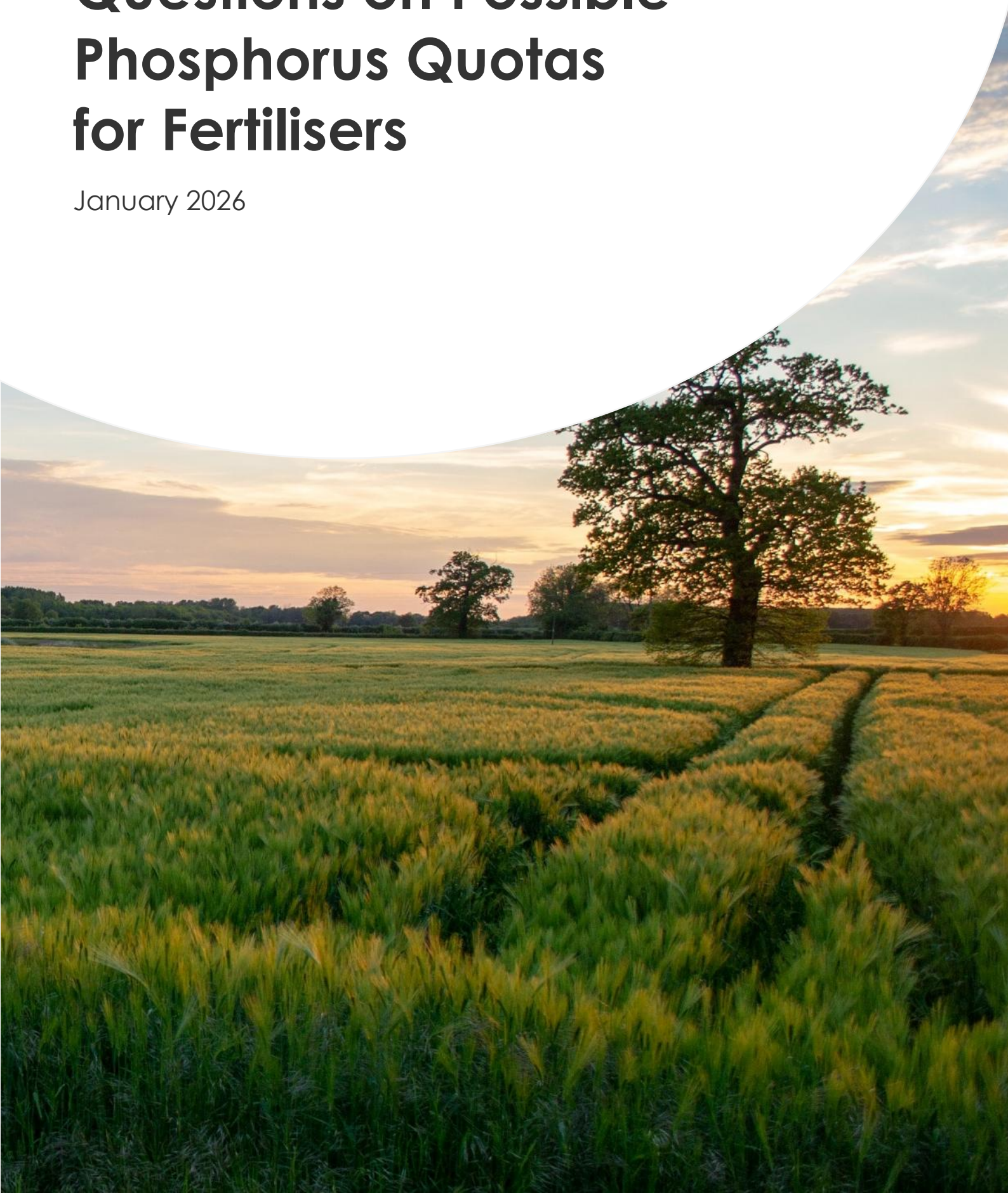
eunomia

Questions on Possible Phosphorus Quotas for Fertilisers

January 2026



Report For

European Sustainable Phosphorus Platform (ESPP)

Project Team

Hannah Gillie

Alyssa Resch

Yvonne Rees

Tanzir Chowdhury

Ann Ballinger

Ayesha Bapasola

Approved By

Yvonne Rees

(Project Director)

Eunomia Research & Consulting Ltd
37 Queen Square
Bristol
BS1 4QS
United Kingdom

Tel +44 (0)117 9172250
Fax +44 (0)8717 142942
Web www.eunomia.eco

Front page photo credit: Simon Godfrey
www.unsplash.com

1.0 Introduction

Phosphorous is a vital element in agriculture, but phosphate rock is a listed EU Critical Raw Material and Europe is heavily reliant on imports from a small number of countries. Transitioning from the current linear phosphorus economy to a circular economy is vital for sustainable phosphorus use, resilient agriculture and global food security. Phosphorus recovery is therefore receiving growing interest from European policymakers and industry.

