

STEP 1: UNDERSTANDING THE CONTEXT

**OPEN THE EYES:
UNDERSTAND THE CONTEXT**

**OPEN THE EARS:
LISTEN TO PEOPLE AND ASK QUESTIONS
BEFORE GIVING ANSWERS**

**OPEN THE MIND:
BECAUSE WE FIND MANY ANSWERS IN
PEOPLE'S PRACTICES AND IN THE
INTELLIGENCE OF LOCAL SOLUTIONS**

Step 1 Understanding the context

Informing Choice for Better Shelter

A Protocol for Developing Shelter and Settlement
 Information Education Communication (IEC) Resources



1st Issue (February 2019)

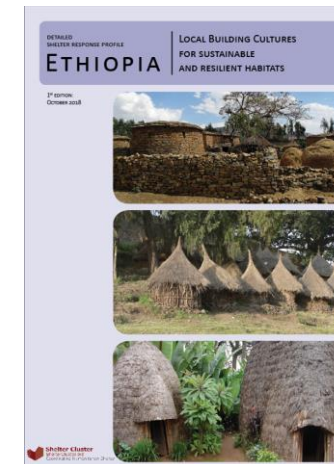
Global Shelter Cluster – Promoting Safer Building Working Group

Step 1 – Activity 1

Shelter response profiles (scale of Malawi – 1st stage)

- A 60 pages A4 document
- Objectives: Help actors understand the relevance of Local Building Cultures and integrate them into their projects after more accurate and localized context analysis

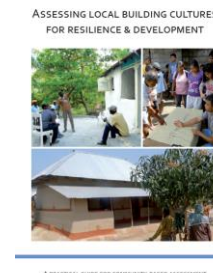
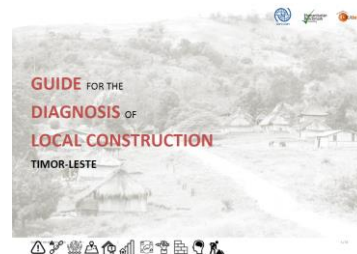
To find the existing SRP: <https://www.sheltercluster.org/promoting-safer-building-working-group/library/shelter-response-profiles>



Step 1 – Activity 2

Context analysis (scale of the locality – 2nd stage)

- A methodology for localized context analysis regarding Local Building Cultures, with Focus Group Discussions, site visits, report writing...
- Objectives: Help actors in understanding local context and assessing Local Building Cultures and integrating them into their projects



STEP 1: UNDERSTANDING THE CONTEXT

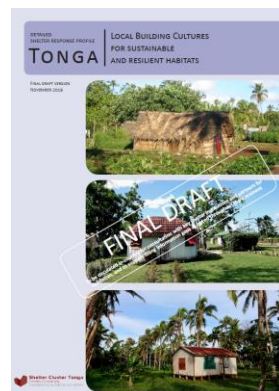
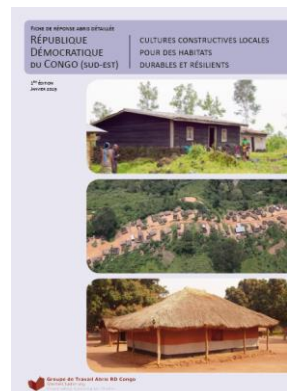
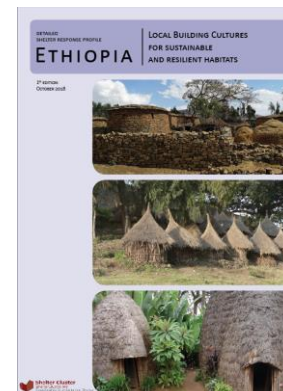
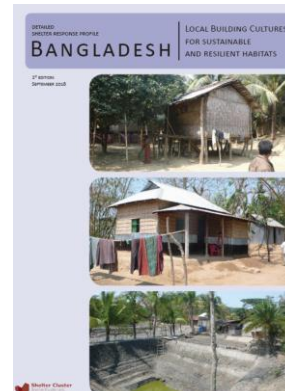
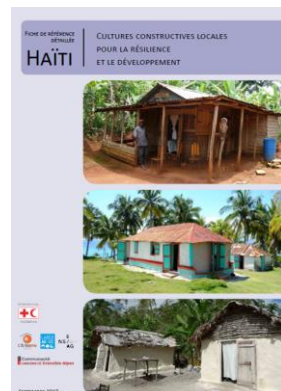
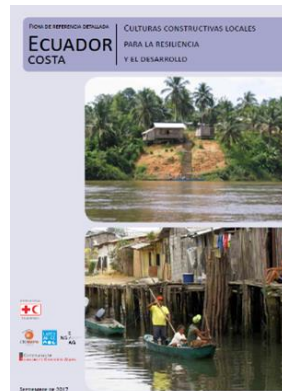
ACTIVITY 1: SHELTER RESPONSE PROFILE

