YEMEN
SHELTER CLUSTER
Coordinating Humanitarian Shelter and Settlements

EMERGENCY AND TRANSITIONAL SHELTER GUIDELINES FOR THE REPUBLIC OF YEMEN

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Overview

Yemen is facing a complex and protracted humanitarian crisis, exacerbated by an ongoing conflict, economic collapse, large-scale displacement, and the impact of frequent climate crises. Millions of Yemenis have been forced to flee their homes, seeking refuge in spontaneous settlements, rental accommodations, and host family arrangements, leading to significant shelter challenges across the country.

Adequate and dignified shelter is a fundamental need and a critical component of the humanitarian response in Yemen. Providing safe, secure, and dignified shelter solutions is essential to protect crisis-affected populations, support their well-being, and restore a sense of normality in their lives. Shelters provide lifesaving protection to families in distress by safeguarding them from harsh climate conditions and diseases and ensuring minimum privacy and dignity.

The purpose of this guideline is to provide an overview of different shelter options and design considerations primarily emergency shelters and transitional shelters that align with context, culture, and building practices in different parts of the country. It aims to equip shelter cluster members, and other stakeholders with the necessary information to review and implement appropriate shelter solutions to meet the diverse needs of crisis-affected communities in Yemen.

Shelter design and construction in Yemen differ depending on the IDP's locations and availability of materials including for construction in local markets as there are many shelter designs implemented in the country for years. Shelters in Yemen are commonly built from materials such as stonework, mud, thatch, or composite construction from concrete and stones. In mountainous areas, shelters are mainly built with stones because these materials are more accessible and affordable, while in flat areas, the shelters are built out of mud or cement blocks with wooden or concrete roofs. The climate in the country significantly influences shelter design. For instance, in wet and warm areas like Haradh and Malaheet, people prefer living in houses made of thatch because it provides better temperature regulation inside their homes compared to other materials.

This guideline presents a comprehensive range of shelter designs, highlighting the key characteristics, advantages, and limitations of each. This enables shelter practitioners to make informed decisions based on specific needs and contexts. The guideline is divided into several sections, addressing various aspects of shelter programming in Yemen. It provides detailed guidance on site planning, fire safety, and housing, land, and property (HLP) issues. Furthermore, examples of durable housing solutions are annexed to this guideline.

Shelter Types

1. Emergency Shelter

This type of shelter falls under the first stage of emergency response. These initial emergency shelters should be distributed quickly after displacement to provide temporary overnight housing. They are intended to serve only for a short period until displaced families can return to their homes or be provided with more sustainable housing solutions. The shelters should have simple designs, allowing for easy installation by the local community without the need for skilled labor. Additionally, the materials used for these emergency shelters should be suitable for storage, and ready for distribution during emergencies. To address this, the Shelter Cluster Technical Working Group (TWiG) has provided three examples of emergency shelter designs in this guideline.

2. Localized Shelters

There are two locally made designs were developed by shelter partners to serve as emergency solutions on Yemen's West Coast (Tihama ESK) and in Marib (Iron Net). However, these designs utilized more durable materials commonly used by the local community, providing better protection against harsh weather conditions. However, it was found that the materials and components for these two shelters were difficult to pre-position and stockpile, unlike the standard emergency shelter designs. Additionally, they were less durable and offered less protection compared to transitional shelters.

As a result, the Shelter Technical Working Group (TWiG) recommended categorizing these designs separately as 'Localized Shelters,' rather than classifying them as emergency or transitional shelters. The TWiG acknowledged that localized shelters could still be appropriate for some emergencies if partners could rapidly deploy them. Furthermore, the TWiG noted that localized shelters could be suitable for protracted displacement settings, especially when budgets are limited. In such cases, localized shelters could potentially be upgraded over time into more substantial transitional shelter solutions.

3. Transitional Shelters

After approximately six months of providing emergency shelters, there is often a need to transition to more sustainable shelter solutions. These transitional shelters are designed to offer better protection from weather conditions for displaced populations who may require mid-term housing options until achieving durable solutions.

Transitional shelters tend to be more costly than emergency shelters due to their heavier construction and more substantial roofing and cladding materials, which form the structural 'shell'. However, the specific design, materials, and construction methods for transitional shelters can vary widely based on the local context, availability of materials, and building skills in the affected area. Given this variability, flexibility in transitional shelter designs is crucial to optimize them based on the unique circumstances of each response and informed through community engagement.

This guideline presents five different transitional shelter models that have been implemented and reviewed by the Shelter Technical Working Group (TWiG). These designs serve as examples that shelter actors can build upon. They can use these models as a starting point, then adapt and innovate to create transitional shelter solutions that best meet the needs of the affected population within the given operational context.

