

Projet GROOF

Les serres horticoles en toitures, des outils de production adaptés aux villes durables ?

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Lundi 21 juin 2021

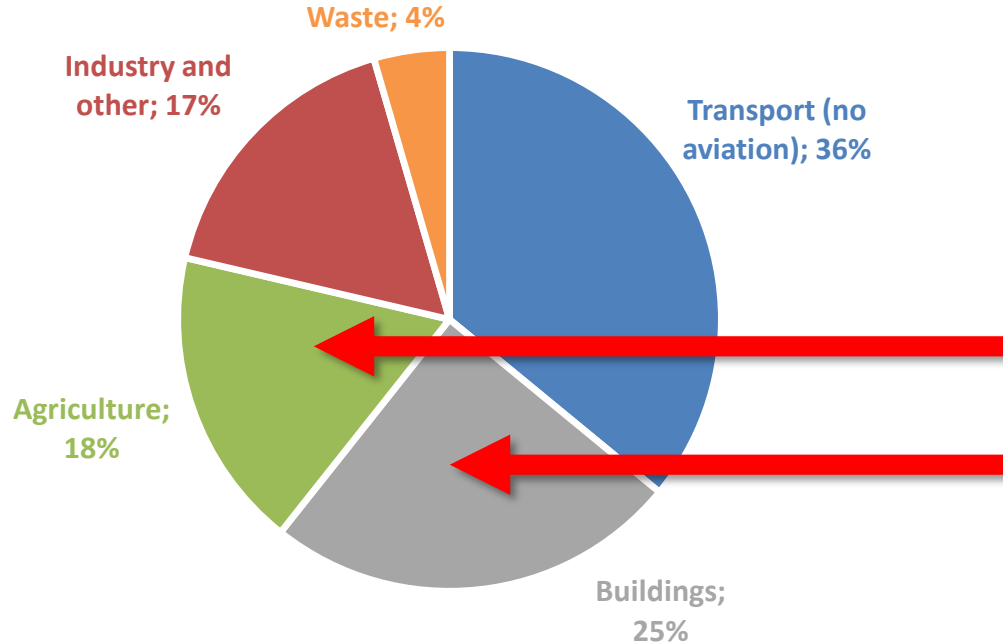


**Colloque international "Transitions 2021 - Les
transitions écologiques en transactions et actions"**

21-25 juin 2021 Toulouse (France)



GHG EMISSIONS UNDER EFFORT SAVING LEGISLATION, BY SECTOR IN EUROPE, 2019



How to reduce those 2 with a transversal approach?

Source: European environment agency



GROOF is
here to
find out!

