

# Humanitarian Innovation Fund

Communicating Technical Evidence: supporting people making decisions about shelter after disasters

## Technical evidence after disasters: a review of documents from Haiti, Peru and Pakistan

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## Executive Summary

Technical evidence provided at the right time, addressed to the right audience in a digestible form underpins the feasibility of developing humanitarian shelter responses that enable people affected by disasters to lead their own recovery. The value of this evidence does not come from injecting new technical solutions but from understanding the local situation pre-disaster, the drivers of vulnerability, local capacities and by encouraging technical teams to work alongside government, householders and builders to develop support that is locally appropriate.

The challenge is how to combine humanitarian resources with technical evidence so that alternative shelter support, led by affected families, can be developed rapidly after a disaster. This requires a fresh look at the collection and communicating evidence about hazards, damage and needs after disasters.

This project brings together CARE, Arup and UCL in “peace time” to look at how to combine their work to make it more than the sum of its parts. This analytical report is a key output and draws on the experience and expertise of academics, consulting engineers and shelter staff from a non-governmental (humanitarian) organization. The audience for this report are the consortium team’s peers in the shelter sector: the organisations that participate in the Shelter Cluster and fund the shelter response and the engineering and research teams from whom humanitarian shelter organisations seek advice.

The consortium team pooled the technical evidence that they typically produce or refer to. The review of these documents allowed a categorisation of the evidence in terms of their producers and users as follows:

- Produced or used by Humanitarian Shelter Organisations (HSO) in response to a specific disaster: standalone maps and images and humanitarian project documents (assessments, plans and process evaluations);
- Produced or used by researchers engineers, development banks and the international private sector in response to a specific disaster: technical assessments such as damage assessments, risk or hazard assessments, diagnostic or advisory reports, exploratory/experimental reports
- Produced or used by Humanitarian Shelter Organisations (HSO) for learning or knowledge management: case studies and procedural guidelines
- Produced or used by the built environment sector for learning or knowledge management: design criteria such as structural design parameters, building codes, general design briefs, general construction principles, instruction manuals, standard designs and design options catalogues

This collection of documents was reviewed against criteria that checked the format and contents. The document formats were checked for clarity, timeliness, the level of detail (or the “zoom” on maps) and the focus of analysis. The content was reviewed against whether it answered questions about the humanitarian priorities to inform humanitarian decisions and plans (who is affected, where are they and how many/how much need is estimated?) or shed light on housing and sheltering processes before and/or after the disaster (how and why is housing damaged?).

These results suggest that the challenges of communicating technical evidence to technical ministries and planners in the humanitarian shelter sector are confounded by the form and content of the evidence typically generated and accessed by researchers, engineers and humanitarian organisations. The results also suggested that this poor communication negatively impacted efforts to develop, with affected people, the types of humanitarian support that will enable and inform their own processes of shelter response and recovery. This visual analysis allows the problem to be broken down in terms of:

- Gaps: technical evidence that was not available to the consortium team
- Marriage: filling each other’s gaps where the technical evidence is gathered by different members of the consortium at the same time

- **Synthesis:** extracting relevant evidence from different types of documents, produced at different times and at different scales of resolution and focus

The recommendations and further work are organised under the same headings:

**Gaps:** funding proposal (aimed at research funders) to research and consolidate experiences of post-disaster repair and retrofit projects in terms of how funding was secured, policies and standards were set, assessments and projects were designed and appropriate technical approaches were adapted to the specific pre and post disaster settlement, housing and shelter processes

**Marriage:** funding proposal (aimed at humanitarian donors) to design and implement joint humanitarian and engineering assessments that are designed to answer the core questions of who, where, how much need/how many in need and why and how people have been impacted, at an early stage.

**Synthesis:** funding proposal (aimed at donors with an interest in context analysis, evidence, value for money and impact) to develop and implement models of working within the research, engineering or humanitarian community that support the synthesis and interpretation of technical evidence building on the tools currently used:

- **Longitudinal and impact studies:** include in (currently scant) studies of the longer term, broader scale impacts of humanitarian intervention, a review of the strategic decision-making or process, strategic decisions and evidence used.
- **Planning Surge capacity and Secondments:** review the types of staff and teams required at a strategic level inside governments/ministries/international community to understand and integrate social and technical information, estimate cost of this support and draft Terms of Reference.
- **Shelter Cluster and Technical Working Groups:** test and develop with the Shelter Cluster options for interpreting and using technical evidence in strategic decision-making and training for Shelter Cluster Technical Co-ordinators and their Working Groups on (participatory) methods for procuring, compiling and communicating technical evidence.
- **Map-making:** test out possibilities for shared, common map platforms using open source software, geo-referencing images and/or automated/crowd sourced rapid analysis of scale by damage level and housing typologies and locations; and automated/app based or wiki-style rapid description and diagnosis of damage based on “ground photos” as well as remote sensing; rapid techniques for assessing housing processes, housing land and property, livelihoods and markets.

## 1. Introduction

When a major destructive earthquake strikes, the national government may decide to invite the international humanitarian community to help in the response. The international humanitarian response is coordinated by sector which means that in disasters where thousands of homes have been destroyed, humanitarian shelter organisations would participate in the Shelter Cluster. The Shelter Cluster is the coordinating entity for the shelter sector and is convened by the International Federation of the Red Cross, after natural disasters and by UNHCR in conflict situations. The Shelter Cluster works with the government, donors and humanitarian shelter organisations to estimate needs and plan a response.

International humanitarian shelter organisations try to respond with a range of options to achieve the best match with what people need to survive and what they might want to do next, while recognising that people are affected by disasters in different ways. In the rush to help, however, it is difficult to be quick, cover a large population and provide different types of support to people in different situations.

The response is also happening in the face of damage and destruction that reinforces the view that the ways people went about building before the disaster made their homes extremely vulnerable. This often means that humanitarian organisations are unwilling or unable to provide the types of support that enable

people to lead their own recovery by fixing their own temporary shelter, repairing their dwellings or even building new homes as quickly as they might like. Instead, the tendency is to provide shelter kits, designed to enable the structure to be modified over time, rather than methods of assistance which enable other activities in the sheltering process. Humanitarian organisations that are able to find ways to enable other activities have an opportunity to expand the range and scale of shelter assistance after disasters. Alternative assistance methods that can be scaled up quickly must be based on the effective sharing of technical information and includes mass communication to households, technical advice, training for builders and modest financial support to help people get started. The challenge is how to combine humanitarian resources with technical evidence so that alternative assistance, led by affected families, can be developed rapidly after a disaster.

Technical evidence provided at the right time, addressed to the right audience and in a digestible form underpins the feasibility of deploying the alternative methods of assistance mentioned above. However, this is currently difficult to find. The value of the evidence does not come from injecting new technical solutions but from understanding the local situation pre-disaster, the drivers of vulnerability, local capacities and encouraging technical teams to work alongside government, householders and builders to develop assistance that is locally appropriate. This requires a fresh look at the collection and communicating evidence about hazards, damage and needs after disasters with a view to developing humanitarian assistance that is matched with the priorities of disaster affected people.

This project brings together CARE, Arup and UCL in “peace time” – while not responding to a major disaster – to look at how to combine their work to make it more than the sum of its parts. By drawing on the experience and expertise of shelter staff from a non-governmental (humanitarian) organisation, academics and consulting engineers the project aims to produce:

- an analytical report reviewing the technical evidence available after earthquakes in Haiti, Peru and Pakistan (this document);
- a policy brief addressed to shelter sector decision makers and
- a roadmap for testing and implementing the findings.

The audiences for this report are the consortium team’s peers in the sector: the organisations that participate in the Shelter Cluster and fund the shelter response and the engineering and research teams from whom humanitarian shelter organisations seek advice.

The project creates a rare opportunity for these organisations to work together and reflect outside the frenzy of the post-disaster response. It is hoped that this process will generate a shared understanding of what sort of analysis is useful to different groups and to rehearse a collaborative relationship. The team regards the process as being as important as the product.

