



AGRI-FOOD ECOSYSTEM: MINERAL FERTILISERS

DEFINITION

Fertilisers are products containing nutrients intended to improve the fertility of the soil or to contribute to plant nutrition. These nutrients commonly include nitrogen, phosphorus, potassium, and other essential elements such as calcium, magnesium, sulfur, and micronutrients like zinc and iron.

Fertilisers can be of various types, including:

- **Mineral Fertilisers:** These are derived from naturally occurring minerals or synthetic sources. Examples include ammonium nitrate, urea, triple superphosphate, and potassium chloride.
- **Organic Fertilisers:** These are derived from organic materials such as compost, manure, bone meal, and fish emulsion. They provide nutrients to plants as they decompose.
- **Biofertilisers:** These are products containing living microorganisms, such as nitrogen-fixing bacteria or mycorrhizal fungi, which can enhance nutrient availability and plant growth.

SME SIGNIFICANCE



NUMBER OF SMEs IN THE
EU27 VALUE CHAIN

ca. 1,000

SHARE OF SMEs
OVER TOTAL

90%

ADDED VALUE OF
SMEs OVER TOTAL

20%



FERTILISERS EU VALUE CHAIN



PHASE 1 INPUTS AND RAW MATERIALS

- The EU is almost fully dependent on other countries for nitrogen, phosphate and potassium, the three raw materials for mineral fertilisers.
- For organic and bio-fertilisers, the EU is almost self-sufficient.



PHASE 2 INTERMEDIATE PRODUCTS

- Various intermediate products are made in the mineral fertiliser industry, including ammonia, nitric acid, phosphoric acid, potassium chloride, sulphuric acid and so on. The majority of these intermediate products are imported into the EU, given their energy-intensive nature which would make them too costly to be domestically produced.
- For example, there are around 32 ammonia production facilities in the EU which have a combined theoretical capacity of 17.7 million tonnes per year, which accounts for about 10% of the global total and one-third of all hydrogen consumption in Europe.



PHASE 3 FINISHED PRODUCTS

- The share of imported products of EU consumption stood at 35% for nitrogen-based fertiliser, 65% for phosphate fertiliser and 88% for potassium oxide fertiliser in 2021.
- For organic and biofertilisers, the EU is largely self-sufficient (but these account for a relatively modest size of the overall market).

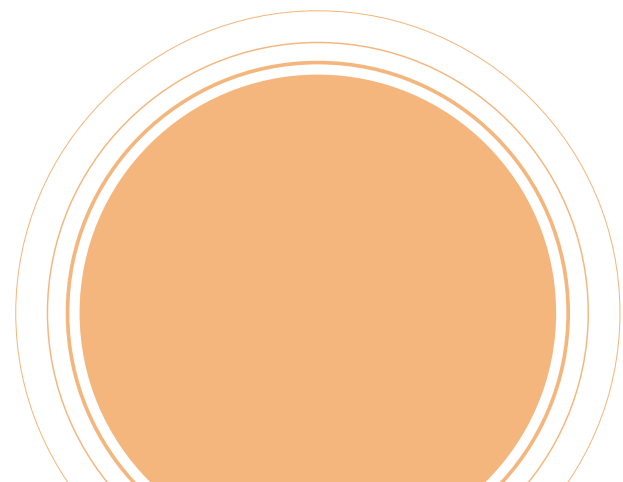
STRENGTHS AND VULNERABILITIES

EU STRENGTHS

- The **global biostimulant industry** is forecasted to equal USD 3.9 billion in 2023 and projected to expand further to USD 6.8 billion by 2028. In addition, Europe has a strong position, with around half of global activities taking place in the EU.
- Organic-based fertilisers are another growth market where the EU can make use of bio-waste.
- There is ample scope to limit the use of fertilisers without significant impact on production and employ a more holistic approach to plant nutrient solutions, such as precision farming and sustainable farming techniques. The **potential to substitute mineral fertilisers** with alternatives is substantial, also considering that the demand for compost and organic fertilisers is higher than the demand.
- The supply of raw materials can be **sourced from various countries**. As exemplified in the aftermath of trade sanctions between Belarus and Russia, two major suppliers, the EU was able to find alternative suppliers in a relatively short time.