4. Semi-Permanent Shelters

This type of shelter is intended to achieve long-term solutions. In Yemen, two shelter programs can be classified under permanent or early recovery shelter solutions: the rehabilitation of conflict-affected houses for returnees and reconstruction programs/advance shelters. While this guideline does not currently present any specific semi-permanent shelter designs, the TWiG acknowledged that such examples could potentially be included in a dedicated guideline.

Displacement Phase	Type of Intervention	Options	Life Span[1]
First stage (Displacement)	Emergency shelter	Tents, and ESK	3 - 9 months Av. (6 months) ESKs 12 - 24 months Av. (18 months) Tents
Second stage (Mid-term Solutions)	Localized shelter	TESK and Iron Net	12 - 24 months Av. (18 months)
	Transitional shelters	Construction and Repair of TS	2 - 3.5 years for wooden structure[2] 2.5 - 4 years for steel structure
Third stage (Durable/Early Recovery)	Semi-Permanent shelters	Rehabilitation and Reconstruction of Houses	Durable Shelters are 15 years+

[1] The lifespan of shelters takes into account different contexts and weather conditions (both best and worst scenarios) and includes considerations for minor repairs. After this period, maintenance and replacement of damaged components can extend the service life of transitional shelters.
[2] White termites can reduce the lifespan of shelters with wooden structures by up to 25% in some cases. Therefore, it is crucial to implement mitigation measures, particularly in transitional solutions to address this issue.

Shelter Design Considerations

1. Minimum Shelter Space:

- Shelter design should consider minimum living space as per the humanitarian standards, context, and specific cooking practices.
- As per SPHERE, a minimum covered space of 3.5 m^2 should be maintained per person excluding cooking and bathing areas. If cooking and bathing areas are included, then a minimum of 4.5 m^2 to 5.5 m^2 covered living space per person should be ensured.
- The cooking practices in most IDP sites in Yemen are done outside the shelter to avoid fire incidents. Moreover, latrines are mostly a separate unit out of the shelter. Therefore, the minimum covered space for emergency and transitional shelters can be considered as 3.5 m^2 unless the context in specific areas is different from what was mentioned above.
- Although the average family size in Yemen is often 7 members, according to context, it was found that in many cases, this average may differ. Therefore, from a cost-effectiveness point of view, it is recommended to have shelter designs with a space between 15-20 m^2 to provide the minimum space for 4-5 persons. For families with more family members, they can be provided with more than one shelter.

2. Materials:

- To minimize costs and transportation requirements, it is highly recommended to utilize locally available materials in the shelter construction.
- One notable example is the Tihama shelter, which incorporates a variety of local materials for the walls and roof cover. This approach not only reduces cost but also offers the added benefit of keeping the shelter cooler.
- Mud walls are another example of keeping the shelter cool by using local materials.
- In situations where local materials are scarce or unavailable, it becomes crucial to carefully select materials that are already familiar and commonly used in the targeted community. By opting for familiar materials, the community is more likely to accept and have prior knowledge of how to effectively work with them. This approach promotes a smoother construction process and ensures that the shelter design aligns with local practices and preferences, enhancing overall effectiveness and community engagement.

3. Ventilation:

- Adequate ventilation shall be ensured in the shelter design to maintain a healthy environment and limit the risk of transmission of diseases, such as tuberculosis, etc. Ventilation should be considered in hot climates to improve the temperature inside the shelter and provide some heat in cold climates.
- In hot areas, it is preferred to have a minimum height of 2m at the lowest point, with greater height being preferable to aid air circulation and ventilation. The gabled roof is mostly preferred in hot areas. It is also important to have a larger number of windows (3 to 4 in addition to the door) with bigger size.
- In cold areas, it is not advised to have a ceiling height further than 2m. The opening should be as small as possible.
- Considering local materials such as "Khazaf" for the walls is a highly effective method for enhancing ventilation in shelters. Effective use of natural resources is recommended. The small gaps between the straws allow air to flow, creating a refreshing breeze within the shelter. This natural ventilation system not only helps regulate the internal environment but also utilizes locally available resources, making it a sustainable and practical solution.
- It should be mentioned that the above recommendations about ventilation are advisable, community consultations play a crucial role in designing shelters to ensure that they meet the specific needs and preferences of the people who will be using them. Engaging with the local community allows for a better understanding of their cultural practices, social norms, and climatic conditions, which can greatly influence design choices.