## **1.1. Problem Description**

Both recent and longstanding analyses of the humanitarian shelter sector point to three recurring problems that have an impact on funding flows, decisions, organisation and practical humanitarian assistance:

- The inability of the shelter sector to reach expert consensus on technical standards during the emergency phase<sup>1</sup>;
- A lack of pre- or post-disaster diagnosis of known weaknesses in the built environment in selecting and organising humanitarian shelter projects<sup>2,3</sup>; and

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<sup>1</sup> HERR, ed., “Humanitarian Emergency Response Review” (Independent Review Panel Chaired by Lord (Paddy) Ashdown, March 2011), <http://www.dfid.gov.uk/Get-Involved/Disasters-and-emergencies/Humanitarian-Emergency-Response-Review/>.

<sup>2</sup> Ian Davis, “What Have We Learned from 40 Years’ Experience of Disaster Shelter?,” *Environmental Hazards* 10, no. 3–4 (2011): 193–212, doi:10.1080/17477891.2011.597499.

- Limited acknowledgement or understanding of the reality of shelter processes and building practices<sup>4</sup>.

In the context of earthquakes, these problems should be of particular concern to the engineering community. The period after a devastating earthquake is a time when people who have been trained to understand the dynamics of earthquakes and structures, diagnose damage to buildings or work out some of the processes, activities and costs associated with building could genuinely contribute. This contribution is more valuable to disaster response and recovery when it complements local knowledge and the efforts of affected communities to face their predicament.

As the sector makes progress on these fronts, the challenge will be to bring forward the funding and capacity to support people to repair and rebuild quickly and to form effective partnerships with the organisations that nurture diagnostic expertise; and synthesise and share research<sup>5</sup>.

## 1.2. Project Aims and Scope

The aim of this project is to take a more detailed look at real examples of technical evidence available to the shelter sector in terms of their content, presentation and how they might translate into strategic decisions and technical advice for the shelter and housing sector. To limit the scope of the exercise, three case studies were chosen of recent earthquakes that have affected areas with significant informal or unregulated housing: in urban Port-au-Prince (Haiti earthquake, 12<sup>th</sup> January 2010), rural Huancavelica (Pisco earthquake, Peru 15<sup>th</sup> August 2007) and Khyber Pakhtunkhwa (Pakistan, Kashmir earthquake 8<sup>th</sup> October 2005, followed by floods in 2007 and 2010).

The project identifies the need for analysis and advice at different points on a typical response timeline and looks critically at whether what is currently produced can usefully feed into the processes of response and reconstruction envisaged by the IFRC and World Bank. It also aims to identify the main institutional and professional points of entry for improvement.

It is recognised that this review has the following limitations:

- Three case studies: The focus is not on analysing or generalising from these cases but on explaining the shelter sector's framework for thinking strategically and then analysing and generalising about the evidence that the consortium team might typically turn to, particularly after disasters that have involved the large scale destruction of housing.
- Sampling: The document sample has been selected based on what has been produced or used by the consortium team. There are likely to be many more documents that the team are not aware of but the methodology is designed to expose what the team currently calls upon.
- Validity: This report does not aim to give a statistical (valid and reliable) meta-analysis of what the evidence says. Instead, it emphasises a visual analysis of what the evidence typically available to the consortium team tends to look like and what it tends to contain to indicate the systemic gaps, disconnections and mismatches between the work done by researchers, the private sector and humanitarian organisations.
- Strategic-decisions: This report does not examine the process of strategic decision-making in the shelter sector or decision-making in the face of uncertainty emerging from other fields. It gives examples of strategic decisions (rather than the process of arriving at decisions) and does not claim that more or better evidence will be used by decision makers or that this would result in better decisions.

<sup>3</sup> Michal Lyons, Theo Schilderman, and David Sanderson, "Harnessing Time: Reflections on Constraints to Development," *Environmental Hazards* 10, no. 3–4 (2011): 213–217, doi:10.1080/17477891.2011.597498.

<sup>4</sup> Randolph Langenbach, *Don't Tear It Down! Preserving the Earthquake Resistant Vernacular Architecture of Kashmir* (Oinfoin Media, 2009).

<sup>5</sup> Jeni Burnell and David Sanderson, "Whose Reality Counts?: Shelter After Disaster," *Environmental Hazards* 10, no. 3–4 (2011): 189–192, doi:10.1080/17477891.2011.595581.

- Shelter Project Impact: This report does not evaluate the quality or impact of the shelter response plan so it does not make any causal links between the evidence base and quality of the response.

The report introduces the Humanitarian Shelter Response in Section 2 and Section 3 outlines the consortium’s methodological approach. The review exercise is explained in Section 4. The results of the document review are presented alongside a brief analysis in Section 5. Section 6 concludes the review and Section 7 offers recommendations for future action.

## 2. The Humanitarian Shelter Response

This review is in the context of the humanitarian shelter response – the action of international humanitarian shelter organisations after disasters – but it sits in the broader context of disaster management. Disaster management is often described as a cyclic process of preparing, reducing risk, responding and recovering or as parallel processes of response, recovery and risk reduction<sup>6</sup>.

### 2.1. Shelter as a Process

In the humanitarian shelter sector, the idea that disaster management involves cyclic and parallel processes is reflected in the mantra that “shelter is a process – not just a product”. The notion of “shelter as a process not a product”<sup>7</sup>, was originally used in the thinking about shelter after disasters in the seventies and is now recognised in IFRC’s official statements about meeting shelter needs after disasters that explain this as:

*“a process of ‘sheltering’ done by affected households with different materials, technical, financial and social assistance... Sheltering goes beyond the immediate provision of basic shelter solutions and is closely associated with longer-term reconstruction as well as with assisting individuals, families and communities to re-establish themselves and enable a return of individual dignity.”<sup>8</sup>*

### 2.2. Shelter Response Planning

Although sheltering is understood as a process where response, recovery and risk reduction could happen simultaneously, post-disaster shelter activities are often described in sequential, archetypal phases, for example, immediate humanitarian emergency followed by transition and recovery. This is because international humanitarian organisations have learnt that response planning must include realistic expectations of when money, decisions and the capacity to get organised and get things done are likely to be in place:

- Funding: international funding for relief and reconstruction come from different institutions at different times.
- Decisions: being contracted to spend money often depends on setting clear strategies plans, policies and standards. This in turn depends on the ability of a disaster-affected government to take swift decisions and on other complex processes like building consensus with institutions, humanitarian organisations and communities: relationships, trust and communication which takes time and thought.
- Organisation: formal international funding flows to organisations trusted to spend money effectively, efficiently, coherently and on relevant and appropriate interventions that cover major population groups. Accounting for this funding is based on a project cycle and phases of assessment and planning.
- Implementation: trusted organisations need people on the ground with the right skills to do the right things and it can take time to work out the humanitarian priorities, principally, who and where are the people affected by the crisis, and what conditions are they facing?

<sup>6</sup> <http://www.ifrc.org/en/what-we-do/disaster-management/about-disaster-management/>

<sup>7</sup> Shelter After Disasters, Davis 1978

<sup>8</sup> <http://www.ifrc.org/en/what-we-do/disaster-management/responding/services-for-the-disaster-affected/shelter-and-settlement/how-we-do-shelter/>

