CASE STUDY

AFGHANISTAN 2022-2024 / EARTHQUAKE

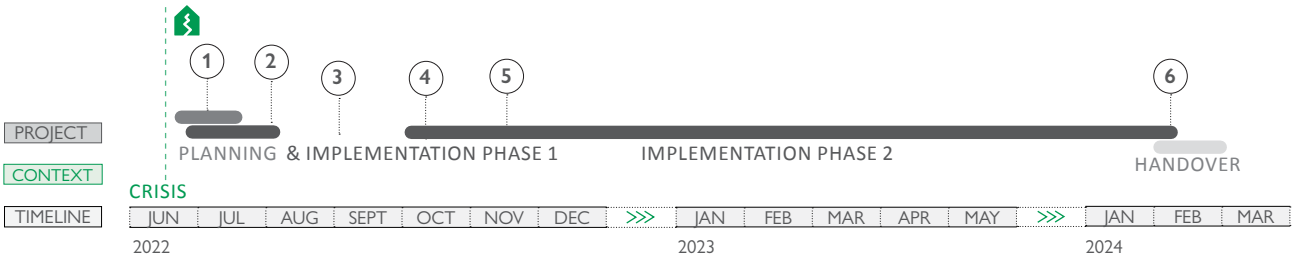
CONTEXT / SETTLEMENT | SHELTER TYPE | SUPPORT METHODS

CRISIS	Earthquake in Paktika and Khost
PEOPLE AFFECTED	100,000 people affected*
PEOPLE DISPLACED	21,000 people displaced*
PEOPLE WITH SHELTER NEEDS	100,000 individuals* 7,358 houses destroyed 8,027 houses partially damaged
PROJECT LOCATION	Paktika and Khost Provinces
PEOPLE SUPPORTED BY THE PROJECT	4,959 HH through shelter repairs
PROJECT OUTPUTS	4,959 shelters repaired or reconstructed 83 skilled masons trained
SHELTER SIZE	30 m² Shelter repair or reconstruction
SHELTER DENSITY	~ 4.3 m² per person (average family size of 7)
DIRECT COST	USD 2,620 for shelter reconstruction USD 1,310 for shelter repair
PROJECT COST	USD 3,332 per HH (reconstruction) USD 1,665 per HH (repair)

* *Multisectoral Rapid Assessment Form (MSRAF)*

PROJECT SUMMARY

The project supported earthquake-affected households to rebuild safer homes using locally accepted construction methods and materials. Through a coordinated cash-for-shelter approach, families reconstructed or repaired vernacular houses using Paskha and mud brick designs adapted to improve seismic performance and reduce future risks. The response combined technical guidance, standardized safer-construction details, and community-based rebuilding practices, enabling households and local masons to lead reconstruction while preserving cultural appropriateness and familiar compound layouts. The project demonstrated how vernacular architecture, combined with targeted risk-reduction measures and coordinated technical support, could provide culturally appropriate, scalable and more resilient shelter solutions in remote, resource-constrained environments.



Jun 2022: Major displacements following the earthquake in Paktika and Khost provinces.

1 **Jul 2022:** Funding approval.

2 **Jun-Jul 2022:** Multisectoral assessments and the provision of emergency shelter and NFI to affected families.

3 **Sep 2022:** Shelter technical assessment and beneficiary selection.

4 **Oct 2022:** Transitional shelter repair and reconstruction began; first instalment distributed to affected villages.

5 **Nov 2022:** Training for masons conducted.

6 **Feb 2024:** Transitional shelter repair and reconstruction completed; final instalment disbursed to beneficiaries.

An initial diagnostic following the earthquake revealed common causes of failure, such as rooftop overload and wall bonding issues, for both stone and mud masonry.

