



Agriculture in North-West Europe and its potential for Solar Thermal Energy application



The European Context: a driver for change

Renewed Priorities

Reducing greenhouse gas emissions & developing renewable energies

→ Green Deal & its goal of reducing by 30% the greenhouse emissions



Large consumer of fossil fuels BUT leading producer of green energy



→ Solar Thermal Energy (STE) as an economical and renewable alternative to conventional energies

Agriculture in North-West Europe (NWE)

- Turnover : between 5.6 and 77.2 billion €
- Largest agricultural sectors : pig, vegetables, milk products, sheep, beef, veal, cropping



- Number of Farms : between 23 000 & 453 000 in each country* cf. 850 000 = total in the NWE area
- Average Size : between 26 and 84 hectares (rank depends on the country)

Energy for agriculture in north-west europe

- Consumption (in Millions of tons oil equivalent) : between 0.21 and 3.8
- Consumption (in Millions of tons CO2e) : between 5.5 and 76
- Price in €/MWh (in 2018) :
 - Gas: between 27 and 41
 - Electricity: between 103 and 156



Success factors for solar thermal energy in agriculture

- Heating systems that use water as a heat transfer fluid
- Underfloor heating systems using low-temperature water (between 30 and 50°C)
- Energy needs all year round and especially during the summer when the sunshine is the most important

Priority sectors (in theory)



Meat Poultry Breeding



Pig Farms (Maternity & Post-Weaning)



Milk-Fed Calves Breeding



Protected cropping under Greenhouses



Dairy Farms with/without onsite processing

Next Generation STE system Specifications & energy cost

EX: FengTech

- Vacuum tube collectors & tanks for direct warm water use
- FengTech STE: 10 units of 4m² & nominal power about 25KW

- Cost of produced energy: 0.05 €/kWh
- Initial investment: 50 000€ for 10 units
- Energy production for 20 years: around 1.000.000 kWh

our data refers mainly to our 5 partner countries : France, UK, Netherlands, Flanders, Ireland



ICaRE4Farms Project

North-West Europe (NWE) project
 Total project budget: €3.37m
 60% (€2.02M) funded by NWE



Goal

- Contributing to the Green Deal and EU objectives toward environmental transition
- Uptake and dissimulation of STE systems in Europe



Means

- Next Generation STE systems allowing both economical & greenhouse gas emissions savings
- Sampling and review of implementation criteria in 5 North-western Countries (FR/UK/IR/NL/BE)