Figure 2 Shelter Cluster Strategic Response Plan: Haiti

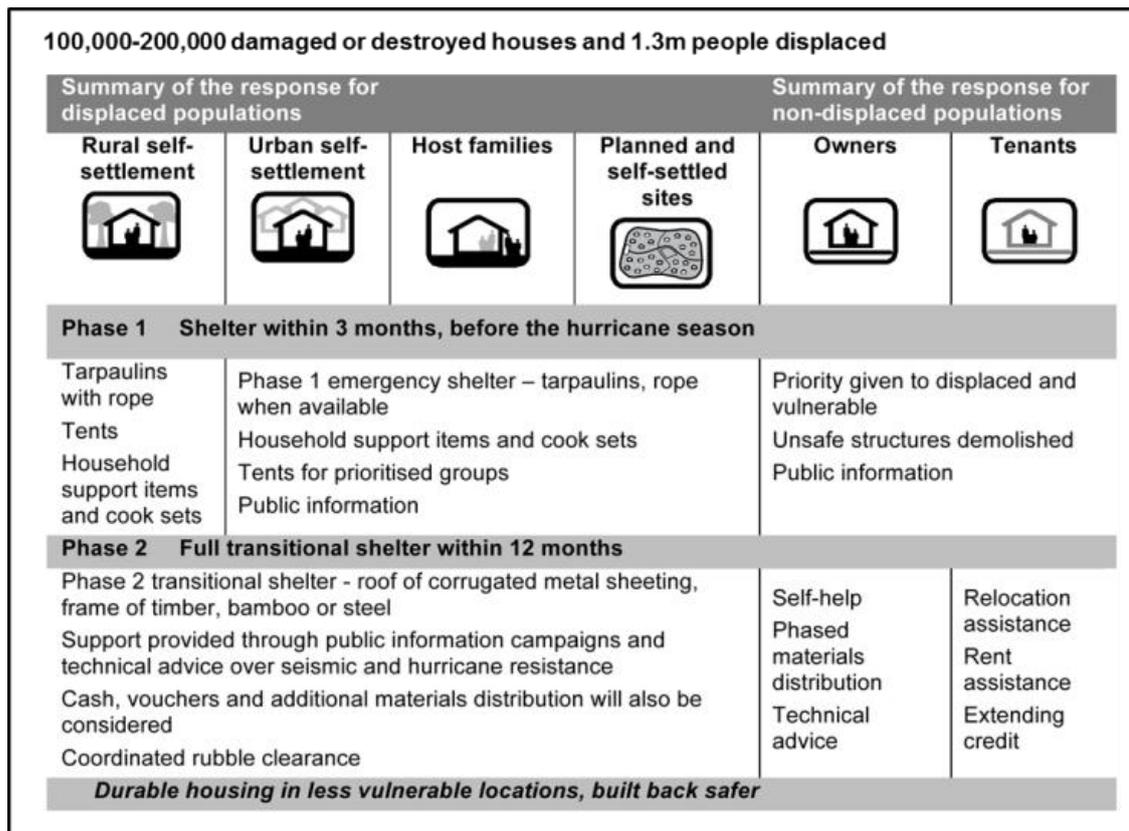
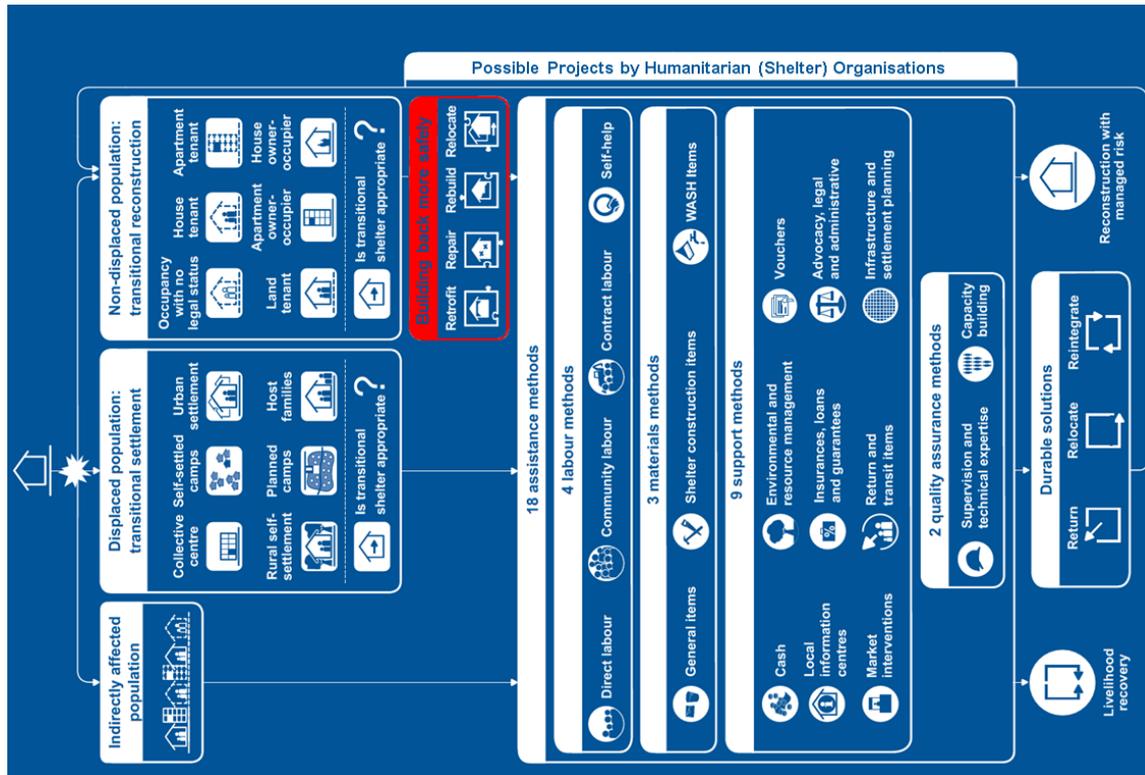


Figure 1 Post-Disaster Response Strategy (adapted from Shelter After Disasters<sup>9</sup>)



Shelter Centre, UN, and DfID, "Shelter After Disaster: Strategies for Transitional Settlement and Reconstruction."

<sup>9</sup> Diagram 4.1 in Shelter Centre, UN, and DfID, "Shelter After Disaster: Strategies for Transitional Settlement and Reconstruction."

### 2.3. Shelter Processes in Response Planning

Humanitarian shelter organisations agree response strategies in coordination with the Shelter Cluster and based on what the shelter sector has learned about the different situations that people find themselves in after disasters. These situations are illustrated in Figure 1 on Page 7, a graphic that appears in guidelines and standards for strategic thinking in the sector<sup>10</sup>. Based on this framework, a plan is developed within days or weeks that:

- Identifies the different transitional settlement and reconstruction circumstances of the populations directly and indirectly affected by the disaster.
- Estimates of the scale of need in terms of the population groups in each situation and categorisation of the types of need in terms of displaced and non-displaced, shelter damaged and household vulnerabilities.
- Identifies priority or vulnerable groups and a menu of assistance methods and explaining the timeframes over which the assistance will be provided.

Assistance typically includes providing shelter construction items (for example, Transitional Shelter Kits in Haiti), cash or vouchers, materials, training and information. This framework is provided to show the strategic thinking behind the strategies devised for the case study disasters, as for Haiti, shown in Figure 2.

### 2.4. Shelter Processes in Unplanned Responses

Potential strategic limitations of post-disaster response plans that were highlighted by consortium members include the challenge that:

- Funding from the humanitarian system is insufficient and the strategy cannot cover the entire affected population. This means that the international contribution to response, recovery and risk reduction is small in increment (only a bit safer than before) or reaches only a small population.
- Humanitarian Shelter Organisations spread out and co-ordinate geographically (avoiding overlap and gaps in terms of areas) but adopt similar projects (aligned with the strategy but matching up with a limited set of transitional settlement and reconstruction options). This might mean that the international contribution to risk reduction may be large in increment (in that a handful of individual structures may be a lot safer than before) but covers only a limited set of risks or reaches only a small population.
- Funding from the humanitarian system is insignificant compared to flows of aid flowing from outside the government or international system. This might mean that the international contribution to response, recovery and risk reduction is small in increment or reaches only a small population relative to self-recovery.

The operational limitations are that funding, decisions, organising and implementing take time and meanwhile: “[m]any households and communities will begin a process of self-recovery as soon as possible after a disaster, out of practical necessity.”<sup>11</sup>

The view of the consortium is that these strategic and operational limitations and the resulting processes of self-recovery are likely to apply to:

- people or places that are not identified as a priority or vulnerable, for example, non-displaced populations;
- people who cannot make use of certain humanitarian projects, for example, with no rights or access to land on which to receive a shelter;

<sup>10</sup> Shelter Centre, UN, and DfID, “Shelter After Disaster: Strategies for Transitional Settlement and Reconstruction” (Shelter Centre, 2010), <http://sheltercentre.org/library/shelter-after-disaster>.

<sup>11</sup> A. K. Jha and J. E. Duynne, *Safer Homes, Stronger Communities: A Handbook for Reconstructing After Natural Disasters* (World Bank, 2010), <http://books.google.co.uk/books?id=AyIYZrXQDJwC>.

- people living in places reached only slowly or with very limited resources, for example, in remote rural areas or violent urban areas;
- people who want to do something different, for example, repair their housing (donors and humanitarian organisations see this as difficult to design and implement<sup>12</sup>) or repair/rebuild alternative or informal/hard to monitor housing that is not covered by existing building codes/policies; rent; migrate or emigrate.

## **2.5. Shelter Processes captured in Technical Evidence**

Repairing shelter is an obvious self-recovery option for non-displaced populations but, as the World Bank notes: “[t]he vulnerabilities that turned a hazard into a disaster in the first place often get recreated in the process...for example...using the same building techniques that caused [homes] to collapse”<sup>13</sup>.

