



Focus Group 'Innovative on-farm energy production systems'

Dublin, Ireland
12-13 November 2025



Successful case from Horizon/Cluster 6: RES4LIVE

May HOBEIKA
DG AGRI/ F2: Research & Innovation
European Commission

Vision for Agriculture and Food

- › **Leveraging the opportunities of innovation** that reward:
 - › *“**Renewable energy production**, an avenue which enhances energy security, decreases greenhouse gas emissions, and offers farmers and foresters additional income and innovation prospects.”*
 - › *“Farmers should not only be even more **energy-sufficient** with for example solar panels, windmills and biogas production, but also be able to deliver their **energy products to the market**, including through energy communities.”*



Projects funded under Horizon/Cluster 6

Project acronym	Project title	Type of action	Project id / website	Period	EU contribution
HarvRESt	Harnessing the vast potential of RES for sustainable farming	RIA	101136904	2024-26	4.9 mio
HyPErFarm	Hydrogen And Photovoltaic Electrification On Farm	IA	101000828	2020-24	5.1 mio
RES4LIVE	Energy Smart Livestock Farming towards Zero Fossil Fuel Consumption	IA	101000785	2020-24	4.9 mio
AgroFossilFree	Strategies and technologies to achieve a European Fossil-energy-free agriculture	CSA	101000496	2020-23	1.9 mio



