



## **WINTERISED SHELTER ASSISTANCE FOR DISASTER AFFECTED POPULATIONS IN POST- EARTHQUAKE PAKISTAN 2005**

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### **1. INTRODUCTION**

Shelter is the first priority of the Government of Pakistan's Emergency Plan. This paper outlines the options available for erection of alternative non-tented emergency and transitional shelter assistance in post-earthquake Pakistan.

### **2. BACKGROUND**

Time is running out for survivors of the 8<sup>th</sup> October earthquake in Northern Pakistan, many of whom have limited, or no access to safe, comfortable shelter. Many families are choosing not to leave the shattered remains of their former homes, particularly in remote areas at high altitude in AJK and NWFP. With night time temperatures already below zero in the upper valleys, the delivery of effective, safe, culturally appropriate and winterised shelter that can best utilize the existing skills and resources of the affected population is now the most pressing need.

Given the extent and the urgency of shelter need, it is important that tents, winterized tents or otherwise, continue to be distributed as part of shelter assistance. It must be noted, however, that tents are currently neither available in the quantities required to meet needs, nor are they the most appropriate option in many circumstances.

As a consequence, the Shelter Cluster Draft Emergency and Transitional Shelter Strategy of 25<sup>th</sup> October clearly outlines a plan for alternative non-tented shelter. This alternative provision includes the supply of 'self-build shelter kits' to allow families to build for themselves a warm, safe inhabitable space using both distributed and salvaged material.

### **3. ADVANTAGES OF 'SELF-BUILD KIT' ASSISTANCE**

There are seven key advantages to assisting families with self-build shelter kits;

- Assisting disaster-affected populations where they live allows families to maintain access to their social support network and their livelihoods. These are critically important coping mechanisms for survival over the coming winter as well for recovery phases.
- Reducing population displacement puts the Government of Pakistan (GoP) and the International Community in a stronger position to plan for reconstruction after the winter and reduces the strain on the expanding number of relief camps which are increasingly difficult to support, manage and maintain acceptable living standards. To this extent, a shelter kit can be considered a 'transitional' shelter solution that anticipates reconstruction, rather than simply relief assistance.
- Shelter assistance that builds upon local building culture, local materials and utilizes the existing skill sets within the affect population gives families greater autonomy, control over their environment and allows for a social recovery process to be maintained.
- Self-build shelter kit assistance is considered to be an effective and efficient mechanism to use the considerable labour resources within the affect population.
- Shelter may be incrementally improved by families over the winter months as other shelter resources become available.
- Shelter constructed in an appropriate manner from local materials can lower fire risk and maintain structural integrity with heavy snow loads.



- The majority of the proposed self-build shelter kit can be locally or regionally procured, which contributes to the recovery of the Pakistani economy and the ability of the private sector to meet needs independent of outside assistance.

### 3. THE SELF-BUILD SHELTER KIT

The emergency and transitional shelter needs of the disaster-affected population varies depending on the location, physical environment, culture, gender, socio-economic and other circumstances of individuals, families and groups. The shelter kit enable materials salvaged from damaged or destroyed housing stock to be used by families and communities to fabricate 'stand alone' winter shelter located adjacent to, or nearby to their former homes. This kit has been developed in collaboration with implementing agencies operating in all disaster-affected areas<sup>1</sup>. The two Annexes attached to this document describe the kit in detail and its application field.

- Annex A describes the components of a typical shelter kit
- Annex B describes some field examples and details of improvised self-built shelter

The shelter kit consists of tools and fixing material, additional 'hard' construction items such as roof sheeting, as well as a number of shelter-related Non-Food Items (NFIs). These NFIs MUST be considered as part of the shelter package supplied to families or communities. These items include, but are by no means limited to plastic sheeting, blankets, other personal insulation items, wood-burning stoves and associated heating equipment including flue manifolds and flue pipes. The provision of other items that allow for a transitional sheltering process to begin, such as shroud material necessary for Muslim burial, must also be considered.

Whilst there is no single, prescriptive sheltering solution that can be used in all situations, the Shelter Cluster has developed a set of shelter components that represent the typical components that are already being utilized unilaterally by the disaster-affected population as well as items that are currently being supplied by humanitarian actors to enable self-build shelter construction.

The shelter kit described in Annex A should be used as a platform from which humanitarian actors can tailor a shelter response to meet the anticipated shelter needs of a particular family or community. The shelter kit should, for example, take account of the availability and type of salvage material available, such as Corrugated Galvanised Iron (CGI) roof sheeting and local shelter typologies used within a particular locality.