CONTEXT

On 22 June 2022, a 5.9 magnitude earthquake struck southeastern Afghanistan, causing widespread destruction across rural districts in Paktika and Khost. The event left 1,036 people dead and 2,949 injured, and it damaged or destroyed thousands of homes as well as essential local infrastructure. The urgency of the shelter response was shaped by extreme seasonality—very cold winters and hot summers—and by the geography and access constraints that limited movement and supply lines. In many locations, travel between provinces required crossing a riverbed passable only at low water or traversing steep, pine covered terrain along the international border with Pakistan. In parallel, the political environment demanded close coordination with de facto authorities to validate caseloads and authorize implementation.

SITUATION BEFORE THE EARTHQUAKE

Before the earthquake, housing in the affected districts was largely of vernacular construction, including mud and Paskha walls and stone masonry. Some buildings benefited from good construction practices and local craftsmanship, but many were self built without technical oversight, and the understanding of good building practices varied considerably across affected households. As a result, typical weaknesses, such as insufficient wall bonding, poorly executed connections and vulnerable roof assemblies, were common in the local housing stock. The area had experienced flooding and heavy snowfall in the years preceding the earthquake, but nothing approached the scale or severity of the seismic event. These pre existing conditions and construction patterns influenced both the nature of the damage and the strategy for recovery.

SITUATION AFTER THE EARTHQUAKE

The earthquake struck a social fabric organized around family compounds: multiple related households living within a walled enclosure. In these settings, privacy and the control of space are central to daily life, especially for women who are seldom present outside the compound. In this context, damage to boundary walls and house to wall interfaces disrupted more than structures; it disrupted social organization and daily routines.

Damage patterns were consistent, including collapsed wooden plank roofs; failure of boundary walls often built very high and long without lateral support; rooftops overloaded with thick waterproof clay that gave way; weak connections between boundary walls and house walls which led to propagation of failures; and poorly bonded stone masonry and mud bricks without adequate overlaps contributing to widespread collapses. These failure mechanisms became the technical compass for reconstruction priorities.

In the immediate aftermath, no humanitarian actors were present in the area; neighbors and surrounding communities provided initial support. Many families, traumatized by the event and fearful of aftershocks, hesitated to return to affected homes. The scale of need, with 7,071 houses for repair and 7,715 for full reconstruction, required a strategy that was both technically robust and locally executable.

