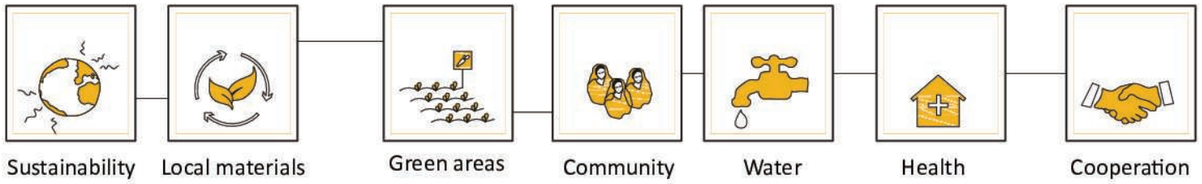
‘Improved’ sanitation systems

Dispensary’s toilet block in Tanzania

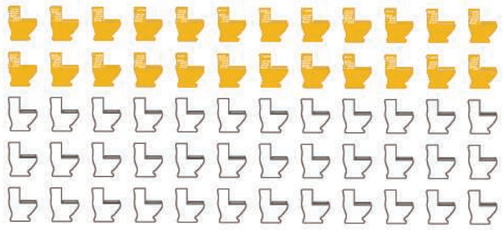


Access to sanitation measures the percentage of a country’s population that has access to improved source of sanitation.

This system is considered improved, if it hygienically separates human excreta from human contact and is not public, meaning that it can be either private or shared. Although there has been significant progress in access to sanitation worldwide, there are 2.5 billion people without access to basic sanitation worldwide.

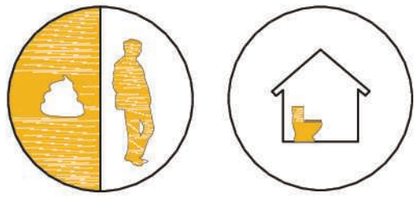
Clean water is an essential element for human health, wellbeing and prosperity. Whether used for drinking, cleaning, food production or industrial output, access to sufficient water resources is a basic human need. Access to sufficient and safe sanitation facilities is also vital for hygiene, disease prevention, and human health.

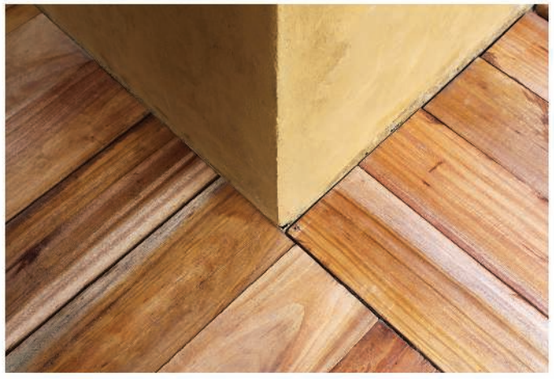
Access to sanitation



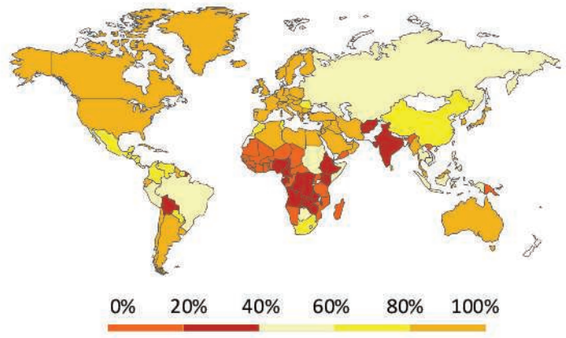
40 % of global population doesn’t have access to a clean hygienic toilet

‘Improved sanitation’





Water use and sanitation

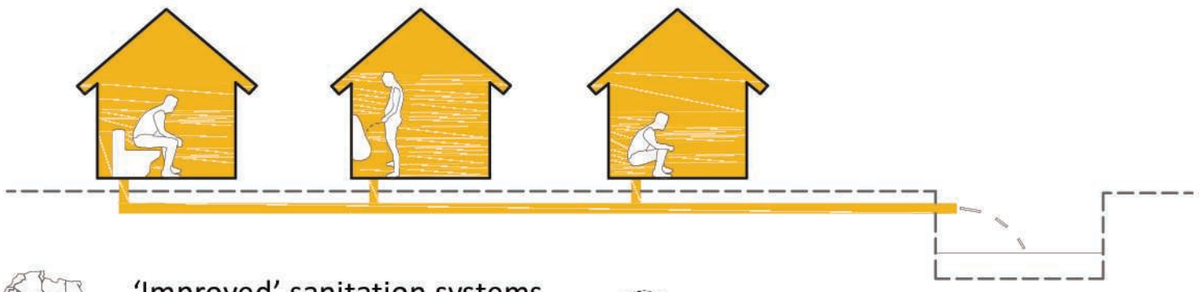


Maji Moto is a village located in Arusha, northern Tanzania with a population of about 1200 adults and 800 children.