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<sup>1</sup> Agencies include IFRC, ICRC, CARE, SCF, CRS, ACTED, IOM.



#### 4. GUIDANCE FOR IMPLEMENTATION

##### *International Standards of Assistance*

There are several documents that describe international standards of assistance concerning emergency and transitional shelter.

**The SPHERE Standards** describe minimum benchmarks that shelter provision in emergency phases should achieve. This document has been developed over 8 years in collaboration with all the major humanitarian actors and contains guidance concerning both technical performance and the process of how shelter can be provided during emergency relief. This document and the chapter concerning shelter is available at [www.sphereproject.org](http://www.sphereproject.org). All humanitarian actors providing shelter assistance should make every effort to meet SPHERE minimum humanitarian standards for self-build shelter assistance.

**'Transitional Settlement – Displaced Populations'** (Shelterproject.org) builds on the SPHERE standards to describe in detail the six methods of shelter assistance and the mechanisms for developing an appropriate strategy for assistance. As with the Sphere Standards, this document has been the subject of wide consultation process within the international humanitarian community. The chapter concerning *'rural self settlement'* is a key reference document for Post-Earthquake Pakistan. This document is available at [www.shelterproject.org](http://www.shelterproject.org).

The Prevention Consortium working with ALNAP have recently published a 'lessons learnt' review concerning transitional shelter response to recent earthquakes. This document is available at: [http://www.alnap.org/pubs/pdfs/ALNAP-ProVention\\_SAsia\\_Quake\\_Lessonsa.pdf](http://www.alnap.org/pubs/pdfs/ALNAP-ProVention_SAsia_Quake_Lessonsa.pdf)

##### *Advisory Role of Agencies*

It is important that agencies do not simply assess and deliver material. Agencies must provide technical guidance to help families help themselves. Guidance on fire safety and fuel management is particularly critical for those who have little or no experience of living in cramped environments in either improvised shelter or within tents.

Showing families how they can incrementally improve their shelter over the coming months is also important.

Many families have abandoned their damaged homes as they are afraid that aftershocks may cause further collapse. Although self-build shelter can mitigate the risks of injury resulting from aftershocks, it is important that agencies provide an advisory role to families and communities concerning seismic risk. This is particularly important concerning the method of jointing and the selection of appropriate lightweight materials for construction. It might also be necessary to assist families with site selection for improvised shelter if there is risk of landslides from subsequent aftershocks.

Building skills and the ability of disaster-affected populations to implement self-build shelter is not ubiquitous. Some individuals and families will always require additional assistance to make settlement decisions and construct shelter as required. Past experience has shown that communities cannot always be relied upon to provide this assistance to vulnerable groups, particularly if the community has been fractured by the disaster.

##### *Privacy and Cultural Appropriateness*

In the context of Pakistan, it is also important to provide safe and culturally sensitive shelter. For example, if more than one family is sharing a tent, it may be important to provide fabric room dividers for males and females for reasons of personal safety and comfort (eg additional supply of blankets to be used as internal partitioning).



### *Structural Considerations*

Snow load, particularly at altitudes above 7000 feet must be considered. It is important to keep the span of the roofing material small and the roof angled in order to shed snow. Whilst many families living at high altitudes will be aware of the structural implications of snow loading this is not true for all the affected population. Agencies must factor this consideration into their advisory role at the point of distribution.

### *Needs Assessment*

Given the time constraints and the extent of need, agencies should look to collaborate with local agencies and the Pakistani military on the ground to both identify the extent of need and to establish a priority of distribution.

Despite the pressing need for distribution, special care must be taken to ensure direct consultation occurs with particularly vulnerable groups such as women, the disabled and female headed households to ensure that their shelter needs and priorities are well understood. For example, a female headed household may not have direct access to information about materials distributions through a community forum and women may have specific suggestions and requirements regarding heating/cook stove arrangements.

Villages which appear to have suffered less damage may still be in need of shelter assistance because they may be hosting other families whose houses have been destroyed. Reducing living densities and allowing families to separate is particularly important to maintain access to dignified shelter and reduce the potential for conflict over scarce shelter resources within a community.