EU VULNERABILITIES

- The EU is almost fully dependent on other countries for **raw materials**.
- The processing of mineral fertilisers is **energy-intensive** and, therefore, relatively expensive in the EU.
- Even when the efficiency of fertiliser products is maximised, and alternative solutions for nutrients such as plant biostimulants are more widely adopted, the **dependency on imports** for mineral fertilisers is likely to remain high.





EXAMPLES OF POLICY MEASURES INTRODUCED TO ENHANCE OPEN STRATEGIC AUTONOMY


EU

- In 2019, the **Fertiliser Regulation** (EC) No 2019/1009 came into force. In a nutshell, it aims to ensure the safety, quality, and effectiveness of fertilising products placed on the EU market while promoting innovation, sustainability, and market harmonisation.
- The **Integrated Nutrient Management Action Plan** is currently under development.
- The CAP (**Common Agricultural Policy**) is the main policy lever to encourage the efficient use of fertilisers, ideally guided by an Integrated Nutrient Management Plan, set at the EU.

MEMBERS STATES

- **Several Member States** have taken a **holistic view** to reduce the influence and encourage sustainable nutrient management practises, such as precision farming, setting aside lowlands, catch crops, buffering strips along watercourses and conservation/zero tillage.
- The **Netherlands**: They have become a pioneer in sustainable agriculture, significantly reducing fertiliser use through precision agriculture techniques and stringent policies. Dutch farmers employ advanced technologies like drones and soil sensors to tailor fertiliser applications, maximising efficiency and reducing waste. The country also enforces strict environmental regulations and offers incentives such as subsidies and training vouchers to promote environmentally friendly farming methods. These efforts are supported by robust research and innovation, involving collaborations among government bodies, academic institutions, and the private sector to develop new sustainable agricultural technologies and practices.

EXTRA-EU

- **Japan**: The Ministry of Agriculture, Forestry, and Fisheries in Japan released its 2030 targets for its “Green Food System Strategy” in 2022. It includes a 20% reduction in the use of mineral fertilisers, with more ambitious targets foreseen by 2050.
 - **South Korea**: The Eco-friendly Agriculture Promotion Act aims to put its agriculture on a more sustainable footing. The Korean Ministry of Agriculture, Food and Rural Affairs has formulated a plan to promote eco-friendly agriculture every five years in consultation with expert groups. With respect to fertilisers, it has placed maximum limits on fertilisers sprayed on crops, defining terms related to environment-friendly agriculture and fisheries and organic food, with certification procedures for organic food and materials. The government also encourages organic farming practices through subsidies and incentives, invests in research and development for alternative fertilisation techniques, and emphasises soil health management strategies like crop rotation and conservation tillage.
- 

POLICY RECOMMENDATIONS TO MAXIMISE SME OPPORTUNITIES AND REDUCE RISKS IN OPEN STRATEGIC AUTONOMY

There are still existing **regulatory barriers** when it comes to the expansion of organic-based fertilisers, an area where SMEs dominate. This includes the clarification on the use of animal by-products and the elaboration of harmonised standards across the EU.

Updating this framework would take time, as well as enacting it and transposing it into national legislation even more (also considering that the EU Fertilising Products Regulation came into force in 2022, three years after its approval). This slow procedure is ill-suited in a market with considerable innovation, typically by small firms. One possible way forward to avoid being behind the innovation curve is to **set up the criteria** by which commercial activities can take place rather than establishing a positive list of microbes that are deemed safe for commercial use.

The governments can facilitate the increased use of bio-based fertilisers by **investing in infrastructure** for the collection, treatment, and processing of biowaste, as well as research.

Modern sustainable farm practices, including crop rotation and efficient fertiliser application, are also vital for decreasing reliance on imported fertilisers. Any policy initiatives to use fertilisers (both organic and inorganic) more efficiently, as currently under development by the Integrated Nutrient Management Action Plan, are likely to be crucial.

Data sources:

available at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/582010/EPRS_BRI\(2016\)582010_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/582010/EPRS_BRI(2016)582010_EN.pdf)

Fertilizers Europe. Paving the way to green ammonia and low-carbon fertilizers. Working Paper available at <https://www.fertilizerseurope.com/wp-content/uploads/2020/07/Paving-the-way-to-green-ammonia-and-low-carbon-fertilizers-digital.pdf>

https://agriculture.ec.europa.eu/common-agricultural-policy/agri-food-supply-chain/ensuring-availability-and-affordability-fertilisers_en