Making a policy decision to support repair or seismic retrofit<sup>14</sup>, and choosing humanitarian assistance methods that might enable safer repair and retrofitting (e.g. supervision and technical expertise, training or capacity building, construction materials, money or advocacy) requires a raft of technical and social information about damage, risks and the sheltering process. Even where it is mentioned in the response plan, as in Haiti, the struggle to align funding, policies and guidelines, projects and building practice can delay or prohibit systematic support for alternative non-standard, traditional or informal forms of recovery. Technical evidence has a role to play in informing policies, projects and practices.

The humanitarian shelter sector has various tools for drawing on technical evidence to develop the response plan and align activities with the shelter processes of affected populations.

### **2.5.1. Counting: Post-Disaster Shelter Process in the Needs Assessment**

Early assessment is designed to estimate the scale of need in terms of the size of population groups in different situations and the types of need in terms of displaced and non-displaced people, level of damage to housing and household vulnerabilities (related to members of the household and livelihoods). This accounts for the post-disaster shelter processes in terms of the number of people choosing different shelter options after the disaster.

### **2.5.2. Describing: the post-disaster Shelter Process as Functional Characteristics and Incremental Changes**

Post-disaster Shelter Needs Assessments and Damage Assessments describe the specific conditions of emergency shelter or categorise levels or types of damage to housing, as the population estimates are gathered.

The humanitarian priority is to improve on these conditions by making them “adequate”. The Sphere Project: Humanitarian Charter and Minimum Standards is founded on the right to adequate housing, enshrined in human rights law<sup>15</sup>, and along with other standards, such as the Key Performance Criteria for Housing given in Lessons from Aceh<sup>16</sup>, help to describe the characteristics of adequate housing. These describe the social, cultural, economic and physical characteristics of housing and their links to health and

<sup>12</sup> Ibid.

<sup>13</sup> Building resilient communities World Bank

<sup>14</sup> Shelter Centre, UN, and DfID, “Shelter After Disaster: Strategies for Transitional Settlement and Reconstruction.”

<sup>15</sup> Sphere Project, “Humanitarian Charter and Minimum Standards in Disaster Response” (The Sphere Project, 2011), 243, <http://www.sheltercentre.org/library/Humanitarian+Charter+and+Minimum+Standards+Disaster+Response>.

<sup>16</sup> Jo da Silva, “Lessons from Aceh: Key Considerations in Post-Disaster Reconstruction” (Practical Action, 2010), <http://www.dec.org.uk/download/721/lessons-from-aceh.pdf>.

a sense of security and dignity. More recently, IFRC has extended this to describing the characteristics of safe and resilient communities, many of which influence or are influenced by the shelter process<sup>17</sup>.

Sphere also refers to **existing, appropriate** and **acceptable** standards for shelter and settlement, all of which require some understanding of the pre-disaster sheltering process including but not limited to:

- Settlement Planning: identifying and using existing planning processes, housing and identifying land and property ownership and/or use rights, access to shelter and access to services;
- Covered Living Space: ensuring that covered living space is adequate, safe/private, allows for household and livelihoods activities, uses materials that are familiar to the disaster-affected population and, where possible, culturally and socially and climatically acceptable and environmentally sustainable
- Construction: use appropriate safe building practices, materials and expertise which maximises local livelihood opportunities.

Recognising shelter as a process that is closely linked to other aspects of life, IFRC aims to respond with solutions that:

- meet need for safety, privacy, protection from the climate and maintaining their livelihoods
- are appropriate to the context and available resources
- are flexible and lend itself to incremental change: enable households to improve their homes over time as resources and opportunities permit
- consider broader and longer term shelter and settlement issues: housing land and property rights, adaptation to climate change, sustainability and urbanization

This shows that the humanitarian shelter sector recognizes the shelter process in part as incremental changes over time in the adaptation of physical structures. This idea of incremental change potentially applies to whole settlements, for example, physical upgrades to infrastructure. The notion of incremental change is also sometimes applied to housing, land and property rights<sup>18</sup> which might accrue over time as people informally occupy or build on land but Sphere describes typologies rather than process or relationships in securing tenure. Settlement and associated types of tenure, shown in Figure 1, only go as far as indicating that some types of tenure are insecure. Although IFRC considers broader and longer-term sustainability and urbanization, the idea of incremental change at settlement level (e.g. gradual upgrading of services and infrastructure) is not explicitly considered and Sphere is concerned with people moving between settlement options rather than incremental change to settlements.

### ***2.5.3. Diagnosis: Linking the Pre-disaster and Post-disaster Sheltering Processes***

Describing the characteristics of shelter and acknowledging incremental change as part of the process does not fully answer questions about existing practices, what is appropriate and acceptable and how the perception of what is appropriate and acceptable might change over time.

#### **Physical and technical diagnosis**

Damage assessments sometimes go further than describing or categorizing damage by, for example, linking the “common structural defects” to technical and physical aspects of the shelter process that can be observed during a survey and/or discussed with engineers, architects and builders such as:

- location;
- the building’s shape and height;
- the structural system and detailing;
- materials and workmanship.

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<sup>17</sup> Arup International Development, “Characteristics of a Safe and Resilient Community Community Based Disaster Risk Reduction Study” (International Federation of Red Cross and Red Crescent Societies, 2011), [http://www.ifrc.org/PageFiles/96986/Final\\_Characteristics\\_Report.pdf](http://www.ifrc.org/PageFiles/96986/Final_Characteristics_Report.pdf).

<sup>18</sup> Citing Hamdi in Alison Killing, “Towards a Wider Process of Sheltering: The Role of Urban Design in Humanitarian Response” (Submitted in partial fulfilment of the MA degree in Development and Emergency Practice, Oxford Brookes University, August 2011).

## Social and cultural diagnosis

These physical and technical factors are invariably linked to social and cultural aspects of the shelter process and the choices people make about:

- where to live;
- what sort of home they want;
- who provides housing for rent;
- how much and when people are able to pay;
- the customs and practices of builders; and
- the organisation of the construction sector and markets for land, housing and building materials.

Some humanitarian shelter organisations have developed assessment tools to explore these factors through, for example, historical profiling with communities to understand the present situation, causal links to the past and changes that might happen in the future (the Red Cross/Crescent Movement's Participatory Approach to Safe Shelter Awareness (PASSA) toolkit<sup>19</sup>). CARE's shelter evaluations use interviews with key informants and focus groups to build up a retrospective picture of the sheltering process to understand:

- processes of claiming rights to housing, land and property;
- relationships between housing, livelihoods and markets; and
- household decisions about finding, renting, building or paying for a home (when, who and how).

Such an understanding of shelter processes forces questions about why people build their homes in certain locations or in certain ways<sup>20</sup>; who decides when, where, what and how to build housing; who cares; who pays; who knows what to do; who builds; who checks; who rents and who lets and how might these factors affect the post-disaster shelter processes of different households and groups in different locations.

### 2.5.4. Strategic Interpretation: the Sheltering Process in Technical Evidence

Interpreting data that counts, describes and diagnoses damage to housing can potentially reveal a partial picture of the shelter process and help answer strategic questions such as:

- **Who is affected by the damage and why?** What are their options? Can they repair their home quickly? Is an earthquake the worst thing that could happen to them next? Do they need to look or lobby for a safer place to live?
- **Is the damage different in different places and, if so, why?** What does this mean about safe sites and what other information is needed to interpret the data?
- **Who, where and how can people build back safer?** What standards are appropriate and acceptable to inhabitants culturally, socially, climatically, environmentally, economically? Is it going to be easy for the government to decide on structural safety/risk levels? Is it possible and practical to estimate/engineer/check safety? Is possible and practical to build to the standard and monitor the building process?

To this end, the document review checks whether technical evidence **counts, describes, diagnoses or strategically interprets** data about damage to housing and looks at whether this data is disaggregated in a way that can help illuminate the sheltering process in terms of settlements, living spaces or construction.

