



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

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# Perspectives on agricultural inputs in view of the current geopolitical challenges

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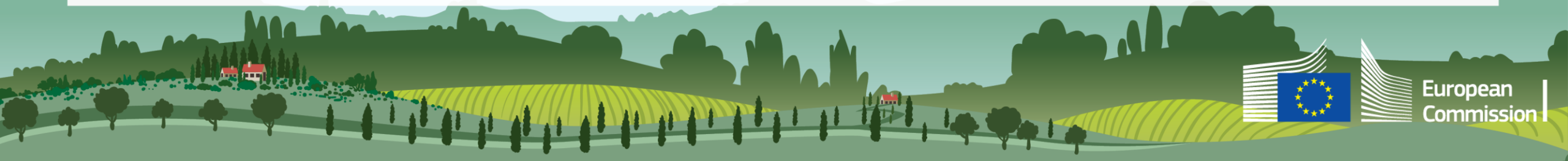


# Perspectives on agricultural inputs in view of the current geopolitical challenges

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Directorate General for Agriculture and Rural Development

Porto, 06/12/2022



# Content

- The bigger picture: EU agricultural markets in 2022
- Critical role of energy and fertilisers for EU agriculture
- R&I priorities in Cluster 6



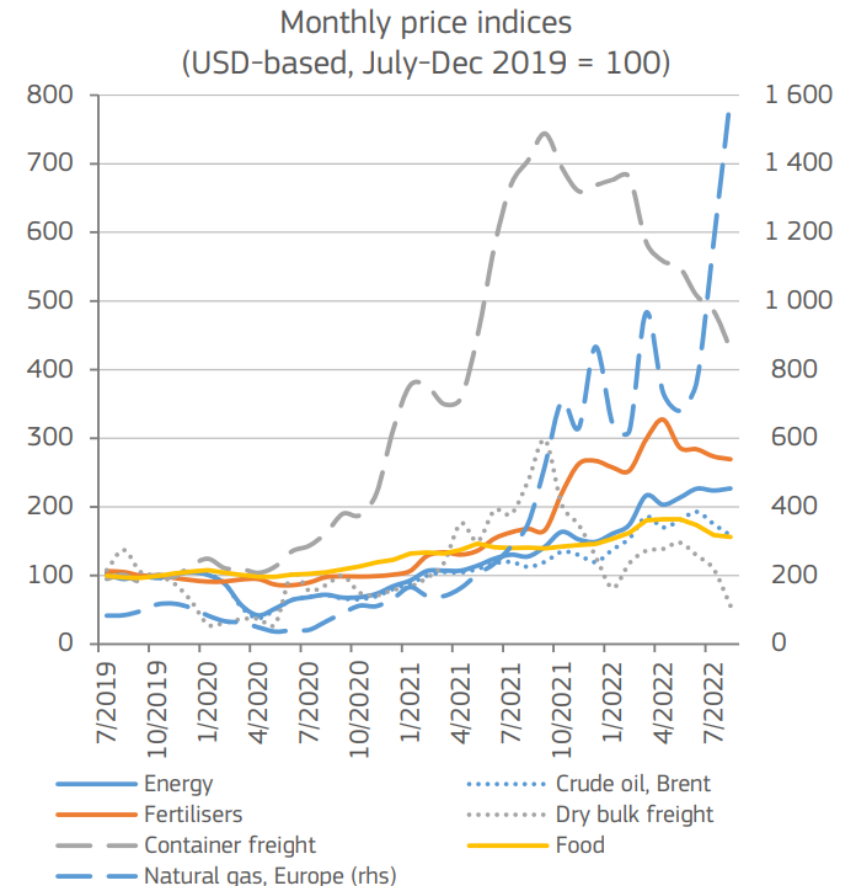
# Before the war started....

