



# EU CAP Network Seminar 'Smart circular farming to address high energy and fertiliser prices'

6-7 December 2022  
Porto| Portugal



Funded by  
the European Union

# AgroFossilFree

Konstantinos Vaiopoulos





# The path towards a defossilised EU agriculture

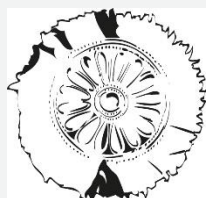
EU CAP Seminar, December 6<sup>th</sup>, 2022

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**CERTH**

CENTRE FOR  
RESEARCH & TECHNOLOGY  
HELLAS



Institute for Bio-Economy  
and Agri-Technology



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ID 101000496

# Problem Statement

Open-field crop production

- arable crops
- orchards
- vineyards

Controlled environment agricultural constructions  
(i.e. greenhouses and livestock buildings)



## Technologies & Strategies for sustainability



In the EU, the last 20 years these technologies and strategies **were applied** in most economic sectors with very positive results.

1. **Households**
2. **Industry**
3. **Transport**

**6.1% in 2000 to  
15.2% in 2016**

**Not applied in Agriculture  
with the same intensity!**

not considered as a **main energy consumer** and **GHG producer**

**High cost** of such technologies for small/medium farmers due to their **low income** and **lack of sufficient incentives**

# Solution

## Fossil-Energy-Free Technologies and Strategies (FEFTS)

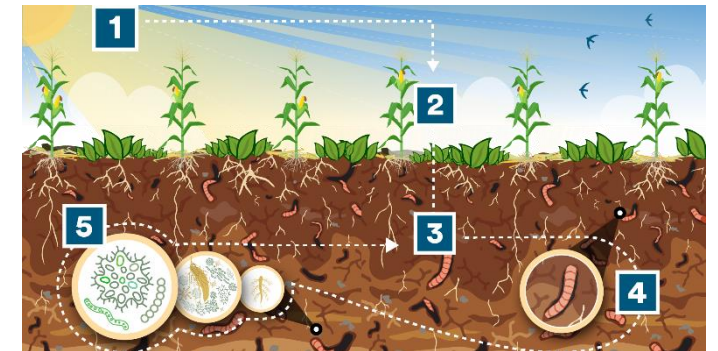
On-site renewable  
energy production



Energy efficiency and  
rational use of energy  
in Agriculture



Soil Carbon Sequestration  
Practices



# Problem Statement

## Agriculture

**Important gap** between such developments and the actual adoption and use of the available tools and practices by the farmers

## GAP CLOSED BY

gaining knowledge of existing and future technological advancements in energy sector and adequate training is achieved within the EU

## FULL ALIGNMENT WITH

- fossil energy use reduction policies
- the related legal and regulatory frameworks
- sustainable food production practices



# The Project

AgroFossilFree is working on bridging this gap!

**Call:** Defossilising agriculture – solutions and pathways for fossil-energy-free farming (Coordination and Support Action)

**Title:** Strategies and technologies to achieve a European Fossil-energy-free agriculture

**Budget:** € 2,000,000 by Horizon 2020

**Duration:** 36 months, started on October 2020

**Partnership:** 16 partners from Greece, Denmark, Poland, Belgium, Italy, Netherlands, Ireland, Germany and Spain





# Approach

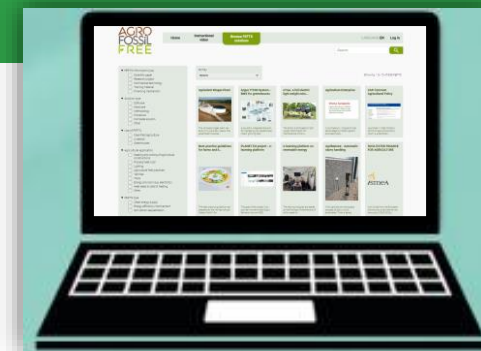
**POLICY (WP3 & 5)**  
Policy Guidelines  
and dissemination

**INNOVATION (WP3)**  
Multi-actor networking:  
Innovation Workshops in 8 countries and 3  
International Workshops for integrating national  
results in an EU context

**KNOWLEDGE (WP2)**  
Inventory of FEFTS (Papers,  
Projects, Products, Training  
material, Financial tools)



**FEFTS PLATFORM (WP4)**



**RESEARCH (WP1)**  
Assessment of EU agriculture  
energy status and farmers'  
needs

# Main Findings from Farmers' Survey

## FEFTS Adoption

### Main motivation for adoption

1. ↓ Energy cost  
↑ Profit (i.e. selling energy to others)
2. Reduction of environmental impact  
(complementary)

