

## GROOF – Final Assessment

“Reducing CO<sub>2</sub> emissions via rooftop greenhouses:  
research conducted on 4 pilots in Europe»

### *End of the project and coaching*

*Press release – Mai 2023*

London, 3<sup>rd</sup> of May 2023 - The Interreg North-West Europe co-founded GROOF project (Greenhouses to Reduce CO<sub>2</sub> on rOOFs), which ran from 2017 until 2023 and has become a key source of urban agriculture expertise for the region with a specific focus on how building integrated greenhouses offer opportunities to exploit metabolic, operational, and social synergies with the Built Environment. GROOF built 4 pilot projects as demonstrators and research tools, leading to the development of guidelines underlining best practices in the field.

#### *Focus on two projects coached by GROOF*

- **Seedleaves** is part of a wider project based around bringing aeroponic tower growing directly into both food service and food retail. The global project aims to develop a food hall, restaurant, artisan cookery school, market garden, horticulture school, and vertical tower greenhouse.
- The **MTU** project aims to provide fresh produce to meet the needs of the training programs within the Department of Tourism and Hospitality. The future greenhouse will be connected to an existing building and production will occur both indoors and outdoors.

#### *Where does Urban Agriculture stand in the UK and Ireland?*

Since Brexit, Covid, recent UK food system supply chain shocks, and the resulting inflation, interest in urban agriculture has increased substantially among developers, building owners, and housing associations.

- **In the UK**, urban agriculture has a deep cultural legacy that is largely soil-based and ground-bearing. The building-integrated greenhouse typologies are close to non-existent with very few examples of building-integrated greenhouses and even fewer that are horticulturally oriented. The vertical farming typologies are more mature but also in their relative infancy to industrial agriculture (Growing Underground, GrowUp, Lettus Grow, Harvest London, Vertical Future, and UK Urban Agritech).
- **Ireland** also has a well-developed soil-based allotment urban agriculture scene with only one notable building-integrated greenhouse example to GROOF's knowledge, Cork Rooftop Farm. Dublin's first city farm was opened in 2019 at St Anne's Park, suggesting a low count of larger Community Supported urban farm types. Its vertical farming sector is also very much in its infancy with very few operators (Emerald Greens in Ballyporeen, Co Tipperary, and Farmony in Dublin).

## **What is GROOF - Greenhouses to Reduce CO<sub>2</sub> on rOOFs?**

### 1. A 5-Year project, led by 12 European partners

**GROOF** is a **cross-sectoral innovation project** involving **12 European partners** (Luxembourg, France, Belgium, Germany, and Spain).

It explored how building integrated greenhouse can improve their host buildings' thermal, operational, and metabolic performance while replacing the need to import perishable greenhouse products over long distances to their urban markets.

It also examined the social impact that this realignment of the food-city nexus could offer.

Please see the following video introducing the research project: [Presentation of the GROOF project](#)

- The GROOF partners built **4 pilot greenhouses** on four host buildings of varying functions in Belgium, France, Luxembourg, and Germany. These 4 pilots have allowed us to carry out research on:
  - [Installation costs of such devices](#)
  - [Potential CO<sup>2</sup> emission mitigation by both improving building performance and cannibalizing the market for fresh produce sourced from conventional supply chains.](#)
- In September 2019, GROOF launched its **first project call** and **coached 10 building-integrated greenhouse projects** until September 2021. GROOF then helped five of them move through more advanced design stages and into construction.
- In February 2022, GROOF issued its **second project call** and **coached 8 building-integrated greenhouse projects** from March 2022 until March 2023.

### 2. A final assessment and guidelines for future development

- The GROOF consortium has **generated a set of guidelines** for the design, development, and delivery of building-integrated greenhouses, based on the experience gained from their collective activities. They are intended to facilitate the development of similar projects in the future by helping adopters ask the right questions at the right time.
- All the **results** produced by GROOF are available in [the Communication Report 2023](#).

## **Why build rooftop greenhouses?**

In terms of **energy**, a building-integrated or rooftop greenhouse can offer an active layer of insulation during colder months, and, when filled with plants, a dynamic layer of evapotranspiration cooling during hotter months. Where possible these structures should be applied to vacant or underutilized spaces in the city that do not displace other more lucrative functions. In this regard, the rooftop offers the most obvious opportunities. If committed to horticultural production, all requirements are usually readily available.

In terms of **social benefits**, their hyperlocal nature means that consumers can interact directly with the sources of production rather than through retailers, improving food literacy and awareness and eliminating, as far as is practicable, any fossil fuel-fed transportation.

### *What was the role of Architecture & Food (A&F) in the GROOF project?*

**Architecture & Food** acted as an external consultant responsible for coaching Early Adopters: Seedleaves and Dublin City Council. A&f also produced State of the Art documents for both the UK and Ireland and edited the Guidelines to ensure the correct language was employed when using architecture and construction terminology. A&f also acted as an Early Adopter for the Grosvenor Works project, a rooftop greenhouse hydroponics school and urban farming hub that will be developed by A&f as Architect and principal stakeholder with the host building's owner, Cell Project Space.

### *To know more about it*

- The **closing event of GROOF** took place on April 25 at the IFSB Bettembourg, Luxembourg. This event aimed at sharing the results and marks the end of this large-scale project.
- A series of **podcasts** and **videos** highlighting the coached projects will be released in the coming weeks.
- On March 20th, GROOF received the **Energy Global Award Luxembourg** from the Austrian Embassy in Luxembourg.

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