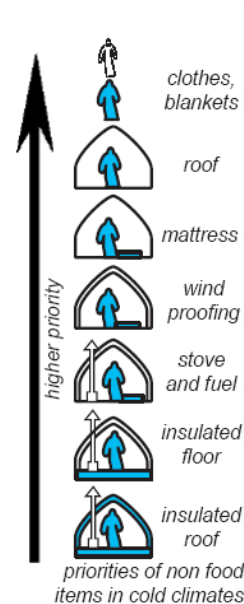
Agencies must, therefore, ensure the accuracy of shelter assessments and maintain a close monitoring role during and after the distribution process.

### *Holistic Shelter Assistance*

Shelter must be considered as a package and more than simply a structural support system with covering material. This is particularly important in cold climates. The provision of shelter includes the ability to insulate a shelter from the ground and to provide personal insulation and bedding. Provision for heating a shelter must be made. Where the supply of shelter resources are limited, shelter assistance should be prioritized. The figure to the right is applicable to both tents and self build shelter.

#### *Repair or Creation of a Warm Room in a Existing Damaged Accommodation*

If an existing house or building has been assessed as structurally safe, it may be possible to supply shelter kit components to create a warm room within the building. This may include insulating the walls and roof, covering the windows with plastic sheeting and other measures to reduce draughts and provide insulation, as well as providing some form of heating. It should be noted, however, that in the absence of an assessment by a suitably qualified professional, this option should be discounted altogether.



(courtesy J. Ashmore,  
shelterproject.org)



### *Shelter Kits For Non-Winterised Tents*

Delivering items from Annex A to families living in tents is also important in order to provide the full range of shelter assistance. Allowing families to safely accommodate and use a stove within their tent is critical. The provision of additional materials from the shelter kit, such as plastic sheeting, will allow families to extend living areas outside their tent and improve the thermal performance of a single canvas fly sheet and damp proof the ground. At higher altitudes, some non-winterised tents will need further structural support to cope with snow loading. This issue will be addressed in a separate guidance note from the Shelter Cluster later this week.

Non-food items, such as personal insulation and stoves, must be supplied in tandem with 'shelter kits' and on an 'as needed' basis. Given current logistical constraints it is likely that in many places, shelter assistance may have to be delivered both incrementally and between humanitarian actors to meet needs. It is critical, therefore, that these items are considered part and parcel of family shelter assistance and delivered in a coordinated manner by operational agencies.

### *Host Family Support*

Consideration should be given to supporting host families both on a local and regional basis. This support can be delivered in a variety of ways either through in kind support or cash. Reference is made to '*Transitional Settlement – Displaced Populations*' Section 3.2 *Dispersed in Host Families* p.77 [www.shelterproject.org](http://www.shelterproject.org). Guidance on this issue will form a separate guidance note from the shelter cluster later.



## Annex A - Suggested Shelter Kit items

<b>Suggested shelter kit items</b> (based on family size of 6)			
<b>Item</b>	<b>no</b>	<b>unit</b>	<b>Specification/notes</b>
Shroud	3	piece	1 X 7.5m white linen for burying the dead ('bukavu' model or similar) further guidance on specification to follow this week)
Tin stove	1	piece	Pipe made from 1mm gauge steel
Stove flue pipe	1	piece	6 inches long
Roofing nails	4	kg	1000x2500 to 3500 1mm thick, or similar
Iron sheet	10-20	piece	2kg each of 4,3,2 inch nails
Nails	6	kg	UNHCR/MSF '97/USAID spec or similar
Reinforced plastic	48	m2	LDPE translucent plastic (or similar) to seal walls and floor
Non- reinforced plastic	20-40	m2	
Claw hammer	1	piece	
Saw	1	piece	20 inches long
Bucket	1	piece	metal or plastic 20 litre capacity
Pickaxe	1	piece	
Hand axe	1	piece	
Rope	20	metres	black poly propylene or similar
Wire	5	Kg	(thin enough to break by hand)
Wire cutters	1	piece	
Metal restraint strap	6	metres	15mmx1mm steel strapping or similar
Blanket	12	piece	IFRC standard



## **Annex B 'STAND-ALONE' SHELTER USING SALVAGED MATERIALS**

There are many examples of how families and communities have already made improvised shelter for themselves. This has occurred both unilaterally by affected families and communities as well as through programmes supported by agencies. Below are three typical structural types which are evident across NWFP and AJK. These models may form the basis of more detailed agency proposals for self-help shelter assistance.