In the revised EU Urban Wastewater Directive (UWWTD) 2024/3019 Article 20, the European Commission is empowered to adopt Delegated Acts specifying a combined minimum reuse and recycling rate for phosphorus from sludge and from urban wastewater by 2028.[1] Some stakeholders suggest that quotas for recycled phosphorus (or recycled content obligations) could be an effective tool for stimulating supply and demand of recycled phosphorus, for driving innovation to make recycled phosphorus more attractive for use, and for cost-sharing (to avoid cost falling only on water utilities, and thus on water users). But other tools such as a tax on virgin-based phosphorus fertilisers and/or subsidies for recovered phosphorus could be considered.

A recycled phosphorus quota for fertilisers would be a regulatory mechanism mandating a certain percentage of phosphorus content in fertilisers to be derived from recycled sources. Such quotas may be considered as a possible tool for implementation of the UWWTD by the European Commission.

This document, produced on behalf of the European Sustainable Phosphorus Platform (ESPP)[2], sets out **over 40 key questions** which policymakers should take into account if considering a possible quota system for recycled phosphorous (P) in fertilisers. The questions fall under the following broad themes:

1. What would be the aim of a recycled phosphorus quota system?
2. Who should the quota apply to?
3. How would the quality of recovered phosphorus and fertiliser products be ensured?
4. How high would the quota be?
5. What would be the geographical scope and regulatory context of the quota system?
6. What would be the burdens of implementing a quota system?
7. Would quotas be tradeable?
8. How would imports and exports be accounted for in a quota system?

These questions are derived from a review of literature and stakeholder consultation between October—November 2025 with experts and practitioners, including representatives of fertiliser producers, the water and waste industry, recycling technology companies, research and waste management. The questions are intended give a practical perspective; to guide thinking on the potential effectiveness, fairness, feasibility and possible co-benefits or unintended consequences of developing and implementing a quota system for recycled phosphorus in fertilisers.

---

[1] European Parliament, "DIRECTIVE (EU) 2024/3019 of the EUROPEAN PARLIAMENT and of the COUNCIL of 27 November 2024 Concerning Urban Wastewater Treatment (Recast) (Text with EEA Relevance)," 2024, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403019.

[2] ESPP brings together over 50 companies and stakeholders, including water companies, recycling technology suppliers, mineral and organic fertiliser industry.

2.0 Key Considerations

2.1 What would be the Aim of a Recycled P Quota System?

The purpose and reason for introducing a recycled P quota system is an important first question, as every decision about an envisaged quota system, its design and format, would depend on the objectives and intended outcomes. For instance, quotas for recycled P could be considered with the aim of addressing a number of environmental or strategic issues related to phosphorus, including transitioning to a circular economy and/or enhancing EU fertiliser supply security. The problem that is trying to be solved, determines how high the quota should be, to whom it should apply, the monitoring needed and how trading might work.

Key questions for policymakers

1. What would be the reason for introducing a quota? What problem would the quota system be designed to solve?

    a. Is the aim to enable recyclers/water companies to remove recovered P for which there is no market? If so, why is there not a market?

    b. Is the aim to transfer costs from water utilities (water users) to other stakeholders (i.e., fertiliser producers, food industry, farmers and ultimately food consumers)?

    c. Is the aim to increase the uptake of recycled P in general or in a particular product?

    d. Is the aim to increase quality of recycled P and improve circularity of P by replacing primary P?

    e. Does a quota system help to replace mineral with organic fertilisers?

    f. Is the aim to reduce pollution and if so, is such a quota in line with the polluter pays principle?

    g. Does a quota enable Europe to be less dependent on imported P?

    h. How can a quota system target P that is otherwise not recovered?