4. Disaster Mitigation / Hazard & Loading Design

- It is recommended to install shelters at the highest areas of the site.
- It is advisable to anchor the strong posts with solid footings to the ground.
- Ensure techniques to strengthen shelters against the winds with barriers on each side.
- Do not install shelters on rain drainage paths, in proximity to areas prone to rock falls, under high voltage electrical lines, or in areas where water is stagnating.
- Provide sandbags to beneficiaries where needed, they should be filled to 2/3 maximum level. The sandbags

need to be placed around the shelter to prevent flash flooding.
- Shelters should be built at a safe distance from each other to limit fire propagation on site. Sphere standard recommends the minimum space between shelters to be double the height of the shelter or at least 2 meters to prevent collapsing structures from touching adjacent shelters.
- It is advisable to encourage the community to construct at least one or two rows of cement blocks, rocks, or even compacted soil if feasible. This will help mitigate the risk of rainwater infiltration and protect the shelter's structure.

5. Location and Site Selection

- The selected site should be as high as possible relative to the surrounding ground level.
- The selected site should be relatively flat to allow easy draining of raining water. Site slope should be between 1-6% to ensure optimal drainage of rainwater.
- Settlement planning consideration should be given when settlements do need to be built or upgraded, re-planning can vastly improve the health, security, privacy, and dignity of those people living within them. Minimum sphere standards should be considered while developing the master site plan.

6. Protection Considerations

While many protection risks occur within the home or, in a settlement or site context, within the shelter or shelter plot, significant risks also exist for women and girls outside the shelter. No part of a settlement or its surroundings is free from these risks. Therefore, to reduce protection risks both inside shelters and throughout the settlement, the following activities are recommended:

- Solar Light poles: Consideration should be given at the settlement level, especially near the Latrines, health center, and Water points.
- Privacy: The shelter direction should be in a way that ensures privacy, the door should not open directly into the walk path.
- Partitions: Plastic tarpaulin can be used for partition inside the Shelter, to separate adults and children. Also, for men and women. Depending on the fund availability it is also highly recommended to consider latrines at the household level in the transitional phase to avoid female beneficiaries going out especially at night.
- Lockable doors/Windows: The shelter door should be lockable from the inside and outside; Windows should have locks from the inside.

7. Fire Safety

- Shelter partners should develop fire safety awareness messages, with samples available from CCCM. Additionally, they should implement training and awareness-raising measures to accompany the distribution of cookers, stoves, and heaters. This should be done in collaboration with site management authorities, fire services, and CCCM where relevant, to ensure that the messages are consistent, reflect best practices, and align with the available firefighting and fire safety measures on site.
- It is worth noting that the largest cause of fires in the IDP settlements in Yemen has been poor unsafe, environmentally unfriendly cooking modalities. Safe cooking habits should be promoted including Mud and clay stoves which provide a better flow of air.
- Likewise, site planning and distances between shelters and fire breaks should be integrated into an overall strategy for fire risk reduction.
- Fire in settlements is the most deadly and destructive risk. Firebreaks can prevent fires from spreading and becoming catastrophic and can save lives.
- Assess fire risks to inform the site planning of temporary communal settlements and the grouping of individual household shelters. Mitigating actions should include the provision of a 30-meter firebreak between every 300 meters of built-up area, and a minimum of 2 meters (but preferably twice the overall height of any structure) between individual buildings or shelters to prevent collapsing structures.

8. HLP Issues

- HLP issues in Yemen are a bit unique. It was found that ownership for the majority of the IDP site's land is for private individuals or can be common ownership for families or tribes. This is in addition to some sites which were established on public land.
- It is not practical to require beneficiaries a proof of ownership of the settlement as mostly, such vulnerable groups do not own land especially if their displacement is away from their place of origin.
- However, shelter partners along with HLP specialists, CCCM in the sites, and authorities, can attempt to have a clear agreement with landowners on the right to stay. A minimum of 5+ years right to stay at the land should be granted for the IDPs in case of relocation to a new land, and/or if they are protracted IDPs and eligible to

receive transitional shelters. HLP issues should be done in close collaboration with the local authority.

- HLP should be one of the design considerations and a discussion should be done with landowners to see what can be implemented as shelter intervention. Some owners have reservations about using certain building materials like heavy materials that will need large efforts for removal or some of the permanent materials that will encourage IDPs to stay for a long time.
- IDPs often settle spontaneously or are guided to private or public land, where they face constant threats of eviction by landlords or authorities. To address this, the shelter partner must secure land tenure with the support of local authorities. This involves engaging Housing, Land, and Property (HLP) actors, the shelter cluster, and Camp Coordination and Camp Management (CCCM) to obtain clear, signed land tenure documents (temporary or permanent) for the IDPs before the shelter installation.

