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Demonstration of circular bio-based fertilisers and implementation of optimized fertiliser strategies and value chains in rural communities

## **POLICY BRIEF 4**

### **Circular bio-based fertilisers in a global context**

#### **Key messages**

We summarise the key challenges and opportunities related to circular bio-based fertiliser production, utilisation, and trade in a global context:

- European strategies on sustainable food systems impact agricultural sectors globally through policies, regulations, and international cooperation.
- The development of locally adapted bio-based fertiliser technologies and value chains is crucial for food security in the Global South.
- International cooperation should focus on context-relevant research and innovation, as well as enabling policy frameworks.
- International trade of bio-based fertilisers may be necessary to bridge asymmetries between areas of high nutrient demand and areas with high availability of nutrient dense residues. However, discrepancies in regulations on bio-based fertiliser products around the world can complicate international trade.

#### **Point of departure**

The Green Deal is a forward-looking European strategy with a global reach, aimed at achieving the targets of the Paris Agreement. A cornerstone of the European Green Deal is the Farm to Fork Strategy, which outlines the EU's ambition to make its food system more sustainable by addressing priorities and challenges at every step in the food chain. The strategy includes a set of actions designed to transform agriculture and food systems into fair, healthy and environmentally-friendly systems, with an emphasis on the bioeconomy as part of the solution. Promoting the production and use of circular bio-based fertilisers is key to achieving the ambitions of the Farm-To-Fork strategy by reducing dependency on synthetic fertilisers, improving soil health, and lowering the carbon footprint of farming.

At the global level, the European Commission promotes the transition to sustainable food production and the bioeconomy through international cooperation, supporting key areas such as research and innovation aimed at climate mitigation, adaptation, and agroecological farming practices. The EC also invests in research, innovation, and knowledge transfer as reflected in the new round of Horizon Europe calls and of the DESiRa Initiative. Ongoing projects focus on diverse technologies, including bio-based fertilisers derived from animal and plant-based waste streams.

EU's bilateral trade agreements offer another means to promote EU environmental standards in third countries, as well as environmental and food safety standards for imported agricultural products and regulations impacting fertiliser trade. A specific example is the new EU Fertilizing Products Regulation. On the 16th of July 2022, this new regulation significantly changed the

landscape for the marketing of fertilising materials in the European Union. Replacing EC Regulation 2003/2003 and supplementing current national rules, EU Regulation 2019/1009 (Fertilising Products Regulation, or FPR) establishes a list of materials, properties, and processes allowed for in the development of fertiliser and plant bio-stimulant products.

### Challenges and opportunities

When it comes to the production and use of circular bio-based fertilisers, significant differences can be observed both between and within global regions. This applies to fertiliser requirements as well as the availability of residues and waste as feedstock for bio-based fertiliser production. Globally, hotspots with large surpluses of nutrient-rich residues, such as those from intensive dairy farming, tend to be geographically separated from areas with high nutrient requirements, such as regions where animal feed is produced on low-fertility soils. Different regions globally can thus complement each other in their needs and capacities, making international cooperation beneficial from both an economic and environmental perspective. On the other hand, challenges associated with bio-based fertilisers in the international context include discrepancies in regulations on fertiliser products around the globe that complicate international trade.

Of particular interest are the benefits of bio-based fertilisers in the Global South, where food production and food prices are crucial for food and nutritional security, and issues like low agricultural productivity and soil fertility are widespread. This is partly due to high costs and insufficient or inefficient use of fertilisers. At the same time, inadequate waste management, such as open dump sites and burning, is a key source of greenhouse gas emissions and other environmental and human health issues. Recovery of nutrients from residue and waste streams is absolutely crucial to secure human nutrition, improve farmer incomes, and strengthen local agricultural value chains by making agricultural inputs from waste streams available at a competitive price. This means that the development of technologies and business models for bio-based fertilisers that are well-adapted to the local context is a priority, alongside enabling policy frameworks and incentives.

### Request to policy makers

Where possible, bio-based fertiliser technologies and value chains should be adapted to the local context. Solutions should be tailored to the resources, capacities, and markets available in a given context, focusing on developing cost-efficient approaches for different residue streams and target crops. However, local solutions may be hindered by a shortage of available residues as feedstock for bio-based fertilisers, or local expertise and infrastructure may be limited. In such cases, regulation that ensures a level playing field to encourage international cooperation and trade of bio-based building blocks and fertiliser blends is important. Policy makers should be aware that tensions between promoting international trade and promoting local supply chains may exist.

In summary, the development of bio-based fertilisers should primarily consider the local context, knowledge and human capacity. At the same time, policy makers should facilitate international cooperation by supporting the transfer of materials and know-how and by streamlining regulation.