoration of livelihoods). Build the program on local capacities and capabilities, if necessary build capacities. Regular participatory monitoring of the living conditions in transitional solution is mandatory. If necessary respond with up-gradation programs.

Establishment of appropriate decision making structure within the response team is one of the critical success factors for shelter programs. Specialists with balanced management, technical and social skills are needed to steer the program. Finding durable shelter and settlement solution is specialized job, which should be attempted with adequate human resource capacity and capability. Coordination at all the stages with Shelter cluster and leading the policy and technical discussions at cluster level could be a priority activity for Oxfam; advocate for build back better.

A1.0 Annexure- 1

The concept of building type and its relevance in post disaster reconstruction

Abstract: For selection of appropriate design for post disaster transitional shelter a quick participative appraisal of the damaged/existing built environment should be attempted to identify 'types' in shelter and settlement. These 'types' can be used to evolve appropriate design in response to the emerging context.

Rationale: 'After a number of design researches in varying contexts have been carried out, one discovers a complex of characteristic properties, typical for a class of buildings, independent of the site level context; the parlance is then of typological similarities. A type may be rendered schematically. It is possible to verify whether a type (form or structure) return under different conditions (architecturally, or in terms of urban planning) and whether it maintains the same effectiveness, such as functional properties (typology)'.[Adopted from: http://team.bk.tudelft.nl/Publications/2002/design%20research.htm]

The 'type' is then independent of the immediate context. This does not mean that the context is of no importance for the typology. The context is variable, and response to this variability is, one of the important aspects of the humanitarian response to post disaster housing. Though, responding to the variables has its cost and human resource implication for the agencies. An agency may try to adapt an identified 'type' in discussion with men, women and children of individual families, which might be most desirable as a practice OR we may be able to negotiate any particular design (specific variation of the 'type') with men and women at community level, leading to a typical design for a village or a hamlet, which might be practical solution. It is important to remember that humanitarian workers just are facilitators or moderators in the process of contextualization; development of shelter and settlement design. The participative process for identification of type and its contextualization helps to achieve higher level of acceptability/ownership of the house and settlement, which in a sense is achievement of humanitarian accountability in line with standard one of the common standards.

Hence the action point, in run-up to the reconstruction is to bring-out a dwelling type and a settlement type in discussion with men, women and children, which is an important part of the participatory process. The opportunity can be utilized to understand the local customs, practices, response to climatic conditions, use of local materials, building skills, prevalent building embellishments, typical details etc. etc. This is a very useful bit of information, which can be used to enrich the housing program. Important question: Who has the capacities and capabilities to facilitate this process? What do design professional need to learn and unlearn to reach that state of mind where we can listen to others and capture the essentials/sacred elements of any built environment?

Context dependency
If a design features a location, it has a material (spatial, ecological, technical) and a social (economical, cultural, political) context. That context will change from community to community, place to place, so is the design. Post disaster the change of context is very evident and drastic, part of the context shifts completely due to unfolding of the hazardous event, which at times is not well understood by the concerned stakeholders. Defining and communicating the risk and nature of hazard and the improvements necessary in the built environment for disaster risk reduction becomes an important role of the concerned humanitarian agency. This may be referred as future context or perspective, which needs to be factored into the design process. Remember that designs of any particular building or settlement type would differ from each other as a response to their respective context (space) and perspective (time). Humanitarian agencies also have a very important role in helping communities and other stakeholders develop appropriate perspective on maintenance, ownership and utilization of improved services (housing, water, sanitation, settlement etc).

Spatial design to be appropriate may require awareness of other dimension of the context. As an example, the ecological context may vary between small and considerable diversity in terms of soil, plants, growth and use within the area of operation, which may have significant impact on design and technology selection.
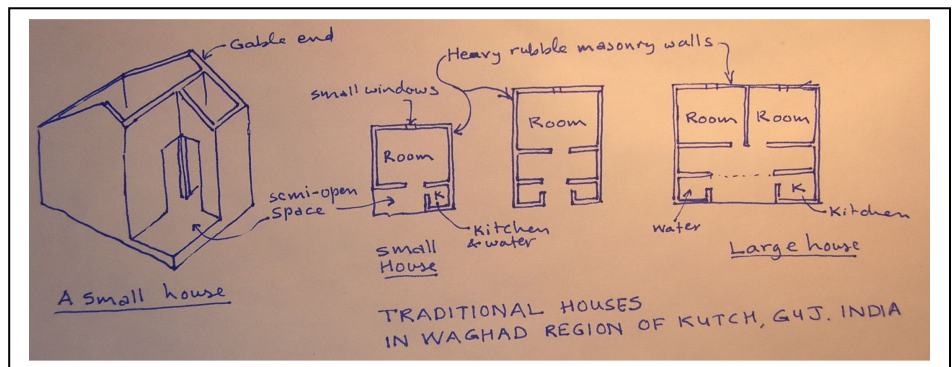
Practice: Use of concept of type in reconstruction.