9. White Termite

White termites are a major factor that negatively impacts the lifespan of wooden shelters. Without proper mitigation measures, wooden shelters in termite-prone areas can see their lifespan reduced to just 25% of the expected duration. To address this issue, Shelter TWiG has collected information on measures taken by shelter actors to mitigate the risk of white termite infestation. The Bill of Quantities (BOQs) for one of the mitigation measures practices in **Annex 3**. In addition, and according to availability in the local market, one of the materials in the list developed by BHA can be used.

10. Installation on Soil and Rocky Ground

For wooden structures, the columns are typically anchored to the ground using cross-braced wooden fractions installed below ground level. However, this can be complicated when the shelters are built on rocky ground. In such cases, a metal L-shaped connector can be used to attach the wooden poles directly to the rocky ground, instead of using the cross-braced wooden anchors.

11. Other Considerations

- For designs that will be implemented by the community, an engineer and a skilled person are required to train the community on installation. Therefore, closer technical support and installation of a sample is recommended.
- For emergency shelters' opening/aeration, beneficiaries should be allowed to put some openings on both sides above the wall to allow the flow of air, it is advisable to maintain the cut piece as a flap to the main sheet, the flap can be rolled up/down when required.
- For safety, the nails should be put in a way that they do not appear on the inner side of the shelter which can harm the residents of the shelter.

Modality of Intervention

1. Community Implementation:

- In a context where the community is willing and can build their shelters by themselves, it is preferred to go with the community implementation modality.
- Based on the context, community mobilization, motivation, and community acceptance, there are some cases where implementation can be done as a community participation. In some other cases, the partner needs to pay some incentives for the beneficiaries to install their shelters. Sometimes, this payment can be used to manage any installation expenses.
- Mostly, community modality is more cost-efficient because it involves community participation in an installation rather than paying for a contractor from another area to implement.
- In this modality, the partner should provide technical support for the community to ensure the quality of implementation. At least, one shelter should be implemented by the partner as a sample in each area.
- A building tool kit should be distributed for each household implementing this modality.

2. Skilled Labors:

- In areas with the availability of skilled laborers, it is preferred to go with implementation through the skilled labor modality.
- The laborers should be from the targeted community and can be paid with cash for work. To facilitate supervision and speed implementation, it is preferred to pay laborers according to achievement and not at a constant daily rate. The rate for skilled labor can be identified according to the familiar rates for the needed skills in the targeted area.
- Although fees are paid for skilled laborers, this modality is more cost-efficient than implementation by contractors.
- The skilled laborers should be divided into several teams. Each team should be provided with a building tool kit.
- For professional machinery tools that might facilitate construction and not part of the tool kit such as an electric saw, rental of such tools should be considered during planning.
- Supervision and technical support are still needed in this modality to ensure the quality of implementation.

3. Contractor:

- Where community implementation seems to be inefficient and skilled laborers are not there, it is recommended to implement through a contractor.
- This modality is preferred when the design is complicated to implement by community expertise.

4. Cash:

- In this modality, conditional cash assistance is provided to beneficiaries to purchase and install shelter materials.
- Cash or 'market-based approaches' are designed to give beneficiaries maximum choice and control over the design and implementation of their shelters. This approach also has the potential to stimulate local markets. However, this modality carries significant risks. Beneficiaries might use part or all of the cash for other emergency priorities (e.g., medicine, food, or "Qat" costs) and may lack the knowledge to purchase high-quality materials or use construction materials efficiently.
- Conditional cash assistance involves distributing funds in tranches or installments, contingent upon the completion of prior construction phases. It is the organization's responsibility to ensure the program's objectives are met. Therefore, the organization should design the program to facilitate the successful implementation of shelters and provide continuous technical support and consultancy to the community during the procurement and installation of shelters to ensure the quality of materials and construction.
- Cash is becoming increasingly popular in emergency shelter programs. However, it should be accompanied by a market assessment in the area of intervention. This market assessment should identify the availability of shelter materials, quality of materials, presence of skilled personnel, and people's willingness to implement shelters by themselves.