SHELTER RESPONSE PROFILES

Shelter response profiles

7 countries already studied:

- **FIJI** (En) -> <https://www.sheltercluster.org/promoting-safer-building-working-group/library/shelter-response-profiles>
- **ECUADOR** (Sp) -> <https://www.sheltercluster.org/promoting-safer-building-working-group/documents-0>
- **HAITI** (Fr) -> https://drive.google.com/open?id=0B_TTG4Ds-jcQSC1kbDI2YXZDN0U
- **BANGLADESH** (En) -> <https://www.sheltercluster.org/promoting-safer-building-working-group/documents/bangladesh-local-building-cultures-resilience-and>
- **ETHIOPIA** (En) -> <https://www.sheltercluster.org/ethiopia/documents/ethiopia-country-profile>
- **DEMOCRATIC REPUBLIC OF THE CONGO** (Fr) -> https://www.sheltercluster.org/sites/default/files/docs/fiche_reponse_abris_-_rdc_sud-est_-_version_finale_hq_-_2019_01.pdf
- **TONGA** (En) -> In country validation in progress



SHELTER RESPONSE PROFILES

CONTENT

1. Introduction

2. Country profile

- 2.1. General description
- 2.2. Demographic, cultural and socioeconomic data
- 2.3. Natural hazards, environment and climate change impacts

3. Land, housing, construction and DRR in Malawi

- 3.1. Regulatory framework
- 3.2. Institutional framework and organisations involved
- 3.3. Land, housing and property
- 3.4. Construction sector

4. Description of local habitat

- 4.1. Households description
- 4.2. Access to water, sanitation and other services
- 4.3. Organisation of settlements and conditions of use of habitat
- 4.4. Available construction materials
- 4.5. Local affordable or self-built housing types
- 4.6. Description per region (is it relevant?)

5. Learning from local habitat

- 5.1. Hazard resistant practices
- 5.2. Prevailing dangerous construction practices
- 5.3. Lifespan, extensions and maintenance
- 5.4. Green design, comfort features and aesthetics
- 5.5. Health issues related to housing
- 5.6. Protection, gender and environment
- 5.7. Sociocultural practices fostering resilience
- 5.8. Evolution of local building cultures

6. Examples of projects based on local building cultures

7. Additional resources and bibliography

SHELTER RESPONSE PROFILES

4. DESCRIPTION OF LOCAL HABITAT

4.1. LOCAL HABITAT: GENERAL DESCRIPTION

A. LOCAL AFFORDABLE OR SELF-BUILT HOUSING

VERNACULAR HOUSING

Regarding the form, all around the country, round houses (*tukul*) with walls built in different materials and thatch roofs are very common. Rectilinear houses are less common, but they are gradually replacing round houses in order to make it easier the use of CGI sheets for roofing. Round houses with thatch roofs are known in the north of the country as *sarbat* (grass hut), while rectilinear houses with CGI sheets roofs are known as *corcorobet* (corrugated hut).

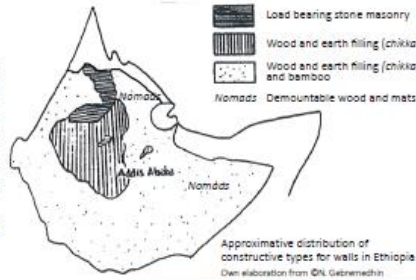
Vernacular housing in Ethiopia can be shallowly classified into four categories depending on wall types:

Timber structure with earth and fibres filling (*chikka*)

Chikka houses are very common throughout the country (72% of houses had their walls in *chikka* in 1984). Their structure is built with wood poles of eucalyptus or other available timber measuring about 8 cm large. Wood is split in half if the diameter is too large. Eucalyptus, which is easily attacked by termites, is smoked and/or soaked in burnt oil. The poles are set vertically about 30 to 40 cm deep into the ground or on a stone or cement foundation. Foundations are then filled with stones and sometimes lime mortar up to 35 cm above the natural terrain. These main poles are then tied in place and diagonally braced when necessary. Wood elements with smaller diameters (about 5cm) are planted in the basement or on the ground and go up to the roof. They are braced by horizontal elements, the assembly being ensured by strings and/or barks of eucalyptus. Thinner eucalyptus elements (*siqha*) are attached to this structure to accommodate the *chikka* mixture, close enough to prevent excessive shrinkage of the *chikka* during drying.