The Mw7.6 Bhuj earthquake that shook the Indian Province of Gujarat on the morning of January 26, 2001 (Republic Day) is one of the two most deadly earthquakes to strike India in its recorded history. Government of India figures place the death toll at 19,727 and the number of injured at 166,000. Indications are that 600,000 people were left homeless, with 348,000 houses destroyed and an additional 844,000 damaged.
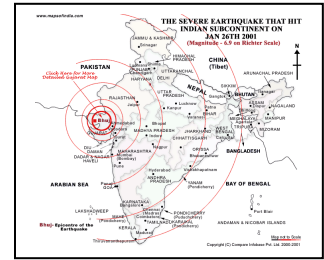
Participatory shelter needs assessment, apart from other things brought out that affected population expresses doubt about using local materials for earthquake resistant construction; stones have killed our family members we don't want to use it. Assessment also brought the local dwelling type and construction, which was re-engineered by the responding organization and proposed as a model for reconstruction.

To facilitate the technology selection process, four sample houses in different locations were built and same technology was used to make camp accommodation for the staff of the humanitarian agency. Sustained Consultation with affected families led to adoption of technology. The dwelling as being built was same as their collapsed houses with additional features to make it earthquake safe.

Expand the Earthquake resistant housing program with wider service delivery like water etc. and capacity building program was implemented in number of villages' targeted at the most vulnerable families.

A2.0 Annexure-2
OPERATIONAL OBJECTIVES OF SHELTER CLUSTER LEAD (focal agency) IFRC, full document on the following URL
www.humanitarianreform.org/.../nb%20ESC%201c%20Performance%20Management%20System%20-%20ToR%2013July07.doc

Country Level
Develop benchmarks and monitoring systems for:
- Effectiveness of Coordination Management
- Improved identification of need
- Improved allocation of resources
- Evidence-based decision making
- Enhanced program planning and implementation
- Meeting of shelter needs of affected population
- Improved monitoring and information management, including data collection, collation, and analysis
- Accountability of Cluster Coordination Team

Global Level

Develop benchmarks and monitoring systems for:
- Predictability of response in terms of preparedness and application of standards
- Identification and filling of gaps
- Improvements in quality and quantity of partnerships
- Improved human, financial, and material resource mobilization
- Application of lessons learned
- Accountability of Line Management

A3.0 Annexure-3
Approaches and Modes for shelter response:

Two discrete **approaches** and five distinct yet linked **modes** of post disaster shelter delivery are part of the post disaster shelter delivery. Two approaches are:
- Agency Managed-Donor Driven
- Beneficiary Managed-Owner Driven

The five modes of shelter delivery are:

A3.1. Providing transitional or temporary shelter: Though temporary or transitional, it still needs to be designed with adequate sensitivity towards local climate, culture and functional needs. Speed of delivery remains one of the critical success factors. The provision of temporary shelter alleviates the immediate need for accommodation, which means that permanent housing projects may be regarded as less of a priority. As a result, short-term housing measures often mutate into permanent, poor-quality settlements lived in by the poor.

A3.2 Housing repair: Speeds-up the reconstruction process
- More houses can be repaired for less money
- Demand for social readjustment is minimal
- Allows the affected population to play a major role
- Effective in rural and isolated areas
- Could result in more culturally-appropriate, permanent solutions
- Kits may end up sold on the market
- Requires a certain level of skills
- •To build in safety measures (mitigation) becomes a very specialized work. Could result in a loss of identity in culturally/historically significant settlements
- Challenging to distribute materials and account for.

A3.3 Constructing new housing and settlements: Constructing new housing and settlements involves a great deal of effort and requires the highest level of investment, in relation to all other comparable reconstruction approaches, though it offers a good opportunity for risk reduction. Safe housing after disasters can be delivered by building a partial house- core shelter or a complete house.
Core house is a basic roofed structure with secure corner and intermediary posts attached to stable foundations. In some projects, a half-wall is added around the building perimeter, or a small room for sleeping is built inside the structure. The core shelter construction facilitates beneficiary completion of walls, which can use a variety of materials. Core shelter projects are also highly favored by donors as it fits within budget limits for cost per unit and short project time frames. Reconstruction of resettlement, is an important strategic decision that links to the lives and livelihoods of the disaster survivors

A3.4 'Building-yard' approach: The philosophy behind this approach is that during reconstruction the affected communities are capable of rebuilding their own houses, either by themselves or by contracting local builders; outside help should seek to facilitate this process by making sure that building materials and skills are locally available at affordable prices, or free of cost. This approach is best implemented in rural and suburban areas, where people are most likely still to build their own homes as a matter of course. It is particularly valuable in hazard prone areas where building materials and construction techniques have proved to be the main source of vulnerability, for instance in earthquake zones.

A3.5 Finance facilitation: Like the building yard approach, finance facilitation is based on the assumption that affected communities are fully capable of planning and managing the rebuilding of their own homes and recovering their livelihoods; building materials and skilled labor are available, but finance to buy them is missing. In this way, intervention does not duplicate community efforts and can instead be concentrated on providing resources, such as technical advice, which would otherwise not be available.