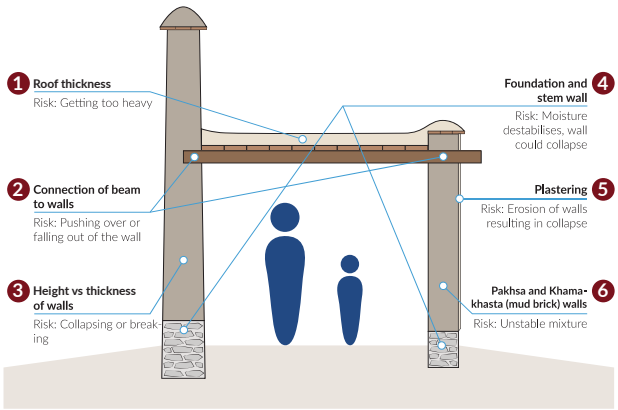
NATIONAL SHELTER RESPONSE

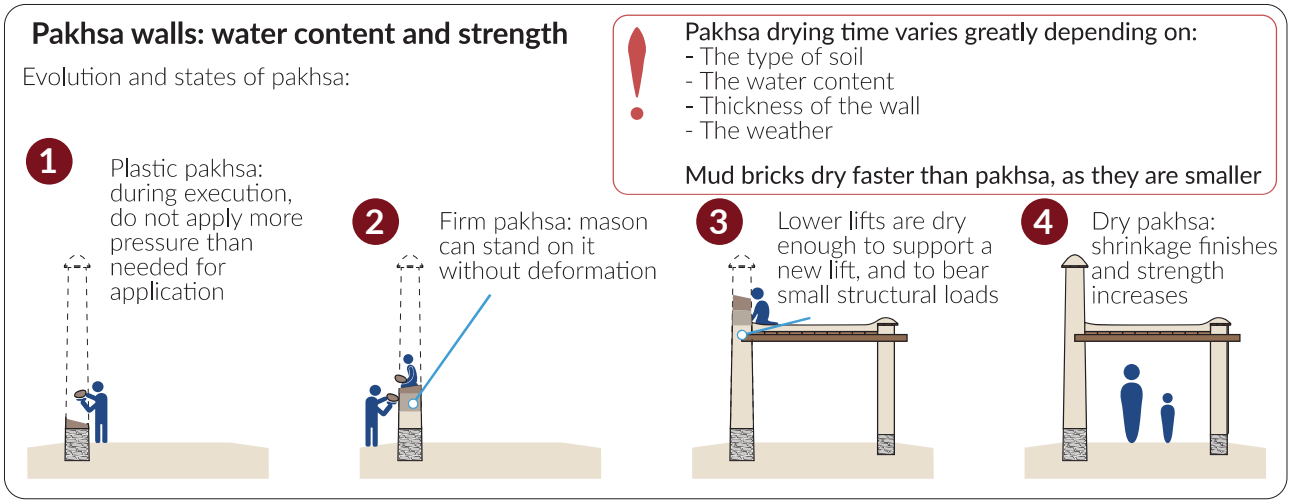
Joint multisectoral assessments conducted in June and July framed a two track response:

- Immediate relief through distributions of tents, tarpaulins, kitchen sets and shelter repair kits by implementing organizations under shelter cluster coordination.
- Early recovery planning through technical assessments to identify suitable longer term shelter solutions that aligned with local practice and were feasible to implement before winter.

This approach balanced urgent lifesaving support with accelerated design and decision making for durable shelter, recognizing the short window before cold weather would severely limit construction.

Over 30 organizations operated from humanitarian hubs in three affected locations: Paktika, Barmal, and Khost, to facilitate humanitarian access and responses.



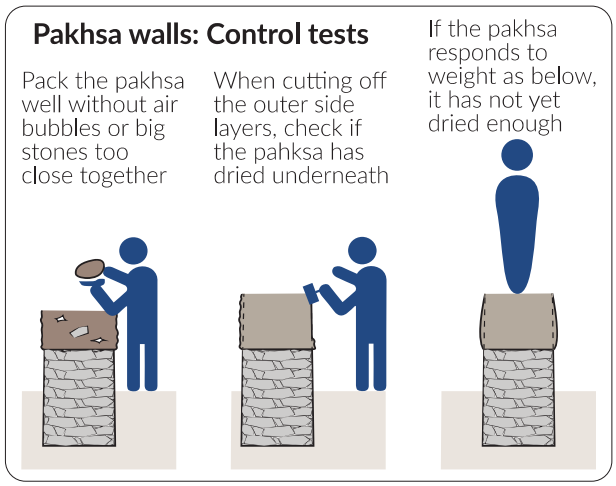


Key messages were developed to standardise assistance and focus on the most important improvements based on the common failure mechanisms observed.

PROJECT STRATEGY

The shelter community, operating through the active cluster, anchored the design strategy in vernacular architecture. Actors analyzed houses that had performed comparatively better and developed a standardized, two room house using Paskha and mud brick walls. The decision to standardize around a familiar typology was deliberate: it preserved cultural fit, employed locally available materials and skills, and provided a common technical reference to guide consistent quality across implementers and districts.

Critically, the strategy hinged on markets. Once functional markets were confirmed, the cluster agreed to pair the standardized design with a cash for shelter package. Cash respected the self build tradition, leveraged the existing construction economy and supported early recovery by keeping expenditures local. At the same time, the common design functioned as a quality safeguard, focusing attention on the construction details most associated with observed failures, so that risk reduction could be practical, visible and locally achievable. These details were interpreted into key messages and technical training to local masons and engineers involved in the post-earthquake activities.



Vernacular techniques were supported through the project, accompanying simple instructions and illustrations for local masons and households.

