

ClieNFarms Policy Brief #3: Supporting farmers and advisors to select tailored practices that contribute to climate neutrality

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Introduction

Progress towards climate neutrality within the agrifood industry is described as “too slow” by the European Climate Neutrality Observatory (ECNO)ⁱ. The European Commission’s Vision for food and agricultureⁱⁱ highlights the need to create climate neutrality roadmaps for agriculture and a long-term and just transition strategy that includes the contribution of farmers. The Common Market Regulation, being reviewed to strengthen farmers’ position on the market, acknowledges that agricultural incomes are likely to remain under pressure as farmers encounter growing risks, partly due to a changing climate, higher input costs, and stricter production standards. Making farming systems less harmful to the climate and the environment, yet more resilient and profitable is critical to many policies, starting with the Common Agricultural Policy (CAP). The CAP aims to promote certain solutions through regulations, subsidies or the absence thereof. Thus, it is important to equip farmers, advisors, policy makers, and stakeholders with evidence-based knowledge about the climate, environmental, social and economic impacts of such solutions.

The challenge

Many climate solutions are available for agriculture. However, farmers might find it hard to choose tailored solutions because their suitability and effectiveness often vary due to differences in the biogeophysical context (e.g., soil type, climate), type of production system, current management practices and the way they are implemented. Moreover, certain solutions may reduce productivity or income or show trade-offs towards other sustainability goals. Any promoted solutions must therefore be tested on applicability, effectiveness and integral sustainability in different contexts and for different farming systems.

Against this backdrop, the Innovation Action project ClieNFarms contributes to the EU Green Deal (EGD) and the Farm2Fork Strategy (F2F) by co-developing, testing and scaling up farming solutions that pave the way to climate neutrality across Europe.

Aim of the policy brief

This policy brief aims at guiding policy makers in their decision-making processes towards EU climate neutrality in agriculture by presenting the approach of ClieNFarms, which helps farm stakeholders select solutions adapted to a certain context. This includes highlighting the process of selecting and implementing climate solutions tested on farming systems involved in the ClieNFarms project, as well as at evaluating implementation challenges, from which policy recommendations are derived.

Disclaimer

Reaching climate neutrality within the EU is not the only reason to pursue resilience and profitability in the continent’s agricultural sector. The EU’s dependency on imported inputs from non-EU countries is undeniable and addressing that requires a competitive and reliable domestic sector. For example, in 2022, the EU imported 97% of the protein-rich feed product soybean meal it used, with 85% of the volume imported being produced in Brazil and Argentinaⁱⁱⁱ. In the same year, France, the EU’s leading beef producer, imported 25.6% of the beef it consumed, although EU domestic production is reported to cover meat consumption for beef, chicken and pork^{iv}. These figures show that no matter how climate neutral EU agriculture is, the EU will continue to contribute to climate change unless we address our import dependence.

CLIEFARMS' APPROACH

Supporting farmers to select tailored climate solutions

Key finding 1: Farmers and advisors can select suitable, effective and integrally sustainable climate solutions based on the following criteria: applicability, climate impact, variation in impact, synergies and trade-offs.

ClieNFarms identified and selected 33 solutions for GHG reduction and carbon sequestration in the production systems shown in Figure 1. Solutions were included in a catalogue of climate solutions^v if they were applicable and effective in European farming systems, with a high technical readiness level (7-9), and with evidence of potential reduction in total net GHG emissions in at least 2 peer-reviewed scientific articles. Some solutions were not included due to insufficient evidence or inconsistent results found in the literature. The catalogue contains a factsheet for each climate solution, with the following information:

- **Applicability:** which depends on the territorial, pedoclimatic and production system type contexts (see Figure 2 below).
- **Climate impact:** effects on the carbon footprint, on absolute emissions, on specific greenhouse gases per emission sources, and on soil organic carbon. By disaggregating the effects, the information is useful to different users and purposes, for example to understand how farm-level practices contribute to the LULUCF/ ESR targets or the Global Methane Pledge.
- **Variation in climate impact:** many solutions show variable effects depending on the farm location, management, way or level of implementation, and external conditions. By understanding the reasons behind the variable effects, the farmer or stakeholder can ensure impact and avoid ineffective practices.
- **Effects on yields, cost-effectiveness and other sustainability aspects:** the catalogue includes an assessment of the impacts of adopting a given solution on animal and crop yields, on synergies and on trade-offs. Many mitigation strategies require capital investment, change operational costs and revenues and have an impact on biodiversity, water quality and other sustainability aspects, especially when deployed at scale or without local adaptation.