A4.0 Annexure-4
Example of use of matrix to workout shelter delivery mechanism: *Oxfam is implementing core house as transitional shelter in response to the SIDR cyclone'2007 in Bangladesh. The matrix below forms part of the core shelter delivery.*

Phase	Mode of Engaging labor / Approaches to delivery of Core house	self-help labor	Direct labor	contracted labor	Capacity building and monitoring needs
Project-1	**P1) Pilot Project**		-Partner NGO selects carpenters, organize them into teams (8-10 per team) and engages them for on-job training -Partner NGO selects casual labor to demonstrate plinth protection.		-Oxfam engineers to actively engage with carpenters and partner engineers at all stages of the pilot project. -Issues relating to quality of material and workmanship to be discussed with community/families. This will be useful to initiate community based monitoring system during project-2 -Conduct exposure visit of local NGOs to Demo core shelters.
	P2.1) Repair & Strengthening of plinth by application of 'stabilized rammed earth' (SRE)	Families execute the work and get paid a fixed amount. Look for families that need support.			-Organize Demo. On stabilized rammed earth. -Form group of around ten families to help each other. -Initiate community based quality monitoring system.
	P2.2) Shelter assistance kit for core house construction. -Tools -Material -IEC -Cash Grant for labor payment	Families hire skilled workforce and work with them. Fixed cash grant released in stages/progress in construction.	Partners hire and train master crafts men and others for provision of: -Handholding support -Monitoring -delivery of IEC		-Training of Craftsmen, supervisors and engineers. -Training partner staff on logistics and procurement. -Motivate families for improvement of their self built shelter using materials that are accessible to them.
Project-3	P2.3) Repairing damaged housing and retrofitting for risk reduction -Tools -Material -IEC -Cash Grant	Families hire skilled workforce and work with them. Fixed cash grant released in stages/progress in construction.	Partners hire and train master crafts men and others for provision of: -Handholding support -Monitoring -delivery of IEC		Same as above
	P2.4) 'finance facilitation' Cash grant for the programs. P2.1, 2.2 &2.3				-Financial entitlements of families clarified in village meeting before start of the project by Oxfam and partners. -Partner engineers to certify completion of work. Oxfam engineers to do random check.
ct-3	P2.5) Technology demonstration for longer term risk reduction. through		Hire local masons to demonstrate Stabilized Rammed Earth construction for		Promotion of technology for next three to four years in partnership with local university and other NGOs.

A5.0 Annexure- 5
**Advantages and disadvantages of various ways of engaging labor**

Self-Help Labor; Self help Build

Advantages	Disadvantages
o There is likelihood that work will be of **good quality**	o Beneficiary households **may not have** the required time, skills, or equipment
o Any remuneration will be to the **displaced beneficiary household,** rather than to external groups	o Self-help labor projects can **divert key household members** from other, more urgent, priorities
o Included in projects with direct and contracted labor there will be **opportunities** for the beneficiary household to: ▪ influence the other labor ▪ comment directly to the aid organization	o **Special provision** must be made to assist vulnerable households, unable to participate in self-help projects
o Can **empower** beneficiary households by offering more choice over their lives	o Local population is **excluded** from projects directed exclusively at the displaced population
o Can offer skills training and tools which can **broaden livelihoods opportunities** but **specific training is required**	o **Aid organization** may not have skills, local experience, and resources necessary for project coordination and management

Contacted labor:

Advantage	Disadvantage
Useful for projects: • that are **large and complex** • requiring **specialist skills** or equipment • when local and displaced population have **other priorities**	o Unless the contractor involves local and displaced labor, the contract sum is **paid to the contractor,** not the communities
o Contracted works **can be faster** that those undertaken with self-help or direct labor, especially if equipment is available *such as chainsaws, earthmovers and lorries*	o If the contractor is not required to include skill training and apprenticeships, there is **little likelihood of capacity building** within local and displaced communities
o Contractors can be required to use skilled and unskilled labor from local and displaced communities thus **distributing some of the contract sum locally** and potentially developing skills	o Contractor links with political parties, politicians and local community leaders are common, and may delay works through **political interference** and **corruption**
	o Care should be taken to avoid **'cartels',** where contract bidders have **secret negotiations** deciding which company will submit the most attractive bid and at what price