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<sup>19</sup> [http://sheltercentre.org/sites/default/files/20120501\\_-\\_passa\\_participatory\\_approach\\_to\\_safe\\_shelter\\_awareness.pdf](http://sheltercentre.org/sites/default/files/20120501_-_passa_participatory_approach_to_safe_shelter_awareness.pdf)

<sup>20</sup> See for example the Decision Tree on P.6 of Dave Holmes, Rowan Salim, and Dipti Hingorani, "Evaluation of the 'Disaster Preparedness and Mitigation' (DPM) Component of Oxfam-Solidarite's Shelter Project: Western Sahara," ed. Kate Crawford (Oxfam Solidarite, 2010), <http://www.alnap.org/pool/files/sah-uc-161.pdf>.

### 3. Methodology

The objective of this phase of the project is to establish, through a systematic review, what sort of technical evidence is available and whether it can be used in decision-making after disasters. This involves defining what is meant by technical evidence (Section 3.1) and setting up a framework for analysing this evidence based on what makes it useable and whether it might be useful in influencing strategic decision-making in the humanitarian shelter sector (Section 3.2). The definition and selection of evidence is informed by: i) the existing literature on planning the humanitarian shelter response<sup>21</sup> and the contribution that the private sector and academia might make to the humanitarian sector<sup>22</sup> and ii) the experiences of the consortium partners, sought through proposal development, agreeing the project vision, team meetings and documenting the thinking process through the project blog. The consortium agreement and definitions are as follows.

#### Box 3-1 Agreed Methodology

**On methodology, the consortium members agreed that:**

- i) the contributions made by research teams and consulting engineers currently have a limited influence on the decisions of humanitarian agencies;
- ii) the types, format and content of analytical and advisory skills and services (rather than specific construction products or project management services) were the least well understood and their usefulness should be the focus of the review;
- iii) the influence of these contributions depends on whether they help to answer strategic questions posed by decision makers in the humanitarian shelter sector defined by the consortium as:
  - identifying the humanitarian priority (who is affected (and who is vulnerable); where are the affected people (vulnerable groups and individuals); and how much people are affected (and what are their capacities, needs and vulnerabilities)?);
  - understanding the shelter process from assessments: counting, describing, diagnosing and strategically interpreting
- iv) for the analysis or advice offered by research teams and consulting engineers to be presented in a **format that is useable** in influencing humanitarian shelter decisions the key issues are
  - clarity;
  - timeliness; and
  - scale and focus of analysis
- v) the technical evidence should be systematically reviewed against these bulleted criteria;
- vi) three examples will be reviewed and these will be examples of disasters that have destroyed large areas of informal housing because addressing this informality is a significant challenge in terms of producing technical evidence that is relevant to the context (Haiti, Peru and Pakistan)
- vii) the sample of documents will be selected based on what the consortium members generate or refer to so the sample will be based on the documents readily available to the team.

<sup>21</sup> IFRC Technical Team, "Developing a Shelter Strategy," <https://www.sheltercluster.org/References/Pages/ShelterClusterGuidance.aspx>; Shelter Cluster, "Draft Shelter Sector Response Plan (as a Contribution to a Common Action Plan for Haiti)," February 28, 2010; IASC, REVISED PAKISTAN INITIAL FLOOD EMERGENCY RESPONSE PLAN (Pakistan: Shelter Cluster, Set 2010); Care Emergency Toolkit Section 4.3.

<sup>22</sup> Alex Wong, Arun Eapen, and Tania Gutknecht, Engineering & Construction Disaster Resource Partnership. A new private-public partnership model for disaster response (World Economic Forum, 2010); Tony Lloyd-Jones et al., The built environment professions in disaster risk reduction and response (RICS, ice, RIBA, RTPI, 2009); <https://www.sheltercluster.org/AboutUs/Pages/TheShelterCluster.aspx>; Integration of the science of high probability unpredictable hazards into disaster reduction programmes: lessons from west Sumatra (Enhancing Learning & Research for Humanitarian Assistance (elrha), 2010); High-science in low-tech emergency settings: a foreseeable horizon or height of folly (University of Glasgow, Oxfam, 2010); Joseph Ashmore and Corinne Treherne, eds., "Transitional Shelters: Eight Designs" (International Federation of Red Cross and Red Crescent Societies, 2011), <http://josephashmore.org/working/4-web/index.html>; Shelter Centre, UN, and DfID, "Shelter After Disaster: Strategies for Transitional Settlement and Reconstruction."

### Box 3-2 Agreed Process

#### On process, the consortium agreed that:

- i) working relationships – whether client-consultant advisory relationships (defined by memoranda of understanding; framework agreements or sub-contracts); researcher/knowledge broker relationships with academic peers, the public or policy makers; or partnerships between humanitarian NGOs and the communities they serve – depend on a clear, shared understanding of what is required;
- ii) it takes time and resources to arrive at a shared understanding and reconcile the different ‘natural’ objectives of humanitarian organisations, researchers, and engineering companies; and
- iii) this project is an opportunity to rehearse and reflect on these relationships and these reflections will be recorded and reported;
- iv) the results of the analysis will point primarily to the ends (what can the consortium partners do when they work together) rather than the means (the processes and models of partnership).

### Box 3-3 What is technical evidence?

In this report, technical evidence is defined as the body of analysis and advice generated by academic and commercial engineers or other built environment professionals about disasters, disaster prone places and the people or systems affected by disasters. Technical evidence can include photographs, maps, reports or designs.

This report has not looked at contract or project planning documents or social research, development or governance analysis.

### Box 3-4 What are the criteria for evaluating technical evidence?

#### Useable Format

- **Clarity:** two criteria have been used indicate the form of the evidence and how clear and easy it will be for humanitarian decision-makers: document length and type, with categories designed to capture the document’s purpose and intended audience;
- **Timeliness:** day, month and year of publication; and
- **Scale:** subject of photographic images and scale of maps to indicate the resolution or “zoom” detail

#### Relevant Content

- **Humanitarian Priorities:** the type of document gives an indication of the sort of contextual details that are covered and whether the evidence is potentially of use is evaluated on whether it can help to answer the questions: who is affected, where are the affected and how are people affected.
- **Shelter Processes:** counting, describing, diagnosing, strategically interpreting damage

### Box 3-5 What are the key questions for identifying the humanitarian priorities?

- **Who is affected (and who is vulnerable)?** The humanitarian mandate is about meeting the needs of the vulnerable so this is important in understanding the humanitarian priority.
- **Where are the affected people (vulnerable groups and individuals)?** Resources will always be limited so working out where people are and which areas are worst affected or still at risk helps to prioritise, strategize and plan.
- **How are people affected (and what are their capacities, needs and vulnerabilities)?** A strategy has to cater for the fact the people can end up in different situations after a disaster and any humanitarian shelter solutions should support what people can do for themselves and fit their circumstances, which are often rapidly changing.

### 3.1. Limitations and Other Perspectives

The consortium has agreed to accept the following limitations in this review exercise:

- The working assumption of this project is not that experts always know best or that local knowledge is irrelevant but that, in service to the individuals, communities and governments affected by disasters, we endeavour to share knowledge that is being synthesised at a global level (e.g. models to help us understand hazard probabilities; climate and ecosystem dynamics; or soil and structural dynamics) in the hope that it can complement local wisdom and ingenuity and can be adapted to the specific national policy context and conditions.
- The importance of finding ways to collaborate cannot be underestimated but this report does not offer a comprehensive review of this subject. This means we have excluded contractual and proposal documents.

## 4. Review Exercise

Given the importance of clarity, timeliness and context, this report takes forward the work done to date by establishing when different types of technical evidence are available, what they contain and how they might support strategic decisions in the shelter sector. The approach consisted of the following:

- Compilation of a shared library of documents from Peru, Haiti and Pakistan<sup>23</sup> based on a project dropbox and Zotero group library;
- Creation of a checklist against which to review technical evidence;
- Review and categorisation of the technical evidence;
- Synthesis of the results of the review.

The document review evaluates the technical evidence available after disasters in terms of its format and content and whether these are likely to mean the evidence will be used to inform strategic decisions and devise appropriate support. The checklist is given in Appendix XX and is based on for the following:

- clarity: type of document and number of pages;
- timeliness: [when it was published]; and
- scale of analysis: subject of photographic images and scale of maps to indicate the resolution or "zoom" detail
- relevance of content: type of document and whether it contains information on humanitarian priorities and shelter processes.

The initial checklist was modified by adding extra fields for notes, quotes and references as well as additional categories for types and sub-categories of document as more evidence was reviewed.