The roof (thatch or CGI sheets) is put before applying the *chikka* mortars. Then, a mixture of earth, straw (usually teff straw, a common cereal in Ethiopian highlands) and water, is used as a filling for the wood structure. It is also used for plastering. The mixture is left to ferment between 3 days and 2 months for better adherence quality. It is stirred every 2-3 days for homogenization. Then the mortar is projected with force on the wood structure, so that it hangs well. Once dry, an extra layer can be applied. The layers on the inner side of the construction are made before those on the outer side. One or two layers are applied in the inner part and two or three in the outer side. The amount of straw in the mixture increases in the final layers. The last layer is usually give a smooth finish. The walls can get to be protected by a relatively thick earth coating (15 to 20 mm). The final layer can then be coated or not (with lime or cement mortar) with an improvement of the hanging through stones embedded in the layers of *chikka*. To prevent cracking around wooden doors and windows, they are only fixed once the first layer of *chikka* is dry.

Houses in the highlands have thick *chikka* walls in order to get better inertia and control of humidity and so a better temperature inside the houses in this temperate region. On the contrary, these houses have less and less mortar in the walls in the lower tropical climate areas, and they permit ventilation and better comfort inside the houses. In some areas, almost no *chikka* is applied to the wooden structure and the walls are almost only made of wood.



Sources: WOLDE-MARIAM (1996), GEORGHIS (2015), DAVIS & BLOCK (2015), LAST (n. d.), MOGES (2015), UN-HABITAT (2013), BRIDONNEAU et al (2012), Central Statistical Agency (CSA) (Ethiopia, shafiqul-hamid.ward@psa, wicorah@psa, ethiopia, un-habitat) (2008), NAIMATO & KIDANU (1998)

Approximative distribution of constructive types for walls in Ethiopia
Dien elaboration from DR. Galzinmethin



Oromo chikka tukul near Langano lake (Oromia). CC-Nivara



Chikka house in Gedeo Zone (SNNPR). © Shashberk



Decorated chikka house in the South Omo Zone (SNNPR). CC-Nisa Willert

Chikka houses are usually round houses (*tukul*) covered with thatch, but more and more metal roofs are used and houses are becoming rectangular. Corrugated iron is growing as a roofing material as the price of thatching grass rises and skilled thatchers become harder to find. The roofs usually have an overhang to protect the walls. CGI sheets and straw are sometimes combined in the roof to have a better comfort.

Thatched roofs have the disadvantage of being flammable, but they also allow to cook inside the house without a chimney, as smoke can pass through the thatched roof. At the same time, smoke can treat the thatch against insect attacks.

These two typologies are built with the limited building materials and construction skills available in the rural areas. These constructions require regular maintenance. Thermal comfort is very recognized and appreciated.

Load bearing stone masonry walls with earthen mortar

This is found specially in Tigray and Amhara regions, but also in cities like Harar or Dire-Dawa.

In these regions, stone is an abundant resource. Houses are usually square or round and stone built. There are one single level square or round houses, and also two levels rounded houses.

Basalt is used for foundations. Walls are built with stones (gray trachyte). In square houses large stones well carved are placed at the corners with a filling of smaller stones for the rest of the walls. Mortar is made of earth and straw (*chikka* mortar). The collection of stones can last nearly 3 years, then the construction of the house typically takes 4 to 6 months. Openings and frames are in wood. Stone balconies can be found on the 1st floor, which protects the wall of the 1st level from the rain (*chikka* mortar).

The wooden posts supporting the roof are positioned all around the house, with no particular symmetry according to their height and section.

Flat roofs of wood covered with sods of earth and wide overhanging eaves are common, but also thatch roofs can be found. Recent houses often have CGI roofs (*corcoro*) with gable ends as thatching grass becomes scarcer.

Ceilings are usually very decorated. The interior walls are often plastered with a mix of earth, straw and cow dung.

Bamboo and thatch walls

This technique is found in SNNP Region, especially in Dorze and Sidama peoples.

The structure is built with split bamboos sunk into the ground every 10 cm or so following a circle or oval form. The series of vertical bamboos are connected to each other, forming circles or ovals that have a diameter which diminishes as one goes up. The bamboo structure is then covered with bamboo leaves (sometimes also with grass and ensete leaves). Small openings at mid-height are usual to leave the smoke out.

Dorze houses do not have central pole, while Sidama houses do have one and have a bigger surface.

