

LUXEMBURG

Local development

Location
Redange

Programming period
2014 – 2020

Priority
P6 – Social inclusion & local development

Measure
M19 – LEADER/CLLD

Funding (EUR)
Total budget 1 870 368.34
EAFRD 18 221.00
National/Regional 12 147.34
Other* 1 840 000.00

Project duration
2014 – 2021

Project promoter
CELL – Centre for Ecological Learning Luxembourg

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The Äerdschëff is the first public Earthship building in the world and will serve as a place to document, educate and research as well as stimulate curiosity and creativity about future-proof living and the circular economy.

Summary

In the 21st century, human society has developed an unsustainable lifestyle characterised by the overconsumption of energy, water, materials and food. In addition, through these current modes of consumption, most people have lost many practical, low-tech skills and the knowledge of how to use natural resources in a sustainable way.



The project focused on the design and construction of an Earthship, which is a type of passive solar earth shelter constructed by natural and upcycled materials, such as earth-packed tyres. The Äerdschëff (Earthship in Luxembourgish) is adapted to the European context, particularly to Luxembourg's climatic conditions and to the more demanding standards of European environmental legislation. Its components have been evolved to include a non-fossil fuel-based cooking system, a state-of-the-art drinking water purification/filtration system, on-site treatment of blackwater as well as the production of food in the building through closed-loop aquaponics production systems. During the LEADER funding phase (2015-2016), the project team designed the project and trained two people on Biotecture in New Mexico (USA) at the Earthship Academy. An educational programme on sustainable living was also developed for schools and adults.

Results

Some 3 000 people were reached through communication actions.

Fifty people were actively involved in the participatory building process.

Some of the key performance indicators of the educational programme for 2020-2023 are listed below:

- develop nine educational modules;
- establish two partnerships with schools by the middle of the project period and five by the end;
- ten secondary schools to have participated in the educational programme;
- forty participants/students visiting per week for 40 weeks a year (subject to additional funding);
- a number of regional partners involved through regular (+/- 10) or one-off (+/- 15) Äerdschëff activities annually; and
- media coverage two to three times a year.

* EUR 299 000.00 (salaries, Œuvre Nationale de Secours- privat foundation, 2016-2021)
EUR 432 000.00 (Fonds national de la Recherche, PSP-Flagship, 2020-2023)
EUR 1 109 000.00 (Ministry for Environment, Climate and Sustainable Development)

Context

In the 21st century, human society has developed an unsustainable lifestyle characterised by the overconsumption of energy, water, materials and food. When talking about 'how many planets a country consumes', this refers to its 'ecological footprint' and is a way to measure how fast a country consumes nature's resources and generates waste compared to how fast nature can absorb this impact and regenerate. To sustain Luxembourg's lifestyle across the globe would require the resources of between seven and nine planet Earths! In addition, through these current modes of consumption, most people have lost many practical, low-tech skills and the knowledge of how to use natural resources in a sustainable way.

This project was inspired by the Earthship concept of Mike Reynolds and [Biotope](#). An Earthship is a type of passive solar earth shelter constructed using natural and upcycled materials, such as earth-packed tyres. Earthships are based on the premise that there are six human needs which can be addressed through environmentally sustainable building design. The five Earthship design principles are based on the production and off-grid management of its own resources to meet human needs in a resilient and sustainable way. These are self-sufficiency in water, sanitation, heating, electricity and food autonomy.

Earthship structures are intended to be off-the-grid homes, with minimal reliance on public utilities and fossil fuels. They are constructed to use the available natural resources, especially energy from the sun and rainwater. They are designed with thermal mass construction and natural cross-ventilation to regulate indoor temperature. The designs are intentionally uncomplicated and mainly single storey so that people with little building knowledge can construct them.

Objectives

This project aims to showcase that people can live fulfilling lives by taking only their fair share of the Earth's natural resources. It is a demonstration that society can respond to the issues of lack of food sovereignty and energy unsustainability through the planning, building and running of an Earthship set on the site of a secondary school in the rural west of Luxembourg.