PROJECT IMPLEMENTATION

Implementation proceeded in phases, integrating coordination, technical scoping and modality decisions:

- **Coordination and approvals:** Given the sensitive operating environment, multiple coordination meetings with de facto authorities were convened to confirm caseloads, formalize approvals and clarify implementation arrangements. This step was essential for safe, predictable access in remote localities.
- **Technical scoping and diagnostics:** Field teams documented structural damage, compound layouts and construction practices, gathering the evidence that shaped the standardized design. The same diagnostics that identified roof collapses, unsupported boundary walls and weak connections provided the priorities for improvement within the vernacular method.
- **Modality and supply chains:** With markets confirmed, cash for shelter was adopted to allow households to source materials and local labor under the standardized construction approach. This reduced logistical burdens in areas where roads, riverbeds and mountain crossings limited movement and made centralized supply risky or slow.
- **Phasing from relief to reconstruction:** Immediate distributions of temporary shelter items and essential household items, followed by the provision of three months of rental cash assistance stabilized families while reconstruction planning and resource mobilization advanced in parallel. The timeline for repairs and reconstruction aimed to complete as much as possible before winter.
- **Social fit and compound logic:** Implementation explicitly recognized the centrality of boundary walls and compound arrangements to habitability. Restoration of the compound together with the dwelling was framed as integral to a successful shelter solution, enhancing community acceptance and engagement.

Focusing on connections, wall bonding and roof assemblies – where failures concentrated – yielded safety gains through modest, locally achievable enhancements.

Upon the initial assessments conducted, 2.620 USD were assigned for reconstruction, and 1.310 USD for repair cash packages that were provided in three instalments:

- the first instalment (20%) covered foundations and stone masonry level;
- the second instalment (50%) for walls construction;
- the final instalment (30%) was provided for roofing and finishing of the shelter.

Percentages were later reviewed to ensure families met the required progress criteria to qualify for the next instalment.

Affected families, having lived on their lands for years, rebuilt on the same plots without significant land ownership issues.

The two implementing organizations offered technical and financial support, while communities managed material procurement, labor hiring, and proper use of cash assistance to complete their shelters.

TARGETING

Targeting followed an inter agency process aligned with the shelter cluster and engaged de facto authorities to validate caseloads. Prioritization hinged on the nature and severity of housing damage, distinguishing cases feasible for repair from those requiring full reconstruction. This triage approach matched the technical solution and cash modality to the household's situation and aimed to ensure that works could be completed safely and appropriately before winter.

Further, main priority was given to severely damaged shelters, as well as to vulnerable groups such as persons with disabilities, low-income households, displaced families, and female-headed households.

COMMUNITY ENGAGEMENT

Community dialogue was essential in a context marked by trauma, aftershocks and hesitation to re-enter damaged homes. Shelter teams explained the sequencing from temporary assistance to safer reconstruction, emphasizing technical solutions rooted in local typologies and materials. Engagement highlighted how specific safer building details, especially at connections, roof assemblies and boundary interfaces, would reduce risk while preserving the familiar form and function of the compound.

This approach helped build confidence and acceptance, while positioning local masons and households as the principal actors in rebuilding.

The importance of the compound life was understood and supported by the project, which included boundary walls and clustered configurations in the reconstruction.

While community dialogue was essential to build trust, female participation in the project was limited, due to contextual norms as well as organizational limitations.

TECHNICAL APPROACH

VERNACULAR CONTINUITY

The two room house design used Paskha and mud brick and followed familiar layouts, enabling local builders to execute works and households to monitor quality. Cultural and practical continuity increased adherence to safer techniques.

TARGETED RISK REDUCTION

Damage diagnostics guided where improvements were most needed and most impactful, and these were specified to be achievable with local materials and skills. The main improvements focused on strengthening wall bonding, improving wall-to-wall and wall-to-boundary connections, and securing roof assemblies to prevent collapse.

SEASONAL FEASIBILITY

Works were scoped to meet winter deadlines, reflecting material availability, labor capacity and access conditions. The combination of cash and a standardized design supported rapid mobilization and consistent execution despite logistical constraints.

