Preface

This book is a key product of the first 2 years of the Global TraPs project. The chapters incorporate prevailing views on *critical questions* and *issues* related to current phosphorus management practices. These views have been elaborated among more than 200 key stakeholders of the phosphorus supply–demand chain. For each node, *Exploration*, *Mining*, *Processing*, *Use*, and *Dissipation and Recycling* as well as the cross-cutting issue: *Trade and Finance,* the reader will find *state-of-the-art knowledge*, *transdisciplinary processes* (i.e., forms of science-practice collaboration) and *topical case studies.* This may help to develop robust orientations on how food security may be achieved and how the current low use efficiency may be increased by improved utilization strategies and the development of new technologies. A closure of the anthropogenic phosphorus cycle may help to avoid eutrophication, hypoxia, and other negative impacts on ecosystems and promotes resources conservation. Finally, the book takes a global perspective on phosphorous and reveals the different use patterns of different types of farmers and countries.

The Global TraPs project and the writing of this book was a consultative process and included participation of representatives from industry and trade, scientists from various disciplines and numerous universities, public agencies and international organizations, Non Governmental Organizations (NGOs), farmers and user associations. This consultative process included four workshops during 2010 and 2012 and the first Global TraPs World-conference in Beijing, China, June 18–20, 2013. We, as the leaders of the project, are very impressed with how well this process worked. The members of the Global TraPs project unselfishly shared their knowledge and time to develop a comprehensive understanding of phosphorus use. Most remarkable was the willingness to listen to each other. Thus, authentic process of mutual learning and knowledge integration took place. We want to thank all authors and reviewers, and the participants of this—presumably first—large-scale transdisciplinary process. This book is an important milestone of this process.

The chapters present a widely shared blueprint of on current phosphorus use and how it may be improved for developing orientations for sustainable phosphorus management. Yet as it is typical for transdisciplinary multistakeholder discourse, the discussion of different chapters revealed the complexity and multilayeredness of the supply–demand chain and identified different and incoherent

data, perspectives and valuations that asked for integration. This complexity challenged a re-examinations, re-assessment, and rethinking of key conclusions. A final round of review of all chapters was initiated at the 2013 Beijing conference. For supplementing the current view on sustainable phosphorus management, spotlights were written for explaining key concepts or for introducing nonconventional views. The introductory chapter now includes both a comprehensive and coherent blueprint of an actor- or agent-based phosphorus flows view and outlines the transdisciplinary process, i.e., the specific science-practice collaboration which is needed to foster its sustainable use.

The book thus goes far beyond the mere description of physical phosphorus flows and their impact. As expressed by the subtitle "Global Transdisciplinary Roadmap," the chapters provide a schedule of how critical questions may be answered, in particular by transdisciplinary case studies. The vision is to accomplish mutual learning and consensus building among the key stakeholders of the phosphorus supply–demand chain. This may be valuable not only for the members of the Global TraPs project or those who are interested in sustainable phosphorus management, but also for scientists and key stakeholders who are interested in sustainable resources management.

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