2. Would quotas encourage investment in P recycling?

2.2 Who would Quotas apply to?

There are several aspects to consider here: which *materials* and *products* would be in scope; whether the system would target the use of *input* or *output* materials; where in the supply chain the quota would be applied and whether the quotas would apply universally, only to specific sectors or above certain volumes of P. Decisions around each of these aspects could significantly influence the fairness and workability of an envisaged quota system.

Which specific sources of secondary P are targeted by a quota needs to be considered, as recycling technologies are more readily available for some inputs compared to others. For instance, the quota

could target recovered P from sewage, manure, food and food waste or other digestates. Crucially, policymakers would need to take into account that different fertiliser formulations have different technical constraints and to understand which recycled P products are actually compatible with commercial fertiliser formulations. Where the quota applies in the supply chain closely relates to which inputs are targeted as the system should be designed to prevent economic operators changing input systems to avoid the burden of quotas. With regards to final products, a quota could apply for instance to all fertilisers, mineral fertilisers only or P use in industrial and animal feed.

Responsibility could fall on fertiliser manufacturers, downstream users such as farmers or be shared across all economic operators using fertiliser products. If the obligation is placed too far upstream there is a risk of farmers bearing the cost burden with limited ability to pass this on. Whereas, placing obligations further downstream, such as on food retailers, could create demand and enable farmers to be compensated for cost premiums. Quotas do not need to apply universally. The system could be designed to apply only to specific sectors or above certain volumes of P. Policymakers would need to decide whether it would be fairer to focus on a few participants with similar market share or to disadvantage large numbers of SMEs.

Key questions for policymakers

3. How should recycled P in fertilisers be defined?
4. Which products should be subject to the quota?
    a. Should a quota apply to all P fertiliser types (mineral and organic) and all fertiliser uses (e.g., on farm, all crops, sports-recreation, individual gardeners etc)?
    b. Should quotas apply to other products that use P (e.g., industry, batteries, animal feed etc)?
    c. If the quota included organic fertiliser products, which already largely contain recycled P, how would this be dealt with, especially in the case of quota trading?
    d. If the system included organic fertilisers, why not also include manure used as such on fields?
5. Are some formulations preferred over others and if so, how should this be taken into account?
6. What final product is being proposed as a circular nutrient and would that be compatible with fertiliser products?
7. Should the quota only concern recycled P from certain sources (based on quality)?
    a. If only sewage, how could this impact development of P-recycling from manure, food waste, etc?
    b. Many digesters take mixed inputs— how would the quota system deal with input from a digester taking partly sewage, partly food waste and partly manure?
8. Given some recovery technologies are more sustainable than others, how would the environmental impact of recovering P be considered? How could more sustainable, but low yield, processes be improved?
9. Should a ‘multiplier’ or added value apply to more sustainably produced P to incentivise sustainability?

10. What is the production capacity of recycled P in the current market and what is the feasible development of capacity?

11. How large is the potential of recycled P to substitute phosphate rock imports?

12. Where in the supply chain would the P quota obligation be applied, e.g., fertiliser manufacturer/importer, fertiliser distributor, companies purchasing crops, food manufacturers, supermarkets or farmers?

13. Should those producing recycled P pay for it, or should all economic operators using fertiliser products contribute to the costs of reducing surplus P?

14. Should the quota only apply above a certain volume or for specific sectors?

2.3 How would the Quality of Recovered Phosphorus and Fertiliser Products be ensured?

The *quality* of recovered phosphorus, and the quality of the fertiliser products incorporating it, would be fundamental to the viability of an envisaged quota system. Recovered phosphorus varies widely in plant availability, contamination risk and suitability for different crops and applications. Quality criteria or standards would need to be set, such as the Component Material Categories (CMCs) under the EU Fertilising Products Regulation which define the input materials allowed in EU-labelled fertiliser products. Policymakers should consider which recycled phosphorus streams are realistically compatible with existing fertiliser products and which are not. There is a risk that quotas may drive uptake of recycled P from the 'best' raw materials (like manure), while more difficult, but environmentally significant, raw materials are deprioritised in the market.

Recovered phosphorus sources/processes vary in their environmental impact. Depending on the objectives of the envisaged quota system, policymakers could consider multipliers or value add mechanisms to encourage more sustainably produced phosphate, phosphate that is particularly difficult to recover or current recovery routes that are unable to compete under current market conditions.