### **LEAN-TO SHELTER (Figure 1)**

A timber frame (typically using 150x100x2300mm timber) is erected using salvage timber. Four corner posts are dug into the ground by 300mm and a timber wall plate using small section timber is fixed to the top of the posts. The frame should be braced vertically across at least one structural bay with a small section diagonal timber member linking the wall plate to the base of the opposite vertical post (typically 75x50mm). Small section timber rafters (typically 75x50mm) are fixed to the wall plate across the shortest span. The roof should also be diagonally braced on the underside of the rafters. Roof sheeting (plastic or CGI roof sheeting) is then fixed directly on top of the rafters to form a roof. The roof should have a small pitch to allow rain to drain away. Side walls are then built within the timber frame with locally available material. This might be traditional dry stone walling with mud infill built from the ground to a height of around 1 metre (but no higher in order to minimize injury should aftershocks occur). Other material, such as timber planks (section 15mmx150mm) or metal sheeting can also be used to clad the side walls of the structure. Local available insulation material should then be added to the floor and walls. This might include plastic sheeting, blankets and rugs to be hung/attached to the walls from the inside of the structure or wrapped and tied around the outside. Timber planks can be used to provide insulated decking for the floor. Alternatively, compacted rubble and straw can be used to provide alternative but limited insulation.

On dry and drained ground, a rectangular hole can be excavated within the footprint of the shelter before construction to a depth of between 0.5 to 1 metre to provide greater head height. This option is discounted in low lying areas where the water table is close to the surface.

Drainage ditches must be dug around the shelter to deal with storm rain. This is particularly important when shelters are sited on terraces on steep slopes.

### **TERRACE LEAN-TO SHELTER (Figure 2)**

This model is the same as the lean-to shelter except that only a partial frame is built using the earth terrace to support half of the shelter and with the rafters dug into the side of the mountain. Plastic sheeting should be used to seal the mountain wall from the inside of the shelter.



## A-FRAME SHELTER

(Figure 3)

A rectangular hole is excavated within the footprint of the shelter before construction to a depth of between 0.5 to 1 metre to provide greater head height. (The option assumes that the ground is dry and drained and that the water table is not close to the surface and is described in Figure 2).

A timber 'goal post' frame made from large section timber (typically 150mmx100mmx3300) is erected with the base of the frame is dug into the base of the hole to a head height of 3 metres from the base of the hole to the top of the frame. A low timber frame (typically 500mm high) is built from the ground down the two longer sides of the hole to form a wall plate. Low walls using locally available material, typically dry stone walls with mud are used to infill the low timber frame. Small section timber rafters (typically 75x50mm) are then fixed at 900mm centres from the ridge to the wall plate on both sides. Overlapping CGI sheeting is then fixed directly to the rafters. Nails or wire is used to join the sheets/timber at the top of the structure. Other material, such as timber planks (section 15mmx150mm) or metal sheeting can also be used to clad the side walls of the structure. Local available insulation material should then be added on top of the CGI roof sheeting as well as to the floor and walls. This might include plastic sheeting, blankets and rugs to be hung on the walls from the inside of the structure or wrapped and tied around the outside. Timber planks can be used to provide insulated decking for the floor. Brush wood or straw can be placed over the CGI sheeting and held in place with timber battens over the top of the material and fixed through to the rafters.

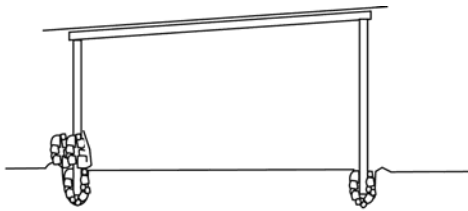


Figure 1

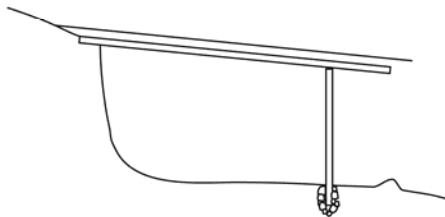


Figure 2

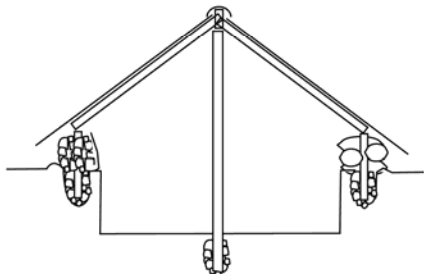


Figure 3





A-frame Shelter (courtesy SCF-UK)



Lean-to Shelter (courtesy SCF-UK)



Local insulation material being added to an A frame shelter (courtesy IOM)



Wire jointing (courtesy IOM)