

MAKAO

Jennifer Margell

Makao is a modular shelter designed for slums and made of recycled materials. Its name means home in Swahili and it is designed to help raise the standard of living for the 600,000 residence in Nairobi, Kenya. It can be assembled in many configurations depending on users needs. It collects and filters gray water from the roof, the roof panels open to release heat, it is affordable, it has an optional bathroom and kitchen module, and the hollow plastic walls are filled with mud on site for insulation.

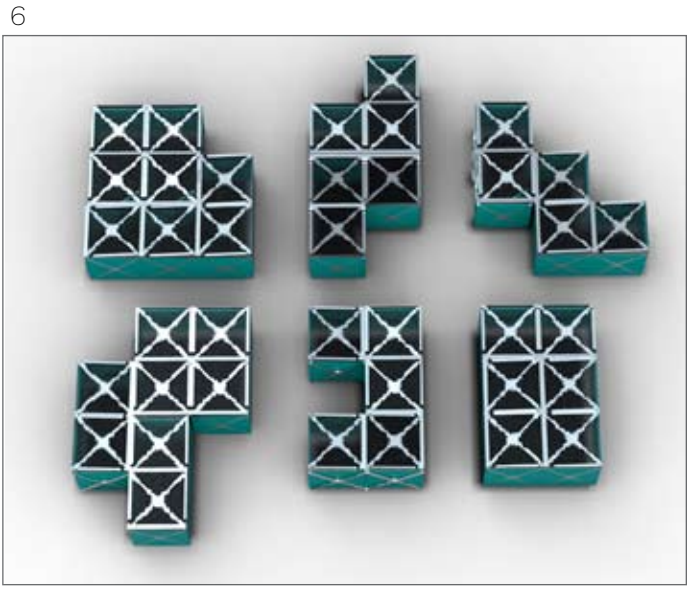
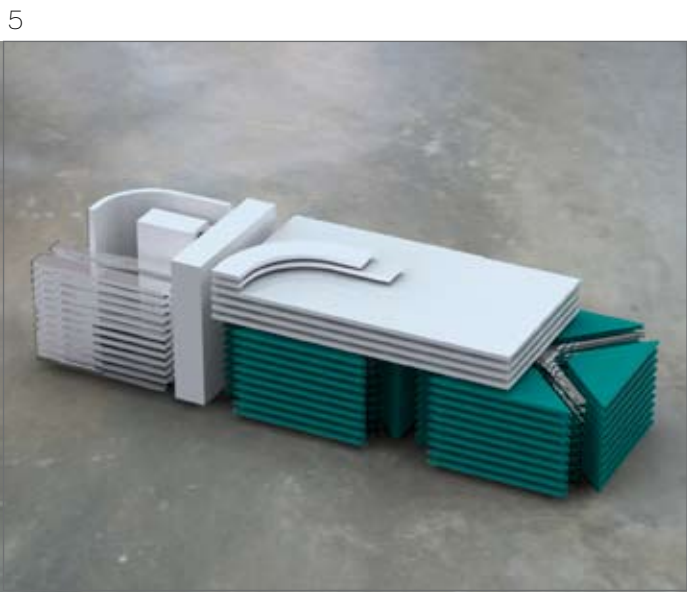
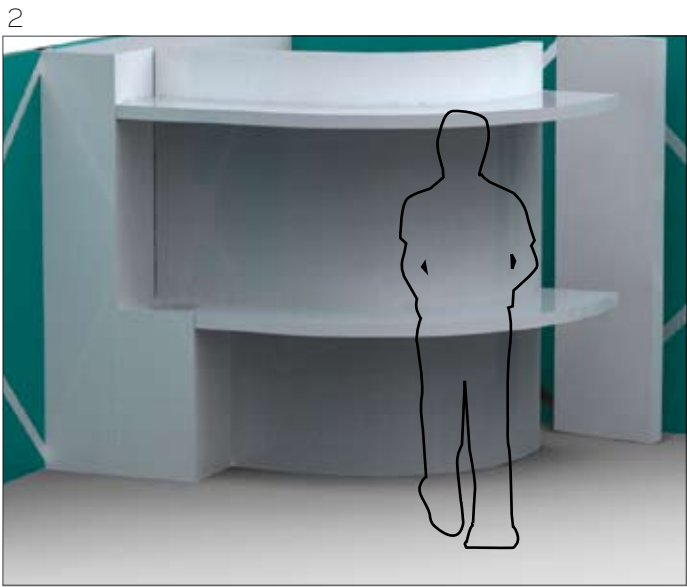
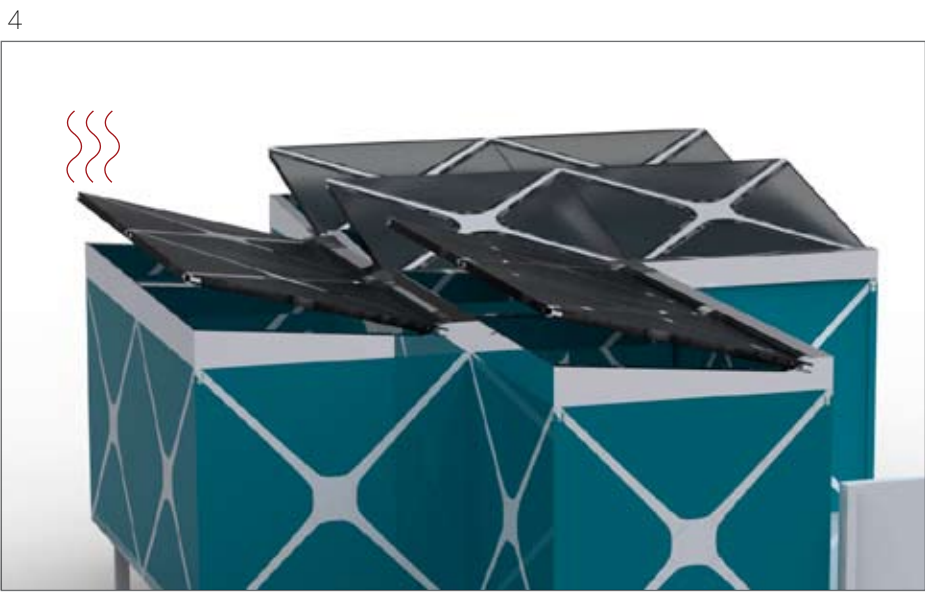
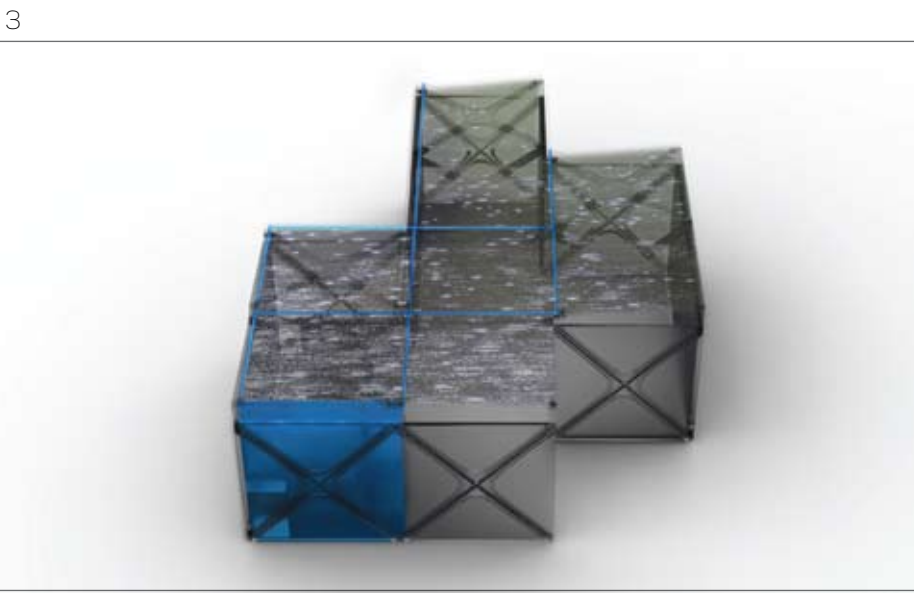
I chose to focus on Nairobi because of the overwhelming poverty and need for versatile, affordable housing. I conducted interviews with people who have been to Nairobi and learned everything I could about their living situations, culture, and challenges. I learned that the primary needs include safety, sanitation, running water, and privacy.

