Transitional Shelters: Eight Designs

Transitional Shelters

Eight designs

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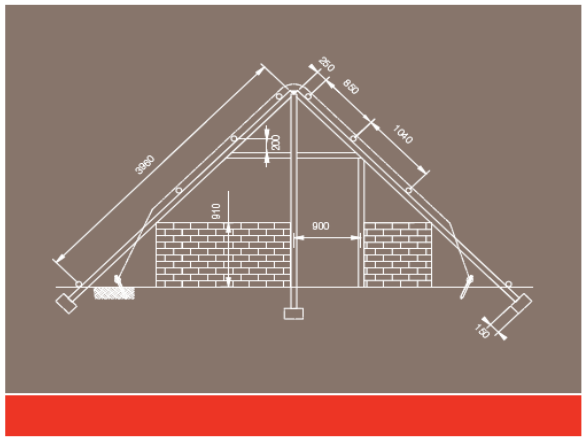
Transitional Shelters: Eight Designs

What will be presented?



Transitional shelters
Eight designs

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- "Transitional Shelters: Eight Designs"
- Context & Background:
  - Key concepts
  - Tool at hand
- Structural Review of Transitional Shelter Designs
  - An Overview of the Process
- Next Steps
- Q&A

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Meaning of transitional shelter

- Take-home message

  Transitional shelter is a **phase**, <u>not</u> a product.

- Many options to provide transitional shelter

  e.g. appropriate construction material, tools and fixings, cash and/or vouchers, host families, technical guidance and training, etc.

- One of the options: transitional shelter product

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Transitional shelter as a product

"Rapid, post disaster household shelters made from materials that can be upgraded or re-used in more permanent structures, or that can be relocated from temporary sites to permanent locations. They are designed to facilitate the transition by affected populations to more durable shelter."

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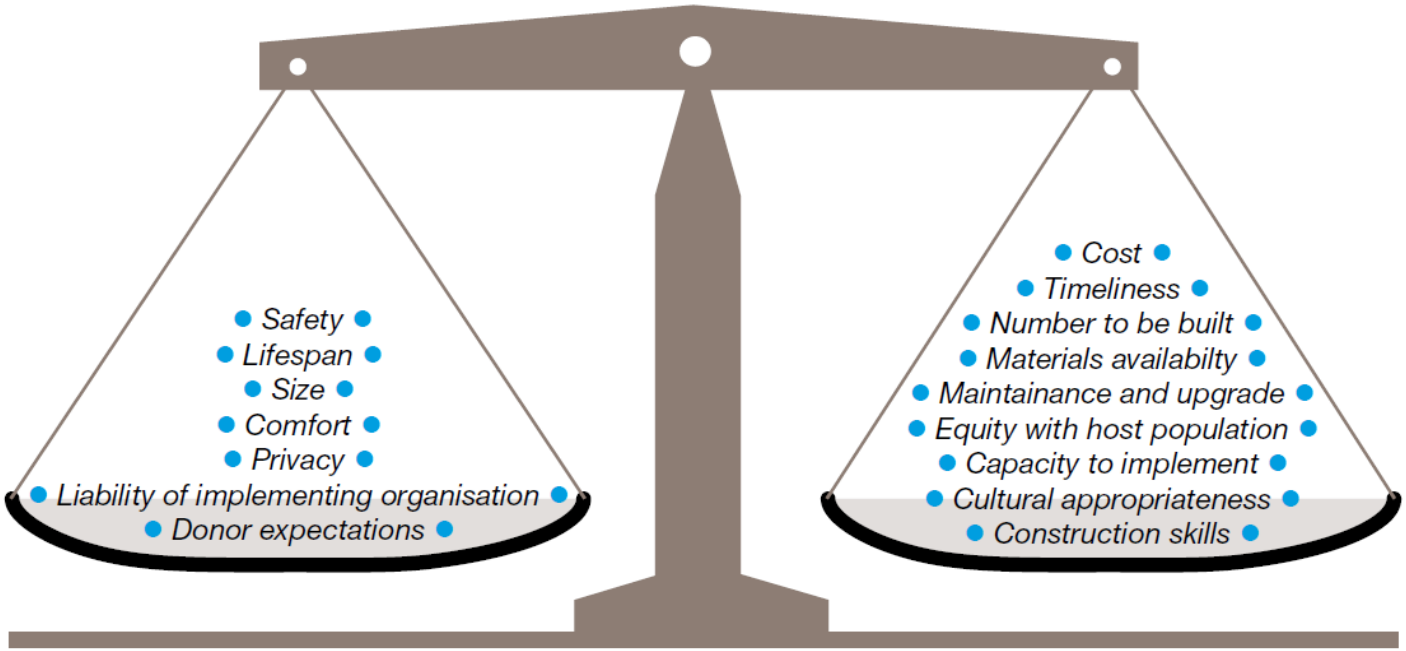
Challenge of designing transitional shelters



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Tool at hand (1)

- What is it?

  Collection and compilation of transitional shelter products: 8 different designs are summarized, specified and technically reviewed.

- What is it not?

