



Dr. Amit Roy (IFDC) has accepted co-leadership

A principal aspect of the Global TraPs project is that it is designed with co-leadership, that is, a leader from academia and from practice at each level of the project. A critical first step in assembling the core project leadership has been to find a committed, engaged partner from practice who would serve as the principal leader from practice for the lifespan of the project.

We are pleased to announce that IFDC, represented by Dr. Amit Roy, will join ETH Zürich, represented by Dr. Roland Scholz, in leading the Global TraPs project. On February 1, Dr. Roy and his team members Sampson Agyin-Birikorang, Deborah Hellums, Steven Van Kauwenbergh, John Shields, and Upendra Singh met with project leader Roland Scholz and project manager Andrea Ulrich at IFDC headquarters at Muscle Shoals, Alabama. They held in-depth discussions about the goals, outcomes and methodology of Global TraPs. On February 3, Dr. Amit Roy accepted the principal practice leadership role. Below is a joint statement from the project leaders.

We are also delighted to announce that Dr. Roy will join and preside over the first Global TraPs steering board meeting on March 31 at ETH Zurich.



"Phosphorus is one of the key nutrients necessary to human, animal and plant life. Phosphorus is also a finite resource that must be used more effectively and efficiently. By focusing on phosphorus from the supply chain perspective, the Global TraPs initiative seeks to bring greater understanding to a number of issues that confront humanity and our environment. We welcome your interest and involvement."

Dr. Amit Roy and Dr. Roland W. Scholz

Dr. Amit Roy has been the president and Chief Executive Officer of IFDC since 1992. Under his leadership, IFDC's programs have broadened to help create sustainable agricultural productivity around the world, alleviating hunger and poverty and ensuring global food security, environmental protection and economic growth.

Roy's work has taken him to more than 100 countries. He is now leading IFDC in the development of the next generation of fertilizers, which will more effectively release nutrients when crops need them. Roy is also working to expand IFDC's successful fertilizer deep placement technology (FDP) from Bangladesh to Sub-Saharan Africa.

Before coming to IFDC, Roy was a process engineer at the Georgia Institute of Technology in Atlanta. While at Georgia Tech, he developed an innovative thermal storage system for a solar energy power plant and researched basic premises for converting water and carbon dioxide into useful fuels using high temperature solar energy. He also developed an innovative heat shield that was used by NASA in the U.S. Space Shuttle program to protect critical optical and electronic components of the shuttle.

Roy earned a doctorate and a master's degree in chemical engineering from Georgia Tech. There, he served as a charter member of the Lions Club and was elected to the Graduate Student Senate. He received a bachelor's degree with honors in chemical engineering from the Indian Institute of Technology in Kharagpur, India.

Global TraPs & USGS

On February 2, Prof. Roland Scholz, Prof. Wellmer (former head of BGR), and Andrea Ulrich visited the United States Geological Survey (USGS) National Minerals Information Center (NMIC) at their headquarters in Reston, Virginia during their weekly Minerals Information Seminar Series (MISS) meeting. Prof. Scholz and Prof. Wellmer introduced the Global TraPs project to more than 50 on-site and Denver office researchers through conference phone and WebEx. The NMIC division of USGS expressed strong interest in participating in Global TraPs. USGS-NMIC plans to define its role over the next two months.

International Fertilizer Industry Association (IFA)

IFA will support the project and intends to participate in some of the nodes. Director General Luc Maene will serve as a member of the practice advisory board.

Further people and institutions joining TraPs

Sebastian Petzet, Institut IWAR, Wastewater Technology, Technische Universität Darmstadt, Germany.

Dr. Cynthia Carliell-Marquet, Civil Engineering, University of Birmingham, UK.

Prof. Greg Morrison, Civil and Environmental Engineering, Chalmers University, Sweden.

