

Preliminary Assessment of the Pilot *Structure* Approach to Humanitarian Sheltering

Report Summary



Structure Test Unit, SEEDS, Kerala, India

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Aga Khan Agency for Habitat



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This summary is intended to provide an overview of the full report *Preliminary Assessment of the Pilot Structure Approach to Humanitarian Sheltering* (Better Shelter, 2021) and to outline its main findings and recommendations, in order to present strategic progress by the *Structure* project.

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Humanitarian Contribution

The assessment report is intended as a contribution by the *Structure* project to the humanitarian community, specifically the shelter sector, to inform the continuing evolution of emergency shelter building through previously acquired experience and knowledge.

The report has been informed by approaches and case studies that have been explored by academics, innovators, and humanitarian practitioners, presented in publications such as *Shelter After Disaster* (Davis, 1978), *The IFRC Shelter Kit* (IFRC, 2009), *Shelter Strategy* (SEEDS India, 2010), *Transitional Shelter Guidelines* (IOM and Shelter Centre, 2012), *AKDN Green Building Guidelines* (AKAH, 2020), *Emergency Shelter Standards* (UNHCR, 2021), *The Shelter Compendium* (GSC, 2021) and ongoing *Shelter Projects* compendia of case studies.

The *Structure* approach builds upon the 'transitional tent' approach, an evolution of the 'transitional shelter' approach by Shelter Centre. The approach uses local material and can adapt to local climate, contexts, and cultures. Transitional tents are movable and can be assembled quickly as temporary shelter for displaced and non-displaced populations during emergency and post-emergency reconstruction efforts.

The evolution of transitional tents was informed by the performance standards developed by Shelter Centre following broad sector consultation, and then published in *Tents* (UN/OCHA, 2004). Research into the building physics specific to transitional tents has also been carried out in collaboration with the Department of Engineering of the University of Cambridge.

1. The *Structure* Approach

1.1 Introduction

Better Shelter is a social enterprise that develops and provides temporary emergency shelters for people displaced from their homes due to armed conflicts and natural disasters. As part of its efforts, Better Shelter developed and launched the *Structure* (Better Shelter, 2021) approach, building upon a proven 17.5 m² modular emergency shelter frame, intended for up to five persons, developed with reference to *The Sphere Handbook* (Sphere, 2018) for humanitarian use. *Structure* aims to provide a rapid deployment solution of robust materials for emergency shelters in diverse contexts.

The design aims to empower local communities by allowing localised upgrades upon the restoration of supply chains and access to materials in the region. Moreover, the *Structure* shelter design aims to introduce a sustainable dimension to transitional shelters by enabling dismantling and repurposing of the frame and tarpaulin. Additionally, the flexibility of *Structure* aims to address long-term transitional contexts, combined with localised solutions and workforce.

The *Structure* approach offers a proven metal frame for humanitarian shelter, capable of being stockpiled and light enough to be airlifted or hand-carried, which is later upgraded with local materials, to adapt to culture, climate and context. The local materials used may be selected from the bills of quantity needed for the parallel repair and reconstruction of permanent housing, offering transitional accommodation with dignity over these processes.

The transitional approach was proposed as a form of assistance for displaced and non-displaced populations, an experience often delayed due to constraints faced around ensuring housing, land, and property rights. Since transitional shelter can be relocated, it therefore can provide immediate and continuous support as reconstruction efforts continue.

1.2 Pilot Project Design Phase

As part of an ongoing design development process, Better Shelter has implemented pilot projects with partner organisations, to test the opportunities and challenges of the *Structure* sheltering approach in the context of Afghanistan, India and Tajikistan. Better Shelter collaborated with Aga Khan Agency for Habitat (AKAH) in Afghanistan and Tajikistan, along with the Sustainable Environment and Ecological Development Society (SEEDS) in India. The partner organisations were involved from an early stage and participated in the planning, deployment and testing phases of the *Structure* approach, serving as a valuable source of information and collaboration for the Preliminary Assessment. Each partner organisation received 15 *Structure* units per location. These units were then tested for both tarpaulin and local material upgrades.

During this pilot phase, focus was placed on adapting the *Structure* units, using local materials and solutions available in the cultures, climates, and contexts in which they were being built. These solutions were explored collaboratively between partners and Better Shelter, relying on the partners' invaluable experience and knowledge of local contexts. Consideration was also given to the dismantling of *Structure* and repurposing of constituent materials. There is indication of reusability of these materials, however, this was not proven in this pilot phase. While still in the design phase, the *Structure* project sought to form a better understanding of the transitional tent approach, by examining aspects of the project as the reuse of materials in longer-term housing, possibilities for reparability, and potential environmental benefits. The first pilot project with partners has ended and Better Shelter is in the process of scaling up and onboarding further partners.

2. The *Structure* Preliminary Assessment

The objective of the Preliminary Assessment of the pilot *Structure* approach to humanitarian sheltering was to assess the *Structure's* ability to support incremental, local, and beneficiary-driven shelter processes in contexts where local materials were not available or readily accessible at the onset of emergencies.