RES4LIVE: Energy Smart Livestock Farming towards Zero Fossil Fuel Consumption

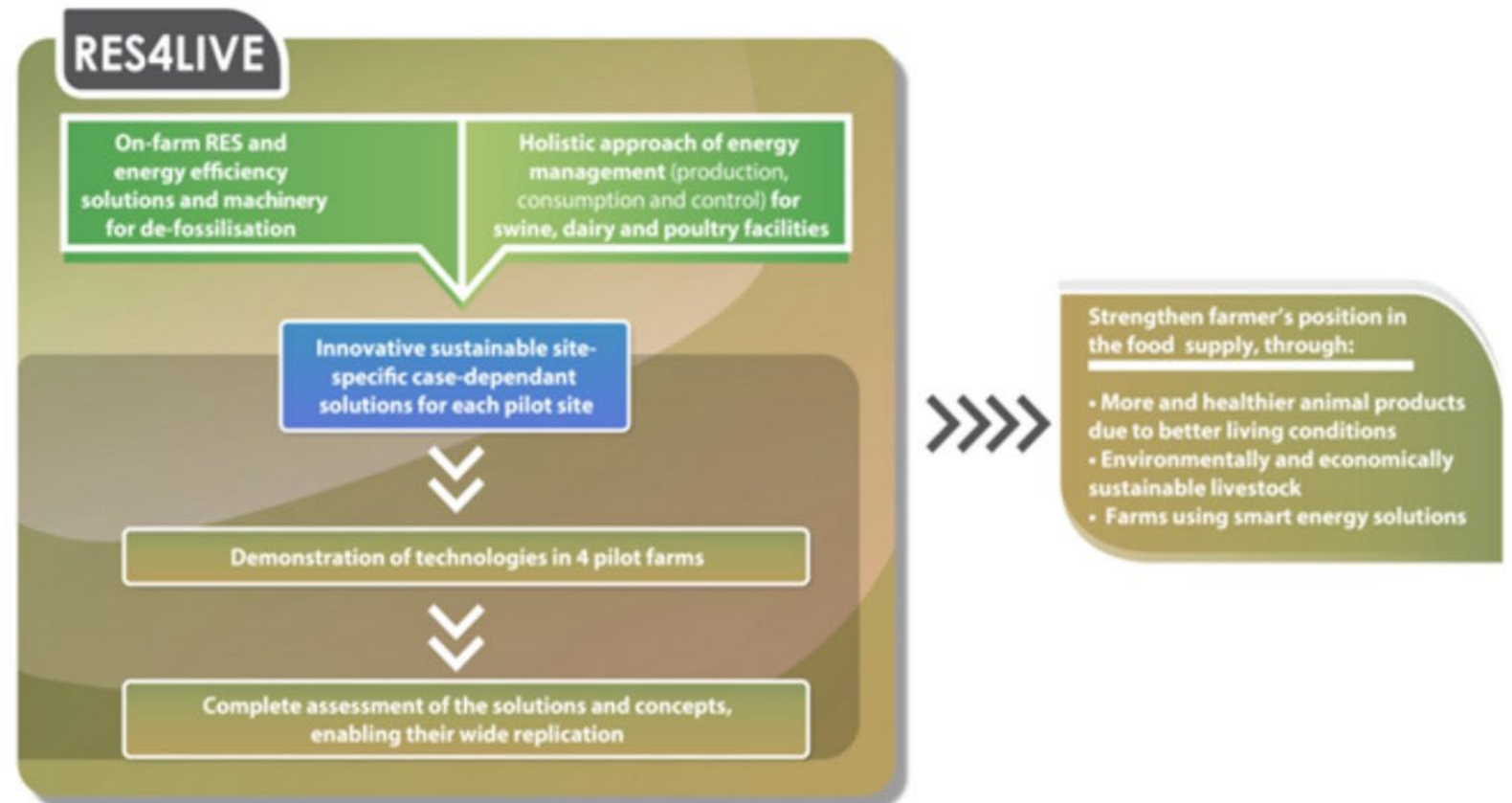
> Context

- > One of the **most energy-consuming** sub-sectors of agriculture is **intensive livestock** that is mainly based on **fossil fuels use**
- > With declining costs and improvement of reliability and performance of key renewable energy sources (RES) technologies (e.g. PVs, heat pumps, biogas), **new business models are emerging on the market**
- > **Specific challenges for the individual farmer:** need for sound advice, investment support and risk management
- > The adaptation and demonstration at a large-scale on farm level of RES technologies and machinery requires supporting measures with respect to spatial planning, infrastructure, different business models and market organization



RES4LIVE: Overall Objective

- › Develop and bring into the market integrated, cost-effective and case-sensitive RES solutions towards achieving **fossil-free livestock farming**



RES4LIVE: Activities

- The project utilised key RES technologies: **PVT panels, heat pumps, geothermal energy, and biomethane production from biogas for tractors**, to determine the most effective and efficient ways to incorporate them on farms.
- RES4LIVE successfully demonstrated integrated RES systems in four pilot farms located in **Belgium (swine), Germany (dairy), Greece (poultry), and Italy (swine)**.
- While overarching RES technologies were implemented throughout the project, **site-specific solutions** were also introduced.
- Additionally, the project conducted a comprehensive assessment of **RES technology integration and outcomes** to facilitate their wider replication in the livestock farming industry.



RES4LIVE: Practical results

- Adapted and demonstrated key Renewable Energy Systems (RES) technologies for seamless integration into livestock farming:
 1. On-farm upgrading of biogas to biomethane
 2. Modification of a farm tractor for biomethane use
 3. Adaptation of a modular heat pump designed for efficient operation in livestock environments
 4. Development of a Photovoltaic-Thermal (PVT) system for easy and cost-effective farm installation



RES4LIVE: Practical results

- Compiled an inventory of renewable energy sources and energy efficiency technologies providing farmers and policymakers with accessible information for sustainable technology investments
- Developed reports analyzing energy demand and consumption, RES availability in typical livestock farms, and livestock thermal comfort
- Created farm-specific energy control approaches and numerical simulation tools were created, focusing on the most promising technologies identified in the inventory
 - o Model's results contribute to optimal designs for fossil-free farms, aiming to minimize costs and maximize ecological impact



RES4LIVE: Impacts

- **Economically:** while the technologies demonstrated positive effects, their success varied by farm—some achieved significant improvements, while others faced challenges due to high energy costs and initial investment requirements.
- **Environmentally:** most farms saw reductions in their overall impacts from the shift to renewable energy, though some experienced increases
- **Socially:** the project led to improved community acceptance and stronger support for RES technologies, suggesting a broader adoption potential if economic and environmental concerns are addressed



RES4LIVE: Expected potential impact

- Impact on both the livestock farming and renewable energy sectors by creating a model for sustainable, economically viable farms through smart energy solutions
- helped farmers reduce fossil fuel dependence, meet energy needs more efficiently, lower costs, improve competitiveness, and optimize animal productivity by enhancing living conditions
- Advancing renewable energy knowledge in livestock farming
- Promoting job growth, competitiveness, sustainability, and diversity in regional livestock farms
- Reducing the environmental footprint of livestock farming and decreasing dependence on fossil fuels and external energy providers
- Establishing high animal welfare standards to improve productivity



EU CAP Network Focus Group 'Innovative on-farm energy production systems'

1st meeting | 12-13 November 2025 | **Dublin, Ireland**

All information on the Focus Group is available on the webpage:

<https://eu-cap-network.ec.europa.eu/focus-groups-innovation-knowledge-exchange-and-eip-agri/focus-group-innovative-farm-energy-production-systems>