Interreg



EUROPEAN UNION

North-West Europe

GROOF

European Regional Development Fund

12

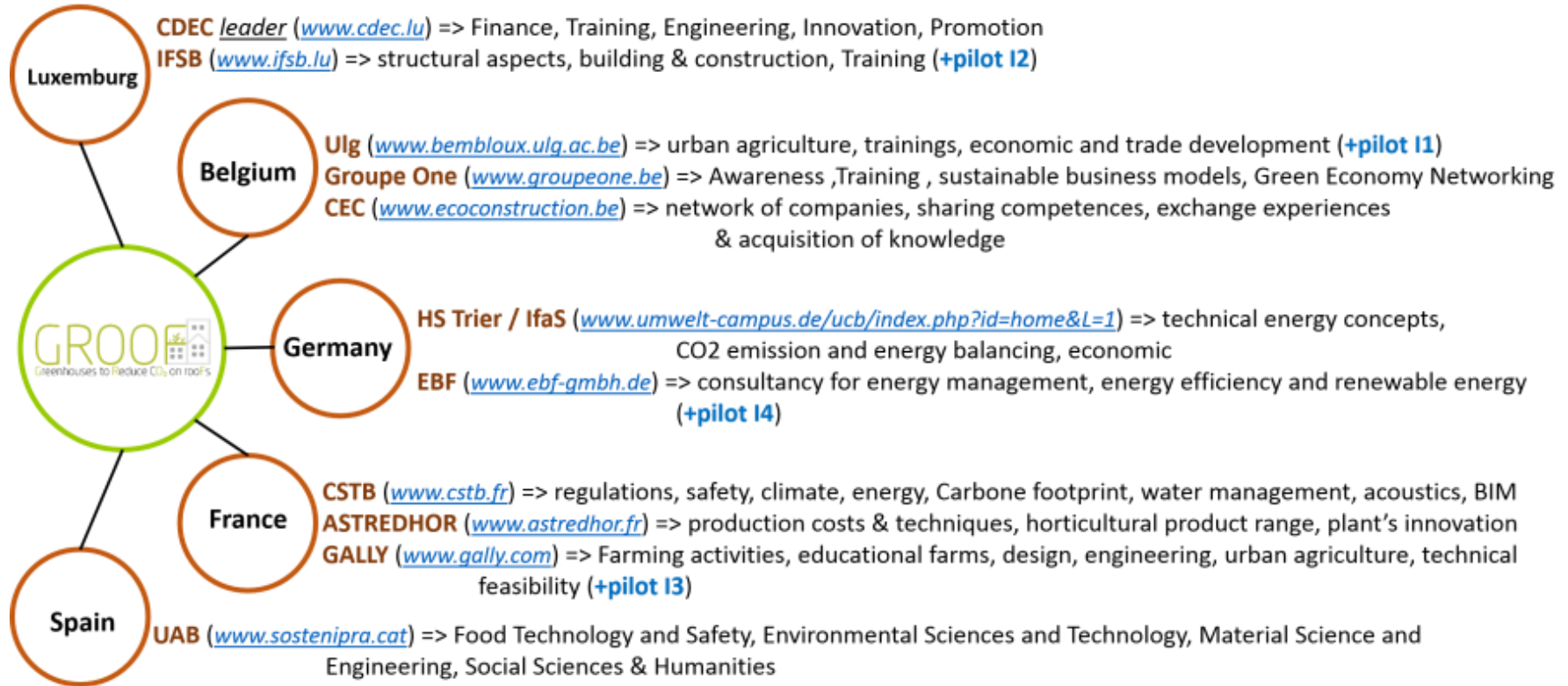
Partners

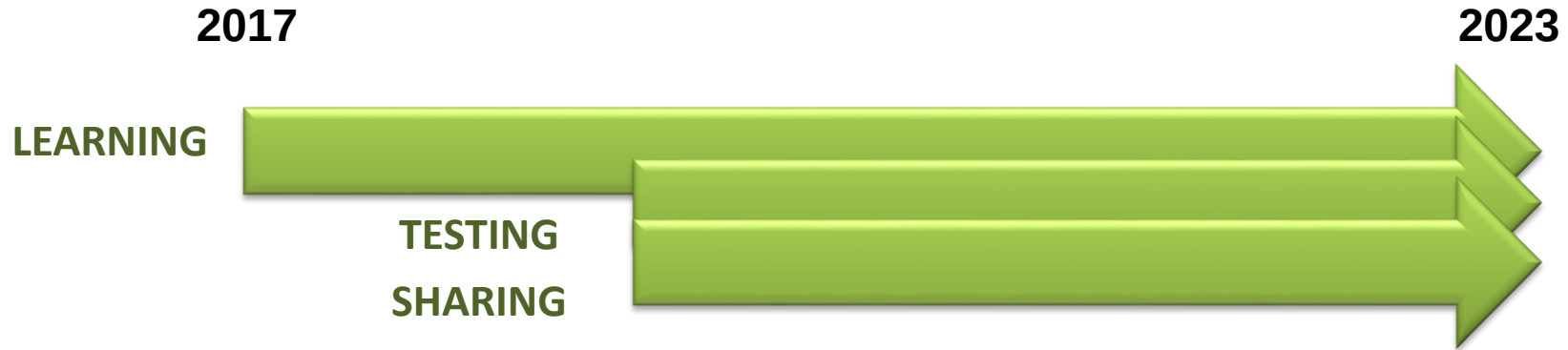
France, Belgium,
Germany, Spain,
Luxembourg

5,9

Millions euros

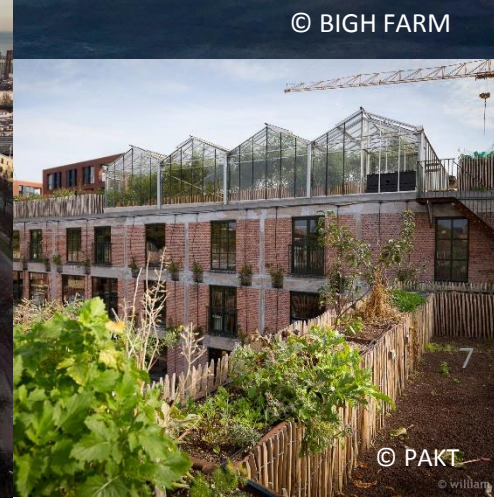








And
many
more...