## 5. Results and Analysis

The review allowed the documents to be categorized in terms of their producers and users as follows:

- Produced or used by Humanitarian Shelter Organisations (HSO) in response to a specific disaster: standalone maps and images and humanitarian project documents (assessments, plans and process evaluations);
- Produced or used by researchers engineers, development banks and the international private sector in response to a specific disaster: technical assessments such as damage assessments, risk or hazard assessments, diagnostic or advisory reports, exploratory/experimental reports;
- Produced or used by Humanitarian Shelter Organisations (HSO) for learning or knowledge management: case studies and procedural guidelines;

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<sup>23</sup> The selection of documents is based on purposive sampling, which means drawing on examples that have been used, referenced or produced by the consortium partners and their peers and are judged to be typical of what is available/accessible after a disaster

- Produced or used by the built environment sector for learning or knowledge management: design criteria such as structural design parameters, building codes, general design briefs, general construction principles, instruction manuals, standard designs and design options catalogues.

## **5.1. Analysis of Document Types**

The results of analysing document types are presented graphically and are constructed from bubble plots. The bubble plots allow a visualisation which indicates what the different document types tend to contain.

### **5.1.1. Length, timeliness and scale of analysis**

- Humanitarian project documents tended to be short and timely but the resolution of data (scale of maps used) varied significantly.
- Technical assessments tended to be produced in response to the disaster but the earlier documents could be long (100-200 pages) and, again, the resolution (or level of “zoom”) of data varied significantly.
- Case evidence was generated continually and tended to be short (less than 50 pages) but with low resolution maps, if maps were included.
- Design criteria were often available before a disaster (in countries which had been previously affected by disasters) but maps, if included, tended to be low resolution.
- In terms of conceptual focus, the documents produced by humanitarian shelter organisations, researchers and engineers did not capture photographic images that placed individuals and their shelters in the broader context of the built environment and this limited their potential to be a window into the pre-disaster context and post-disaster setting (Tables 5-1 and 5-2).

### **5.1.2. Answering questions about humanitarian priorities**

Humanitarian project documents tended to focus on the strategic questions “who” and “how much need or how many needy people” with much less attention to “where” or “how and why” housing was damaged. Technical assessments were more likely to contain a mention of how much need/how many needy people but paid much more attention to how/why housing was damaged. These potentially complementary assessments are happening at the same time but tend to focus on different levels of “zoom”.

### **5.1.3. Answering questions about shelter and housing processes**

Maps, images, humanitarian project documents and case studies contained little or no strategic interpretation. Where humanitarian project documents did interpret the data it was in terms of scale of damage (numbers of damaged buildings or levels of damage). A significant proportion of technical documents did not count (the scale of) damage and were thus unable to offer strategic interpretation of scale (understanding the extent of damage affecting different people and different places). Instead, technical assessments tended to diagnose physical factors that had led to damage or, in Peru, both the physical and social causes of damage. A small proportion of Technical Assessments also linked the strategic interpretation to response and recovery by organising or identifying typologies of housing and damage by location (by low resolution hazard zone) or by site (high resolution context or micro-zone).

Only a handful of case studies (which are retrospective and written in “peace time”) and design criteria, offered any strategic interpretation of the scale, physical or social causes or link this to options or strategic advice for response and recovery. In general, there was a lack of short documents, available early that could answer all the humanitarian priority questions of: who was affected, where were they, how much need/how many needy people and how and why buildings were damaged.

The documents that did answer these questions were not consistent in length, timeliness or resolution of data and there was a lack of short, high resolution evidence that reflected on shelter and housing processes by counting, diagnosing (physically and socially), strategically interpreting (putting together the scale, physical and social diagnosis) and linking findings back to the recovery and response.

The review found few or no design criteria for repairs and/or retrofit. Many documents contained general design briefs for transitional shelter and general construction principles for new construction aimed at a general audience but with limited detail for implementation in terms of locations (zones, regions) and sites (neighbourhoods, plots), building types and building practices. Design options catalogues, aimed at householders, were rare in the sample found by the consortium team. Instruction manuals, aimed at builders, did exist but were less common in the sample found by the consortium team. There were no building codes for temporary (transitional) shelter in this sample.

Table 5-1 Subject of photographic images in different types of document (large bubbles indicate that documents in this category contain this type of image)

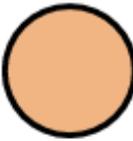
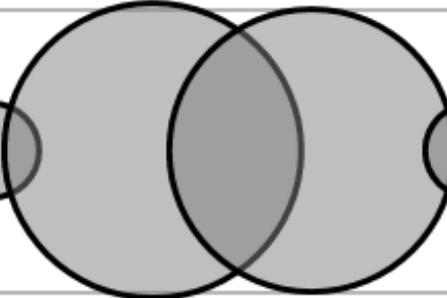
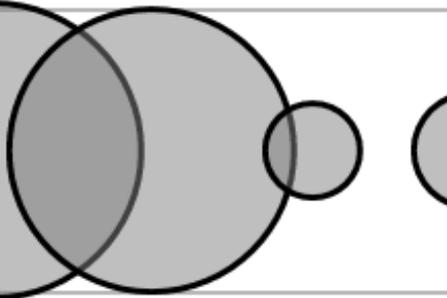
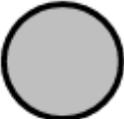
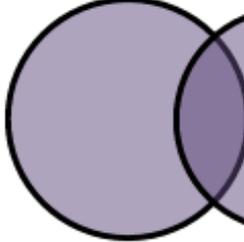
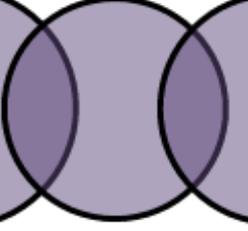
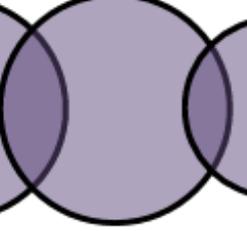
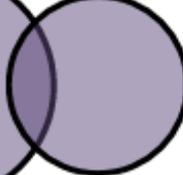
Documents produced or used by:	Document Focus: subject of images included							
	No Images	 People ground photo (people)	 Shelter ground photo (emergency shelter)	 Damage ground photo (damage)	 House ground photo (house)	 Settlement ground photo (group of houses, settlement)	 Aerial aerial image	
Humanitarian Shelter Organisations								
Researchers, engineers, government or development banks and the international private sector								
Case Evidence								



Table 5-4 Shelter Process: strategic interpretation of damage assessments by category (large bubbles indicate that many documents contain information that answers these questions)

How and why "diagnosis" questions by Case Study								
	No counting, diagnosis or interpretation	No strategic interpretation	Strategic interpretation of scale	Strategic interpretation of physical causes	Strategic interpretation of physical and social causes	Strategic interpretation of scale and physical causes	Strategic interpretation of scale, physical AND social causes	Link analysis to response and recovery
<b>Haiti</b>								
<b>Peru</b>								
<b>Pakistan</b>								