**...the global economic recovery was already facing challenges:**

- Imbalances in supply and demand of inputs as well as agricultural commodities -> **severe prices surges.**
- The shortage of containers and the congestion in ports -> **an increase in freight costs.**
- An increased demand linked to the economic recovery and a slow rise of the production -> **steadily increasing oil price.**
- Gas prices had followed a similar development. It is used for ammonia production, a key component of nitrogen fertilisers -> **fertilisers' prices had jumped since mid. 2021.**
- High energy prices and rising inflation -> **pressure on consumers' purchasing power.**

## ... Beginning of the war and immediate consequences

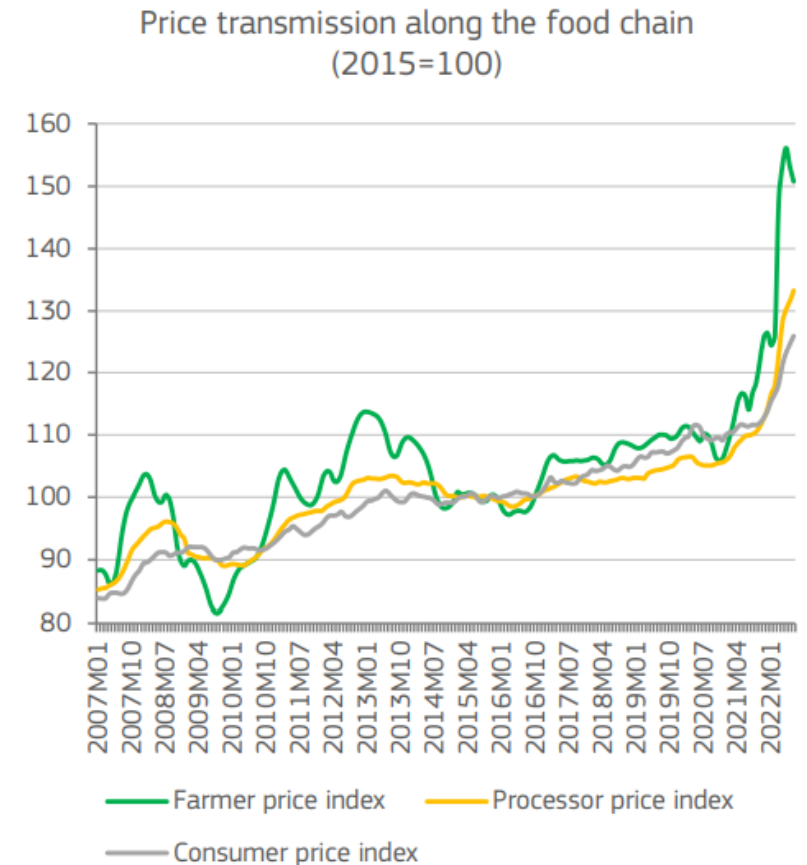
- **Energy and commodity prices:**
  - Continued skyrocketing, also due to weights of Russia and Ukraine on energy and commodity markets
- **Logistics to/from/through Ukraine:**
  - Disruptions caused by the fighting
  - Blockage of the ports on the Black Sea
  - Lack of workers
- **Impacts on Ukrainian agriculture:**
  - Considerations about the availability of seeds
  - Competition for uses and availability of fuel
  - Lack of workers
- **Food security considerations:**
  - especially in Northern Africa and Middle East



Source: World Bank

## ... Impacts on the EU

- The EU is particularly exposed, due to its **proximity and trade relationships with both Russia and Ukraine**.
- The **EU is largely self-sufficient** for key agricultural commodities.
- Reduced imports of maize, wheat, rapeseed and sunflower oil and meals from Ukraine -> **impacts on feed prices and food processing**.
- EU livestock producers looking for **alternative supplies and adjusting feed rations** to address high costs and compensate for the lack of imports.
- **Prices remain the main concern -> farmers' capacity to purchase fertilisers, feed and to pay their energy bill**.
- Concerns about **food affordability** for low-income households.