Wood and mats huts from nomads

These houses are used by the nomads in Afar and Somali regions. They are erected, dismantled and loaded on to the camels by the women. Huts are owned by women. Men usually gather the materials to build the huts.

Both types are made of an armature of boughs bound with palm fibre and covered with mats. Each group of huts is usually surrounded by a hedge or wall to protect the animals from enemies. The Somali hut is called the *aqal*. In some cases, there is an outer uncovered verandah.



Stone tukul in Lalibela in Amhara region. CC-Beth



Houses with stone masonry walls in Tigray. CC-Bernard Gagnon



Bamboo and thatch house (Dorze people-SNNPR). CC-David Stanley



Afar huts (Afar region). © T. Jeffrey-Chikara

SHELTER RESPONSE PROFILES

5. LEARNING FROM LOCAL HABITAT

5.1. HAZARD-RESISTANT PRACTICES

A. FLOODS

[ALL ETHIOPIA]

- Elevated granaries to protect crops against moisture are found in some regions.
- The roof structure is sometimes borne by an independent timber or bamboo frame while the inside space is fenced by load bearing *chikka* or stone walls. In case of damage to the walls during floods or earthquakes, the frame can withstand autonomously, hence preserving the roof which is often the most expensive part of the construction. Moreover, the space under the withstanding roof can be used as an emergency shelter.
- Some constructions in flood prone areas (e.g. Amhara, Anuski in Gambela or Ari in SNNPR) start with the creation of an earthen platform. This is done by raising up an earthen mound whose edges work as a sacrificial mass. This solution is very effective and it can be done at minor cost with earth from the site. However, regular maintenance is required to ensure its effectiveness.
- Vegetation cover around the houses, protect them from strong winds but also from floods effects thanks to the roots system.

[GAMBELA]

- The Nuer and Anuski peoples move from grassy flood-prone zones to higher places during the rainy season. Their villages are built in these higher zones. They have two kinds of houses, one made of grass for the dry season and *chikka* houses for the rainy season in villages.

[BENISHANGUL-GUMUZ]

- Raised platforms to store the grains and crops are common inside the houses in Berta and Gumuz societies.
- There also exist raised platforms to dry cereals outdoors (e.g. Berta people) which may reduce vermin attack.

[SOUTHERN NATIONS, NATIONALITIES AND PEOPLES' REGION]

- The Gurage have different spaces inside their houses that serve for storage of goods. The zones above the animal living areas in houses space (inside the main house) is covered by a mezzanine to store the firewood during the rainy season. Food is also kept inside from one year to the next as well as the tools for harvesting.
- The Alaba houses (SNNPR) have an earthen plinth with a step shape forming a circular bench around the house. This step serves to avoid damages from ordinary rains and even from ordinary floods.

B. EARTHQUAKES

- The roof structure is sometimes borne by an independent timber or bamboo frame while the inside space is fenced by *chikka* or stone walls. In case of damage to the walls during floods or earthquakes, the supportive frame can survive autonomously, hence preserving the roof which is often the most expensive part of the construction. Moreover, the space under the resilient roof can be used as an emergency shelter.
- Some double story buildings in cities have the ground floor built with heavy materials such as stones and the upper floor built with lighter materials such as wood. Thanks to these greater lightness and flexibility, the upper portion is able to endure the movements produced by earthquakes without cracking. In case of partial collapse of the wall, the risk of serious injuries is considerably less, thanks to the reduced weight of the materials used.
- The round forms of *tukuls* provide better resistance to earthquakes.



Aari houses built on a mound with a round verandah protecting the walls from the rain. (Debulu Omo Zone in SNNPR). CC- Richard Mortel



Karo people food storage on stilts (Debulu Omo Zone in SNNPR). CC- Richard Mortel



Earthen plinth in an Alaba house (SNNPR). © Lorenza Fontana



Heavy ground floor and light upper floor in Harar. The upper parts of the walls have a decreased thickness and/or are built with materials lighter and more flexible than those used for the lower parts. CC- IWH



Church with horizontal seismic timber bands or «monkey heads» in Debre Damo monastery in Tigray. CC- Travel Afkonado

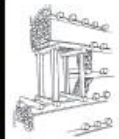
- Wooden structures have a good flexibility. They are more seismically resilient and rarely collapse in the event of an earthquake. Therefore they are also less likely to cause the loss of life of the inhabitants.

