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#### KEY MESSAGES

**Improved consolidation and communication of the evidence** on housing processes, disaster response and recovery is required, including the timely dissemination of evidence to those institutions that can make best use of it.

There should be **joint engineering and humanitarian assessments** of disaster response and **increased collaboration between different institutions** concerned in responding to disasters.

New **techniques to synthesise and interpret technical evidence** should be developed, along with a **consolidated resource on disaster response and recovery**.

## Data, decision-making and disasters: the effective use of engineering research and consultancy in disaster response and recovery

### Introduction

In the aftermath of a disaster vast resources are deployed in the assessment and mapping of damage, humanitarian needs and vulnerability to hazards. With gaps in data, social and technical assessments that are conducted separately and a lack of time to analyse and synthesise, there is a risk that this work has no impact or tangible value in critical decisions and that strategic opportunities are missed to enable faster, more effective and larger scale recovery of safer housing.

### Key conclusions

- There is a substantial body of evidence on disaster response and recovery, much of which could be used to improve decision-making and planning in the aftermath of a disaster. Too often this has not been disseminated or the relevant elements have been overlooked.
- Disparate pieces of work are not connected together. Researchers, consulting engineers and humanitarian shelter staff have only a partial view of each other's activities and thinking.
- 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 effective use of available evidence depends on strong ministries, universities and civil society organisations on the ground; the ability of these institutions to hang on to knowledgeable staff between disasters; and the ability to connect to those people and access their work.

**"Information is valued in principle but the arts and benefits of collating and sharing it are not well understood."**

**HIF workshop participant.**

## Findings

There is a substantial body of evidence that could be used to improve decision-making in disaster response. Disaster assessment should:

- inform and influence technical ministries;
- broaden the palette of tools used in the humanitarian shelter response; and
- enable people affected by the disaster to adopt, reject or critique this advice.

However, such evidence is not effectively communicated or disseminated, or fails to reach the individuals and institutions that could benefit most.

Unless work is published and disseminated during its window of usefulness, it will have little or no impact, even when it may contain important conclusions. Many useful fragments of information that could genuinely enrich the analysis of the context in decisions and planning are lost in long consultancy reports, not incorporated alongside information that is relevant to immediate priorities, mixed in with generic advice, or only synthesised long after it might have supported humanitarian shelter decisions.

Three particular risks in effective exploitation of disaster assessment, together with recommendations to address them, are explored below.

## Gaps in analysis

The sector uses case studies and evaluations for learning. However, few of these look beyond the individual project or shelter design to the broader context and processes of housing and settlement before and after the disaster. There is little analysis or advice that deals with repairs and seismic retrofitting of housing, that sets out shelter choices and technical options for householders, or that examines alternative approaches for rented, informal, traditional or vernacular types of housing.

### RECOMMENDATIONS

- There needs to be improved consolidation and dissemination of the body of evidence and of what has been previously learned from the study of housing processes and disaster recovery.
- In particular there should be increased consolidation of experiences of post-disaster repair and retrofit and of alternative approaches for rented, informal, traditional or vernacular types of housing. This should include examination of how funding was secured, how policies and standards were set, how assessments and projects were designed and how appropriate technical approaches were adapted to the specific pre and post disaster settlement, housing and shelter processes.
- Consolidation should be carried out in a timely way in order to ensure that those responding to disasters have access to the most relevant and up-to-date evidence available.

### WHO?

Collaborative research programmes delivered by the research, humanitarian and engineering communities.

## Perpetuation of silos

Engineers, researchers and humanitarian shelter staff are already and simultaneously working on assessments after disasters. However, there is too often a failure to join up these assessments to deliver a full strategic picture of the shelter process, incorporating both the physical vulnerabilities that affect people and the social vulnerabilities that affect buildings.

**“It’s not about having answers, it’s about asking intelligent questions; the right questions. There’s a need for good contextual situation analysis and currently there is none.”**  
HIF workshop participant.

The perpetuation of professional silos and the failure to join up assessments risks duplication of effort as well as limiting the palette of potential humanitarian responses. Targeted collaborations that address gaps in knowledge and communication, join up the things that already happen and force the sector to think in new ways are required.

**“A better analysis of the contextual situation is about more consideration of sites, history, connectivity, place making and community”**

HIF workshop participant

### RECOMMENDATIONS:

- The early design and implementation of joint humanitarian and engineering assessments is required in order to answer the social “why” as well as the technical “how” questions.
- Special care needs to be taken to communicate directly to technical ministries or via international support structures like the cluster system.
- There should also be improved collaboration which seeks to overcome silos between the different institutions that are involved in assessment and in disaster response.

### WHO?

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

## Lack of synthesis

Analysis of the technical (and often social factors) driving the how and why of damage to housing is scattered across different types of documents and produced at different times and at different levels of detail. The information either lacks sufficient detail to inform community-level responses or is so focused on the detail of individual families that it cannot make sense of processes driven by relationships beyond a single household, like the capacity of the local construction sector.

**“Specialists often don’t have the ‘bandwidth’ to cope with bigger, strategic ideas or collaboration. Even when these could provide a better result... There is a need for ‘boundary people’ to translate back to the specialists in their own professions.”**

-HIF workshop participant

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. However, there is currently a failure to combine high-level and detailed insights. Such synthesis of insights would offer opportunities to add value during the humanitarian response, particularly in the interpretation of shelter and settlement standards, and in implementing support that follows on intelligently from the housing and shelter processes that people relied upon before the disaster.

## RECOMMENDATIONS

- The development and implementation of techniques to synthesise and interpret technical evidence are needed. This is a key element of the sound contextual analysis needed to ensure that humanitarian responses are based on evidence and achieve value for money and impact
- These techniques should build on and innovate beyond the tools currently used such as map-making, secondments, retaining surge capacity, the Shelter Cluster's Strategic Advisory Groups (SAGs) and Technical Working Groups (TWGs).
- Longitudinal and impact studies, which remain rare in the sector, should be designed to include a review of the strategic decisions and decision processes, the evidence available and the evidence used and the causal links between the use of evidence and recovery
- Additionally, a consolidated resource on disaster and recovery evidence should be developed in order to provide timely, up-to-date, and relevant synthesis of evidence and disaster assessment.

### WHO?

We suggest that the development of new techniques and longitudinal studies, and of a consolidated disaster recovery resource, could be funded by humanitarian and reconstruction donors with an interest in contextual analysis, responding to evidence and achieving value for money and impact

## Further information

For more information and to download the full project report, please visit our blog:

[www.humanitarianinnovation.org](http://www.humanitarianinnovation.org)

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## Background

This policy briefing summarises the findings of a consortium, comprising leaders from UCL, ARUP and CARE International, which reviewed 90 examples of advice and analysis from three recent earthquakes. The consortium 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 specific to the context. This work was possible thanks to a small grant from the Humanitarian Innovation Fund.