Source: DG Agriculture and Rural Development  
(Autumn 2022 Short-term outlook)

# Content

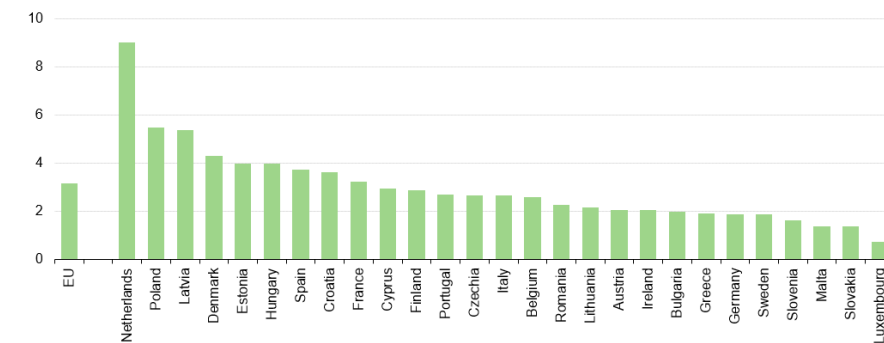
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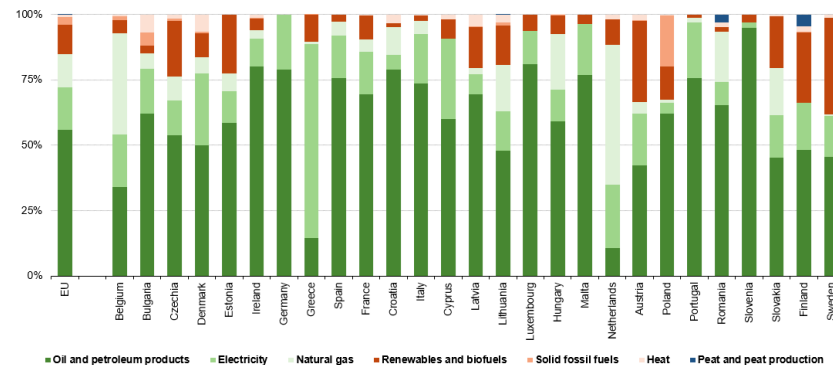
# Direct energy use in agriculture

- Agriculture (and forestry) accounted for a **3.2 % share of the total direct consumption of energy** in the EU in 2020.
- Important applications: **machinery** (e.g. cultivation of fields with tractors), **heating of livestock stables** and **greenhouses**.
- Great differences among Member States: The share of **9.0 % of total energy consumption in NL** due to the role of the glasshouse production of fruit, vegetables and horticultural plants.
- A majority of the sector's total direct consumption of energy from **oil and petroleum products** (excluding biofuels).
- Production of **renewable energies on farm** and **electrifying of agriculture** has a large potential.

Share of the total direct consumption of energy  
by agriculture and forestry, 2020  
(%)



