



Technical specifications

Easy Housing | 2023

Building technology

Easy Housing is a circular and biobased building technology. We are closing the global housing gap. A home for everyone. Sustainable. Social. Scalable. We have developed a prefab timber building concept that uses locally sourced materials and labour. This way, we provide a sustainable alternative to traditional construction, which has a large environmental impact. Our homes are engineered by international timber experts and are designed to last over a 100 years. Our homes are protected against termites, fire, floods and cyclones.



Technical specifications

Timber	FSC certified pine that is kiln-dried and CCA treated (termite resistant) to ensure a long lifespan.
Foundation	Prefab concrete or recycled plastic blocks of appr. 100 kg with stainless steel bolts on which the structure is Connected. Dimensions are 300 x 300 x 400 mm (L x W x H).
Floor finishing	Pine floor planks of 22x96 mm (tongue and groove) which can be painted with lacquer or another floor finishing.
Wall finishing	Pine plywood 9 mm structural board. Top finishing 10 mm gypsum board for improved fire safety and acoustics.
Ceiling finishing	Pine plywood 9 mm.
Ceiling height	260-340 cm high ceiling (inclination).
Terrace	Pine decking planks of 22x100 mm profiled as terrace decking on a pine beam substructure.
Facade	Mixed facade of white plastered cement fibre board and varnished planed pine vertical facade planks of 22x100mm.
Window frames	The windows are produced in black (default) aluminium frames including hinges, locks and screens.
Doors	The front doors are produced in black (default) aluminium frames including locks and grips. The interior doors and door frames are standard timber doors of 83/93x215 cm.
Roof sheets	Corrugated iron sheets of gauge 28 (in a colour of choice that is available at the supplier).
Screws	The frames are prefabricated with screws of various specifications suited for timber construction. Screws used on the exterior are coated appropriately for exterior use.
Mesh screens	The space below the floor frames is closed off with a galvanised mesh around the perimeter of the building. This protects against rats, vermin and snakes entering below the buildings.
Protection	The roof structure is closed off adequately against birds and bats.
Ventilation	Ventilation openings are equipped with a mosquito screen.
Safety	The end user can equip the doors and windows with burglar bars if desired.

Technical systems

Electricity	Electrical wiring, fuse board and points are installed in compliance with national regulation and carried out by a certified electrician.
Sewage and plumbing	Installed in compliance with national regulation and carried out by a certified plumber.
Solar home system	Our homes can be self-sufficient through solar energy. For example, it can have a 2000 Wp solar panel array connected to a 5kW inverter with a battery bank of 12 kWh.
Rainwater collection	Our homes can be equipped with rain gutters that connect to a 5000L rainwater collection tank that is dug into the ground on the back of the home. This tank will be equipped with a pump and a water filter that supplies the home with filtered rainwater.
Ventilation	The home will have cross ventilation openings above the windows that are equipped with mosquito nets. Optionally, the home will be equipped with an AC unit in the living room and ventilators in the bed rooms.
Insulation	The walls and roofs are insulated with locally available insulation materials like rockwool or papyrus. Insulation thickness 75 mm for the walls and 100 mm for the roof.
Disclaimer	Please note these are the default material specifications. The specifications, finishings and installations vary from project to project according to the project requirements.

Timber sourcing

In East Africa, our timber is sourced from Green Resources, which is an FSC certified sustainable forestry company. The timber is kiln-dried and treated for long lifespan and stability. In Mozambique, one of our timber partners is LevasFlor, an FSC certified natural forestry company. In Ghana, we source from Miro Forestry (FSC) and various FSC controlled timber suppliers. The plywood boards are sourced from local suppliers. We work in line with the sustainable forestry safeguards that are developed by the Climate Smart Forest Economy Program.. This way, we ensure the sustainable sourcing of our timber and we make sure that we do not cause deforestation.

Lifespan and maintenance

The oldest timber structure is over 1300 years old and in general timber buildings can easily last for over 100 years when properly maintained. For this reason, the CCA treated timber construction of Easy Homes can also have a long lifespan, even in tropical conditions. However, regular inspection and maintenance of the structure plays an important role in ensuring the lifespan (like with any building).

The timber construction consists of FSC certified and CCA treated timber frames. A long lifespan can be ensured when the structure of the building is properly maintained. Proper maintenance includes regular inspection of the construction for plant growth, leakages and termite attacks, and adequate response to these events. We recommend doing an inspection every 3 months to ensure maximum lifespan of the structure.