### Main barriers for non adoption

1. Affordability - high upfront costs  
(+ Long term investments)
2. Bureaucracy – Complicated procedures
3. Not best fitting/compatible technologies for their farm
4. Small farm size

**2/3** of RES adopters said that a **SPECIFIC SUBSIDY** → opportunity to invest

# Main Findings from Farmers' Survey

## Characteristics of FEFTS Adopters



- **Bigger farms**
- **“Business oriented” (non family farms-companies)**  
Full time farming → **primary occupation**
- **More added value/diversification** on-farm activities  
(i.e. **packaging/processing, agrotourism** etc.)
- **Participate in CAP Pillar II projects**  
(i.e. farm modernization schemes)
- **Better education** (general - agricultural)  
**Better digital skills** (internet use)
- **Personality** : More innovative, keener to experiment, risk taking behavior, visit fairs etc. more often
- **Less years of experience in farming**  
(↓ resistance to change)

# Main Findings from Experts' interviews

## Policy mix characteristics for successful FEFTS adoption



- ✓ **Reliable in the long-term** (frequent changes cause insecurity to farmers)
- ✓ Sufficient **financial incentives** (investment will prove profitable)
- ✓ **Dissemination of reliable information** (extension/advisory and educational/training services for farmers)
- ✓ Avoid **cumbersome-complicated procedures!!!**

# Main Findings – Needs to be addressed

## Financial support



Initial capital investment **viable** for

**Small and  
medium farms**

## Bureaucracy



**Less complicated procedures**  
**“Simplified” Regulations**

## Policies



**Reliability in the long-term**  
**Real farmers’ needs**

# Main Findings – Needs to be addressed

## Information - Training



- Tests/demonstrations under **real farm conditions**
- **Peer to peer experiences** exchange (with adopters)
- **Targeted advisory + cost-benefit** analyses

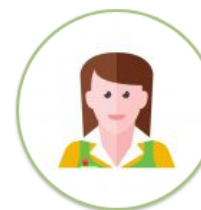
## AKIS Network

Agricultural  
Knowledge  
Innovation  
Systems

Farmer



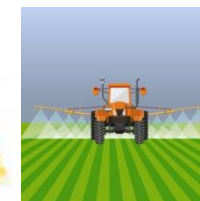
Research



Advisors



Industry





# Conclusions

- Limited and fragmented information about agricultural energy profile / Need for common statistical methodology
- FEFTS in different combinations based on each farm needs could be a partial or even a complete fossil substitute
- High adoption through better organized Agricultural Knowledge Information System (AKIS)
- Research should focus on adapting existing industrial or residential FEFTS solutions to farming needs



# Conclusions

- Extension/advisory services should be a multiplier of FEFTS by showcasing and training farmers
- Technology providers offer FEFTS, always after solid feasibility studies to avoid failures that hinder adoption
- The core of the system, the farmer, should identify the challenges of today and activate his/her business to return to the basis of agriculture – circularity, self-dependency and locality

# THANK YOU FOR YOUR ATTENTION!



[platform.agrofossilfree.eu](https://platform.agrofossilfree.eu)