Table 5-5 Case Summary: information about humanitarian priorities

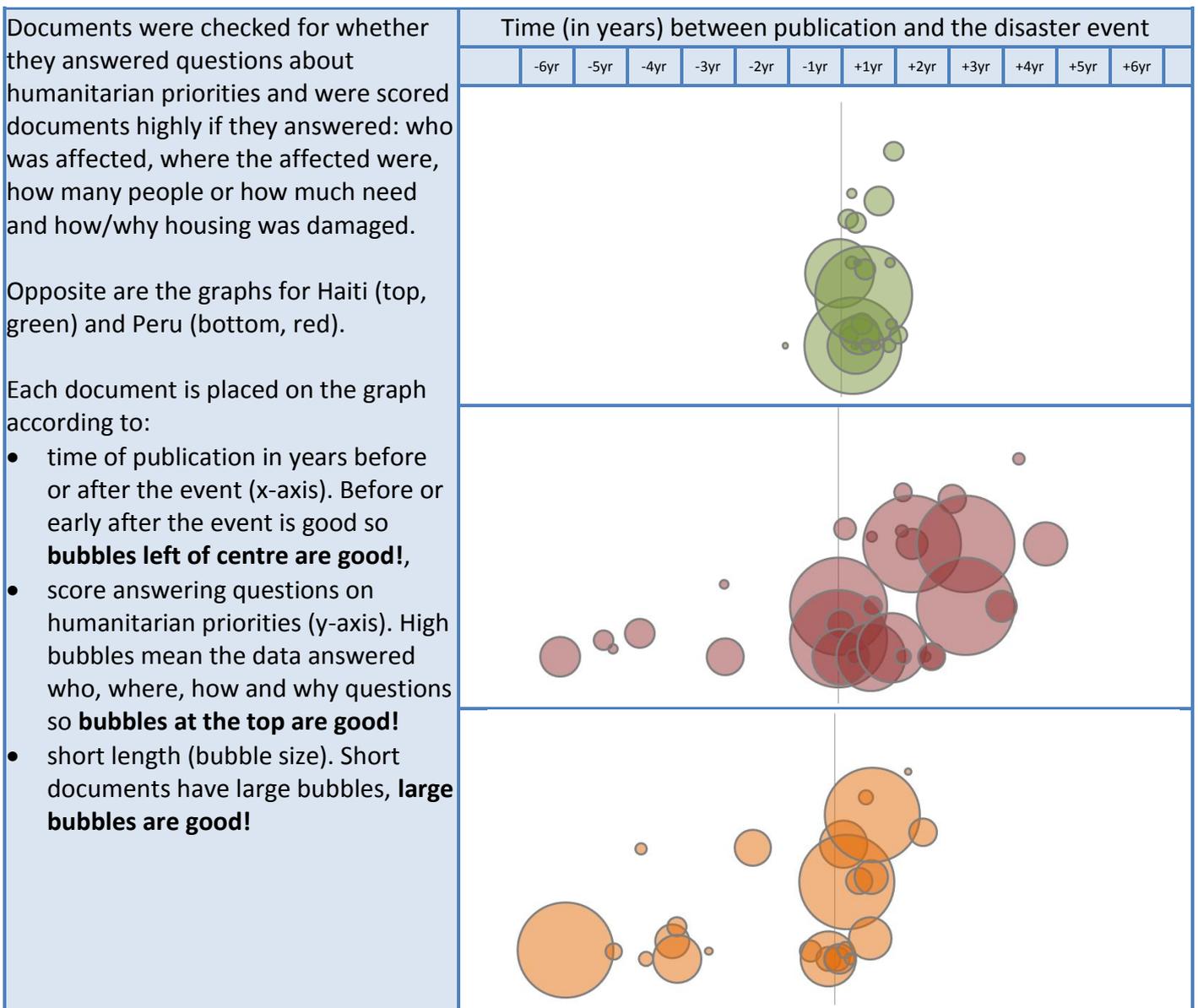
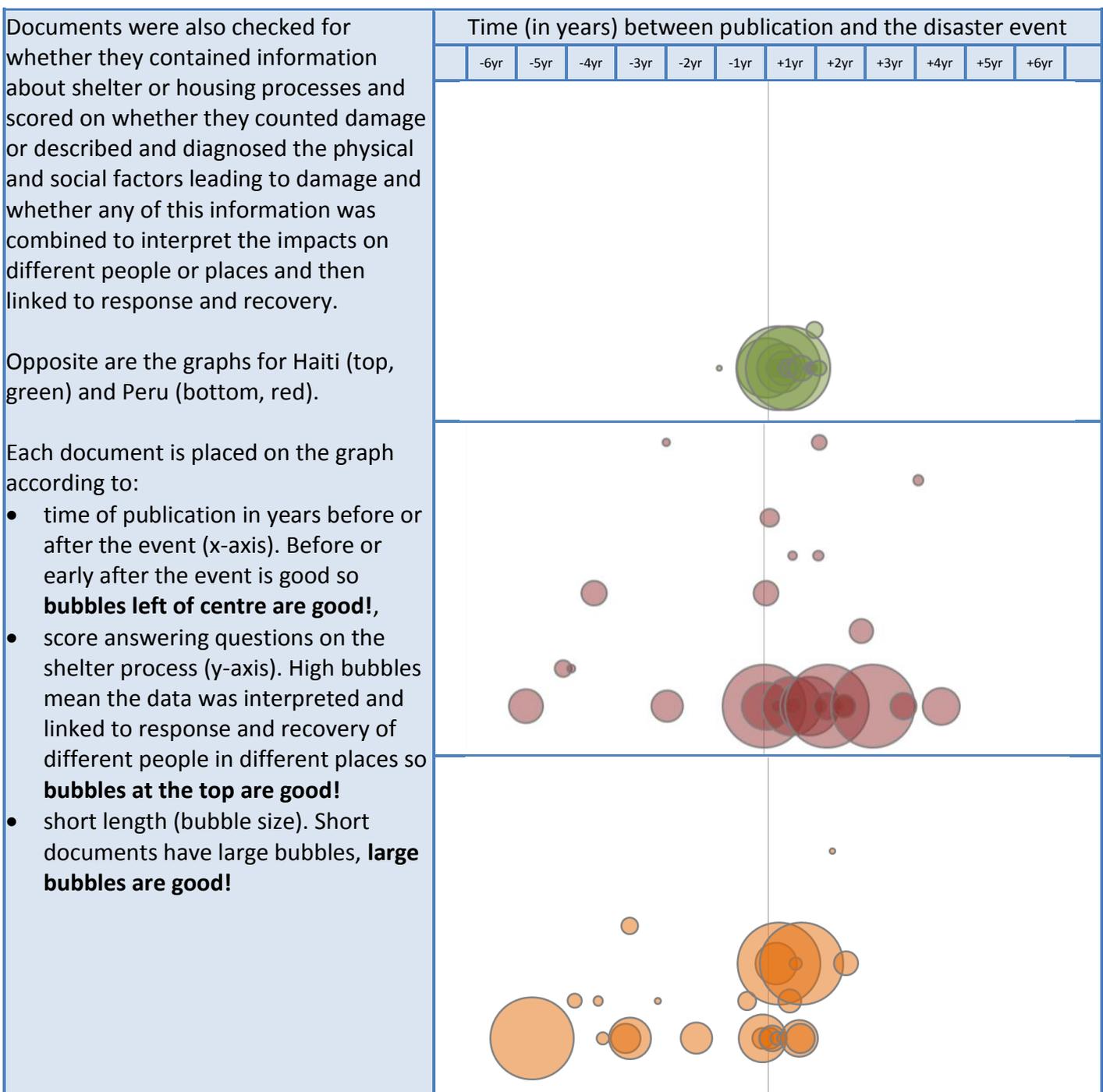


Table 5-6 Case Summary: information about shelter and housing processes



#### 5.1.4. Summary

This analysis of the form and contents shows that:

- **Evidence produced or used by Humanitarian Shelter Organisations (HSO) in response to a specific disaster:** tended to be short and timely and tended to focus on the strategic questions “who” and “how much need or how many needy people” with much less attention to “where” or “how and why” housing was damaged. These documents did not capture photographic images that zoomed out to the broader settlement and built environment and this limited their potential to be a window into the pre-disaster context and post-disaster setting.
- **Evidence produced or used by researchers engineers, development banks and the international private sector in response to a specific disaster:** did not consistently present damage assessments, hazard and risk assessments, diagnostic or advisory reports or experimental work at the same resolution – or level of “zoom” in or out. This makes it difficult to synthesise and interpret, particularly

where the resolution is far lower – very “zoomed” out – compared to the typical scales being used by humanitarian shelter organisations.

- **Evidence produced or used by Humanitarian Shelter Organisations (HSO) for learning or knowledge management:** learning is consolidated at a different (lower and less detailed geographic scale) than their project documents (which are already low on settlement level data on one hand and high resolution maps on the other) even though learning through case studies and identifying lessons is, potentially, a more reflective, research-oriented, “peace time” process and could address details in terms of specific settlement and housing processes. Identifying project lessons and consolidating learning from projects then feeds into generic learning about organisational processes at which point context and geographic specificity is lost completely. This a different systemic problem from the lack of systematic evaluation of the long term impact of strategic decisions and projects in the shelter sector.
- **Evidence produced or used by the built environment sector for learning or knowledge management:** is not focused on places and the way people dwell. When this material was sourced by the consortium team, the guidance was general (criteria or principles) and generic (single model or construction type). General guidance did sometimes cover macro-zones for hazards or advice for the micro-zone ground or slope characteristics but was not linked to specific settlements (sizes, shapes and densities), housing structures (materials, structural systems, storeys) or housing processes (a tendency to extend upwards or outwards) or the local capacities to build and monitor building that might allow the advice to be interpreted for a specific context. There are gaps in any sort of design criteria for repairs and/or retrofit and in building codes for temporary (transitional) structure<sup>24</sup>. Without understanding why people choose to or have to live in zones with high physical risks or build in ways that make buildings vulnerable to physical risks, the application of such parameters and the resulting advice can mean small scale (in terms of geographic area or population covered), expensive or imported “low physical risk” solutions, rather than larger scale (larger areas and population groups) support that takes a strategic, consultative and incremental approach to reducing physical risks in the context of other day to day risks<sup>25</sup>. In the aggregate, the first approach is riskier than the second even if the design parameters were supposed to reduce risk.