Designing a quota system that not only mandates use of high-quality recycled P for fertilisers, but that stimulates real market demand would be a key question. Policymakers would need to consider how recovered phosphorus is commercialised and marketable i.e., it is available in forms that farmers can store, handle, transport and apply using existing machinery. In regions with phosphorus surpluses, recycled nutrients may need to be transported to deficit areas, adding logistical and cost considerations depending on the form of the recovered P. Demand would also be shaped by market dynamics. The cheapest and easiest-to-use recycled materials—such as manure—would likely enter the market first, while more complex or costly recovered phosphorus streams may be slow to enter the market without additional incentives.

Key questions for policymakers

15. How would the system ensure that recycled P is only eligible to count in the quota if it is of appropriate quality — i.e., crop available, safe contaminants, in a form farmers could use — and who would decide this?

16. How would the system take account for how available the P is in the raw material and in the product for plant uptake?

17. How would health and safety and contamination issues of recovered P be addressed?

18. What kind of monitoring, reporting and verification system would be in place for quality?

19. Would a recycling quota system need to have a labelling system, specifying for instance the origin and form of the phosphorus?

20. How would a quota system ensure a commercial/marketable product that is good for storage, transportation, is de-watered, has optimised nutrients and can be spread by farmers' machines?

2.4 How High would a Quota be?

Policymakers should carefully consider how high a possible recycled P quota for fertilisers should be (i.e., what percentage of recycled P should be required), as the level of the mandate would directly determine whether the system is both effective and achievable.

Quota levels would need to reflect current market realities, such as the relative market shares of mineral and organic fertilisers, and the current and anticipated capacities of recycled P production. Setting a quota that exceeds available supply, or is unaligned with existing fertiliser market shares, would risk creating a system that is unworkable and could place disproportionate burdens on economic operators subject to the quota. At the same time, however, the quota should be sufficiently ambitious to stimulate investment and drive growth in recycled P production. Determining an appropriate level therefore requires a clear understanding of production capacity and its potential development (taking into account Art. 20 of the UWWTD), market dynamics and the policy objectives the quota is designed to achieve.

Key questions for policymakers

21. How high should be the quota be and by how much should the quota increase over what timescales?

22. What would be a realistic quota level given production facility limitations and market share of organic versus mineral fertilisers?

23. How would the quota account for the fact that the same physical percentage of recycled P is not possible in every fertiliser?

24. Should the quota be set as an average per company or same percentage per product, for all products?

2.5 What would be the Geographical Scope and Regulatory Context of a Quota System?

Geographical scope would be an important consideration because it affects who would govern the mechanism and therefore the type of mechanism possible. Scale also impacts the extent to which a consistent approach would be applied across the EU market and potential trading of quotas between Member States. For an EU level system, policymakers would need to consider the right legislative instrument (e.g., Directive or Regulation), the degree of harmonisation needed and how new legislation would align with or be incorporated into existing regulations. The potential impact of regional imbalances in supply/demand of phosphorus would need to be considered and how the system could best encourage circular economy principles.

Key questions for policymakers

25. Should quotas be established at regional, national or EU level?
26. How could a quota system enable circular economy at a scale that is as regional/local as possible?
27. How could a recycled P quota fit within the existing regulatory framework, for example UWWTD Art. 20, EU Fertiliser Product Regulation and national fertiliser regulations, Common Agricultural Policy (CAP), future Circular Economy Act, Extended Producer Responsibility, food policy etc?
28. Should there be 'label of origin' for recycled P to encourage recycled P from the EU, rather than imports of recovered P?

2.6 What would be the Burdens of Implementing a Quota System?

Implementing a multinational economic instrument comes with significant administration. A key consideration is where these *financial* and *administrative* burdens would lie, who they might impact most and how burden could be reduced. For a recycled phosphorus quota system, the burden would depend in part on the complexity of the system and where the quota sits in the supply chain, affecting stakeholders differently.

With regards to administrative burden, the European Commission for instance would face significant design and oversight demands, while Member States and their environmental regulators would carry responsibility for implementation, monitoring, enforcement, and ensuring recycling infrastructure is in place. To ensure recycled P product quality, health and safety and to prevent fraud, policymakers should consider robust systems for monitoring, reporting, verification and fraud prevention, including mass balance approaches and quality certification. Fertiliser producers, distributors, and suppliers would face reporting, verification, certification and potential trading burden, particularly if incorporating recycled phosphorus requires new testing or quality assurance processes.

