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# Sustainable Phosphorus Management

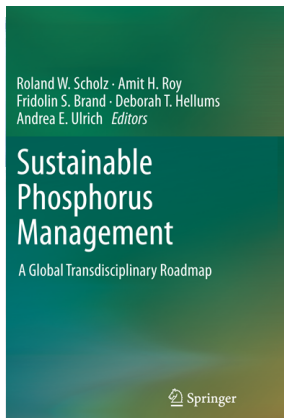
A Global Transdisciplinary Roadmap

 Springer

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## Sustainable Phosphorus Management

### A Global Transdisciplinary Roadmap

- ▶ Provides a comprehensive, supply-demand chain-based analysis of phosphorus flows, use, trade and finance, developed during a two-year transdisciplinary process
- ▶ Describes options for improving phosphorus management in exploration, mining, dissipation and recycling
- ▶ Identifies case studies and proposes a research agenda for critical questions of sustainable phosphorus management

This book describes a pathway for sustainable phosphorus management via the Global Transdisciplinary Processes for Sustainable Phosphorus Management project (TraPs). TraPs is a multi-stakeholder forum in which scientists from a variety of disciplines join with key actors in practice to jointly identify critical questions and to articulate what new knowledge, technologies and policy processes are needed to ensure that future phosphorus use is sustainable, improves food security and environmental quality and provides benefits for the poor. The book offers insight into economic scarcity and identifies options to improve efficiency and reduce environmental impacts of anthropogenic phosphorus flows at all stages of the supply and use chain.

The opening chapter provides a comprehensive survey describing "what is wrong with the current anthropogenically driven phosphorus cycle, based on a material flow analysis". Five chapters address such challenges of sustainable phosphorus as understanding the dynamics of reserves and elaborating when economic scarcity may become physical scarcity, the multiple costs of mining and the challenge of innovation in fertilizer products and production. Chapters on use and on dissipation and recycling establish that phosphorus has a dissipative structure and shows low use efficiency and high losses along the entire length of its value chain, and go on to identify constraints and options for closing the anthropogenic phosphorus loop. A concluding chapter on trade and finance discusses the causes of price volatility of phosphorus products.

Five key stakeholders from science and industry have contributed to this volume, writing full chapters and related spotlights on critical points. Their wide-ranging expertise helps to establish a transdisciplinary perspective as they identify the knowledge and the key stakeholders which must be included in a successful transition from current phosphorus management toward sustainability.



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