A6.0 Annexure-6
Bio Climatic Chart with Design Strategies

Bioclimatic Chart with Design Strategies
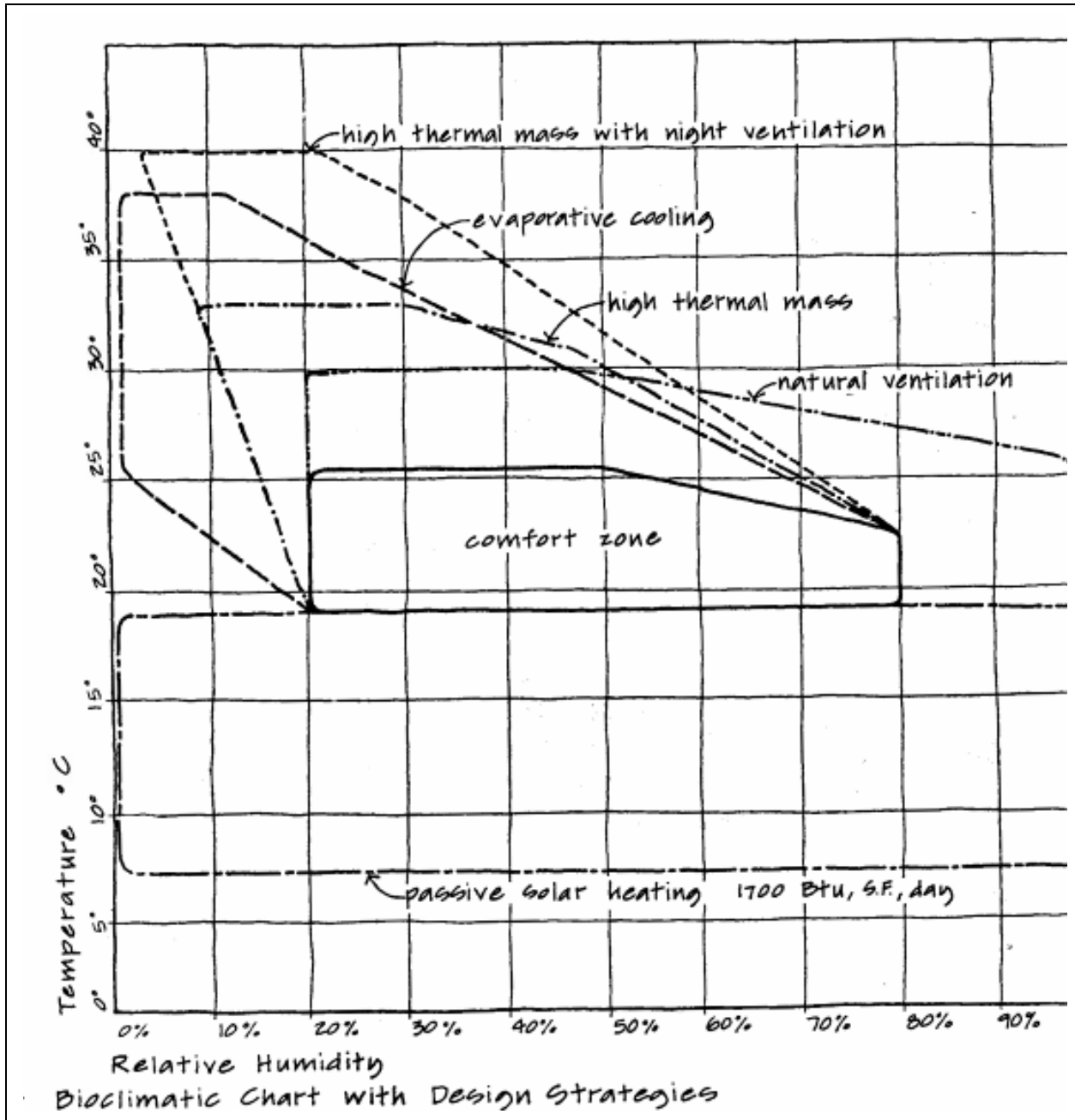
A7.0 Annexure-7
Shelter response to Characteristics of Main Climatic Zones in the Tropics[26]

Zone	Approx. Lat. Range	Natural Vegetation	Typical Cultivation	Climate	Problems	Requirements of shelter design
Warm Humid Equatorial	7.5^ON-7.5^OS	Tropical Rain Forest	Banana, Palm Oil	Warm with high humidity and rainfall	Humidity prevents sweat evaporation, hot nights makes sleep difficult, high rainfall and glare from other cast sky, sun on east and west facades	Air movement from the fans or cross ventilation, low thermal capacity construction, sloping roofs and large overhangs, windows facing north and south.
Tropical Island	$5-30^O$N $5-30^O$S	Rain Forest	Sugar Cane	Warm, humid but less cloud than warm humid zone	Similar to warm humid equatorial, but clear skies and bright sun more frequently	Similar to warm humid but with additional care in the design of shading the south facing windows (vice versa in the southern)
Hot dry Tropical	$15-32^O$N $15-32^O$S	Desert, Steppe	Palms, Grazing (nomadic)	Hot and dry with high annual and daily variation of temperature	High diurnal range, very hot days in summer, cool winter days, low rainfall, very strong solar radiation and ground glare, sandy and dusty environment	High heat capacity construction, shading devices which allow solar heating in winter, small windows, flat roofs (often used for sleeping), small courtyards to give shade and protection.
Maritime Desert	$15-30^O$N $15-30^O$S	Desert	Palms, Grazing	Hot, humid with low rainfall	Similar to hot dry climates but with higher humidity causing discomfort by preventing sweat evaporation	Similar to hot dry but air movement is desirable at times.
Intermediate composite or Monsoon	$5-20^O$N $5-20^O$S	Monsoon Forest, Dry Tropical Forest	Paddy Rice, cane, Millet	Warm humid and hot dry seasons	Combines the problems of warm humid and hot dry climates	Compromise between the requirements of warm humid and hot dry climates or ideally (but more expensively) two buildings or parts of buildings for use at different times of the year
Equatorial Upland	10^ON-10^OS	Broadleaf Forest, Mountain Vegetation	Millet	Temperate to cool depending on the altitude	Combines the problems of the warm humid and hot dry climates with those of a temperate or cold climate for all or part of the year	Designed to take advantage of solar radiation when cool or cold. Heating and additional installation maybe required
Tropical Upland	$10-30^O$N $10-30^O$S	Steppe, Cedars	Wheat	Hot summers,	As above	As above

				cold winters		
Mediterranean	32-45°N 32-45°S	Mediterranean Scrub	Vines, Olives, Citrus Fruits	Hot dry summers, cool wet winters.	Summers have some of the problems of a hot dry climate while winters are cold and humid with moderate rainfall.	Design with high thermal capacity, medium to small openings, and courtyards to give shade and protection.

