Global Shelter Cluster
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Coordinating Humanitarian Shelter

Malawi Shelter Cluster Technical Working Group (TWG) on Promoting Safer building Practices
Notes of the meeting held on 13.05 .2021 from 10h-11.30h via ZOOM

Participants:
(in order of appearance on my zoom participants list)

	Name	Organization	Mail
1	Cecilia Schmölzer	IFRC / Global Shelter Cluster (GSC)	cecilia.schmoelzer@sheltercluster.org
2	Mazgo Khonje	Advocacy & community engagement officer, Centre for Community Organisation and Development (CCODE)	mazgokhonje@gmail.com
3	Dyna Khonde	CRS Malawi	dyna.khonde@crs.org
4	Jamie Richardson	CRS Malawi	jamie.richardson@crs.org
5	Julie Ideh	CRS Malawi	julie.ideh@crs.org
6	Charles Parrack	CENDEP (Centre for Emergency and Development practice), Oxford Brookes University	cparrack@brookes.ac.uk
7	Lameck Nkhoma	CARD, Malawi	lameck.nkhoma@cardmw.org
8	Lemekeza Mokiwa	CARE, Malawi	lemekeza.mokiwa@care.org
9	Lorenza Esquina	CRS	Lorenza.Esquinca@crs.org
10	Mandinda Zunguu	CADECOM, Malawi	mandindaz@gmail.com
11	Madalitso Jere,	CRS, Malawi	madalitsojere@gmail.com
12	Enrique Sevillano	CRAterre, France	e.sevillano.gutierrez@gmail.com
13	Sonia Molina	Independent Consultant	sonitri@gmail.com
14	Andrew Finlayson	BGS (British Geological Survey)	afin@bgs.ac.uk
15	Susanne Sargeant	BGS (British Geological Survey)	slsa@bgs.ac.uk
16	Donald Manda	HfH Malawi	dmanda@habitat.mw
17	Emma Lovell	ODI (overseas development institute)	Emma Lovell <e.lovell@odi.org.uk
18	Bill Flinn	CARE, UK	flinn@careinternational.org
19	Sue Webb	CENDEP (Centre for Emergency and Development practice), Oxford Brookes University	s.webb@brookes.ac.uk

Agenda:

1. recap key weaknesses in rural housing: (WHY do certain elements fail and how can those weaknesses be addressed)
2. criteria for identifying contextually appropriate construction technologies
3. AOB, suggestions for way forward

Welcome and recap

Recap of the last meetings discussion around "green technologies" and different interpretations ther of. Key conclusions are that there are three key areas that need to be addressed when promoting safer construction in Malawi:

- The choice of materials to be sustainable and of good quality.
- The good technical workmanship to provide safe construction.
- Certain structural elements or details that need particular attention (such as foundations, raised plinths, dimensioning of structural elements)

After the recap, two new participants and project partners were introduced, Susanne Sergeant (Seismologist) and Andrew Finlayson (Geomorphologist) from BGS (British Geological Survey). They are in contact with geoscientist in Malawi to explore how geoscience can support shelter recovery and safer housing construction for example by providing information around hazard related to land/soil types and groundwater characteristics the work around shelter and recovery. Participants flagged that geotechnical information is largely unknown or unavailable especially in rural areas and hence

criteria for identifying contextually appropriate construction technologies

Together the participants explored what could be criteria to decide whether a material, techniques, solutions is "green" and adequate in a given context? Various materials used for construction were discussed extensively about their potential as "green" sustainable materials and the various considerations that have to be taken into account. In Summary:

- water for construction is it available in the right quality (e.g. no salt water, no silt or other contamination) and quantities? Is it easily accessible and can be transported to the location without too much effort (e.g. does water have to be carried for long distances from the source)? Do people/artisans have the knowledge about the correct use of water e.g. for concrete (often use too much)?
- soil for construction: does knowledge and understanding of soil types and their applicability for construction exist or is more information needed? Is available soil good for construction and how to test that? Often there are gaps in the knowledge needed to use soil for construction (or production of mud-blocks). Environmental consideration around exploitation of soil (esp. topsoil) in larger quantities are also important.

- Sand for construction (concrete and mortar): availability and sourcing (e.g. dredging from rivers, especially around bridges can cause destruction; dredging is illegal in cities), Transport and cost?
- Bamboo: is available but not very commonly used. Needs to be explored in terms of potential market, availability (potential production capacity of plantations) and cost. Furthermore technical/artisanal expertise for the use of bamboo needs to be built.
- Timber: widely discouraged bc of deforestation; needs to be assessed very carefully with regard to environmental considerations, treatment (against termites and other pests), price, technical skills needed etc.
- Other natural resources such as grass for thatch depending on their (seasonal) availability.
- Steel: commonly used in urban areas, mostly for roofing trusses as well as roofing sheets. Often cheaper than wood! Not easily accessible in Rural areas. Also needs special skills and equipment (for welding) to work with it.
- Cement: as component e.g. in CSEB, or for floor rendering which is much appreciated for maintenance and hygiene reasons
- Concrete as mix of sand water and gravel as wells as some steel, is dependent on the availability of these materials as well as the needed expertise to mix and use it properly.
- Plastics if used, should ideally be recyclable or re-usable.
- Potential alternative materials for example binders to replace cement (lime, fly-ash, egg-shells,…?)

First conclusions about what criteria need to be fulfilled to define a material as “green”:

- Transport cost and feasibility need to be taken into consideration for any material that need to be transported to the site from elsewhere. E.g. is the site accessible by road, with a truck, even during rainy season? If transport to the location is too difficult or exceedingly expensive, the material cannot really be considered adequate for that context.
- Ease of maintenance should be a priority for any material to be categorized as sustainable. It is also related to cost and availability. If people do not know how or cannot afford to maintain the materials used Houses will degrade faster and repairs will be more difficult.
- For any natural materials (such as earth, timber, bamboo, grass, etc.) the potentially negative environmental impacts of exploiting larger quantities (such as after a disaster when many people want to rebuild at the same time) must be assessed carefully. Other aspects like seasonal availability, need for specific treatments e.g. against pests also needs to be taken into consideration

➔ Efforts should be made in the design and construction techniques to reduce the material consumption as much as technically feasible, for reasons of efficiency and cost. This is especially important for materials considered as scarce, such as wood/timber. Good engineering can help a lot to reduce the quantities of wood e.g. needed for the roof structure.

➔ Market studies should be undertaken for rather unknown or not widely used materials, such as Bamboo or CSEB to understand better the potential opportunities that could be crated by promoting such materials. HfH with UNDP is undertaking a market assessment for CSEB and will share findings as soon as available.

➔ Universities should be invited to contribute with research about alternative materials and new green solutions.
Some contacts were shared, for Cecilia to follow up.

AOB, suggestions for way forward

CRS and CARD announced that they are preparing some demonstration shelters in Nsanje and would like to invite participants for a field visit to see them. They will share the date soon.

➔ A larger workshop is planned by CRS and CARE towards late summer to share results of some ongoing field studies and share experience and learning.

➔ the **next meeting will be on Thursday June 3rd at 10h Malawi time.** Invitation will be sent as calendar invite.

Alo feel free to join the TWG Whatsapp group to be better connected: https://chat.whatsapp.com/DJEj8QAwGN39Nk5o6y6EXA