[AMHARA AND TIGRAY]

- In Tigray and Amhara regions, there are some examples of horizontal ladder-like timber bands. This technique called «monkey heads» is typical from the Axumite period, and has later been used in vernacular architecture. This technique consists of stone and earthen mortar masonry walls where timber ladder-like horizontal bands are integrated with a varying distance depending on the buildings. Long squared timbers tie the entire building and are held by short round cross-pieces whose end is visible (the «monkey heads»). The horizontal beams tightly hold perpendicular walls together and bind the whole building at different levels, avoiding dissociation and strengthening of walls towards out-of-plane lateral forces during earthquakes.



Church of Yemrehanna Kristos with horizontal timber bands or «monkey heads» near Lalibela in Amhara. CC- Travel Afkonado



«Monkey heads» technique. © N. Gebremedhin

C. EROSION, LANDSLIDES AND RIVERBANK EROSION

- In many locations around Ethiopia, it has become common to implement terracing and reforestation activities so as to reduce erosion and landslides. This also helps to retain rainfall and replenish the underground aquifers.
- Surface drainage systems are usual. They are executed with simple means and contribute to the reduction of landslides by ensuring that water flows are managed and directed away from unstable areas.



Surface drainage system to prevent from erosion and flooding near Bahir Dar, Amhara. © O. Meles

TO FIND OUT MORE

- WORLD VISION (2014)
Trip Report and Recommendations.
Regreening Tigray
<http://fmprhub.com.au/wp-content/uploads/2014/02/Tigray-Regreening-Report.pdf>



Stone barriers protecting plants against strong winds, improving water retention and infiltration and preventing soil erosion in Western Hararge (Oromia). Project developed with USAID. CC- USAID



Stone terraces preventing soil erosion and landslides near Dire Dawa. CC- Petr Kovacs

D. INSECT INFESTATION

[ALL ETHIOPIA]

- Farmers attempt a number of traditional control methods to control termite infestation, mostly plastic sheets and painting with used engine oil, but they were usually ineffective. (Debelo & Degaga, 2014).
- Eucalyptus, which is easily attacked by termites, is usually smoked and / or soaked in burnt oil.
- Termites are controlled by destroying their nests. When a termite nest is too close to habitation, it is common for the community to dig the queen out of the nest so that the whole colony moves away from the houses.
- Species such as *Thid (Juniperus procera hochst)* and *Kosso (Hagenia abyssinica)* have been traditionally used for the walls as they are very resistant to moisture and termites. Now they are very scarce. Also, in central Ethiopia, different kinds of wood species used in construction are more resistant to termites (people prefer them if available): *Dichrostachys cinerea* (Ader or Ergett-dimmo in Amhara language, Adesa in Oromo language, Dhigdar or Galool-sur in Somali language), *Acacia strobila* (Seraw in Tigringa language), *Flueggea virosa* (no local names available) or *Acacia Senegal* (Gum arabic tree). However, care should be taken when purchasing timber, as native species are carefully monitored and licenced by the authorities.
- As mentioned before in the text, smoke acts as a treatment of thatch against insect attacks.

[SOUTHERN NATIONS, NATIONALITIES AND PEOPLES' REGION]

- The Gamo people (SNNPR) leave slight gaps between the ground and the vegetation covering of their houses in order to reduce the termite attack on these materials.
- Weevils are a beetle which consume bamboo. The Gamo people (SNNPR) traditionally cut bamboo depending on moon cycles (no specific information found on what particular moments are preferred). The Gamo people (SNNPR) smoke the bamboo firing different leaves in order to avoid the attack of weevils.

SHELTER RESPONSE PROFILE MALAWI



**SHELTER RESPONSE
PROFILE MALAWI****WHAT CONTRIBUTIONS ARE NEEDED/DESIRABLE FROM THE TWIG FOR THE SRP?****1****Collection of information**

All of you can contribute sending us **EXISTING** reports, documents, information, images, photos, videos, resources, etc., about:

local building cultures/practices

+

habitat / settlements / shelter

+

shelter / habitat projects...

SHELTER RESPONSE
PROFILE MALAWI

WHAT CONTRIBUTIONS ARE NEEDED/DESIRABLE FROM THE TWIG FOR THE SRP?