Due to large scale privatisation of lands, the Maasai were forced to become sedentary and around 30 years ago a number of people decided to establish the village.

The main sources of income in Maji Moto include agriculture and the keeping of livestock.

Unfortunately, there are no health centres in Maji Moto and the lack of healthcare facilities and improved sanitation systems brought C-re-aid to start a deep research on ways for improving the current unhygienic situation with the construction of a small dispensary and a public toilet block that hopefully will be a cheap prototype to replicate by the inhabitants.



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Dispensary’s toilet block in Tanzania

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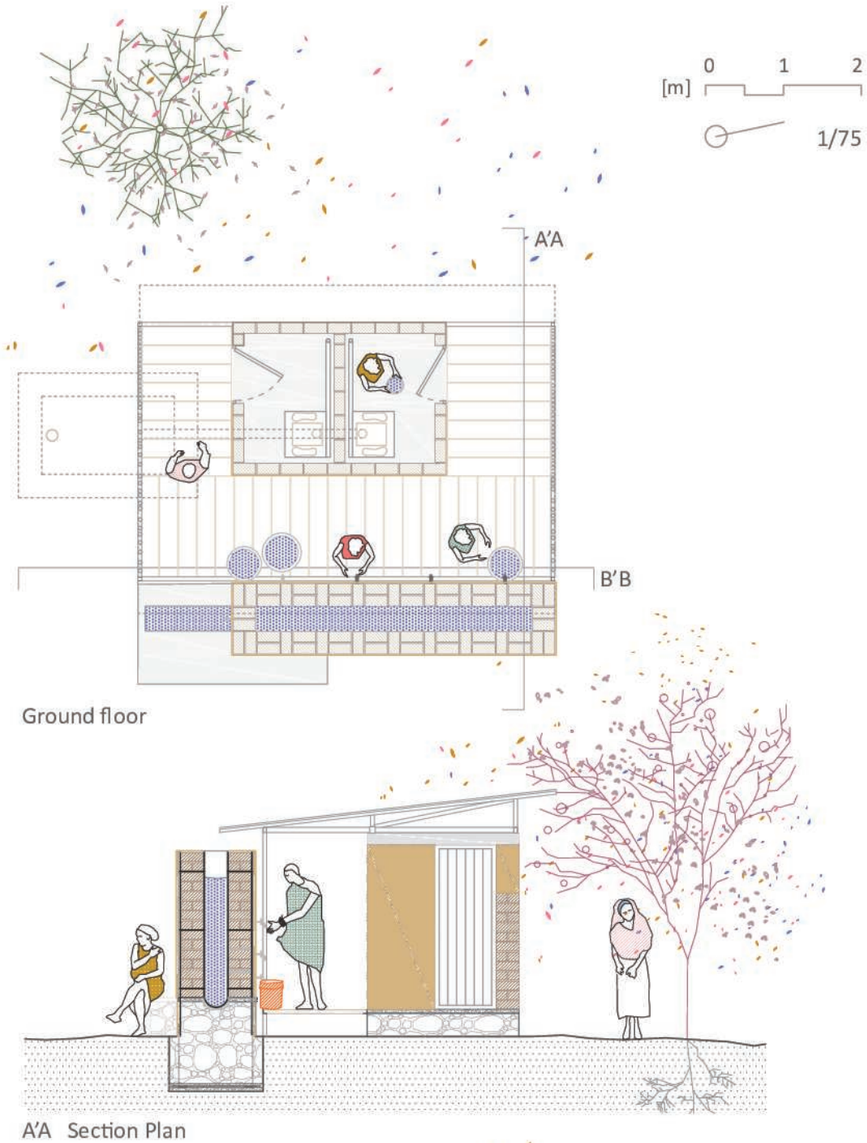
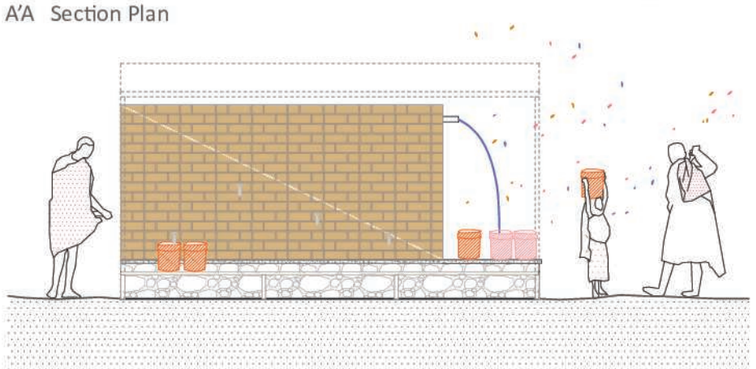
C-RE-AID