MONITORING, ACCOUNTABILITY AND LEARNING

Post-distribution monitoring reports were developed to continuously grasp the community feedback and allow course adjustments throughout the implementation. The documents consolidating the technical messages were designed aiming to standardize guidance across field teams and to translate the construction process into clear, actionable instructions for households and masons, which reinforced consistent implementation.

COORDINATION

Response coordination was established at multiple levels: Kabul (cluster), field (UN humanitarian hubs), and community (local/village shura). The shura gathered community feedback, relaying it to the field and Kabul clusters to address gaps, prevent overlap, and maintain a consistent, harmonized shelter strategy. Frequent site visits by various organizations were conducted to monitor construction quality, ensuring standards were met and providing onsite technical support and feedback.

The shelter cluster provided the forum to agree on technical standards, assistance modalities and timelines. The coordination platform helped avoid duplication, ensured a consistent technical message across organizations and districts, and linked operational decisions to the broader multi sector response. Simultaneously, engagement with de facto authorities ensured alignment on caseloads and approvals. These two levels were indispensable to timely delivery and quality control under access constraints.

The project also trained 83 local masons in vernacular construction techniques.

DISASTER RISK REDUCTION AND SAFER CONSTRUCTION

While the earthquake was the immediate hazard to be addressed, the affected provinces also faced regular flooding and heavy snowfall. The proposed construction techniques, though anchored in seismic learnings, targeted wall integrity, connections and roof performance that contribute to resilience in multiple hazard scenarios, with enhanced masonry levels protecting from floods. By focusing on details that local masons could execute and households could supervise, safer construction practices were more likely to be sustained in routine repairs and future works, enhancing multi-hazard resilience through the reconstruction process. Additionally, where applicable, the positioning of shelters was advised by the project organizations to avoid landslide risks.

Key messages and recommendations were developed in coordination with the Shelter Cluster, targeting both the community and implementing actors to address unsafe construction practices. These covered critical issues such as excessive soil loading on roofs, disconnected roof beams, improper wall dimensions, detached foundation stones, wall erosion, and inadequate soil work for walls and roof covers.

CHALLENGES

In terms of accessibility and logistics, physical access was limited, and basic facilities like schools, clinics, and markets were unavailable in the initial phase. There were no water supplies or access roads, movement was restricted to riverbeds, and relocations within mountainous areas were difficult due to the rugged terrain. Additionally, accessing stone for masonry was challenging because tribal and government land divisions restricted access to the building materials. Transporting materials on donkeys added further logistical difficulties.

Despite the wide presence of vernacular typologies in the project areas, communities lacked knowledge about construction of vernacular structures and risk awareness, which required significant sensitization efforts from the implementing organizations. Since the implementation started in October, winter conditions slowed progress, as Paskha walls and mud bricks needed a longer period to dry, while some families also had to wait for skilled masons to build their houses.

ENGAGEMENT OF WOMEN

The communities were conservative and restrictive regarding female participation, so extra efforts were needed to engage women. For instance, an additional assessment was conducted to gauge female household members' awareness and feedback on the shelter project. At the time, one of the project organizations lacked female shelter staff to interact with women, so the shelter team consulted female staff from other units and requested them to conduct a quick assessment. This aimed to consult women at the household level to gather feedback on the layout and implementation and provide a platform for voicing concerns about the design. A key finding was that women were open to participating in construction or repair training, provided it aligned with local social and cultural norms. However, limited training opportunities for women had an impact on their participation, and was later exacerbated by the decree restricting women from working with NGOs and the UN, which came during the project period.

OUTCOMES AND WIDER IMPACTS

The primary outcome of the shelter strategy was to align actors and communities around a feasible pathway to safer reconstruction that households recognized as their own. The combination of a standardized vernacular design and cash for shelter in functional markets allowed families to mobilize quickly, using local supply chains and labor, while incorporating risk reducing details that directly addressed observed failures following a build-back-better approach.

By explicitly integrating compound restoration—particularly boundary walls—into shelter planning, the approach supported not only structural safety but also the restoration of privacy and social order foundational to daily life in the affected districts. The standardized design served as a common reference across agencies, which reinforced coherence and quality in a challenging operating environment.