  Not a guideline on transitional shelter programming (however an overview of key programmatic issues are provided in a checklist)

- What is it for?
  - To accelerate early design phases of shelter programs
  - To accelerate the budgeting and planning of the procurement process for materials
  - To improve and validate the selected designs from an engineering perspective

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Tool at hand (2)

- Criteria for selection of designs
  - Project already implemented
  - Maximum of 3 weeks on-site construction required
  - Shelter durable to last the entire transitional period
  - Accurate technical information available (design drawings, BoQs, etc)
  - Shelters are safe and reduce risk from context-specific hazards
  - Culturally appropriate, flexible, efficient design, simple techniques
- Included designs vary from local practices (e.g. bamboo) to imported technologies (steel frame)

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Tool at hand (3)

Timber

Shelter 1:
Indonesia, Padang

Shelter 2:
Peru, Chincha

Shelter 5:
Pakistan

Shelter 8:
Peru, Chincha

Steel

Shelter 3:
Indonesia, Aceh

Shelter 6:
Haiti, Leogane

Shelter 7:
Vietnam, Ca Mau

Bamboo

Shelter 4:
Indonesia, Java

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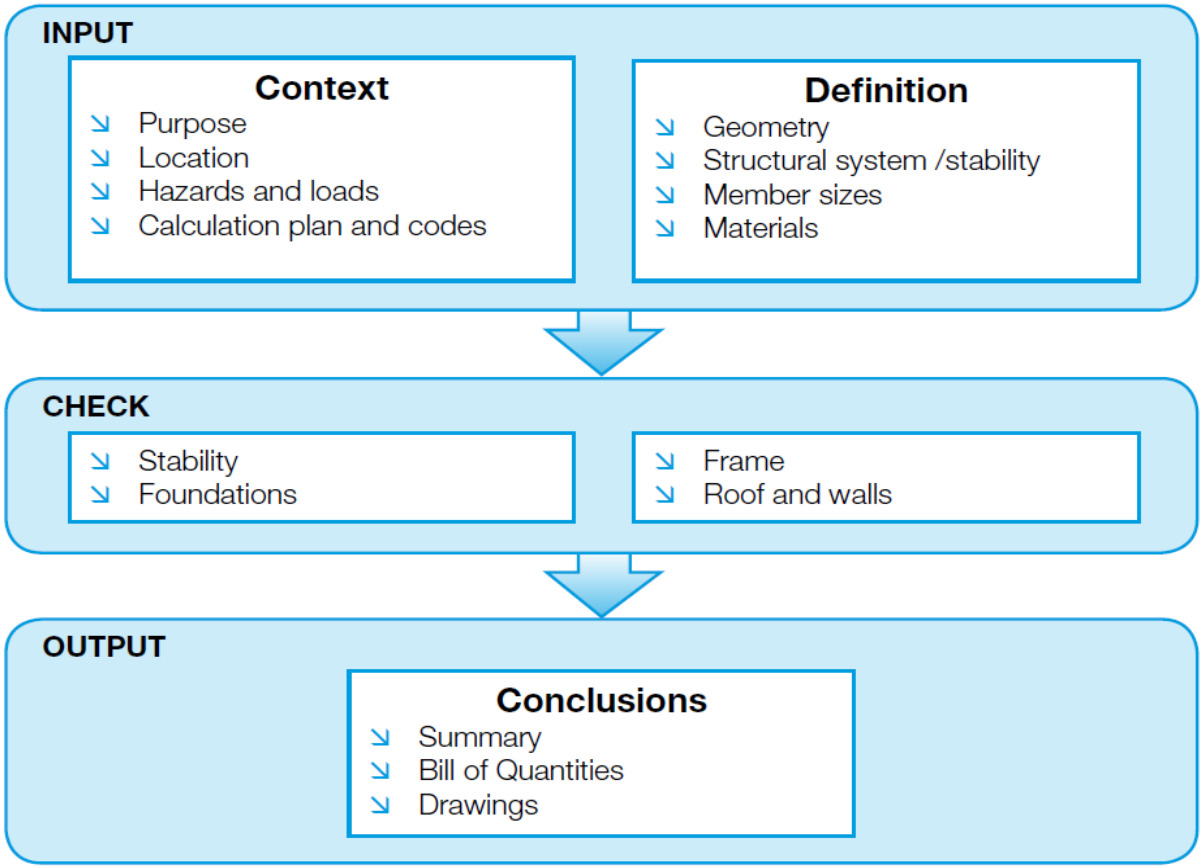
Review process



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Example of "Summary" (output) Aceh, Indonesia

Performance Analysis	
The performance of the frame under gravity loads alone is adequate. The foundations must be upgraded to prevent the settlement of the column bases into the soil. Bracing is required in the walls and roof to improve the lateral stability and make the structure safe.	
Hazard	**Performance**
Earthquake – HIGH	Currently damage to the shelter is expected due to the low resistance to lateral loads provided by the timber cladding. Bracing or suitably nailed plywood should be used to improve the lateral stability and prevent failure in the event of an earthquake. The foundations should also be changed to prevent settlement. The structure is lightweight and relatively flexible so will pose a low risk to life if damaged.
Wind – LOW	The shelter does not perform well under wind loads. In addition to the provision of wall and roof bracing, an alternative foundation solution is required to prevent settlement, uplift and sliding under wind loads. The column size should also be increased.
Flood – HIGH	The shelter has a raised floor to prevent damage but no specific checks against standing water have been made.

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What have we learnt?

- People think it is straightforward to design a small shelter but it is often **more complex** than larger structure.
- Code compliancy is not the issue. It is **structural integrity**.
- In seismic areas **lightweight shelters** are inherently safe, but lightweight buildings in strong winds **need to be tied down**.
- **Bracing and fixings** matter. A structure is only as strong as its weakest link.
- **Small improvements** can make a **BIG difference** (hurricane straps, adequate foundations, bracing, sufficient nailing) often without a big cost implication.

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Next steps

- Available in hard copy
- Available electronically on Shelter Centre Library and will be published on www.sheltercluster.org soon
- Currently limited to designs from the Movement. We hope to capture more examples in the future, also from other shelter agencies
- Open for new partnerships

FOR FURTHER INFORMATION ON TRANSITIONAL SHELTERS:EIGHT DESIGNS, PLEASE CONTACT:

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