2

**Focal group for active participation in the production of the profile
(follow-up, review, redaction if desired)**

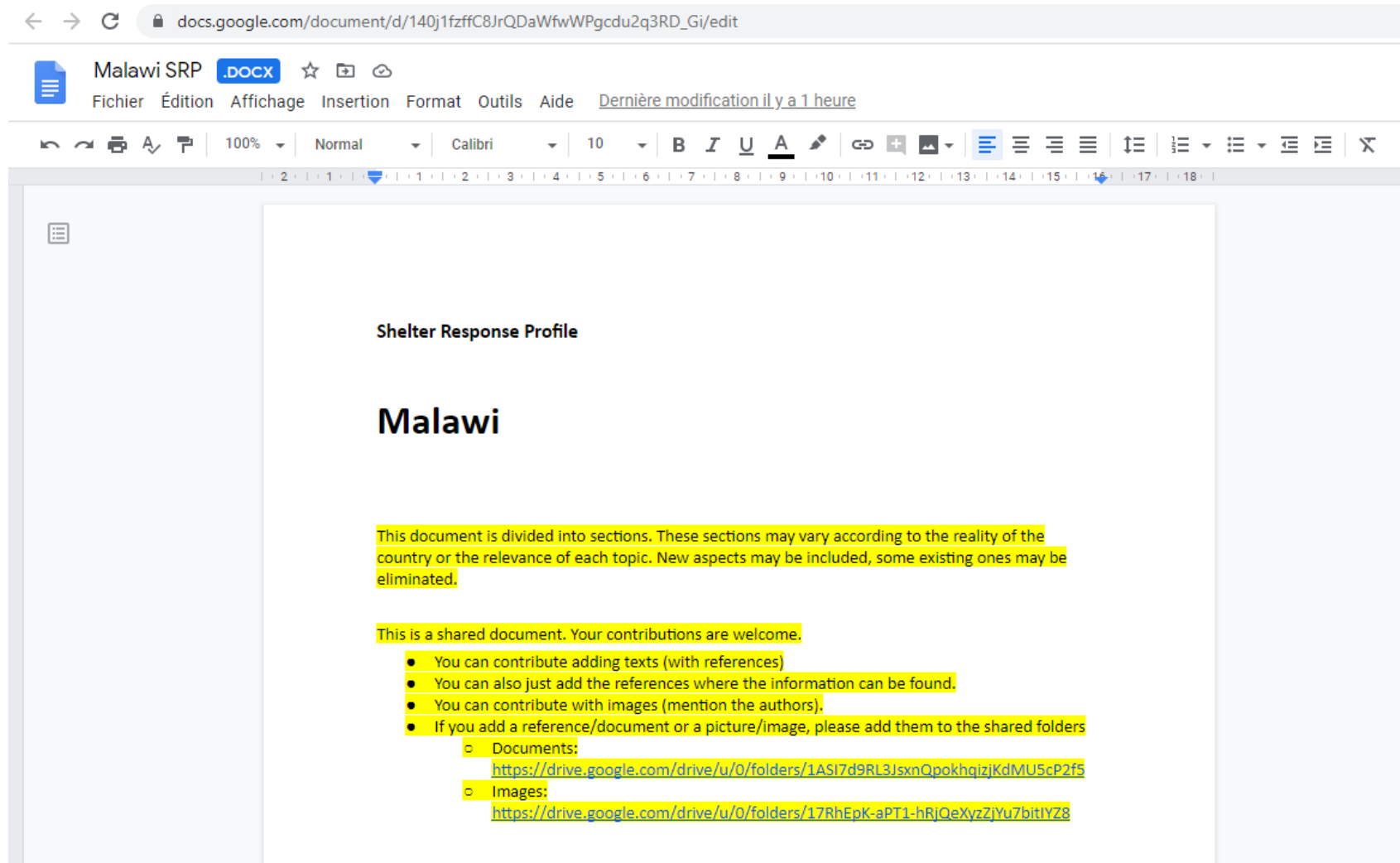


A group of persons willing to participate more closely in the production of this document.

The work on this profile will certainly be the subject of rich **exchanges between the redaction team and the TWIG** in the coming months for writing and review...

If you wish to **make part of the Focal group for redaction and/or review**, please **let us know**

SHELTER RESPONSE PROFILE MALAWI



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Malawi SRP .DOCX

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Shelter Response Profile

Malawi

This document is divided into sections. These sections may vary according to the reality of the country or the relevance of each topic. New aspects may be included, some existing ones may be eliminated.

This is a shared document. Your contributions are welcome.