Share of fuel type in energy consumption by agriculture and forestry, 2020

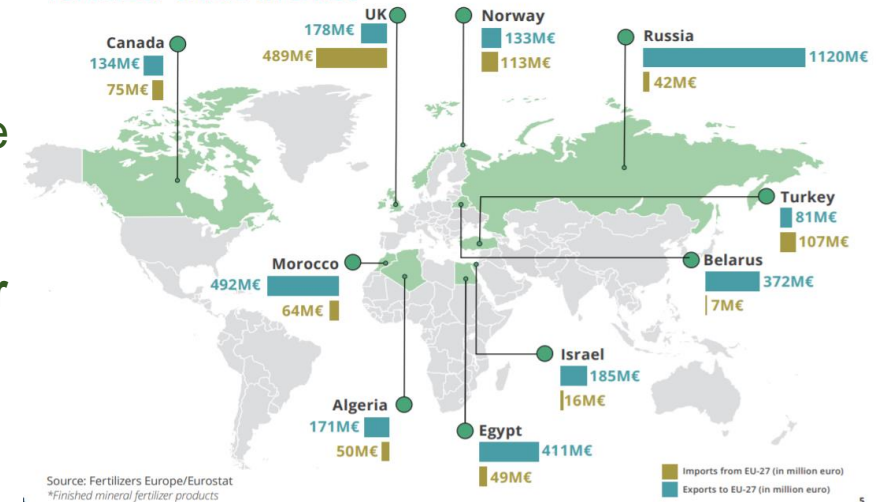


Source: EUROSTAT, data for the year 2020

# Fertilisers are critical for EU agriculture

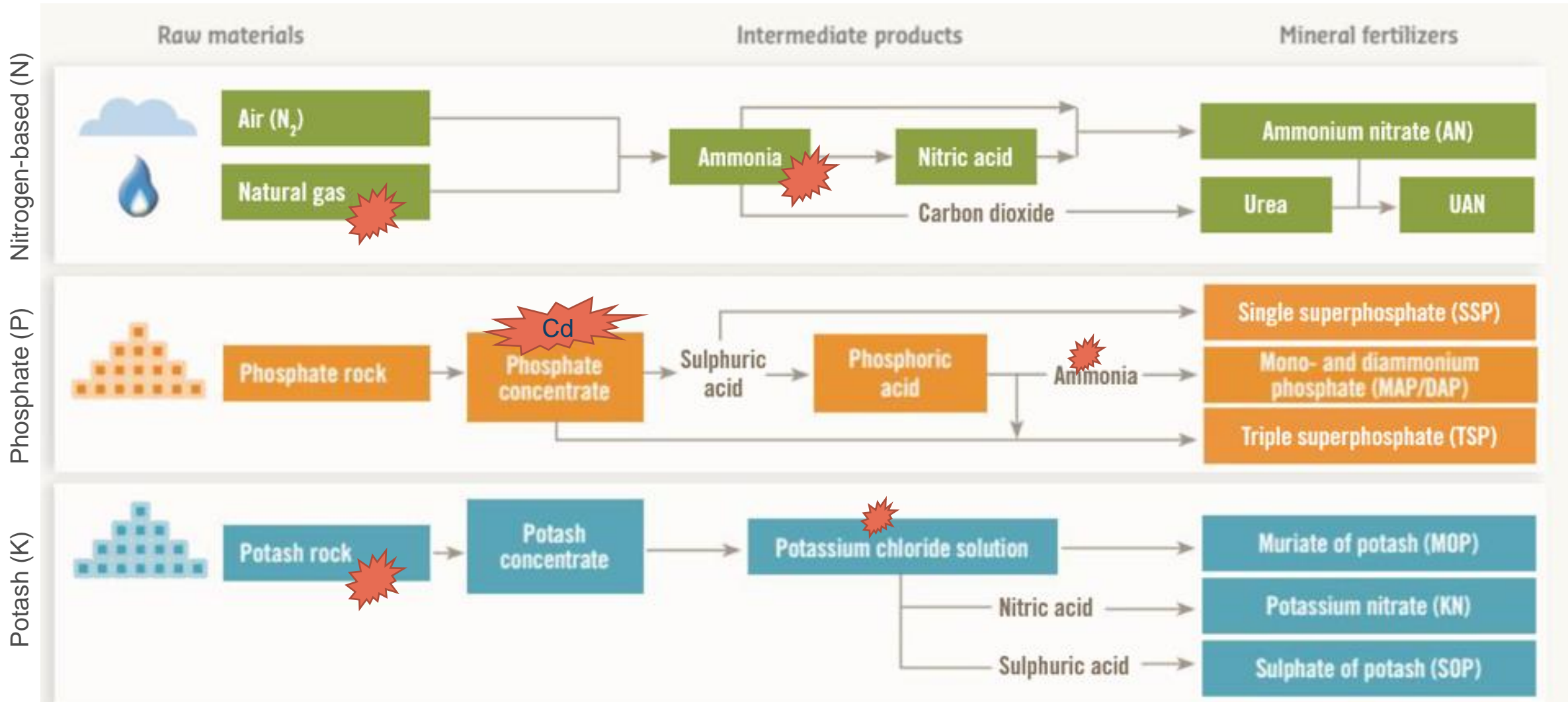
- **~75% of agricultural land** fertilised with **mineral fertilisers**, containing mostly nitrogen (N), phosphate (P), potash (K).
- EU is largely **dependent on imported fertiliser nutrients** (and the energy to produce them).
- Due to the skyrocketing gas prices, main **EU nitrogen fertiliser production plants have cut production** (negative margin).
- **Nutrient-rich side-streams are insufficiently utilised** in agriculture.
- **Manure is not always optimally used** due to hot spots of livestock, low transportability and high processing costs (processing may be a solution).
- **Synergies with energy recovery** (production of biogas).