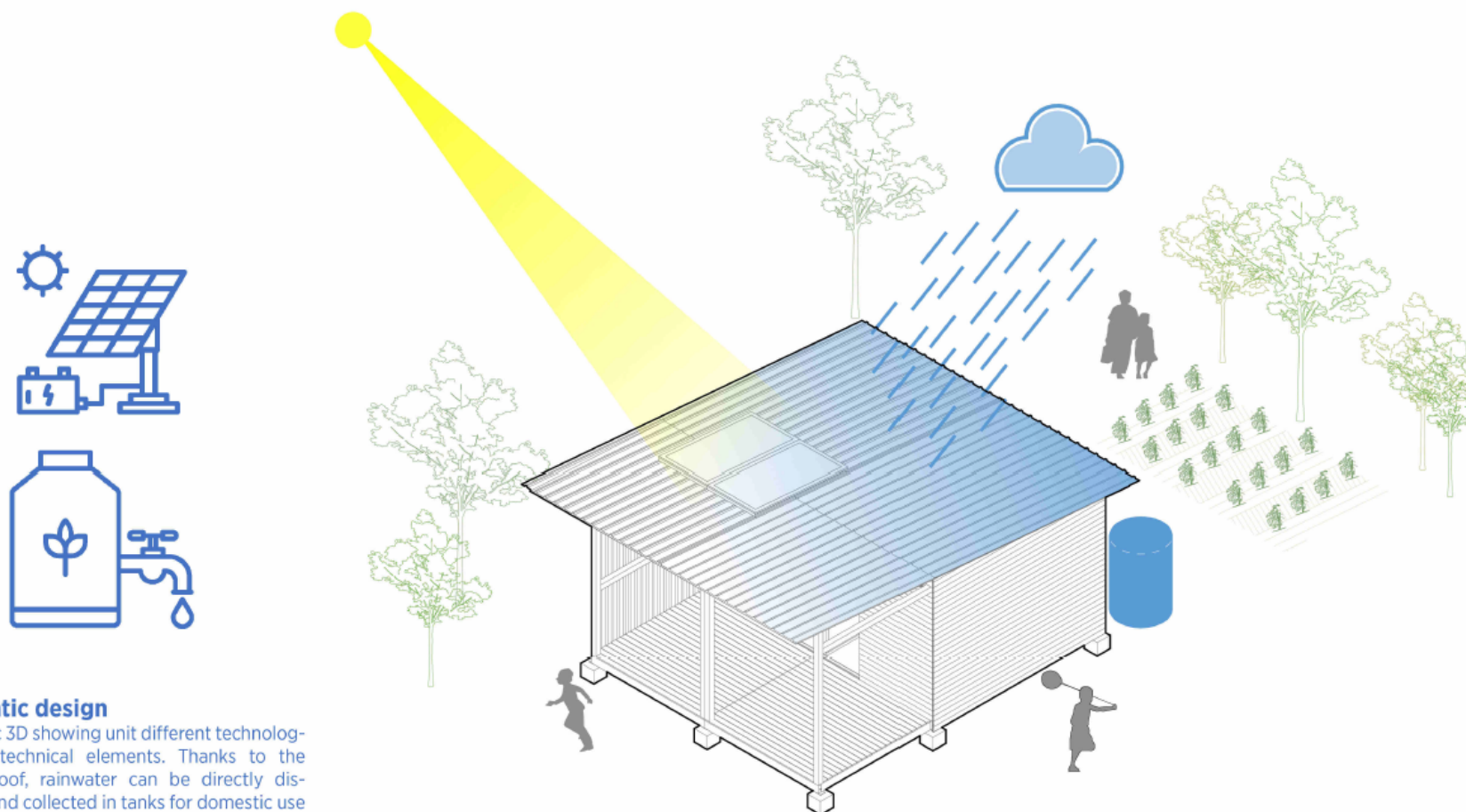
The owner should take care of regular checks to prevent plant growth, termite presence, and any contact with soil and rain. The timber structure should stay clear from vegetation and should not be in contact with soil. This can be easily achieved by applying a bed of sand, stones, pebbles, shells, or coarse aggregate around the perimeter of the building. However, it must be ensured that the cavity below the

timber floor frames can properly ventilate to all sides, so that any moisture can freely escape from below the structure. Paintworks such as any varnished facades and outer beams, have to be maintained according to the specifications of the applied varnish or paint (if used) and in accordance with the advice of the painter. In the case of any leakages on the roof, or around the window frames, adequate action should be taken. Treated timber can generally handle exposure to rain and humidity well, but it is important that the structure can ventilate. Any risk of rot only arises when a leakage is not addressed, or when the structure cannot ventilate, so that water stays trapped in the structure for longer periods of time. The façade and decking generally have a shorter lifespan (15 to 30 years) since they are exposed to the elements. They can be oiled or varnished to extend their lifespan. Check the product description of the used oil or varnish for an indication of the recommended interval of maintenance.

Any timber that is exposed to UV light will undergo a process of natural greying. This process is normal and does not affect the lifespan of timber. In case another colour of exterior timber is desired, it can be treated with paint, varnish or lacquer. This can also extend the lifespan of the timber, but will require regular maintenance, like any painted or plastered façade. The lifespan of exterior timber that is exposed to the elements is shorter than the timber structure inside the building. However, timber facades and deckings still have a lifespan of several decades when properly maintained.

Self-sufficiency

Solar home systems and rainwater collection systems can be provided by Easy Housing to ensure sustainable energy and water provision and to create self-sufficiency and off-grid availability of electricity and water.