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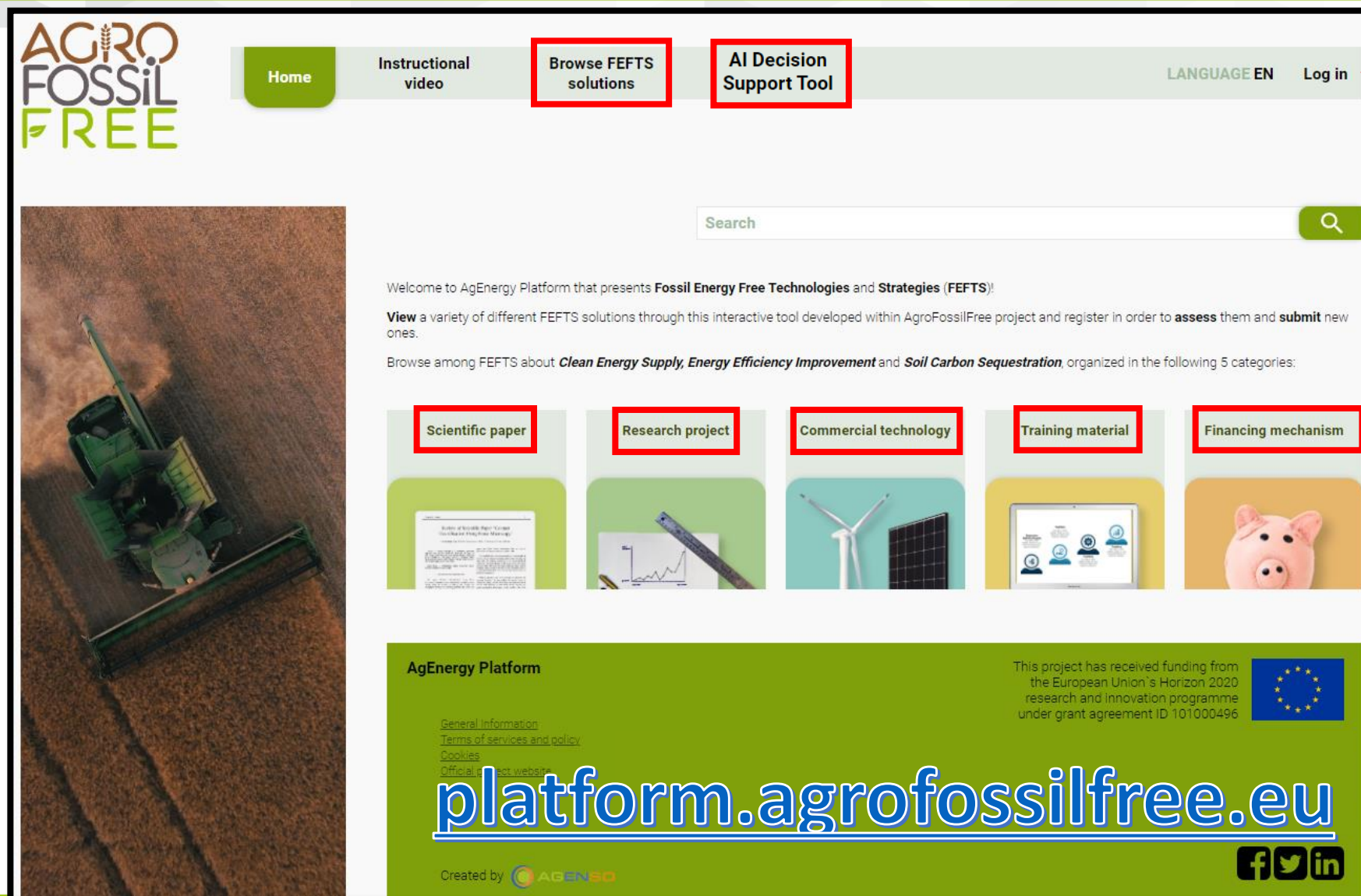
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## AgEnergy platform



# Try to visit our platform!



The screenshot shows the AgEnergy Platform website. The header features the 'AGRO FOSSIL FREE' logo on the left and navigation links: 'Home', 'Instructional video', 'Browse FEFTS solutions', and 'AI Decision Support Tool'. The 'Browse FEFTS solutions' and 'AI Decision Support Tool' links are highlighted with red boxes. On the right of the header, there are links for 'LANGUAGE EN' and 'Log in', with a red arrow pointing to the 'Log in' link. Below the header is a search bar with the placeholder text 'Search'. The main content area welcomes users to the platform, which presents 'Fossil Energy Free Technologies and Strategies (FEFTS)'. It encourages users to view FEFTS solutions, register to assess and submit new ones, and browse among FEFTS categories: 'Clean Energy Supply', 'Energy Efficiency Improvement', and 'Soil Carbon Sequestration'. Below this, five categories are listed in red boxes: 'Scientific paper', 'Research project', 'Commercial technology', 'Training material', and 'Financing mechanism'. Each category has a corresponding image: a document for scientific papers, a graph for research projects, a wind turbine and solar panel for commercial technology, a laptop for training material, and a piggy bank for financing mechanisms. The footer contains the 'AgEnergy Platform' logo, links for 'General information', 'Terms of services and policy', 'Cookies', and 'Official project website'. It also mentions funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ID 101000496, accompanied by the European Union flag. The website URL 'platform.agrofossilfree.eu' is prominently displayed in large blue text, and social media icons for Facebook, Twitter, and LinkedIn are shown at the bottom right.