- You can contribute adding texts (with references)
- You can also just add the references where the information can be found.
- You can contribute with images (mention the authors).
- If you add a reference/document or a picture/image, please add them to the shared folders
 - o Documents:
<https://drive.google.com/drive/u/0/folders/1ASi7d9RL3JsnQpokhqzjKdMU5cP2f5>
 - o Images:
<https://drive.google.com/drive/u/0/folders/17RhEpK-aPT1-hRjOeXyzZjYu7bitIYZ8>

STEP 1: UNDERSTANDING THE CONTEXT

ACTIVITY 2: LOCALISED CONTEXT ANALYSIS

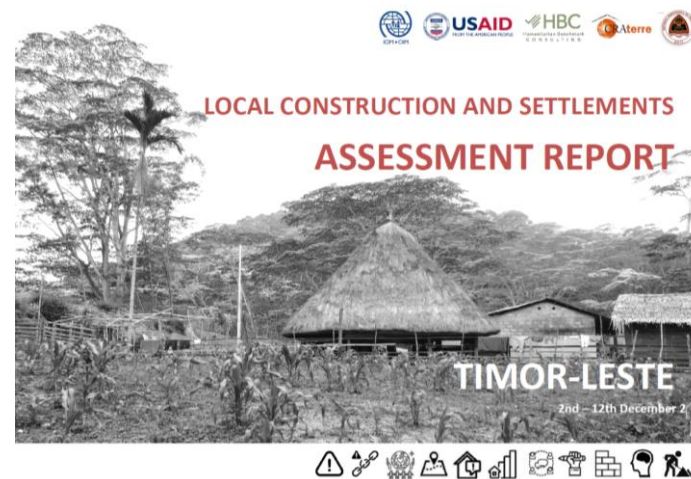
CONTEXT ANALYSIS (Localized)

FORM 2
SYNTHESIS OF COLLECTIVE INTERVIEW AND TARGET LOCATION VISIT

The purpose of this form is to synthesise the information gathered in the target location visit, and the collective interview with the community.

It is highly desirable that women and people with disabilities are included in the collective interview. However, there is also a specific questionnaire for these groups (Form 3) in order to allow in-depth follow-up of certain questions.




1	Form n°	Research location	Interviewers	Date	Contacts of resource persons
2	Location (Coordinates, municipality)				
3	Persons present at the site visit	Surname	Given name	Organisation	
4	Persons present in the community group interview	Surname	Given name	Organisation	



Last version of the simplified methodology for context analysis (work in progress):
<https://img1.wsimg.com/blobby/go/a227c4d4-aa66-4ead-b3cf-4a424f7e31f5/downloads/CRAterre%20Manual%20diagnosis%20local%20construction%20E.pdf?ver=1592992963295>

To go further:
<https://craterre.hypotheses.org/999>

5. ASSESSMENT ACTIVITIES

PHASE	ACTIVITIES	OBJECTIVES	PREPARATION	RESOURCES NEEDED
A STUDY OF THE AREA AND ESTABLISHING CONTACT BEFORE THE FIELD MISSION	1. SELECTION OF THE STUDY AREA 	<ul style="list-style-type: none"> To select a target area linked with the local authorities, ad hoc local humanitarian plans and the needs identified by the Shelter Cluster. 	<ul style="list-style-type: none"> Careful consideration of the security situation before going to the field. 	<ul style="list-style-type: none"> Operational Plan Shelter Cluster and Government; Ad hoc local humanitarian plans and needs identified by the Shelter Cluster.
	2. STUDY OF EXISTING DOCUMENTATION 	<ul style="list-style-type: none"> To understand the population in the area being studied; To understand the actors already operating in the area; To understand the community dynamics (different ethnic groups, associations, women, young people, people living with disability etc.). 	<ul style="list-style-type: none"> Study available documentation on the area and review of the whole body of documents to learn about the situation before going to the field. 	<ul style="list-style-type: none"> Existing documentation on the area.
	3. CONTACT WITH LOCAL AUTHORITIES BEFORE THE FIELD VISIT 	<ul style="list-style-type: none"> To clarify the reasons for the activity with those in positions of responsibility for the local population; To respect the principle of accountability to the local authorities; To facilitate the process. 	<ul style="list-style-type: none"> Identification of the correct protocol (who should be contacted first, and by whom); Identification of the right period to undertake the field visit (taking note of market days, religious festivals, aid distributions, sensitising by other actors, etc) Agreeing meeting times and places with the people who will meet with you on arrival in the field, sufficiently ahead of your journey to the field; Sharing the objective of the visit and the way the research will be carried out with the different stakeholders; Logistical preparations for the field visit (local guides, meals, accommodation, - if necessary, meeting room, dealing with unexpected events, rain, etc) 	

Strong winds: These are one of the most common hazards and recognised by all communities. In most locations, good practice in reducing risk was observed.



Dense forest wind screen between the sea and the settlement in Aldeia Kuluhun (Manufah). Tall trees form a windbreak, which reduces strength and velocity of the wind, but are also at a sufficient distance to avoid accidents if a tree falls down.