Global TraPs workshop at the ASU Sustainable P Summit

Scientists, engineers, artists, educators, and others gathered in Tempe, AZ for the first [Sustainable P Summit](#), February 3-5. ASU organized a 3-day program of panel sessions and workgroups. It provided 'fertile ground' for participants to discuss the current state of research and practice with respect to P use and how humans can shift to more sustainable practices.

Conference organizers encouraged workgroups to discuss current and imaginative approaches for improving how humans manage P. Workgroups focused on topics such as sustainable agriculture,

recycling and efficiency strategies, sustainable future scenarios and situations in developing countries. This led to workgroup development of chapter outlines about innovative, creative perspectives and approaches for investigating and managing P as we move forward. For example, a workgroup focusing on scenario-building envisioned a future where each person has a P credit card and houses are equipped with standardized systems to capture human waste.

Conference organizers asked each workgroup to draft an outline about its topic that can be developed into a chapter of a book to be published later this year. A number of local artists also became involved and, by connecting with researchers before the conference to learn about issues around P use. Each artist created interpretive pieces that were displayed in a gallery arrangement during the last afternoon of the conference. An outcome of the summit was a consensus statement which you can read on the [ASU homepage](#). Presentations of GT members can also be found there.

The Global TraPs workgroup was comprised of Braden Allenby, Donald Burt, Marion Dumas, Patrick Heffer, Zhengyi Hu, Roland Scholz, Nat Springer, Andrea Ulrich, David A. Vaccari, and Friedrich-Wilhelm Wellmer. An outcome of the workshop was a list of "Global TraPs Workshop Propositions" (below).

Global TraPs Workshop Propositions

- The production of phosphorus has mostly been demand-driven thus it is inappropriate to use the Hubbert curve model to make future production projections. Currently, we cannot make reliable estimates of resource lifespan.
- The question of P supply concerns the cost of accessing P in different forms and in different places and not absolute scarcity.
- The global Reserve:Consumption ratio says little of the resource's lifespan because reserves are dynamic and are poorly related to the total resource.
- In order to improve and maintain the resilience of food systems in all societies, it is important to consider not only the continued supply of a commodity such as phosphate rock, but also the supply of new technology and policy options that can respond to unforeseen problems.
- To help us in this direction, research on the interaction of multiple material flows as driven by economies and institutions is warranted, as well as the development of technological options.
- A transdisciplinary process that includes the knowledge of industry, other stakeholders and science is necessary to provide satisfying and sufficient answers to the above questions.

March 31st/ April 1st 2011 Kick-off leadership meeting

People playing lead roles in the Global TraPs project meet in Zurich on March 31 and April 1. The kick-off will involve one and a half days of workshops, with opportunities for small group meetings of the local steering board and nodal working groups. The kick-off will be organized around two priorities: to jointly elaborate the project strategy and to review project roles and leadership interests. Specific goals of the March/April meeting are:

- Developing guiding questions, methodology and outcomes for the overall project
- Defining foci, goals, and tasks for node work
- Discussing and defining what transdisciplinarity means on all levels of the project
- Building a virtual communications platform for participants
- Defining critical questions that relate to issues such as geopolitics, and north-south justice
- Defining the roles and responsibilities of steering board members and node coordinators
- Identifying additional funding needs and resources

A mosaic of efforts

Global TraPs project activities will often work in concert with the efforts of other related initiatives. Members of the International Transdisciplinary Network ([ITdNet](#)) for example, will participate on a transdisciplinary node of Global TraPs to help guide project processes. ITdNet is preparing to create a program for an initial training network that would work in concert with Global TraPs. Another example of a related project is the Global Phosphorus Research Initiative ([GPRI](#)), which is facilitating collaboration of researchers around P use over the long term. The 5-year Global TraPs project can complement this work. Some members of GPRI will participate in Global TraPs, including Dana Cordell and Stuart White. Dana and Stuart have offered to host the third Global TraPs steering board meeting in conjunction with the 2nd Sustainable Phosphorus Summit in early 2012 in Sydney. And, whenever possible, Global TraPs will actively participate in meetings about phosphorus use around the globe, such as the recent Sustainable P Summit organized by [ASU School of Life Sciences](#).