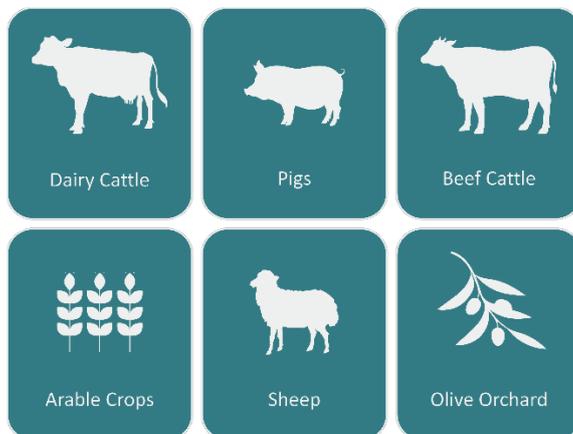


Figure 1 - Production system categories that the farms involved in ClieNFarms belonged to. Source: ClieNFarms.

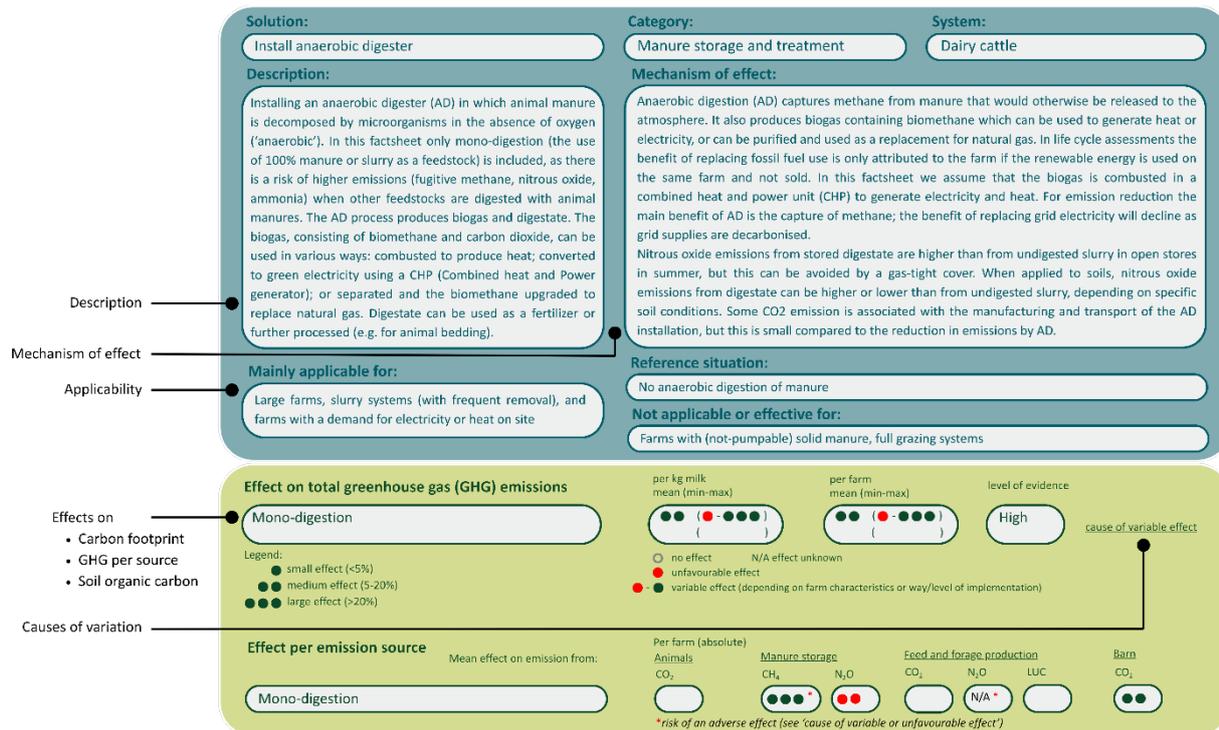


Figure 2 - Example of a climate performance assessment (factsheet) for anaerobic digestion in dairy farming. This information can be found in the catalogue of solutions (see References). Source: ClieNFarms.

Enabling & disabling factors of adoption

Key finding 2: Adoption of climate-neutral practices depends above all on the knowledge of the farmer, the available advisory support and the financial feasibility for a given farm. Farmers adopt measures that fit their production systems and economic objectives, while high investment costs and ineffective advice channels remain key barriers across sectors.

To better understand how farmers across Europe are adopting climate solutions, ClieNFarms conducted a cross-national quantitative survey with more than 300 farmers, complemented by qualitative interviews and workshops. The key results are summarised in Figure 3. Adoption is strongest when new practices align with farmers' economic objectives rather than competing with them.

