



STE pilot site in France

## Welcome to the 2nd IcaRE4Farms newsletter

2021 was a busy year for the IcaRE4Farms team. Despite the limitations faced by everyone a lot of work took place both virtually and in person. In this newsletter, we will recap on the activities that took place throughout the year.

### Pilot Sites

In February, the first site meeting took place in France to set out the timetable for the construction of the solar thermal plant. Construction commenced in mid March. Read more at this [link](#).

Work continued through spring and the plant became operational in June.

Inauguration of the site took place in on the 1<sup>st</sup> October, with local MEP Ms Valérie Hayer sending a [video message](#) to the guests assembled at the site. Monitoring of the site is ongoing with many types of scientific instruments measuring solar radiance,

wind, water and soil temperatures. The monitoring will continue through 2022. Results of the first year of operation will be published in late summer 2022.

There are 3 more pilot sites that are at differing stages of development. Planning approval has been granted to construct an STE plant at a greenhouse at the campus of the University of Lincoln in the UK. A plant will be constructed adjoining an anaerobic digester plant in the Netherlands and interviews have concluded in Belgium to identify 4 interested sites. In January, the final site will be selected. It is expected that the three plants will be operational by the end of 2022.



### In the news

A number of French newspapers and a radio station have conducted interviews with Mr Vaucelle, on whose farm the pilot site is constructed, and some members of the project team. Read the full reports at this [link](#).

#### Energies renouvelables

##### Chaudière solaire : lancement d'un site pilote en élevage



Un site pilote de chaudière solaire est lancé en élevage. Le projet, porté par l'association IcaRE4Farms, vise à démontrer la faisabilité d'une production d'énergie renouvelable pour le chauffage des bâtiments d'élevage. Le site est situé à la ferme de Frédéric Vaucelle, à Sarthe. La chaudière solaire est composée de 100 capteurs solaires et d'un réservoir de stockage d'eau chaude. Elle sera mise en service en 2022.

#### Promouvoir le solaire thermique dans le Nord-Ouest de l'Europe



Le projet IcaRE4Farms vise à promouvoir le solaire thermique dans le Nord-Ouest de l'Europe. Le projet est financé par l'Union européenne et la région Normandie. Le site pilote est situé à la ferme de Frédéric Vaucelle, à Sarthe. La chaudière solaire est composée de 100 capteurs solaires et d'un réservoir de stockage d'eau chaude. Elle sera mise en service en 2022.

#### Sarthe. Même par temps des veaux



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#### « Avec ma centrale solaire j'économise 66 % de propane »

Un agriculteur normand a installé une centrale solaire thermique sur sa ferme. Il a économisé 66 % de propane. Le projet est financé par l'Union européenne et la région Normandie. Le site pilote est situé à la ferme de Frédéric Vaucelle, à Sarthe. La chaudière solaire est composée de 100 capteurs solaires et d'un réservoir de stockage d'eau chaude. Elle sera mise en service en 2022.

#### Un circuit fermé

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#### Stocker la chaleur

Le projet IcaRE4Farms vise à promouvoir le solaire thermique dans le Nord-Ouest de l'Europe. Le projet est financé par l'Union européenne et la région Normandie. Le site pilote est situé à la ferme de Frédéric Vaucelle, à Sarthe. La chaudière solaire est composée de 100 capteurs solaires et d'un réservoir de stockage d'eau chaude. Elle sera mise en service en 2022.

A selection of French newspapers that featured the pilot site, Anjou Agricole, Agri 72, Ouest France & La France Agricole

## Market analysis

Since the Paris agreements, the states have committed to reducing greenhouse gas emissions (GHG) and developing renewable energies, as their priorities. At the European level, these policies are continuing today with the adoption of the Green Deal and the objective of reducing GHG emissions by 30%.

Agriculture, the leading producer of green energy, also consumes large quantities of fossil fuels. STE, long neglected in North West European countries due to climatic conditions, is now an economical and renewable alternative to energy sources such as gas, oil and electricity.

The ICARE4FARMS project aims at testing the relevance and the potential development of STE in North-Western European agriculture and in particular in five countries: Belgium (Flanders), France, Ireland, the Netherlands and the United Kingdom. This study aims to identify the most relevant agricultural sectors for the use of solar thermal energy in each of the five countries, to study the technical and financial conditions of their substitution to conventional energy sources and to estimate their development potential.

STE (production of heat and not electricity) is still very little used in agricultural production in Northern Europe for three main reasons: It depends on the average annual sunshine which is between 1200kwh/m<sup>2</sup>/year for the northern half of France to less than 900kwh/m<sup>2</sup>/year in Ireland, It is adapted to heating systems using hot water and preferably at low temperature (below 60°C), It is more profitable if heat is required throughout the year.

Based on the previous criteria we have identified five main types of agricultural production potentially suitable for STE:

- Milk-fed calf farms that use hot water for feed production (reconstituted milk),
- Dairy farms and in particular those that process milk on the farm,
- Pig farms, especially maternity and post-weaning units,
- Heated greenhouses: market gardening and horticulture,
- Broiler poultry farms.

Interviews with farmers and representatives of the various agricultural technical centres made it possible to specify the most relevant cases for each of these areas. Finally, in each country, economic studies of the sector produced by the States (ministries of agriculture, national energy agencies, etc.), universities and/or agricultural technical centres allowed us to evaluate the number of solar thermal installations that can potentially be deployed on farms.

It emerges that 3 target sectors stand out in our five countries:

- Dairy farms with more than 100 cows in France, Belgium, Great Britain, Ireland and the Netherlands,
- Beef calf farms in France, Belgium and the Netherlands,
- Greenhouses kept frost-free or at low temperatures in France and Great Britain.

Considering this data, the number of possible solar installations draws near 30,000.

The complete market analysis report endeavours to review and explore these potential prospects related to STE within the agricultural area, with an in-depth focus on the 5 target sectors of high interest.

It provides a relevant overview of prominent field materials and outlooks about STE optimal application in agriculture; it will be complemented by several case studies as well as further inquiries to detail more precisely the ideal specifications to address properly the overlap of technical constraints and energy needs.

Click [here](#) to read the full Market analysis report

## Market Outlook of Solar Thermal Energy in North West Europe

Current use analysis of STE and potential demand for hot water production in farming activities in Belgium (Flanders), Ireland, France, The Netherlands, and The United Kingdom



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