Schematic design

Schematic 3D showing unit different technological and technical elements. Thanks to the inclined roof, rainwater can be directly discharged and collected in tanks for domestic use or gardening during the rainy season. Not only that, the inclined roof offers the opportunity to install PV panels.

Process and planning

The building process consists of the following phases. After the construction phase is finalised and Easy Housing has finished its contractual obligations, the project is completed. This project completion does not necessarily mean that the entire building(s) of the client are finalised, since some remaining activities can be contracted or finished outside of the contracted activities carried out by Easy Housing.

1. Permit design phase **2 – 4 weeks**

The permit design includes the floorplans, elevations, sections, site plans and foundation plans that are handed to the municipality.

2. Technical design phase **2 – 4 weeks**

After approval, Easy Housing will work out the technical design of the project. This includes the technical details, bill of quantities with material passport (circular economy), shop drawings and instructions.

3. Procurement phase **4 – 5 weeks**

After the technical design is finished, the materials for the construction phase can be ordered with the relevant supply chain partners.

4. Prefabrication phase **2 – 4 weeks**

The timber frames for the building(s) are prefabricated at a carpentry workshop that is contracted and trained by Easy Housing. A project manager of Easy Housing ensures that the working drawings and technical details are built properly and makes sure the quality, logistics and planning are properly managed.

5. On-site finishing **2 – 4 weeks**

Once the frames have been prefabricated, they are transported to their final destination. The construction team has beforehand set out the site and the foundation points. The placement of the frames usually takes place in a few days. After placing the building(s), the final steps of the construction process can commence. For example, applying roofing, paintworks, sanitation, electricity and so on. After these steps, the project is completed.

Sustainability

Social enterprise

Easy Housing is a social enterprise that offers circular and biobased construction and operates in the Global South. We use sustainably sourced timber and local value chains to ensure social and environmental sustainability of our buildings and projects. We source our timber from sustainable FSC certified forestry companies such as Green Resources. In addition, we collaborate with the Climate Smart Forest Economy Program (CSFEP) to implement sustainable forestry and construction safeguards. Easy Housing fosters an inclusive and gender equal working culture. Our own team consists of many backgrounds and nationalities and has an equal gender division. We also encourage our building partners to work with a gender balanced and inclusive workforce.

Labour standards

Easy Housing and its partners comply with the (ILO) international labour standards. In addition, we take extra precautions during the construction process to ensure the health and safety of all labourers involved. For example, we provide safety instructions and safety equipment, such as gloves, masks and earplugs for the carpenters. Through partnerships and localised value chains we create local employment opportunities and capacity development in sustainable construction.

Climate resilience

Our buildings are climate resilient and are designed to withstand floods and storms. Our timber structures substitute the use of polluting cement and steel. In addition, the biobased construction creates long term carbon storage, also known as construction stored carbon. This way, we reduce the carbon footprint of our buildings by up to 250% when compared to mainstream construction with concrete bricks.

Circular economy

We don't use glue or nails in our construction process, and only use screws and bolts so that all building materials can be reused. This also enables prefabrication and potential relocation of our projects. We generate a material passport that lists all elements used in the building including its amount of stored carbon.

Sustainable Development Goals

The projects of Easy Housing contribute to most of the sustainable development goals (SDGs). Our focus on environmental impact, climate resilience, partnerships, local value chains and jobs, and the living comfort and wellbeing of the inhabitants or end users of our buildings make a significant contribution to a wide range of SDGs. Check out our brochure or website for more background information on our SDG impact.

Legal information

Legal entities

Easy Housing Concepts B.V. is a social enterprise registered in The Netherlands as a limited liability company (Besloten Vennootschap). The business was officially incorporated at the Dutch chamber of commerce under registration number 78108160 on the 20th of May 2020. Easy Housing will register, or partner with, a building company in Uganda before commencement of works. The payment can be done to a Ugandan account in the instalments and currency as specified under payment terms.

Intellectual property

Easy Housing has developed a proprietary circular and biobased building system. We are a social enterprise that works with low margins to make sustainable construction accessible. For this reason, we work with small licence fees that cover our research and development and we depend on large volumes to finance this development. The client is not allowed to use, share or copy any designs, technical details and working drawings of Easy Housing for other purposes outside of the scope of this project. It is not allowed to replicate the homes of this project in any other project without prior written consent of Easy Housing.

Carbon credits

Easy Housing holds the single rights for all carbon credits that are realised in the form of carbon storage and carbon substitution in our projects. This means that the client and the end user can not make any claims on carbon credits realised through completion of this project. Easy Housing is using the carbon credit monetisation to finance and improve the affordability of its homes.

Liabilities and risks

Before commencement of construction, Easy Housing and the Client will discuss how to mitigate the risks of damage or theft during the construction process. The client is responsible for adequate and full-time security (day guard and night guard) on the plot once the first units are transported there. In case additional security measures are needed to mitigate these risks, the parties will come to an agreement. These additional costs will be split by Easy Housing and the Client. Easy Housing is legally responsible for any damage or theft incurred to its materials and equipment during the prefabrication period and during transportations. The Client is legally responsible for any damage or theft incurred to materials and equipment after placement on site.