The results show variability depending on the sector considered:

- **In arable systems**, group training and social-media information foster adoption, whereas peer networks are not significant. Some farmers who rate environmentally friendly farming as highly important tend to adopt fewer practices, which may stem from the belief that their farming is already sufficiently sustainable.
- **In grassland systems**, expert advice encourages longer-term planning, while commercial advice discourages uptake. Higher land quality tend to facilitate implementation, whereas strong self-reliance, i.e., farmers relying solely on their own skills for their success, can limit it, for example for herb/wildflower mixes.
- **In cattle systems**, expert advice promotes dietary supplements and feed crude protein content reduction, while business advice tends to be weakly aligned with climate objectives.
- **In technology-related practices**, farmer-to-farmer learning supports adoption, including renewable energy. Farmers facing financial constraints report higher future adoption intentions, possibly reflecting expectations of cost-saving or efficiency

gains. In addition, organic farms adopt fewer precision-based practices—for example, in the case of variable-rate or precision farming—as these are less relevant to their production logic.

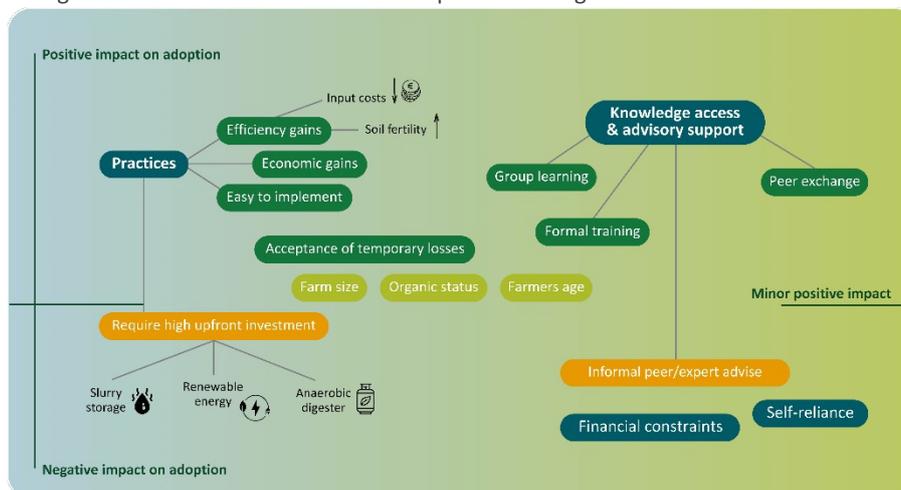


Figure 3 - Common drivers (top, green) and barriers (bottom, red) of adoption of climate solutions. In the middle (light green), factors that have a minor positive impact on adoption. Gray: general factors; green/red: specific factors generally driving/hindering adoption. Source: ClieNFarms.

Policy recommendations

1. The CAP currently in discussion transfers more responsibility to Member States, which should delegate more power to the local actors to tailor strategic action plans with locally suitable and sustainable climate solutions for agriculture. These plans would be designed with a multi-stakeholder approach that could use the catalogue of solutions developed by ClieNFarms.
2. Funding mechanisms should be designed to support the adoption of solutions with high climate mitigation potential, especially when those solutions are high-cost, structural measures, such as slurry infrastructure and renewable energy. Priority should also be given to young and financially constrained farmers, who are less likely to adopt innovative practices.
3. Advisory and peer-learning services should be strengthened as they have been proven to support adoption when the right channels are used. Policy makers should support the development of group-based training, demonstration farm events and structured peer exchanges that highlight successful examples and counter negative narratives within farming communities.
4. Priority should be given to the domestic food and feed market for consistency with the EU's own objectives of a competitive and sustainable EU agricultural sector. The EU needs to support mechanisms that prevent carbon leakage. The methodology developed in the catalogue of solutions can be used to prevent the EU from externalizing its environmental footprint by strengthening policies such as the EU Deforestation Regulation (EUDR), mandatory origin-labelling schemes, and by including food products in the carbon boundary adjustment mechanism (CBAM).

Key references

ⁱ ECNO (2024). *Flagship Report: State of EU progress to climate neutrality* (Velten, E. K., Calipel, C., Duwe, M., Evans, N., Felthöfer, C., Gardiner, J., Hagemann, M., Hossfeld, F., Humphreys, C., Kahlen, L., Lalieu, S., Leśniak, M., Schöberlein, P., Śniegocki, A., Stefańczyk, A., Tarpey, J). European Climate Neutrality Observatory (ECNO).

ⁱⁱ European Commission (2025). Communication from the commission to the european parliament, the council, the european economic and social committee and the committee of the regions. A Vision for Agriculture and Food Shaping together an attractive farming and agri-food sector for future generations. COM(2025) 75 final.

ⁱⁱⁱ Loi, A. *et al.*, 2024, Research for AGRI Committee – The dependency of the EU's food system on inputs and their sources. European Parliament, Policy Department for Structural and Cohesion Policies, Brussels.



^{iv} Kirsch A. And Lore-Elène J. (2023). European food sovereignty: what do the numbers say?. Agriculture Strategies. Available at: <https://www.agriculture-strategies.eu/en/2024/10/european-food-sovereignty-what-do-the-numbers-say/>

^v ClieNFarms (2025). Catalogue of climate solutions. Available at: www.ClieNFarms.eu/solutions.



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