A8.0 Annexure-8

Solid Waste Management[27]

Introduction:

Solid waste is produced by household activities such as food preparation, by commercial activity (markets, workshops etc.), health centers and other central services, and occasionally by war or natural disaster leaving debris behind. When deciding how to deal with solid waste it is important to consider how much of a health risk it poses and how acute the risk is; what other problems it causes, such as blocking roads and drains or creating a depressing environment; what is the scale of the problem, i.e. how much waste is involved; what is the nature of the solid waste; whether the problem is a short term one or whether it will need ongoing attention; whose responsibility it should be to tackle the problem; what resources will be needed for the work; and what are the technical and organizational options for storage, collection, transport and disposal.

Health risks of solid waste

Solid waste or refuse rarely poses a direct threat to health and in most emergencies is not a major priority in the first response. Domestic refuse or solid waste from household activities may contain faeces (particularly children's faeces), and so may be of some direct health importance, but most of the risks are secondary. Domestic refuse and market refuse may attract rats and dogs and be a breeding ground for flies (see chapter 9 for more discussion of this). Leachate from solid waste under wet conditions may pollute water sources and run into shelters.

Sphere Project Minimum Standards

1: Solid waste collection and disposal
People have an environment that is acceptably free of solid waste contamination, including medical wastes.
Key indicators
• *Domestic refuse is removed from the settlement or buried on site before it becomes a nuisance or a health risk.*
• *There are no contaminated or dangerous medical wastes (needles, glass, dressings, drugs etc) at any time in the living area or public spaces.*
• *There is a correctly designed, constructed and operated incinerator with deep ash pit within the boundaries of each health facility.*
• *There are refuse pits, bins or specified areas at markets and slaughtering areas, with a daily collection system.*
• *Final disposal of solid waste is carried out in a place and in such a way as to avoid creating health and environmental problems.*
2: Solid waste containers / pits
People have the means to dispose of their domestic waste conveniently and effectively.
Key indicators
• *No dwelling is more than 15m from a refuse container or household refuse pit, or 100m from a communal refuse pit.*
• *One 100l refuse container is available per 10 families, where domestic refuse is not buried on site.*

Managing solid waste

Transporting and disposing of commercial wastes is managed in a similar way, but organization of collection and cleaning of commercial areas needs special attention. It is important that aid agencies collaborate with some local governance structure like a municipality to provide the solid waste site level collection and disposal. At times the local municipality might not have adequate capacity, like post earthquake in Gujarat, India, 2001, Oxfam while responding to IDPs in the towns of Bahachu and Rapar systematically built the capacity of the municipalities by providing necessary hardware.

Solid waste management program

During the first days of an emergency, disposing of household refuse is unlikely to be a priority. If it is, then it is unrealistic to expect people affected by the disaster to take responsibility and an agency should take on this task. However, the aim should be to have a program which depends on the least external inputs possible. Long term collection and disposal of refuse is an expensive activity which is difficult to sustain. Where possible, look for ways of reducing the amount of refuse produced, or of encouraging and enabling safe recycling or disposal within the settlement. It may be possible to privatize waste collection and disposal, provided that minimum standards of operation are guaranteed by the contract for the work, or in an urban situation a municipal authority may be responsible.

Identify Type of Waste
Identify Source of Waste
Determine Potential Health Hazard from Waste
Determine volume of Waste
Identify Safe collection Method/s
Identify Safe Transportation Method/s
Identify Safe Disposal Method/s
Steps in Solid Waste

Hygiene promotion

The program involves storage of refuse before collection, collection, transport and disposal. At each of these stages there are possible options, and these will be discussed below. The way in which responsibility for these activities is shared between the agency and the disaster-affected community may change over time and will depend to some extent on the policy of the agency. Most solid waste management programs depend on the participation of the population concerned for placing their refuse in containers provided, or burying it where appropriate. Parents and children should be made aware of the dangers of playing with or recycling medical wastes.

Staff needs

Staff numbers needed for running a domestic refuse collection and disposal program depend on the quantities of refuse produced, the size of the camp, access etc. For an example, in Kahindo Rwandan refugee camp near Goma, 25 staff were employed to collect and dispose of approximately 350 m^3 of refuse per week from 110,000 refugees. Staff employed to handle refuse should be provided with overalls, boots and gloves. Workers burning refuse or handling dusty waste should have protective masks. At disposal sites there should be water and soap available for washing hands and faces, and for washing vehicles if they have been transporting hazardous waste such as latrine sludge.