A'A Section Plan



B'B Section Plan

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THE CHALLENGE OF THE NEW TOILET BLOCK

Being Maji Moto a new but yet informal settlement, currently there's not water and sanitation urban systems. Therefore, the traditional toilet has just a deep pit with a concrete slab on top, and three walls around to give privacy to the toilet.

Consequently, pit latrines can have several problems: There may be a four odour from the pit and there can be a favourable place for the breeding of flies and mosquitoes. In addition, when the pit is full, another pit needs to be dug every time, what make the construction of toilets very unsustainable. Also, they can be susceptible to failure/overflowing during floods in the rainy season. Children may be discouraged from using the latrine if the slab is not designed with their size in mind.

Therefore, the main objective of the project was to improve the conditions of the current toilets, that are precarious, unsafe and unhygienic, through small but essential changes that will permit the community to afford and replicate these features for their private toilets. These improvements will become a challenge at the facility level, collecting rainwater, avoiding bad smells and insects.

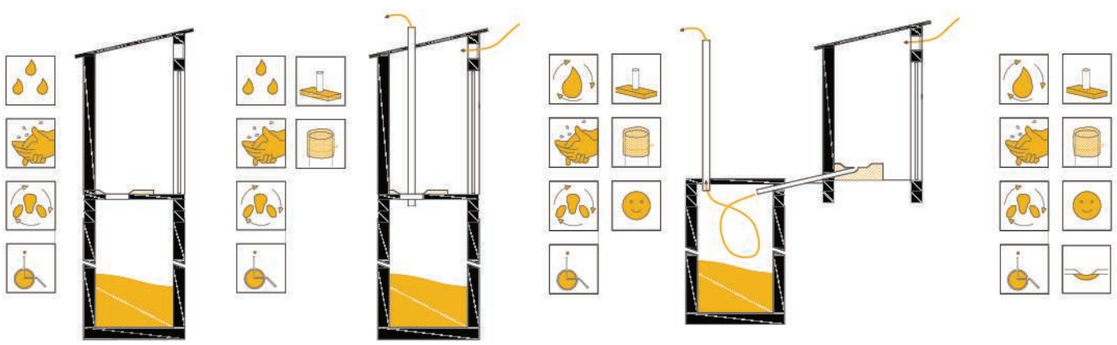
For the well maintenance of this toilet block, a minimum monitoring is required, as the water collected in the water tank has to be thrown on the toilet pipe after each use.

The women's group will be in charge of the management of the toilet block, that will be opened during the opening time of the dispensary.

HOW TO IMPROVE A TOILET BLOCK?

From the traditional toilet to the improved toilet block with small upgrades

- safe for children
- disabled people can use all kind of latrines if they are properly adapted
- hand-washing must be used with the latrine
- the slabs and shelter can be re-used
- the lid must be used for keeping odours and flies away
- pipe must have a net at the end for keeping flies away
- water requires for flushing is low
- re-used water for flushing is appropiate
- water required for flushing is high
- water seal: odour and flies free