Activities

The Äerdschëff is not a simple imitation of the American model pioneered by Michael Reynolds in Taos in the New

Mexico desert. It is an adaptation to the European context, particularly to Luxembourg's climatic conditions and to the more demanding standards of the European environmental legislation in alignment with the possibilities of a real circular design. Its components have been evolved to include a non-fossil fuel-based cooking system, a state-of-the-art drinking water purification/filtration system, on-site treatment of blackwater (waste from toilets), as well as the production of food in the building through closed-loop aquaponics production systems.

The development of the Äerdschëff can be divided into three phases: the conception and design phase (2014-2017), the construction phase (2019-2020) and the post-construction phase (from 2021). During the LEADER funding phase (2015-2016), the project team designed the project and trained two people on Biotope in New Mexico, USA, at the Earthship Academy (October 2016). Thanks to LEADER funding for training and advisers they were able to establish the initial budget and design for the building of the Earthship. They went on to receive additional funding both from Oeuvre (a philanthropic foundation) and the Ministry for Environment, Climate and Sustainable Development for the construction phase. The team received an offer from the secondary school in Redange to use their land and gathered a steering group of citizens. They prepared a model of the Äerdschëff and showed it in various fairs and at the school. The approach was to make the design as participatory as possible and the team ensured that there was continuous communication between the professionals and the citizens.

Between 2016 and 2019, the team designed the adaptations for the Luxembourgish Earthship, and sought to obtain the construction permits. Given the pioneering nature of the project, this was a fairly lengthy process. They collected and stored various reclaimed building materials. In 2019, the foundations were constructed with support from volunteers. This was a large celebration with many people from around the world joining for a sort of camp during the summer to help with the construction.

In 2020, the building work continued and despite the COVID-19 pandemic, the project progressed. In 2020, the team was awarded the prestigious PSP (Promoting Science to the Public)-Flagship programme by the 'Fonds national de la recherche' to develop educational programmes for teenagers. A second small team was formed to work on the post-construction phase on an educational programme.

The initiator of the project was CELL (the Centre for Ecological Learning Luxembourg), founded in 2010 and launched in 2011 as a non-profit organisation that provides an experimental space for thinking, researching, disseminating and practising post-carbon lifestyles and regenerative culture.

The Äerdschëff is built on state-owned land, next to Atert Lycée Redange (ALR), a secondary school with a strong anchor in the western region of Luxembourg. ALR offers, alongside more traditional secondary diploma pathways, renewable energy vocational training to youngsters. CELL is also in partnership with one other secondary school (LTETT) and is seeking to involve more secondary schools as active partners.

Some of the other partners who are part of the steering group for the FNR project and involved in various ways include:

- BENU - an ecovillage in the south of Luxembourg;
- +impakt - a company promoting circular economy in Luxembourg;
- Luxembourg Science Center - an educational space for experiencing science education in Luxembourg;
- Circular Innovation Hub Wiltz - the first locally anchored centre promoting circular economy in the north of Luxembourg;
- University of Luxembourg/Luxembourg Institute for Science and Technology - scientists and experts contribute to the Äerdschëff project; and
- 'Youth and Work' - a non-profit company that works with unemployed youth.



Main results

Some 3 000 people were reached through communication actions.

Fifty people were actively involved in the participatory building process.

Together with pupils, the team is planning a monitoring system in the Äerdschëff to provide real-time, open-source data about its energetic performance (temperature, humidity, energy consumption, etc.). This includes sensors that will be installed on strategic locations in and around the Äerdschëff. The monitoring system is planned during the 2020-2021 school year and will be installed when the Äerdschëff is ready.

Below are some of the key performance indicators of the educational programme for 2020-2023:

- develop nine educational modules;
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- media coverage two to three times a year.

Qualitative indicators:

- post-educational programme surveys;
- two to three semi-structured interviews with key participants (students and adults) synthesised into a report; and
- Äerdschëff firmly anchored into the circular economy landscape of Luxembourg.

Additional sources of information

www.facebook.com/aerdscheff

https://aw.leader.lu/sites/default/files/download/2020-11/Synergie_58.pdf --> see p. 16 and following

https://aw.leader.lu/sites/default/files/download/2020-11/Synergie_59.pdf --> see p.38

https://cell.lu/wp-content/uploads/2017/12/40_Tageblatt_1130.pdf

www.tageblatt.lu/?post_type=post&p=766161

www.woxx.lu/tag/aerdscheff/

<https://moien.lu/projet-aerdscheff/>