Selection Criteria

Emergency Shelters	Transitional Shelters
Targeting Criteria	
• The primary targeted group for this activity is Internally Displaced Persons (IDPs) who left their areas due to conflict or natural hazards. **3 4** • The beneficiary household has limited or no regular income and does not receive financial support related to shelter from a humanitarian actor.	
• The family did not receive ESK longer than a year ago and the shelter is in bad condition and cannot be repaired or upgraded. • The family has received ESK/TS during the above period. However, the shelter was fully damaged due to natural hazards.	• The targeted beneficiary currently lives in a substandard shelter that cannot be repaired at a reasonable cost. • The targeted beneficiary has stayed in the targeted location for around 6 months and intends to live in the shelter for at next year. • The family received ESK longer than 6 months ago but the shelter sustained severe damages.
Exclusion Criteria	
	• There is no concerning HLP issue.
Prioritizing Vulnerability Criteria	
• Families that have not received any previous shelter assistance. • Single women who are facing additional vulnerability elements, such as a medical condition. • Households headed by minors. • Women with special needs who are unable to support themselves or their families, encompassing those without male support, lacking a traditional family protector, dealing with serious legal issues, experiencing, or having faced sexual and gender-based violence, facing threats to their physical safety, stigmatized, and rejected by their community due to cultural, domestic, or social problems, and those who are victims of torture. • Survivors of Sexual Gender-Based Violence. • Single pregnant women in their first seven months of pregnancy. • Individuals with psychological or mental health problems. • Individuals with serious health problems who, due to their health situation, cannot support themselves or their families. • Couples with one spouse who is bedridden or suffering from a medical condition that prevents the other partner from working. • Unaccompanied and separated children under 18 years of age. • Unaccompanied elderly persons of concern over 60 years of age who lack support from their community. • Single parents taking care of a child with a disability. • Persons with disabilities, including those with physical and mental disabilities, who cannot support themselves. • Families who are facing significant protection risks, including the threat of forced eviction. • Households living in overcrowded conditions (as per emergency standards e.g. SPHERE).	

Distribution Protocol

Taking in consideration that children below 8 years old do not need the same space as adults and considering that infants below 1 year are sharing the same mattress with their mothers, the following distribution protocol shall be taken into consideration:

- **Persons older than 8 Years:** To be counted as 1 person.
- **Children of 1 year to 8 years:** 2 children to be counted as 1 person
- **Infants less than 1 year:** Shall not be counted

After determining the number of family members, ensure that each person is allocated a minimum of 3.5 square meters of living space, not including the areas required for cooking and sanitation facilities.[5]

3 In special cases, the host community can be assisted if there is an emergency need to stay out of the house for a temporary period.
4 In special cases, returnees and host communities can receive assistance if their houses are completely destroyed and no long-term solutions have been provided.
5 If a partner lacks sufficient resources to meet distribution protocols, it is recommended to prioritize providing one shelter per family. Families with more than four to five members should be identified as needing additional support later. These families should be advised to retain their previous shelter arrangements as supplementary space alongside the single shelter provided.

Model 1: Emergency Shelter Inclined Roof

Category of Shelter:
Emergency Shelter

Materials:
Structure: Wood

Wall and Roof: Plastic sheet and insulation layer

Distribution Protocol (per family):
The emergency shelter kit was designed to cover a surface area of 15 m^2 with volume of 34.5 m^3. The size of the shelter is as follows: 3m in width, 5m in length, and 2.3m in height. The shelter area can accommodate a family of 4 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 4 *2 Kits (5 - 8)* *3 Kits ≥ 9*

Suitable Context:
- The shelter was provided with an insulation layer to be suitable for both cold and warm areas where there is a lack of local isolation materials like straws (Halfa and Khazaf).
- This kit is also suitable for pipeline prepositioning as the materials are available in the local market and can be stored in large quantities in warehouses and then distributed and installed within a short time.

Preferred Modality of Implementation:
The choice of implementation modality depends on the context in which the shelters are constructed. However, this design is one of the simplest and can be implemented by any community, regardless of their construction skills. Therefore, a community implementation modality is encouraged, as it not only reduces operational costs compared to other modalities but also promotes a sense of ownership and empowers the community to address their own shelter needs.

Under this modality, the organization should provide technical support to ensure quality implementation. It is recommended that the organization constructs at least one sample shelter in each area to serve as a guideline for the community.

Shelter Tool Kit:
It is recommended to provide tool kits according to the modality of implementation as follows:

- The tools shall be distributed only when the beneficiaries are installing their shelters.
- Each household shall receive one kit. Even those large families who may receive more than one shelter shall be provided with one tool kit.
- Tools shall not be distributed if the agency is implementing directly or through a contractor modality.
- For modalities of implementation where installation is assigned to skilled labor, tool kits can be provided to the implementation teams according to the requirement.

BOQs and Drawings:
- Detailed BOQs and technical drawings are provided in **Annex 1 under Model 1**.
- Installation steps are presented in **Annex 2 under Model 1**.