Exploited volumetry

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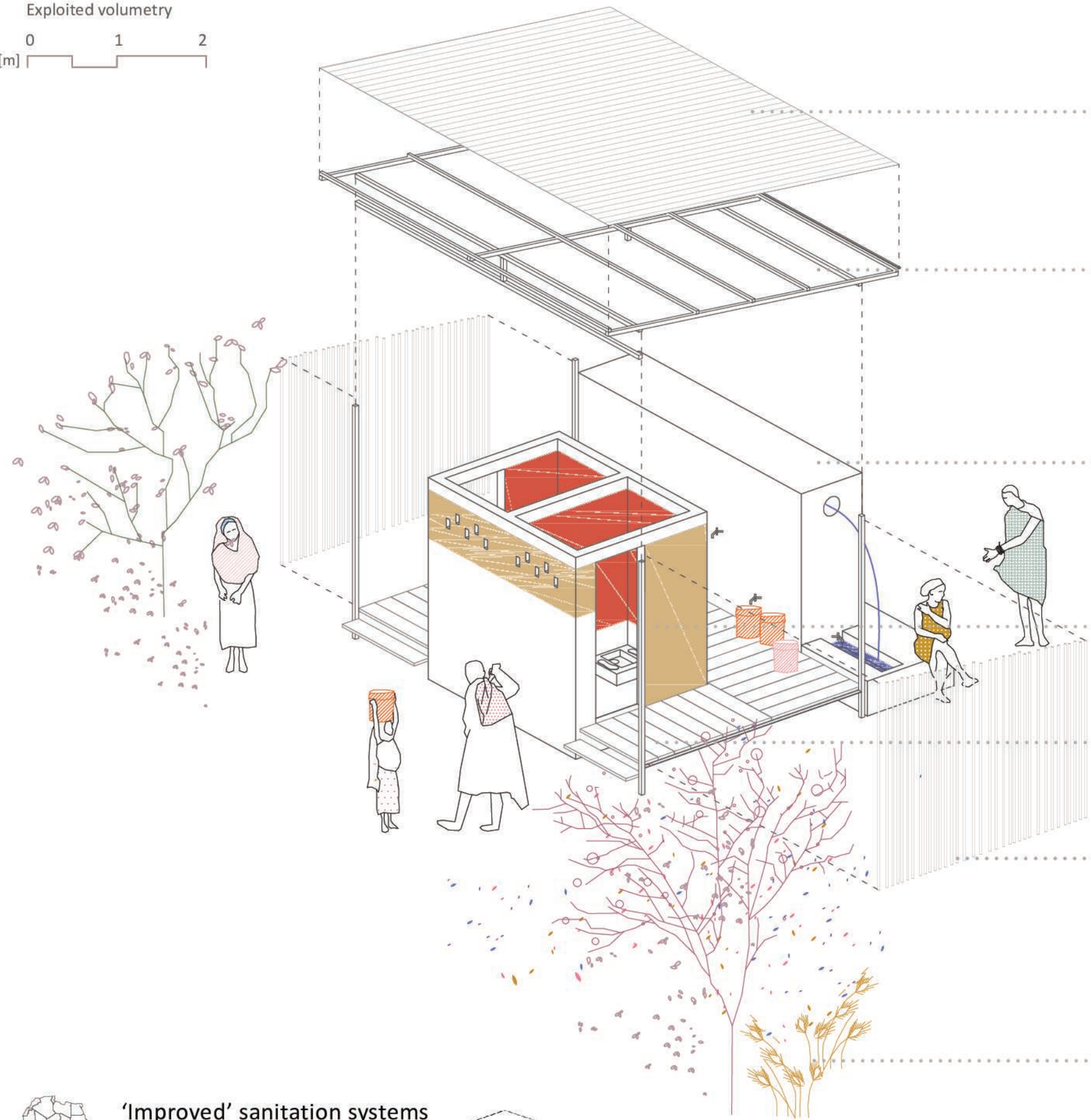

THE BUILDING PROCCESS

The construction process took place in Maji Moto village during the months of August-September and November-December, with the involvement of the local community and a group of international volunteers.

Four local bricklayers and nine volunteers worked together from the foundations until the roofing, with a first week doing further researches after the workshop that took place in the school of Architecture of Granada (Spain). The toilet block was built without any machine and with very little resources.

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How to produce a compresse earth block:

KNOWLEDGE AND RESILIENT COMMUNITY

The traditional Maasai mud houses have been replaced by fired bricks, which are strong and easy to use, but unfortunately also cause environmental damages because of illegal deforestation.

Environmental education is needed in order to be aware about this serious problem that cause droughts and floods in this remote area.

Due to the increasing number of construction happening in Maji Moto in the last years, and with the intention of introducing a new technique that can replace the fire bricks, we believe that Cseb can meet the requirements of high quality standards.

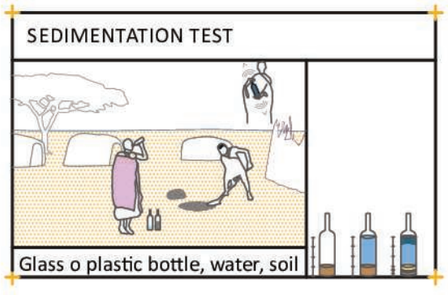
Compressed stabilized earth blocks

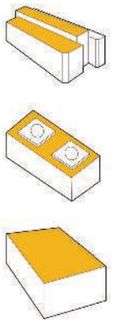
Fire bricks

Therefore, Compressed stabilized earth blocks have been tested with several composition and the final brick with an 5% amount of cement, 20% amount of sand and 75% amount of soil, has been used for the construction of the dispensary and the toilet block.

A group of 4 local bricklayers have been trained by a local expert to produce 450 bricks per day and to spread the knowledge in order to make the community resilient with this new but somehow traditional technique.

Proccess analysis for compressed earth blocks:





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