Disposal on site

Where possible, this is the preferred method as it involves no collection vehicles, disposal site or staff. Individual families or groups of families can dig shallow pits near their shelters and throw their refuse in. They should be discouraged from burning it because of the smoke created in the camp, but should be encouraged to scatter ashes from cooking fires on the refuse heap regularly to reduce fly breeding. This is common practice in many villages around the world. Where rats are a serious problem this is not a suitable method, unless the refuse contains very little food waste.

In many refugee camps people cultivate gardens, even when space is short. Household refuse contains valuable organic matter and nutrients which people may use to add to the fertility of the soil. Composting
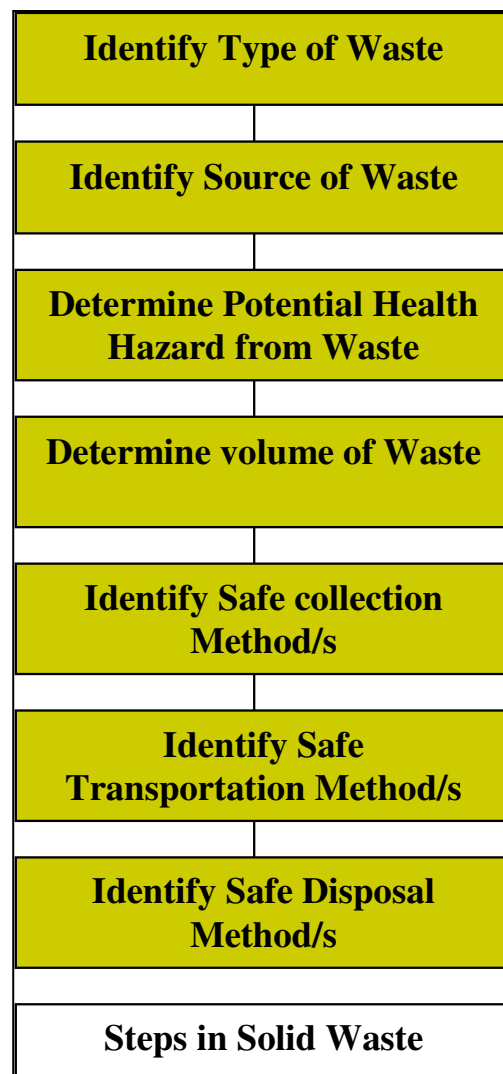
is unlikely to work at the household level because of the small quantity of refuse produced, but may be successful if several families put their waste together.

Storage
If household waste is to be collected and disposed of centrally then it has to be stored until the time of collection. This storage time should be kept to a minimum, particularly in humid tropical conditions, and it should be made possible for people to throw out their refuse daily or twice weekly at least.

Household containers: The easiest for the families throwing away refuse is a container in each shelter, which can then be taken to a nearby point for collection. In the early days of an emergency plastic refuse sacks may be distributed, particularly if a large amount of refuse is being produced. Unless adequate shelter material is also provided however, these sacks are likely to be used for building shelters. Better would be metal containers with lids to keep rats away, but these are expensive to buy and transport and would be likely to be used for food storage (particularly if there is a rat problem), rather then refuse. However, it is an option to be considered at a later stage when local production of containers is possible.

Small collective containers: These are roadside containers where people throw their refuse for collection. The most common option is 200l oil drums, whole or cut in half, with drainage holes near the bottom and handles for lifting. If possible they should have lids to discourage flies. It is recommended to provide 1 drum per 10 families for a twice weekly collection. This may not be possible in many situations as drums are often expensive and difficult to find in large numbers. An alternative may be to use nylon bags of the sort sometimes used to deliver sand to small building sites. Usually 1 m^3 capacity, they require several people to lift them onto a truck or cart when full.

Waste collection depots: A number of refuse collection depots may be built around the settlement from masonry or timber, where people can throw refuse. Another alternative is to leave skips or trailers dispersed around the settlement for this purpose. These containers should have high sides to maximize the volume of refuse which can be carried to the disposal site, and covers to keep off rain and flies.

The type of collection system possible and its success will depend very much on the participation of the users of the system, and their willingness to make it work. This makes consultation very important, to find out the most suitable system to use and to encourage people to share responsibility for its success.

Collection and transport
In general, aim to empty refuse depots daily and small containers such as oil drums twice weekly. The options for transport are handcarts, animal carts, small powered trailers, skip trucks / tractor and trailers, or ordinary trucks. Aim for the most simple and least costly alternative.

Handcarts: These may already be locally available or can be made specially, either with open high sides or with bins, to carry 300-500 liters. Each operator can serve about 500 families. Handcarts are limited to a radius of about 1 km, so could not serve a camp of more than 10,000 or 20,000 people, unless they were used in a large camp for primary collection and off-loading into larger vehicles for transport to a more distant disposal site. They are unsuitable for hilly ground. A collection system based on handcarts may easily be privatized or managed by the refugees themselves.

Animal carts: Donkey, horse or ox carts may carry up to 2 m^3, can operate over a radius of 3 km and may be used in more hilly areas. They are more expensive to construct however, and depend on there being draught animals available and a local tradition of using them.

Small powered vehicles: In some countries, trailers pulled by small powered units like horticultural cultivators are used for local transport. They may be adapted for refuse collection and transport over a 5 km radius, though this depends on the power and speed of the tractor unit. They can manage quite steep hills and can be used on small tracks where larger vehicles cannot go. They do need more intensive maintenance and external support than hand carts and animal carts, but may still be run under community or private management.