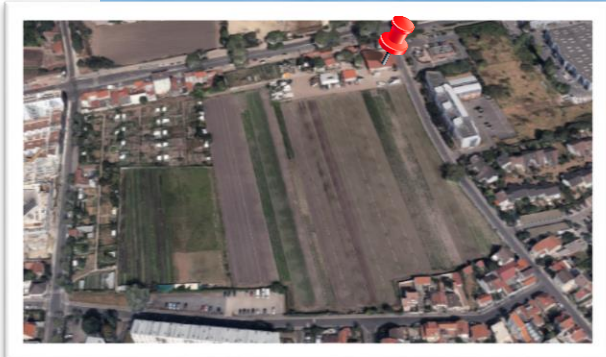






Bettembourg (LU)







Habitat
participatif



Les Petits
Poucets



CO₂ savings estimation tool for rooftop greenhouses

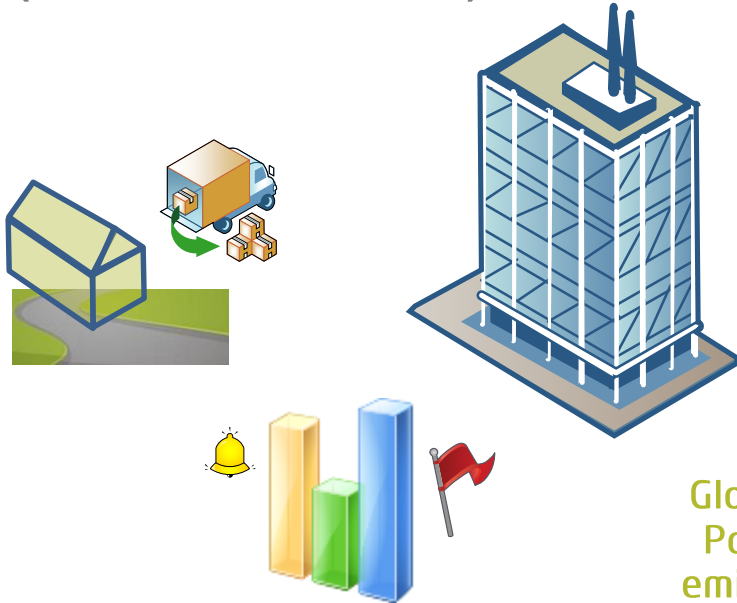
Heating related GHG emissions reference				
Reference - Best	Reference - Best	Reference - Medium +	Reference - Medium -	Reference - Worst
Greenhouse design				
Type of greenhouse	Venlo greenhouse	Venlo greenhouse	Venlo greenhouse	Venlo greenhouse
Roof covering	Foil (F-Clean) double layer	Single glass	Single glass	Single glass
Walls	Polycarbonat 32 mm	Polycarbonat 16 mm	Polycarbonat 16 mm	Double glass
Heating system	mixed heating system	mixed Heatingsystem	mixed Heatingsystem	mixed Heatingsystem
Thermal screens	2 screens	1 screen	1 screen	1 screen
Heating period	Mid-Feb to mid-Dec	Mid-Feb to mid-Dec	Mid-Feb to mid-Dec	Mid-Feb to mid-Dec
Greenhouse temperature	Day 20 °C Night 19 °C	Day 20 °C Night 19 °C	Day 20 °C Night 19 °C	Day 20 °C Night 19 °C
Dimensions				
Size of the base surface	5.000 m ²	5.000 m ²	5.000 m ²	5.000 m ²
Length	71 m	71 m	71 m	71 m
Width	70 m	70 m	70 m	70 m
Height	5 m	5 m	5 m	5 m
Energy				
Energy carriers for heating	Biomass 80% / Gas 20%	Gas 100%	Oil 100%	Coal 80% / oil 20%
Energy demand (heating)	1.003.700 kWh	2.029.800 kWh	2.029.801 kWh	2.054.370 kWh
Energy demand (specific)	201 kWh/m ²	406 kWh/m ²	406 kWh/m ²	411 kWh/m ²
Energy demand (electricity)	31.550 kWh	36.530 kWh	36.530 kWh	36.670 kWh
Energy demand (specific)	6 kWh/m ²	7 kWh/m ²	7 kWh/m ²	7 kWh/m ²
GHG Emissions				
Emissions (heat)	104.124 kg CO ₂ e/a	541.348 kg CO ₂ e/a	692.162 kg CO ₂ e/a	1.221.528 kg CO ₂ e/a
Emissions heat (specific)	21 kg CO ₂ e/a*m ²	108 kg CO ₂ e/a*m ²	138 kg CO ₂ e/a*m ²	244 kg CO ₂ e/a*m ²
Emissions electricity	13.630 kg CO ₂ e/a	15.781 kg CO ₂ e/a	15.781 kg CO ₂ e/a	15.841 kg CO ₂ e/a
Emissions electricity (specific)	3 kg CO ₂ e/a*m ²	3 kg CO ₂ e/a*m ²	3 kg CO ₂ e/a*m ²	3 kg CO ₂ e/a*m ²
GHG Emissions total	117.753 kg CO₂e/a	557.129 kg CO₂e/a	707.943 kg CO₂e/a	1.237.370 kg CO₂e/a
GHG Emissions total (specific)	24 kg CO₂e/a*m²	111 kg CO₂e/a*m²	142 kg CO₂e/a*m²	247 kg CO₂e/a*m²