Phosphorus Phact

The most talked-about P trivia at the ASU 'Sustainable P Summit' was NASA's discovery of a microbe that is "thriving and reproducing" by substituting arsenic for P in its cell components (see [NASA](#)). This finding has recently been disputed.

Dates to remember

- March 31 – April 1: Global TraPs leadership kick-off, ETH Zurich.
- August 29: Global TraPs Preconference Workshop. Precedes [EAAE 2011 Congress](#): Change and Uncertainty, August 30–September 3. Both events will be held at ETH Zurich.

Contacts

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For updates about the Global TraPs effort, visit our website:

»» <http://www.uns.ethz.ch/gt>

Appendix: What is transdisciplinarity?

ETH Zürich definition

While there have been different interpretations of transdisciplinarity, the Global TraPs project employs transdisciplinary processes that involve representatives from academia, industry, government, administration, different stakeholder groups and the public at large. Such society-science collaborations emphasize mutual learning, joint problem definition and knowledge integration. Transdisciplinary processes seek to produce relevant, socially robust orientations (see below) that also feed back to scientific knowledge generation and theory building.

Take a look at the [Global TraPs website](#) for more details about how the concept of transdisciplinarity has been used and has evolved in recent years.

Not our definition

“A transdisciplinary approach dissolves boundaries between disciplines“

From a research perspective, transdisciplinarity (Thompson Klein et al. 2001)

- Organizes processes of mutual learning among science and society
- Is an appropriate “research paradigm that better reflects the complexity and multidimensionality of sustainability” (Martens, 2005)
- Integrates knowledge and values from society in research
- Has been declared as the appropriate methodology by which a sustainable development should be investigated and promoted (Scholz & Marks 2001)
- Is different from triple-helix shaped Dutch transition management (Leydesdorff & Etzkowitz)
- (Best) operates in a non-politicized and precompetitive arena/learning forum

Transdisciplinary processes are characterized by

- Joint processes initiated by non-academia (government, industry, public, NGOs) or scientists on an “ill-defined”, socially relevant, real-world problem which includes challenging scientific questions
- Joint leadership on equal footing from stakeholders and scientists for the process/project
- Joint problem definition (including system boundaries)
- Joint responsibility but taking different/complementary roles
- A method-based construction of scenarios, science/data and stakeholder evaluation, including discourse and negotiation process
- The construction of “robust orientations” (“socially robust knowledge” Gibbons & Nowotny, 2001) for the development of the case as outcome

Products and functions of transdisciplinary processes: Td Processes

1. Organize processes of mutual learning among participants from science and society
2. Provide socially robust orientations (“socially robust solutions”)
3. Serve for
 - Capacity building
 - Consensus building
 - Mediation
 - Legitimization

A ,robust orientation‘

1. Meets state of the art scientific knowledge
2. Has the potential to attract consensus, and thus must be understandable by all stakeholder groups
3. Acknowledges the uncertainties and incompleteness inherent in any type of knowledge about processes of the universe
4. Generates processes of knowledge integration of different types of epistemics (e.g. scientific and experiential knowledge, utilizing and relating disciplinary knowledge from the social, natural, and engineering sciences)
5. Considers the constraints suggested by the context of both generating and utilizing knowledge.

Suggested reading

Posch, A. & Scholz, R.W. (Eds.) (2006). Applying transdisciplinary case studies as a means of organizing sustainability learning. *International Journal of Sustainability in Higher Education*, special issue, 7 (3).

Scholz, R. W. (2011). Transdisciplinarity for environmental literacy (Chapter 15). In: *Environmental Literacy in Science and Society: From Knowledge to Decisions*. Cambridge: Cambridge University Press. To be published.