

# HELP US OPTIMIZE HOW SUSTAINABLE IS THIS SMALL & OFF-GRID HOUSE?



**At Walden we specialize in making completely bio-based and self sufficient architecture. We recently finished this ultra compact house. At the moment, similiar designs are in the making, and we would like completely understand all aspects that determine the ecological impact, so we can optimize the coming projects.**

## SMALL HOUSE MOVEMENT

This house is inspired by the tiny house movement that originated in the US. Living small generates more freedom; there is less junk in your house, you have to clean less and you don't have to worry about a high mortgage since the average price is a fifth of a "normal" house. Furthermore, living smaller means using less energy. In this house, a small wood stove can easily heat the entire home and the roof is fitted with three big solar panels that produce the required

electricity. In the bathroom a composting toilet has been placed to reduce water usage and create compost. The house will also harvest its own rainwater and take care of waste water with a natural wastewater treatment system.

## BIO-BASED MATERIALS

The ecological impact is reduced even further by using bio-based materials. To give some examples, the facade is made out of thermally modified pine wood from Scandinavia,



**Universiteit  
Leiden**  
The Netherlands



**Erasmus  
University  
Rotterdam**



treated naturally to last as long as a tropical hard wood. The construction consists of spruce wood studs and Ecoboard, a sheet material made of agricultural waste products, which has been painted with ecological paint. The floor is made of cork and to keep the inhabitant warm during the Dutch winters, the house is insulated with a layer of sheep wool.

### WHAT DO WE WANT TO FIND OUT?

We are interested in finding out more about the ecological impact of the materials used in the house and the construction process. Also more knowledge on how living in such a house compares to living in a standard house is valuable knowledge that can help in future projects. Besides that more information can be uncovered on maintenance and what happens at the end of life of the house. In short the goal is to get a clear picture of what aspects in the life cycle of this type of housing have the biggest environmental impact, so we can optimize new designs to do even better.

### WALDEN STUDIO

Walden Studio is a design agency for small, self-sufficient architecture with an adventurous touch, founded by two Architecture students from Delft University of Technology; brother and sister Laurens and Lena van der Wal. We operate according to a simple philosophy; creating compact but adventurous architecture, to decrease our ecological footprint and increase happiness at the same time.