EU key partners in  
fertilizer trade in 2020\*



Source: Source: Facts and Figures Fertilizers Europe 2021

# Manufacturing mineral fertilisers



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# Towards a fossil-energy-free farming

- Unleash the potential for the **use of renewable energy produced by the agricultural sector** to be consumed at the level of farms, group of farms or communities.
- The challenge is to **reduce the technical complexity** and **develop cost-effective solutions for fossil-energy-free farming**, and to design the pathways for a **de-fossilised agriculture**.
- Ongoing project examples (selection):



## Bio-based alternatives to substitute fossil and mineral fertilisers

- **Strategies and technologies to strengthen the circular bioeconomy** need to be further developed to provide farmers alternatives with similar or even improved properties.
- Ongoing project examples (selection): production of **bio-based fertilisers from waste and side-streams** (such as from manure, food waste or sewage sludge), ensuring their safety and building evidence-based trust in their usage and agronomic efficiency.



SEA2LAND



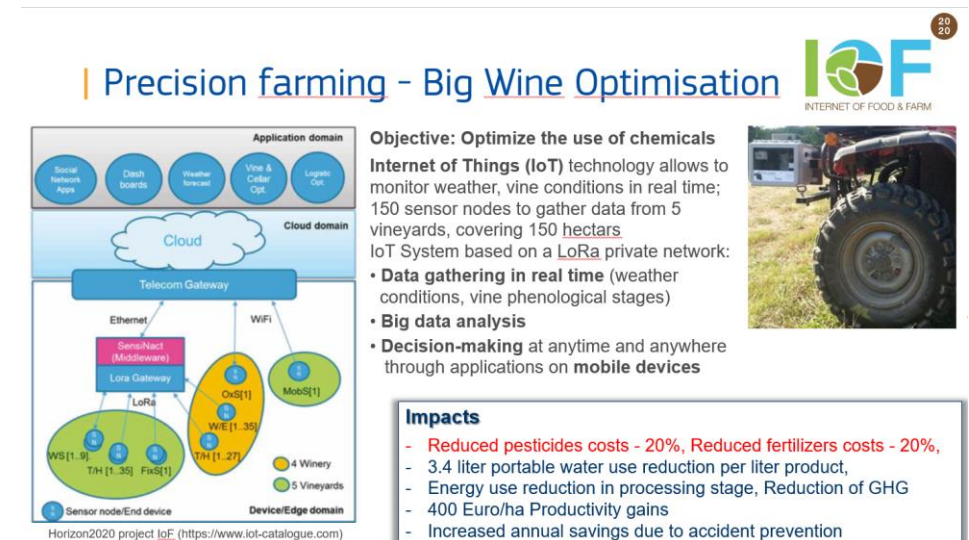


# Reducing the fertiliser demand

- Advances in **plant breeding**, **new technologies** and **digitalisation** in agriculture (e.g., precision farming, decision support tools, etc.) can reduce the input use, while producing healthier crops and higher yields.
- Ongoing project examples (selection):