Model 2: Emergency Shelter Gabled Roof

Category of Shelter:
Emergency Shelter

Materials:
Structure: Wood

Wall and Roof: Plastic sheet and insulation layer.

Distribution Protocol (per family):
The emergency shelter kit was designed to cover a surface area of 15 m^2 with volume of 34.5 m^3. The size of the shelter is as follows: 3m in width, 5m in length, and 2.3m in height. The shelter area can accommodate a family of 4 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 4 *2 Kits (5 - 8)* *3 Kits ≥ 9*

Suitable Context:
This design is similar to Model 1 and is intended for use in areas where local insulation materials like straws (Halfa and Khazaf) are unavailable. It is also suitable for pipeline warehousing in emergencies. The design is particularly well-suited for warm climates, as the higher roof provides cooler shelter. Additionally, the steep roof slope is ideal for regions with heavy rainfall.

Preferred Modality of Implementation:
The design is more complex than model 1. However, community implementation modality is still preferred for this model. Technical support is essential during implementation.

Shelter Tool Kit:
- It should be distributed according to the same conditions mentioned in model 1.

BOQs and Drawings:
- Detailed BOQs and technical drawings are provided in **Annex 1 under Model 2**.
- Installation steps are presented in **Annex 2 under Model 2**.

Model 3: Tent (Emergency Shelter)

Category of Shelter:
Emergency Shelter

Materials:
Structure: Galvanized Iron

Wall and Roof: Two layers of cotton fabric with a medium insulation layer.

Distribution Protocol (per family):
The standard tent can cover a surface area of 16 m^2 with a volume of 36.8 m^3. The size of the tent is as follows: 4m in width, 4m in length, and 2.3m in height. The tent area can accommodate a family of 4 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 4 *2 Kits (5 - 8)* *3 Kits ≥ 9*

Preferred Modality of Implementation:
The tents are often designed for easy installation. They consist of a one-piece tent and standard galvanized pipes for support. As a result, they can be distributed directly to the community for self-installation.

Suitable Context:
- This emergency solution is suitable in deserts where similar types of shelters are used by the IDPs and the community.
- The Shelter Cluster does not encourage the use of tents in the response. However, they can be distributed in some exceptional and emergency circumstances according to the tent distribution policy. (**See Annex 4**).

Minimum Standards:
Minimum Standards for tents are presented in **Annex 1 under Model 3**.

Model 4 - Tihama Localized Shelter

Category of Shelter:
Localized Shelter

This design aimed to create a shelter with a cost comparable to the ESK, but with enhanced protection and durability, utilizing local building traditions. However, the materials cannot be stored in warehouses for prepositioning use. Therefore, these shelters are categorized as localized shelters or basic transitional shelters.

Materials:
Structure: Wood

Wall: The upper part is built from local thatch materials (Khazaf) and the lower part is formed from plastic sheets.

Roof: local thatch materials (Halfa or Thumam)

Distribution Protocol (per family):
This localized shelter was designed to cover a surface area of 17.3 m^2 with volume of 40 m^3. The size of the shelter is as follows: 3.6m in width, 4.8m in length, and 2.3m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:
The selection of implementation modality depends on the context where the shelters are constructed. The thatch roof might need skilled labor to be implemented. Therefore, contractor modality or implementation through skilled labor is recommended for this design.

Suitable Context:
This type of shelter is constructed using local materials that provide insulation from hot weather. The wall material (Khazaf) allows the breeze to pass through, creating a more comfortable environment inside the shelter. Therefore, this model is suitable for warm areas where local insulation materials like straws (Halfa and Khazaf) are available. These materials are commonly found in the west coast areas of Hudaidah and Taiz (Tihama and Mukha).

Installation Steps:
The following are recommendations before implementation:

- Encourage the community to participate in constructing the roof insulation layer. In addition to the materials listed in the BOQs (Halfa/Thumam), they should be allowed to incorporate additional materials for better insulation based on local experience, such as banana tree leaves.
- In case the two suggested materials for roof construction (Halfa/Thumam) are not available in the targeted area, there is flexibility to use some other local materials that can serve the same purpose (protection from the sun). The thickness of the roof's external layer should not be less than 8 cm.
- The net/grid that would be used to hold Halfa/Thumam should not be a fishing net to avoid raising the costs. It is preferred to purchase nets that are locally made by the community in the targeted areas to encourage livelihood and cash for work opportunities.

BOQs and Drawings:
Detailed BOQs and technical drawings are presented in **Annex 1 under Model 4**.