HANDOVER AND SUSTAINABILITY

Sustainability was pursued by anchoring safer construction in familiar forms, materials and techniques, rather than introducing a novel typology. Because local masons and households executed the works with local materials, the safer details embedded in the standardized design are more likely to persist in routine practice after program handover. In districts with no pre earthquake humanitarian presence, this alignment between cluster standards and local building culture was fundamental to enduring impact: as households completed and maintained their homes, they and their builders carried forward safer techniques into future repairs and new construction.

The cash-based response enabled households to source materials and labour locally, while the organizations supported with technical assistance.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

√ **Cluster endorsed standardization rooted in vernacular practice.** The shared design provided a common technical reference across shelter actors and districts, preserving cultural fit while clarifying safer building details that addressed observed failures.

√ **Cash for shelter aligned to functional markets.** Once markets were confirmed, cash enabled households to source familiar materials and hire local masons, accelerating early recovery, strengthening local economies and improving feasibility.

√ **Compound oriented planning that restored privacy and social order.** Treating boundary walls and house to wall interfaces as integral to shelter solutions supported habitability in culturally appropriate ways, increasing acceptance and day to day use.

√ **Diagnostics driven technical priorities.** Systematic attention to roof assemblies, wall bonding and connections, based on field observed failure patterns, focused resources on the highest impact improvements achievable with local skills and materials.

√ **Phased delivery from immediate support to durable shelter.** Early distributions of temporary shelter and essential NFIs stabilized families while reconstruction planning advanced in parallel, reducing delays to winter ready solutions.

√ **Documentation and learning tools in place.** The post distribution monitoring and codified technical messages stressed an intentional learning and accountability loop, reinforcing consistent field practice and informing adaptive management.

WEAKNESSES

× **Uneven construction knowledge and self build variability.** Widespread self build without technical oversight meant variable execution quality, even under a standardized design, requiring sustained guidance and supervision to achieve safer details.

× **Seasonal exacerbated challenges.** Starting implementation at the beginning of winter extended the project timeline, as constructing Paskha walls was difficult in cold weather. The decision to allocate funding for rental assistance came too late, since actual implementation only started after the peak winter months.

× **Uncoordinated approaches.** Despite the strong role of one of the project organizations in the Cluster, some of the other shelter actors introduced new design packages and used contractors to build shelters. This caused confusion among communities about the most suitable designs for the area, and required multiple focus group discussions to explain the benefits and strengths of vernacular designs.

× **Norms driving higher risk boundary walls.** Common practices of long, high, unsupported boundary walls increased structural risk; reconciling risk reduction with entrenched social expectations was complex and time consuming.

× **Limitations on female work.** Despite some efforts, the lack of training opportunities for female community members limited their participation in response activities in many areas.

FURTHER READING ON SHELTER PROJECTS

On Afganistan: SP 2008 / B.01 / 2002; SP 11-12 / A.01 / 2012.

On earthquake response: SP 11-12 / A.12 / HAITI 2010; SP 2010 / A.17 / MALAWI 2009; SP 17-18 / A.18 / NEPAL 2016-17.

LESSONS LEARNED

- **Build safer reconstruction around what communities already know and value.** The choice of vernacular architecture proved suitable and appropriate, as many people reused old building materials like soil, doors, windows, and wooden planks to rebuild their shelters.
- **Pair cash with a clear, shared technical solution.** Cash for shelter leveraged local markets and skills, providing families with significant flexibility, allowing them to directly manage implementation, unlike approaches that relied on contractors.
- **Treat enclosure as a core requirement, not an accessory.** In compound settings, boundary walls are central to habitability. Planning and budgeting must accommodate their restoration alongside the dwelling fabric.
- **Decide early, to beat the season.** When winter deadlines loom, early consensus on modality, design and case-load is pivotal to avoid bottlenecks and to keep households on a viable reconstruction timeline. Advocate early for rental assistance to start as soon as possible to cover the winter months when construction is on pause. If planned earlier, it could have allowed communities to begin construction after the season.