

A Call for International Action on Phosphorus, 2020

The undersigned scientists and researchers call on policymakers worldwide to support progression towards more sustainable phosphorus management, in coherence with the global action on carbon, nitrogen, food and water.

We the undersigned identify:

- 1) Phosphorus is a **non-substitutable, non-renewable natural resource, essential for** fertilisers and animal feeds, and so for **global food security**. It is also important (in much lower quantities) in industrial applications.
- 2) Only a small part of the phosphorus input to agricultural systems reaches the food we eat, especially in meat production.
- 3) **Phosphorus losses** throughout the agriculture – food – sewage and waste systems **lead to major environmental damage, through eutrophication**. This is one of the greatest causes of freshwater quality failure, an ecological menace for enclosed seas and estuaries, and contributes to marine dead zones. Climate change is likely to exacerbate eutrophication problems if phosphorus losses are not reduced.
- 4) **Currently**, much of the **phosphorus** in sewage, food and crop waste or animal manure **is not effectively recycled**. Recycling rates are further threatened by urbanization, intensive livestock production and societal and food industry rejection of nutrient recycling from organic wastes.
- 5) **Many farmers** in parts of the world **cannot access** or cannot afford **the phosphorus fertilizers they need** to produce sufficient food.
- 6) **Phosphorus** today, like nitrogen, **is significantly exceeding planetary boundaries**.
<http://www.stockholmresilience.org/research/planetary-boundaries/>
- 7) Despite a widening awareness, **the global science base on phosphorus is insufficient** and is less structured than for carbon or nitrogen.
- 8) **There is a well-recognized lack of phosphorus related policy** spans from regional to global scales, with phosphorus remaining chronically underrepresented within media and the public consciousness.
- 9) Solutions to these challenges include:
 - a) Using phosphorus more efficiently throughout the agri-food chain
 - b) Increasing phosphorus reuse and recycling
 - c) Ensuring phosphorus is accessible to all farmers
 - d) Optimizing diets to ensure adequate nutrition with lower phosphorus requirements
 - e) Mitigating impacts of phosphorus in the environment.
- 10) Addressing these phosphorus challenges offers multiple benefits including:
 - a) **Improved sanitation**, essential for health and environment
 - b) **Healthier diets** for some individuals
 - c) **New employment opportunities** through the nutrient circular economy
 - d) **More sustainable management of other nutrients** including nitrogen and potassium,
 - e) **Return of organic carbon to soils**, contributing to soil fertility, climate resilience and CO₂ mitigation,
 - f) **Reduced geopolitical dependency** on the limited regions with phosphate rock reserves,
 - g) **Reduced mobilization of contaminants** contained in some phosphate rock reserves.
- 11) We, the undersigned support the need for a global initiative to:
 - a) develop further **scientific evidence** to support phosphorus stewardship,
 - b) develop **collaboration**, coordinate and utilize available networks,
 - c) engage with UNEP and global governance,
 - d) identify and elaborate, with stakeholders and industry, **opportunities and solutions**.

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