Skip trucks and tractors with trailers: These allow large waste containers to be left in the camp, which can then be towed away or carried away when full and replaced with an empty one. It is expensive to hire or buy this equipment, and is only really worth it for managing collection in a large camp (over about 50,000 people), which is likely to remain for some time. Trailers and skips should be provided with high

sides to increase the volume of refuse collected and transported, and preferably be fitted with a cover to prevent rain entering and to discourage flies and smell.

Ordinary trucks: In most situations it is possible to hire or buy flatbed trucks, from 3 to 7 tones capacity, which can be fitted with high sides for refuse collection. This is often the most rapid way to get a system going. These trucks can be used for collecting from roadside containers, direct from householders bringing their refuse to the road at specified times, or from depots in the camp. Around 5 workers with hand tools are needed for loading and off-loading each truck if collecting from depots or from roadside oil drums.

A 9.0 Annexure: 9
Drainage; Liquid waste management:

Waste Water or Sullage is all that waste water which is free of night soil or excreta. Most of the water consumed by us ends-up as waste; hence if steps to manage it are not taken then very quickly the environs of transitional settlement will be rendered unhygienic. 'Sanitation is not only about health, it is also about dignity and the morale of the affected people. By providing sanitary facilities we are helping to create a clean environment where people are able to live with dignity, which will assist their return to a normal existence.'[28] Waste water apparently poses lower level of health risk compared to excreta or medical waste. Waste water mixed with refuse, excreta etc. can spreads the likelihood of direct human contact with disease-causing pathogens.

Drainage standard 1 (*Minimum Standards in Water Supply, Sanitation and Hygiene Promotion,* Sphere Manual)**: drainage works**
People have an **environment** in which the health and other **risks** posed by water erosion and standing water, including storm water, floodwater, domestic wastewater and wastewater from medical facilities, are **minimized**. Page-86

Key indicators:

o   Areas around dwellings and water points are kept free of standing wastewater and storm water drains are kept clear.

o   Shelters, paths and water and sanitation facilities are not flooded or eroded by water.

o   Water point drainage is well planned, built and maintained. This includes drainage from washing and bathing areas as well as water collection points.

o   Drainage waters do not pollute existing surface or groundwater sources or cause erosion.

A9.1 Sources of waste water:
To make a decision on the selection of technology and finalize the option it is useful to know the source of waste water, this will dictate the treatment needs. Some of the sources of waste water could be:
o   **Water taps/ Hand-pumps**
o   **Laundries**
o   **Bathing areas**
o   **Clinics/Hospitals**
o   **Rainwater runoff etc.**

A9.2 Criteria for selection of appropriate waste water management system:
o   **Ground Condition**/ Soil/ Geology: capacity to absorb is the critical aspect to know.
o   **Ground Water level**: be mindful of seasonal variation, which can limits infiltration, life span of the system, risk-ground water contamination

- o **Topography**: unlined surface drains require minimum 1 in 200 slope for optimal functioning.
- o **Quantity and Quality of waste water generated**: low volume can be handled by infiltration; increase in water use can lead to stressing of existing systems.
- o **Climatic conditions**: hot dry climate can aid evaporation.
- o **Socio cultural considerations**: big Volume! At certain time of day.

Technology Choice: Technology options available for drainage are:
- o **Infiltration –**It is a localized disposal, can take form of Soak Pits, Infiltration trenches etc. **For Domestic waste try to shed rather than absorbed, may be used for irrigating vegetable gardens or as drinking water for animals.**
- o **Diversion:** Into natural Drainage, human-made open drainage, piped underground sewers, tankering
- o **Evaporation**- Waste water can be evaporated and evapo-transpiration beds are useful technology. Remember that even in very hot and dry location, 200 sq. m of surface area would be required to evaporate one Cu m. of waste water.

A9.3 Surface drainage and Settlement Planning:
- o **Drainage is a secondary function of a street system**
- o **Runoff in areas is actually brought to the street and the drains**
- o **Goals for Drainage on Street**
    - o Preserve safety and convenience of men, women and Children.
    - o Provide economical means of storm water transport/management
    - o Prevent water from leaving street system except were appropriate
        - o **Maintenance:** For optimal performance of storm water drainage, functional solid waste management system is mandatory.

A10.0 Annexure: 10
Collective Accountability Checklist
Agency implementing post disaster shelter and settlement become an important link between affected communities and other stakeholders to facilitate durable solutions on housing and related needs.
- o Implementing organisation (NGO, UN organisation, Red Cross etc.
- o Affected community
- o Host population
- o Administrative and line-department of Government
- o Coordinating agency etc.

are some of the stakeholders who have their respective priorities to fulfill while the shelter needs of affected population are being serviced? As an attempt towards achieving accountability, it might be useful to use 6 standards for Shelter and settlement as a framework to address the needs and priorities of all the major stake holders. Accountability toward disaster affected people could be an outcome of a process of delivery of respective roles and responsibilities of various stakeholders within the framework of standards. This shared reference to the standards can also help convert priorities into responsibilities.