This objective was achieved by conducting two assessments targeting respondents that were directly involved in managing and building the *Structure* units in Afghanistan, Tajikistan, and India. The assessments were developed and conducted by Shelter Centre, in consultation with Better Shelter and its partners.

The ‘Sphere Coherence Assessment’ was developed to explore the overall consistency of *Structure* with the guidance set out in *The Sphere Handbook 2018*, without in any way inferring adherence, as well as to identify the weaknesses and vulnerabilities of the shelter design and process. It focused on the use of tarpaulin and was developed to inform Better Shelter on how *Structure* performs in an emergency and post-emergency context, where plastic sheeting has been used to cover the frame.

The ‘Design Process Assessment’ was divided into two sections. It focused on the use of local materials to upgrade the *Structure* and was developed to inform Better Shelter on how the *Structure* frame performs in a transitional context, in which local materials are used for an upgrading process and in combination with or in substitution of the tarpaulin sheeting.

3. Summary of *Structure* Project Assessment Findings

The key conclusions presented in this section are derived from the *Preliminary Assessment of the Pilot Structure Approach to Humanitarian Shelter* to present strategic progress on the *Structure* project. Additional conclusions and recommendations can be found in the main report.



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3.1 Performance of *Structure* in Emergency Contexts

The *Structure* has proven to perform well in different cultural and climatic contexts. The assessments showed that it can be easily clad with tarpaulin and supports well, the addition of locally sourced materials, to adapt it further to those operational contexts. Protection was achieved against extreme temperatures, water, and vectors.

Varied ground conditions across local contexts prompted construction teams to adapt local methods of site preparation prior to assembling *Structure*, hence the need for further guidance on assessing site locations and natural hazards (see *Section 8.1.1* of the full report).

Respondents indicated that the transportation of the *Structure* boxes to their final destination of construction was relatively smooth and without significant problems given the structure's compact size and reduced weight, ideal for airlifting and stockpiling (*Section 8.3.4*).

Furthermore, the *Structure* frame was easy to build due to comprehensive assembly manuals and a training of trainer approach involving the community and allowing them to build, take ownership, and maintain the structures themselves (*Section 9.3.1*). *Structure* frame has performed well in being incrementally upgradeable and adaptable to different climates, contexts, building traditions, and cultural norms.

3.2 Performance of *Structure* in Post-Emergency Contexts

In post-emergency contexts, the *Structure* has proven to perform well and demonstrated with ease the ability to be upgraded using locally available materials.

Persons With Special Needs (PWSN) found *Structure* to be generally accessible, given the flexibility in the placement of doors and number of openings (see *Section 9.1.3* of the full report). However, respondents expressed the need for further guidance on combining tarpaulin with local materials to make upgrades to the *Structure* to better accommodate disabled persons, and to make it more liveable in different climatic contexts. Furthermore, respondents indicated the need for strategic positioning of windows and doors to improve ventilation (*Section 9.1.4*).

3.3 Performance of *Structure* in Transitional Contexts

The *Structure* has demonstrated its potential to perform well in transitional contexts, where local materials used to improve the performance and appropriateness of the *Structure* to culture and climate can later be re-used, or upcycled, into permanent housing being repaired or reconstructed.

Decisions on local materials to be used when upgrading *Structure* are able to be made later in the shelter's lifespan, together with beneficiary communities, while *Structure* as an emergency solution is still in use throughout the recovery phase.

Local materials used to make upgrades to the *Structure* were chosen on the basis of being locally and readily available, easy to install, capable of providing thermal comfort, being affordable, and being suitable for re-use in the repair or reconstruction of permanent housing. Furthermore, the frame has performed well in being incrementally upgradeable and adaptable to different climates, contexts, building traditions, and cultural norms (see *Section 9.2.1* of the full report).

3.4 Scaling up of *Structure*

The *Structure* pilot project intends to continue to gather data on various implementations in different contexts, and to continue to share findings with the broader humanitarian community (see *Section 8.2.4* of the full report).

Further research or an extension of the pilot phase, is recommended, in order to understand the transitional opportunities offered by selecting materials which can subsequently be upcycled, as part of repair and reconstruction activities of permanent housing.

Respondents indicated that having a WASH facility within their shelter is very important and suggested that the gable ends of the *Structure* could be extended to support a veranda to create spaces for cooking, socialising and WASH facilities. A key aspect across all interviews was the need for a quick-to-assemble solution, on a temporary basis, whereas more permanent latrines could be built later, in combination with the local materials upgrade phase (*Section 8.2.5*).

Concerning the construction process, respondents stated that the virtual training provided by Better Shelter was invaluable and that construction guidelines were found to be comprehensive and easy-to-follow. They also stated that virtual simultaneous training of unskilled workers may be needed, as well as additional print out graphics could be used as guidance for beneficiaries in emergency contexts with limited resources and capacities (*Section 8.3*).



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