Model 5: Marib Localized Shelter

Category of Shelter:
Localized Shelter

Due to harsh weather conditions, ESKs are not preferred in some areas of Marib. Therefore, a more durable shelter design was developed using materials commonly used by the local community. However, these materials cannot be stored in warehouses for prepositioning use. As a result, they are categorized as localized shelters rather than emergency shelters.

Materials:
Structure: Galvanized iron pipes.

Wall and Roof: PVC plastic sheets with a layer of insulation.

Distribution Protocol (per family):
This localized shelter was designed to cover a surface area of 18 m^2 with volume of 39.6 m^3. The size of the shelter is as follows: 3m in width, 6m in length, and 2.2m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:
As the shelter structure consists of iron, which is connected by welded joints, it is difficult to implement this model by community. Therefore, implementation by a contractor is the recommended modality.

Suitable Context:
This design is suitable in desert-type locations where similar shelters are used by the IDPs such as in Marib.

Installation Steps:
The model was designed to be installed in two stages as follows:

First Stage: Manufacturing of Structure Sections and Shelter Cover:
This stage should be done by a contractor as follows:
The structure sections are made of welded galvanized iron pipes, with the welding done according to the designs in specialized workshops with expertise in welding. Additionally, the PVC covering layer, sold in rolls, should be sewn into a single piece to cover the shelter structure. Finally, these manufactured parts, along with the remaining materials listed in the BOQs, are transported to the site.

Second Stage: Installation of Shelter
The different parts of the structure are assembled to form a single unit. The final step is to cover the shelter with insulation and a PVC cover and complete the finishings. Since the second stage does not require much expertise, it can be carried out by a contractor or the community, depending on the agreement with the contractor.

BOQs and Drawings:
Detailed BOQs and technical drawings are presented in **Annex 1 under Model 5**.

Model 6: Inclined Roof Transitional Shelter (Wooden Structure)




Category of Shelter:
Transitional Shelter

Materials:
Structure: Wood

Wall: The upper part is built from wooden plywood. The lower part can made from wooden plywood, cement blocks, or mud.

Roof: Corrugated metal sheets with a layer of insulation.

Distribution Protocol (per family):
This transitional shelter was designed to cover a surface area of 19.44 m^2 with a volume of 50.5 m^3. The size of the shelter is as follows: 3.6m in width, 5.4m in length and 2.6m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:
The preferred modality for implementing transitional shelters is through contractors. This is because the installation of these shelters requires specific skills, as their designs are more complex compared to emergency shelters.

Suitable Context:

The inclined roof is suitable for both cold and hot areas. The wall materials and design can be adjusted based on community preferences, HLP issues, material availability, and the local climate. This catalog presents three different options: plywood, cement blocks, and mud.

BOQs and Drawings:

Detailed BOQs and technical drawings are presented in **Annex1-Model 6**.

Model 7: Gabled Roof Transitional Shelter (Wooden Structure)

Category of Shelter:

Transitional Shelter

Materials:

Structure: Wood

Wall: Wooden plywood.

Roof: Corrugated metal sheets with a layer of insulation.

Distribution Protocol (per family):

This transitional shelter was designed to cover a surface area of 19.44 m^2 with a volume of 50.5 m^3. The size of the shelter is as follows: 3.6m in width, 5.4m in length, and 2.6m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:

The preferred modality for the implementation of transitional shelters is through contractors. This is because the installation of these shelters requires specific skills, as their designs are more complex compared to emergency shelters.

Suitable Context:

A gabled roof is more suitable for hot areas due to its higher elevation compared to an inclined roof. Additionally, it provides better drainage for rainwater. The wall materials and design can be customized based on community preferences, HLP issues, material availability, and the local climate. This catalog presents three different design options: plywood, cement blocks, and mud.

BOQs and Drawings:

Detailed BOQs and technical drawings are presented in **Annex 1 under Model 7**.

Model 8: Tihama Transitional Shelter (Wooden Structure)

Category of Shelter:
Transitional Shelter

Materials:
Structure: Wood

Wall: Wall: The upper part is from local thatch materials (Khazaf) – The lower part can be from wooden plywood, cement block or mud.

Roof: local thatch materials (Halfa or Thumam)

Distribution Protocol (per family):
This transitional shelter was designed to cover a surface area of 19.44 m^2 with volume of 54.4 m^3. The size of the shelter is as follows: 3.6m in width, 5.4m in length and 2.8m in height. The shelter area can accommodate a family of 5 members according to minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:
The preferred modality for the implementation of transitional shelters is through contractors. This is because the installation of these shelters requires specific skills, as their designs are more complex compared to emergency shelters.