**ecobreed**  
IMPROVING CROPS



## More sustainable & resilient farming systems

- Research and innovation will also further promote holistic and **environmentally sustainable food production systems**, such as **mixed-farming, agroecology, or organic agriculture**, thereby optimising the nutrient cycles, strengthening the resilience of the agricultural sector and minimising the level of inputs.
- Ongoing project examples (selection):



DIVERFARMING





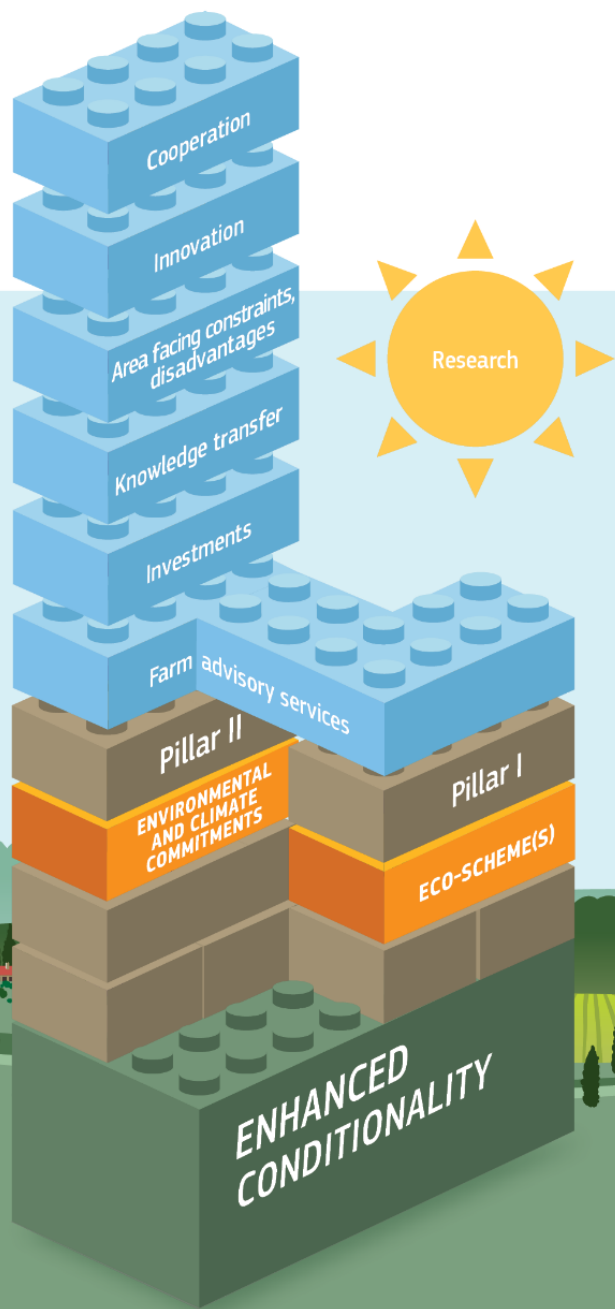
# Upcoming funding opportunities (selection)

**HORIZON-CL6-2023-CLIMATE-01-6: Analysing fossil-energy dependence in agriculture to increase resilience against input price fluctuations** (Research and Innovation Action, 5 M €)

**HORIZON-CL6-2023-GOVERNANCE-01-22: Developing EU advisory networks on the optimal fertiliser use** (Coordination and Support Action, 4 M € in total – 1 project)

**HORIZON-CL6-2023-CLIMATE-01-7: Enhancing the sustainable production of renewable energy at farm-level** (Research and Innovation Action, 5 M € in total – 1 project)

**HORIZON-JU-CBE-20203-IA-02 Production of safe, sustainable, and efficient bio-based fertilisers to improve soil health and quality** (Innovation Action, 15 M € in total – 2 projects)



Thank you very much for your attention

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