The matrix below is expected to help:
- o Map actors and their priorities
- o Understand, how needs & priorities of various actors can be addressed by applying Minimum Standards in Shelter and Settlement

"Priorities/Needs* ↓		How can we address needs & priorities through Minimum Standards in Shelter and Settlement					
		Standard 1 Strategic planning	**Standard 2** Physical planning	**Standard 3** Covered living space	**Standard 4** Design	**Standard 5** Construction	**Standard 6** Environmental impact
Organizational Priorities Defined by common minimum standards	**Standard 1** Participation	e.g. -Take inputs from Community leaders, local Govt. host population etc.	e.g. -Participative risk assessment, site selection etc.	e.g. -Understand, gender based usage of spaces. -Understand seasonal pattern of use of space.	e.g. -Participative design developed with men and women, evolve dwelling type. -Participative technology selection for safe construction	e.g. -Promote construction through self-help. -Local capacity building on safe construction practice.	e.g. -Involve men, women and children in mapping of their natural resources.
	Standard 2 Initial assessment						
	Standard 3 Response						
	Standard 4 Targeting						
	Standard 5 Monitoring						
	Standard 6 Evaluation						
	Standard 7 Aid worker competencies and responsibilities						

	Standard 8 Supervision, Management and support of personnel						
Priorities of affected population	**Habitability**						
	Durability						
Priorities for Government	**Uphold (enforce) national laws/building codes/byelaws (e.g. environment protection)etc.**						
	Approval of plans/programs						
	Entitlements/redress of Grievances/timeline of construction						
	Rehab and recovery policy formulation.						
	Provision of services						
Priorities for Coordinating agency	**Facilitation of application of standards, policies, practices, linkage with Govt. line departments etc.**						
	Timely provision on transitional shelter						

	encourage agencies to not to restrict their shelter perceptions to a narrow frame of reference					
Priorities of Host population	**Protect their rights on natural resources**					
	Get help from agencies to improve services like health, water etc.					

*List of priorities of various actors, while addressing the shelter needs will change as per the context. The above list of priorities is just indicative.

NOTES

[1] Sphere minimum std. www.sphereproject.org

[2] Ref: http://www.tn.gov.in/tsunami/tsunami-relief.htm Update on the Tsunami related activities in Tamil Nadu As on 31st Feb 2008

[3] Ref: G.O 670 dated 10.10.2006

[4] GO Ms No. 575, Revenue dated 28.12.2004

[5] Ref:G.O.Ms.No.268 Revenue (NC-III) Dept, dated 06.05.2005

[6] It some times referred to as phase. To emphasis the nature of shelter response a continuum, term 'increment' has been used.

[7] 'A guide to the specification and use of plastic sheeting in humanitarian relief' www.**plastic**-**sheeting**.org/ref/**Plastic_Sheeting_**2007.pdf

[8] Useful guidance on types of tents, their performance and selection criteria can be downloaded from http://www.sheltercentre.org/shelterlibrary/index.htm

[9] Jo da Silva, Arup International Development

[10] **OPERATIONAL OBJECTIVES OF SHELTER CLUSTER LEAD BY IFRC, ref. annexure-2. F**ull document on the following URL
www.humanitarianreform.org/.../nb%20ESC%201c%20Performance%20Management%20System%20-%20ToR%2013July07.doc

[11] Sphere minimum standards, to download manual visit www.sphereproject.org

[12] "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, *housing* and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control." (article 25(1)) Universal Declaration of Human Rights, 1948

[13] Collective accountability matrix can be used to map-out priorities of various stakeholders.

[14] Sphere Manual, www.sphereproject.org

[15] Checklists are useful tool to ensure that we don't overlook anything important. For Shelter, Settlement, and Non Food Items, it page 238 of Sphere Manual. It is beyond the scope of the current document to elaborate other tools of assessment.

[16] More aggregated the data, the more invisible people.

[17] Transitional Shelter-Displaced Populations, Corsellis & Vitale, 2004 (trail edition)

[18] Adapted from: Transitional Shelter-Displaced Populations, Corsellis & Vitale, 2004 (trail edition)

[19] Part of 7.1 and 7.2 have been adopted from '**QUALITY & STANDARDS IN POST-DISASTER SHELTER**' Jo da Silva, Arup International Development

[20] Factors determining thermal comfort include: Air temperature, Mean radiant temperature, Air movement/velocity, clothing, activity level etc.

[21] A design brief is a comprehensive written document for a shelter and settlement project developed in concert by various stakeholder in need for design and the designer.

[22] Source: www.sheltercentre.org

[23] Refer standard 5 and 6 and their respective indicators, Shelter and Settlement, Sphere minimum standards

[24] Source: www.sheltercentre.org

[25] Parts of this section have been adopted from Oxfam GB documents and other sources from Interworks Europe.

[26] Source: Tools of the Trade, an article by Regan Potangaroa, School of Architecture Unitec Auckland New Zealand, email: rpotangaroa@unitec.ac.nz

[27] Adopted from Oxfam Engineer's CD, source Oxfam GB.

[28] Emergency Sanitation in Refugee camps, S. Baghri & R.A. Reed, 24th WEDC conference, 1998, Islamabad, Pakistan