Suitable Context:
This type of shelter is constructed using local materials that provide insulation from hot weather. The wall material (Khazaf) allows the breeze to pass through, creating a more comfortable environment inside the shelter. Therefore, this model is suitable for warm areas where local insulation materials like straws (Halfa and Khazaf) are available. These materials are commonly found in the west coast areas of Hudaidah and Taiz (Tihama and Mukha). The wall materials can be customized based on community preferences, HLP issues, and material availability. This catalog presents three different design options: plywood, cement blocks, and mud.

BOQs and Drawings:

Detailed BOQs and technical drawings are presented in **Annex 1 under Model 8**.

Model 9: Tihama Transitional Shelter (Bearing Wall)

Category of Shelter:
Transitional Shelter

Materials:
Structure: Bearing Wall of cement blocks

Roof: local thatch materials (Halfa or Thumam)

Distribution Protocol (per family):
This transitional shelter was designed to cover a surface area of 19.44 m^2 with a volume of 54.4 m^3. The size of the shelter is as follows: 3.6m in width, 5.4m in length, and 2.8m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:
The preferred modality for the implementation of transitional shelters is through contractors. This is because the installation of these shelters requires specific skills, as their designs are more complex compared to emergency shelters.

Suitable Context:
This type of shelter is suitable for the same context as the standard Tihama transitional shelter but features more durable wall materials. However, due to the heavy wall materials, some HLP challenges are anticipated with this design. Therefore, it is essential to carefully assess this design with the targeted community and landowners to mitigate potential risks.

BOQs and Drawings:
Detailed BOQs and technical drawings are presented in **Annex 1 under Model 9**.

Note:
Some partners implemented the same shelter design using mud-bearing walls, but these walls could not withstand heavy flooding. After evaluating the damage, it was recommended that mud-bearing walls can still be considered an efficient building material if constructed by skilled laborers and reinforced using traditional methods. For more information, please refer to the Yemen Shelter Profile - Local Building Cultures for Sustainable and Resilient Habitats.

Model 10: Transitional Shelter Caravan Structure

Category of Shelter:
Transitional Shelter

Materials:
Structure: Steel Hollow Sections

Wall and Roof: Corrugated metal sheets with a layer of insulation foam.

Distribution Protocol (per family):

This localized shelter was designed to cover a surface area of 18 m^2 with a volume of 40.5 m^3. The size of the shelter is as follows: 3m in width, 6m in length, and 2.25m in height. The shelter area can accommodate a family of 5 members according to the minimum sphere standard of 3.5m^2 per person.

1 Kit ≤ 5 *2 Kits (6 - 10)* *3 Kits ≥ 11*

Preferred Modality of Implementation:

Since the shelter structure consists of iron connected by welded joints, it is difficult for the community to implement this model. Therefore, the contractor implementation modality is recommended.

Suitable Context:

This design is suitable in desert-type locations where similar shelters are used by the IDPs such as in Marib.

Installation Steps:

The model was designed to be installed in two stages as follows:

First Stage: Manufacturing of Structure Sections and Shelter Cover:

This stage should be done by a contractor as follows:

The structure sections consist of welded steel sections. Therefore, the welding works are done as per the designs in specialized workshops that have expertise in welding works. Lastly, these manufactured parts are transported to the site with the other materials listed in the BOQs.

Second Stage: Installation of Shelter

The different parts of the structure are joined together to make one structure.

BOQs and Drawings:
Detailed BOQs and technical drawings are presented in **Annex 1 under Model 10**.

References

This document was developed to enhance the previous Yemen Shelter Cluster guidelines related to Emergency Shelters and Transitional Shelters. During the TWiG meetings, members reviewed documents developed by the Shelter Cluster in the country and incorporated lessons learned from similar contexts in other countries.

REFERENCE LIST:

- Tehama Emergency Shelter Kit Content
https://sheltercluster.org/yemen/documents/tehama-emergency-shelter-kit-content

- Enhanced Emergency Shelter Kit
https://sheltercluster.org/yemen/documents/enhanced-emergency-shelter-kit

- Technical Guidance for Transitional Shelter
https://sheltercluster.org/yemen/documents/technical-guidance-transitional-shelter

- Yemen Shelter Typologies 2020
https://sheltercluster.org/yemen/documents/yemen-shelter-typologies-2020

Annexes

- Annex 1 – Shelter Designs Catalogue & BOQs.
- Annex 2 – Installation of Emergency Shelter Designs.
- Annex 3 – White Termite Mitigation.
- Annex 4 – Tent Distribution Policy.

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