Makao has opaque wall panels, which are hollow and designed to be filled with mud and debris, making them lighter to ship and better for the environment. Frosted wall panels are also available, letting in diffused light. Users can create any roof and wall combination that they prefer using opaque and frosted panels. The roof panels open on a hinge to release rising heat and keep the living spaces comfortable in high temperatures.

A great deal of time and energy is spent collecting water in Nairobi. Makao addresses water needs by collecting gray water from the roof. A system of pipes funnel the water through a carbon filter and to the storage tank. Additional drinking water can be filtered and added to the tanks or piped in from a water system.

Makao has an optional bathroom and kitchen that is designed to be space efficient. The bathroom is on the interior space and an open kitchen wraps around the outer wall. The water storage tank is placed behind the bathroom and keeps the utilities in one central area. The kitchen has open shelves for food storage, a large food preparation area, a stove, and a sink. The bathroom includes a shower, a sink and a composting toilet.

Sanitation is also a huge concern and insufficient disposal of human waste is the main contributor. Makao addresses this issue with its self-composting toilet. It is designed to be used by 6-8 people, has a final product of 10% the volume and is easily emptied from a door outside the bathroom. Makao addresses the primary housing needs of the residence in Nairobi. Its goal is to help build a healthy community that the residence can be proud of.



1. Bathroom unit with shower, sink & self-composting toilet
2. Kitchen with sink, food preparation area & storage shelf
3. Rainwater collected on the roof funnels to the storage tank
4. Top panels open to release heat
5. Pieces disassemble to fit in a standard shipping container
6. Modular parts can be assembled in many configurations
7. Units can be attached to create a community
8. The hollow walls are filled with mud and the affordable supports are made from bent and welded sheet metal