**Different members of the consortium team work on assessments at the same time. While humanitarian assessments focus on who and how many people are in need (social vulnerability of people), technical assessments tend to assess, describe and diagnose damage or hazards (physical vulnerability of buildings). There are physical vulnerabilities that affect people and social vulnerabilities that affect buildings so a full strategic picture of the shelter process requires these assessments – that already happen early and simultaneously – to be more closely coupled.**

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<sup>24</sup> Although not a focus of this review, the World Bank and IFRC among others have demonstrated that this also applies to traditional or vernacular types of housing. Design options catalogues – aimed at householders and offering a variety of possibilities to fit with household circumstances – were unusual. Structural design parameters, building codes and design briefs are put in place to set a framework for managing risks. These documents tend to understand risks in terms of the probability of a physical hazard exceeding certain limits over a set period of time, or return period. A longer return period means infrequent, worse events are important, a shorter period means more probable but less serious events are important but return periods are decided upon by governments, scientists and insurers based on weighing up the other frequent and infrequent risks faced by people who live in a particular society. When risk parameters are set based on physical hazards, the size and frequency of the hazards will be specific to the context but return periods will be brought from other societies and contexts and will not take account of the broader set of risks faced by people with precarious livelihoods in informal settlements.

<sup>25</sup> “Strategically” demolishing the second storey of people’s houses is often recommended but is not strategic in the sense implied in this paragraph.

## 6. Conclusions

This review suggests that the challenges of communicating technical evidence to technical ministries, to decision makers in the shelter sector, to technical ministries or directly to people affected by disasters are confounded by both the form and contents of the evidence typically generated and accessed by researchers, engineers and humanitarian organisations.

The consortium reviewed 90 examples of advice and analysis produced or referred to by our team of built environment professionals, engineers, researchers and shelter specialists after three recent earthquakes. We assessed the documents for their length, timeliness and focus. We also explored whether they helped to shed light on humanitarian priorities or the shelter processes that were at play in the context. We built visual pictures (or bubble plots) to look at gaps in the evidence base and at opportunities to marry up what we already do. We expected some of the results but the subtleties were surprising.

Useful fragments of information that could genuinely have enriched the analysis of the context in decisions and planning were often lost in long consultancy reports, not incorporated alongside information that was relevant to immediate priorities, mixed in with generic advice or only synthesised long after they might have supported humanitarian shelter decisions. We discovered some excellent pieces of work had little or no impact as they were not published and disseminated until well after their “window of usefulness” had expired.

Unless analysis and advice is on time, succinct and helps to answer questions about immediate humanitarian priorities, it is likely to get overlooked in the decisions and plans made by the humanitarian shelter sector even if it reveals a lot about housing and shelter processes. The consortium team’s experience of hunting for evidence in peace-time mirrors what happens after a disaster. Navigating the substantial body of evidence built up before a disaster requires resources and clearly defined responsibilities and relationships. Dissemination depended on strong institutions on the ground - ministries, universities and civil society organisations – their ability to hang on to knowledgeable staff between disasters and our ability to connect to those people and track down their paperwork. The solution is not simply about a general call for collaboration between the private sector, academia and humanitarian agencies but about targeted collaborations that address gaps in knowledge and communication, join up the things we already do and force us to think in new ways.

Disparate pieces of work currently undertaken are not connected together. Each of us has only a partial view of what others have already done or are typically doing at the same time as us. With so much data but so few opportunities to consolidate and call on this evidence in the critical decision-making process, there is a risk that the work has no impact or tangible value.

- **Filling gaps:** Little analysis or advice that dealt with repairs and seismic retrofitting of housing<sup>i</sup>; that set out shelter choices and technical options for householders; or that examined alternative approaches for rented, informal, traditional or vernacular types of housing. Across the case studies and evaluations (the documents the sector uses for learning), few looked beyond the individual project or shelter to the broader context and processes of housing and settlement before and after the disaster.
- **Marriage:** members of our team - engineers, researchers and humanitarian shelter staff - are already and simultaneously working on assessments after disasters. There are physical vulnerabilities that affect people and social vulnerabilities that affect buildings so a full strategic picture of the shelter process requires these assessments to be more closely coupled. Perpetuation of professional siloes risks duplication as well as limiting the palette of potential humanitarian responses.
- **Synthesis:** Analysis of the technical (and often social factors) driving the “how and why” of damage to housing was scattered across different types of documents and produced at different times and at different levels of “zoom” or focus. The information was either without enough detail to inform community-level responses or so focused on the detail of individual families that it couldn’t make sense

of processes driven by relationships beyond a single household, like the capacity of the local construction sector. There is a spectrum between broad brush estimates of housing units destroyed and the minutiae of humanitarian needs assessments concerned with the situations of individual families. In between, there are opportunities to add value during the humanitarian response, particularly in the interpretation of what might, in the language of Sphere, be "existing", "acceptable", "appropriate" shelter and settlement standards and in implementing support that follows on intelligently from the housing and shelter processes people relied upon before the disaster.

## 7. Recommendations

**Filling Gaps: do more thinking ahead of time...** consolidate experiences of post-disaster repair and retrofit projects in terms of how funding was secured, policies and standards were set, assessments and projects were designed and appropriate technical approaches were adapted to the specific pre and post disaster settlement, housing and shelter processes.

**Who?** The international research community.

**Marriage: do the same thinking in the aftermath but do it together...** design and implement joint humanitarian and engineering assessments that are designed to answer the who, where, how much/how many **and** why and how questions at an early stage, taking special care to communicate directly to technical ministries or via international support structures like the cluster system. Additionally develop a task force to focus on better communication and dissemination of future assessments and research.

**Who?** The Technical Working Groups of the Shelter Cluster, humanitarian shelter organisations, research missions (like EEFIT), consultants contributing to the PDNA, UNDAC, FACT assessment missions or others commissioned by government via reconstruction donors to provide technical analysis and advice.

**Synthesis: think in new ways...** develop and implement models of working within the research, engineering or humanitarian communities that support the **synthesis and interpretation of technical evidence** building on the tools currently used such:

- **Map-making:** test out possibilities for shared, common map platforms using open source software, geo-referencing images and/or automated/crowd sourced rapid analysis of scale by damage level and housing typologies and locations; and automated/app based or wiki-style rapid description and diagnosis of damage based on "ground photos" as well as remote sensing; rapid techniques for assessing housing processes, housing land and property, livelihoods and markets.
- **Surge capacity and Secondments:** review the types of staff and teams required at a strategic level inside governments/ministries/international community to understand and integrate social and technical information, estimate cost of this support and draft Terms of Reference.
- **Shelter Cluster and Technical Working Groups:** test and develop with the Shelter Cluster options for interpreting and using technical evidence in strategic decision-making and training for Shelter Cluster Technical Co-ordinators and their Working Groups on (participatory) methods for procuring, compiling and communicating technical evidence.
- **Longitudinal and impact studies:** include in (currently scant) studies of the longer term, broader scale impacts of humanitarian intervention, a review of the strategic decision-making or process, strategic decisions and evidence used.

**Who?** Humanitarian and reconstruction donors with an interest in contextual analysis, responding to evidence and achieving value for money and impact.

## 8. Acknowledgements

In addition to the members of the team who wrote or reviewed this document, the project itself would not have been possible without early support and encouragement from Jo da Silva, Kubilay Hicyilmaz and Isobel Byrne-Hill at Arup and Elizabeth Babister, while at CARE UK. Alex Notay also provided essential support in convening and chairing the workshop and final meeting and producing communication materials. Thanks also to Victoria Maynard for reviewing the final documents and insightful feedback throughout the project.

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<sup>i</sup> The World Bank and others have demonstrated that this also applies to informal, traditional or vernacular types of housing