Regarding financial burden, policymakers would need to consider to whom the cost of P-recovery could be passed. Farmers for example may be exposed to financial impacts of new compliance requirements, or, depending on where the obligation sits, supermarkets could pass costs of meeting a quota onto food consumers. Ensuring that administrative and financial burdens are fair, manageable and do not fall

disproportionately on those with the least capacity to absorb them would be critical to the success of a quota system.

Key questions for policymakers

29. What administrative burdens would be caused by a P quota and who would these fall on?
30. How could a P quota be designed so that the impact of burdens fall fairly on those most able to absorb the burden?
31. Who would pay for the quota system? Who should take the cost for recycling?
32. How could the quota system/obligation not generate administrative burden for SMEs?
33. How would the quality/content of the recycled P be tested and certified? What quality standards would be used?
34. How would authorities control the quota?

2.7 Would Quotas be Tradable?

Not implementing trading within a possible quota system would likely lead to an inefficient allocation or resources and production. Policymakers would need to consider the levers for establishing an efficient and fair trading system and the challenges trading could bring. The specificities of trading are highly dependent on understanding the system the quota is trying to regulate. This includes a deep understanding of all potential sources of recycled P as well as key end users. Focusing the quota on a cohesive economic group (e.g., select large organisations close to the end user) could reduce the risk of an inefficient economic system and make it is easier to find a fair quota allocation method, where potentially trading is not needed. Should this not be possible, then a trading system must be established to reach an equilibrium over time. Policymakers could also consider combining various systems to ensure efficient implementation of a quota. For instance: a) Part of the quota is non-tradable to ensure a minimum requirement is met; b) Part of the quota is allocated and tradable to stimulate innovation and promote flexibility. Moreover, with a system as complicated as recycled P content in fertilisers, price floors and access for SMEs need to be considered.

Key questions for policymakers

35. Should quotas be tradeable?
36. Would a tradable quota system improve efficiency?
37. Would the admin burden of trading be worth the financial efficiency benefits?
38. Would trading be compatible with ‘regional’ quotas?

2.8 How would Imports and Exports be accounted for in a Quota System?

As current recycling solutions are costly and not readily available, a recycled phosphorus quota for European producers/users would raise the risk of competitive disadvantage. Imports of cheaper fertiliser products which are not subject to the same regulatory requirements in their origin country presents a major challenge for a quota system in the EU.

Allowing imported fertilisers to avoid a quota would be unacceptable to many stakeholders and would lead to unfair competition, especially as it is unlikely imports to the EU would have recycled content (UWWTD Art.20 does not exist outside the EU and Switzerland, which also has a P-recycling legal obligation). Therefore, a system would be required to prevent this unbalance. Such a system could be either a tax on imported fertilisers not containing the quota, or an obligation for importers to purchase tradeable quotas.

Key questions for policymakers

39. Would quotas cause market distortions as some fertiliser production technologies, fertiliser types, food producers (depending on where in the value chain it is applied) and distribution circuits can adapt more easily than others?

40. How might quotas impact innovation and technology development and roll-out?

41. What would be the impacts on market stability for: (a) recycling technologies, (b) recycled P, and (c) price of fertilisers for farmers?

42. How could imports be accounted for in a quota system to ensure they would not unbalance the scheme?

    a. How can the risk associated with cheap imports that have not been produced to the same environmental standards, be mitigated? E.g., would a carbon border adjustment mechanism (CBAM) type system be needed to avoid unintended consequences and 'leakage'

43. Should there be 'preference' or 'label of origin' for recycled P to encourage recycled P from the EU, rather than imports of recovered P?

44. Would exports to the EU and rest of world be subject to the quota?

3.0 Conclusion

This briefing document has discussed and proposed over 40 key questions policymakers would need to consider for a possible quota system for recycled P in fertilisers. Some of these questions could be difficult, if not impossible, to answer.

Nonetheless, mapping out the key uncertainties and trade-offs is important for identifying practical pathways and avoiding unintended consequences.

We hope that these questions will be useful for policymakers considering a recycled content quota system as a possible policy to develop phosphorus recycling and circular economy.


eunomia