CO₂ savings estimation tool for rooftop greenhouses

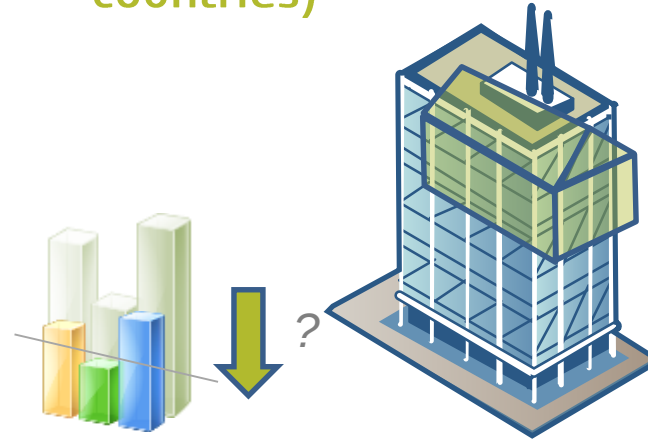
Assess the environmental impacts of Building + Greenhouse vegetable production, comparing 2 scenarii :

Building Greenhouse on the ground
(conventional scenario)



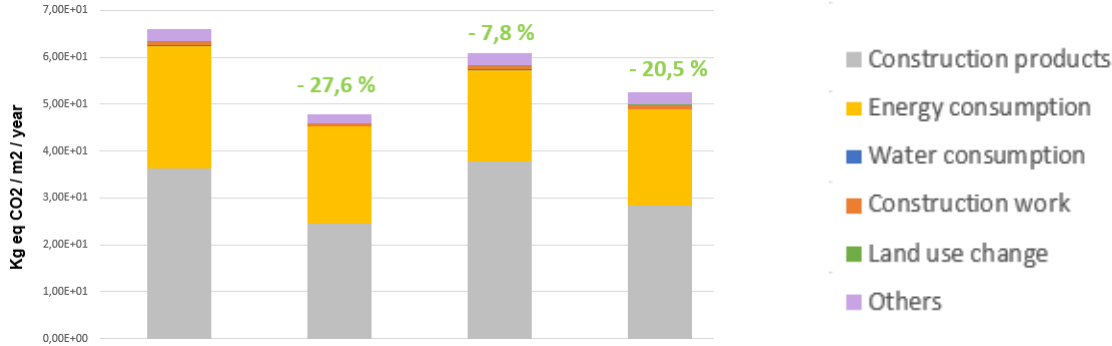
versus

Building Rooftop Greenhouse
(GROOF Scenario in 4 différents countries)



Global Warming
Potential GHG
emission, eqCO₂

CO₂ savings estimation tool for rooftop greenhouses



Life Cycle Assessment (LCA)

LCA is promoted by European and national initiatives such as:

European standard for Building LCA : EN 15978

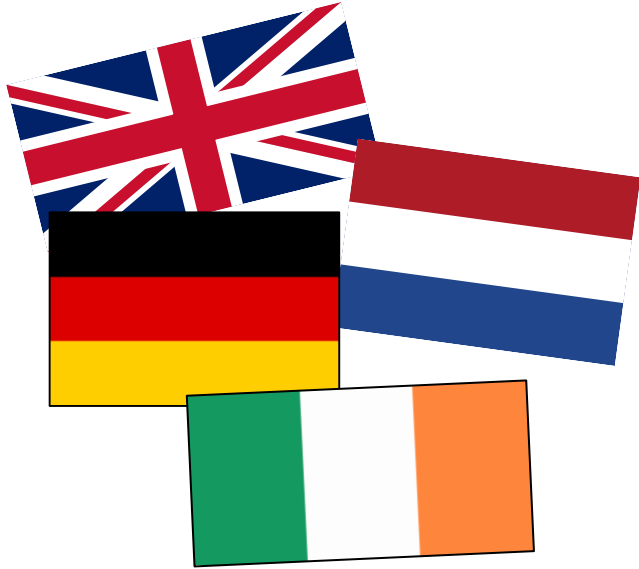
European framework for Sustainable Buildings

Reference configuration

Building with RoofTop Greenhouse (RTG)

Higher level of insulation

Extensive Green Roof



NEW COACHING

Open call for projects in Sept 2021
www.groof.eu

For sustainable greenhouse projects connected to buildings and cities.

You learn from us, we learn from you!

GROOF GUIDELINES

Step by step guidelines to make sure you ask the right question, to the right person at the right time.

To be used by:

- Architects, engineers,
- Owners and investors,
- Farmers and entrepreneurs,
- Cities and municipalities...

COMING SOON!



THANK YOU FOR YOUR ATTENTION



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