Houses are oriented with the short walls perpendicular to the dominant wind direction, reducing impact on the house. Here the wind comes from the sea, right in the back of the house. Aldeia Kuluhun (Manufah).

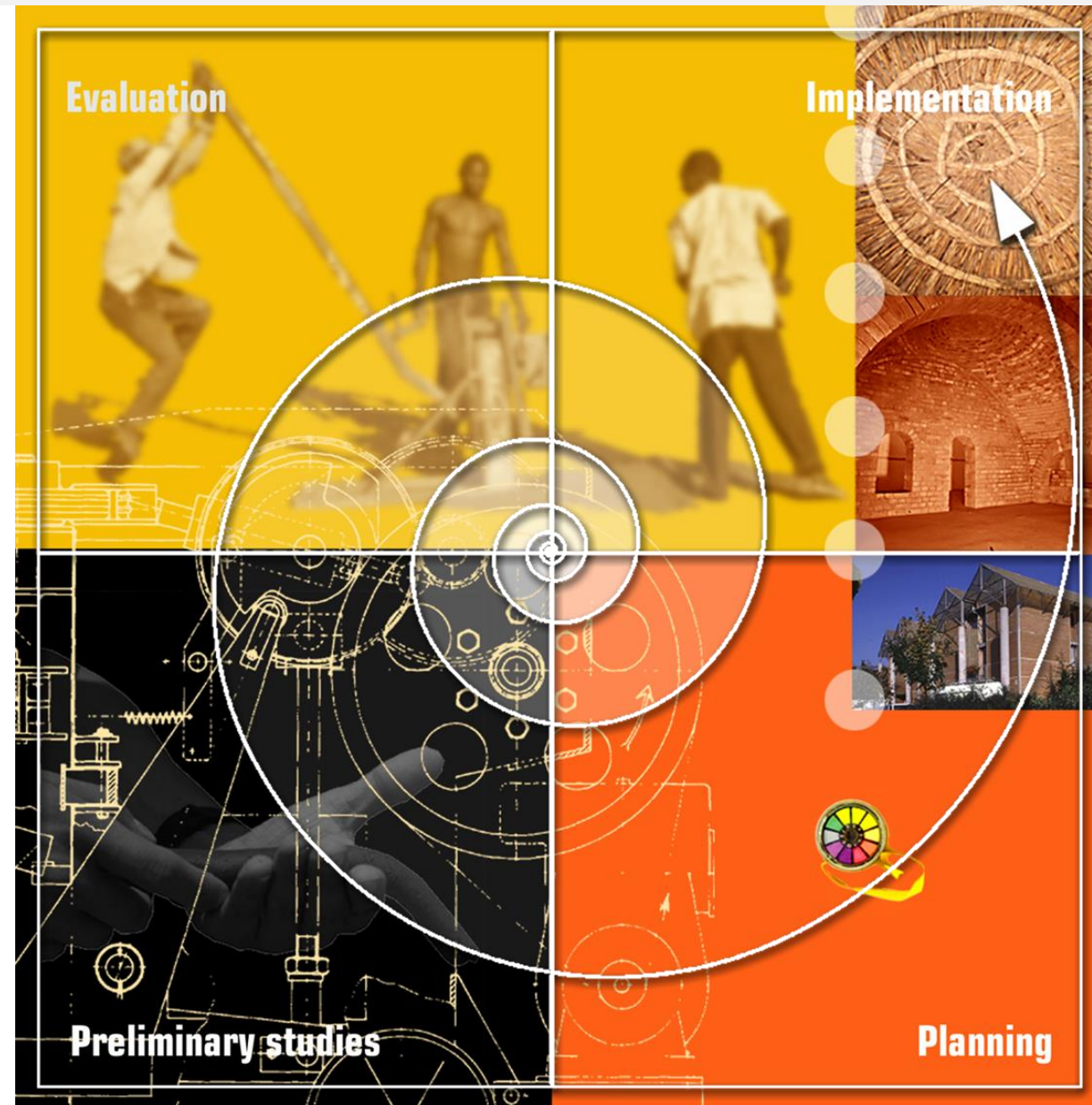


Having separate roofs for veranda and house is a good practice to avoid the whole roof being blown off by strong winds. Aldeia Siscoelema (Liquiçá).



**ITERATIVE
METHOD****Iterative method**

1. Understanding the context / preliminary studies
2. Planning / design
3. Implementation
4. Evaluation

**Facilitates upscaling**

THANKS FOR YOUR ATTENTION

ANY QUESTIONS?