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Spring in the Ötztal, Austria (J. Halbe)

The Society

The Integrated Assessment Society is a not-for-profit entity created to promote the community of inter-disciplinary and disciplinary scientists, analysts and practitioners who develop integrated assessment. The goals of the society are to nurture this community, to promote the development of IA and to encourage its wise application.

Integrated Assessment Defined

Integrated Assessment (IA) can be defined as the interdisciplinary process of integrating knowledge from various disciplines and stakeholder groups in order to evaluate a problem situation from a variety of perspectives and provide support for its solution. IA supports learning and decision processes and helps to identify desirable and possible options for addressing the problem. It therefore builds on two major methodological pillars: approaches to integrating knowledge about a problem domain, and understanding policy and decision making processes. IA has been developed to address issues of acid rain, climate change, land degradation, water and air quality management, forest and fisheries management and public health.

Feature

Moving Towards a New Global Change Science Through Demonstration Projects

In light of unprecedented and accelerating environmental and socio-economic changes, a research proposal on new approaches to global change science has been developed by TIAS and the European Science Foundation-Forward Look initiative, Responses to Environmental and Societal Challenges for our Unstable Earth (www.esf.org/rescue). The RESCUE initiative is a response to the need to develop new approaches at the interface of science, policy and education that identify and implement solutions to these persistent problems of unsustainability (Pahl-Wostl et. al. 2012).

The RESCUE initiative points directly to an urgent need for the following changes within science:

- Integration of natural and social sciences including the humanities already at the stage of framing research questions;
- Improvement of the effectiveness of the science-policy interface and support for engaged research that does not proceed detached from real world problems and processes;
- Development of new inter- and transdisciplinary methodologies and knowledge to address global unsustainability and produce appropriate knowledge for action;

Together with these changes, a fundamental transition is needed in education and training programmes in order to train a new generation of scientific scholars and practitioners to both stimulate these changes and be able operate within this new environment. Furthermore, a revolution in the funding programs and incentive structures in science is required to make the change happen.

Meeting these needs through a global network of long-term demonstration projects was the focus of a webinar organized by the Integrated Assessment Society (TIAS) in July 2012 based on the report of the ESF/COST foresight initiative RESCUE.

Long-term, regionally-based **demonstration projects**, funded for a period of at least 10 years, can demonstrate how new approaches to research and capacity building begin a process of learning and of transitions to sustainability. A long-term commitment is essential to build trust and the capacity to communicate across scientific disciplines and across science, policy and practitioner communities.

Demonstration projects should involve:

- **Shared problem identification:** A structured phase of pre-project deliberation involving researchers, funders and stakeholders.
- **A shared vision** developed between all stakeholders within all projects to guide the research and implementation and regularly updated based on the results of the project.
- **Creation of institutional space** to develop epistemology, methodology and influence of transdisciplinary research and practice.
- **Time for thought:** synthesis is an essential phase (or part of the cycle) – ‘knowing what is known’ in transdisciplinary research is not the same as in disciplines. It is transformative and contested, not incremental.

A global network of such projects could be realized in a stepwise fashion using a flexible approach. The projects funded should be **long-term initiatives** that analyse and build the capacity of regions to deal with global environmental change.

A project network can be organised around a core module that focusses on the development of shared conceptual and methodological frameworks, the establishment of shared data and knowledge bases and monitoring of the progress of initiatives that allow learning exchange and knowledge integration.

Support should be given to “laboratories” for developing, testing and monitoring experience with integrated methodologies, where experimentation with various approaches is encouraged. Viable methodologies that generate interdisciplinary and transdisciplinary knowledge and integrate various knowledge cultures are not developed in the abstract, but in practice. Integrating education and exchange programs for academia, policy and practitioners should be a component of all projects.

An **open global sustainability learning platform** should be implemented to connect projects funded under the umbrella of long-term initiatives. Such a platform should be open to diverse transdisciplinary projects operating at different levels, that also meet certain access criteria.

There has been much emphasis on analysing deficiencies in global change science and developing recommendations in recent years. Insights gained are not entirely new. It is time to stop discourse on what should be done and to move finally towards real action. The authors urge global and national funding organizations to launch new innovative programs taking into account the proposals made above.

References

Pahl-Wostl, C., Giupponi, C., Richards, K., Binder, C., de Sherbinin, A., Sprinz, D., Toonen, T. and van Bers, C. (2012). Transition towards a new global change science: Requirements for methodologies, methods, data and knowledge. *Environmental Science and Policy Journal*.

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Literature Preview

New article on management paradigms in natural resources management

Halbe, J., Pahl-Wostl, C., Sendzimir, J. and Adamwoski, J.. In press. Towards Adaptive and Integrated Management Paradigms to Meet the Challenges of Water Governance. *Water Science & Technology*.

Paradigms reflect our basic assumptions about how the world works, perceived risks, our goals, and the strategies we consider to achieve these goals. As long as paradigms guide our actions in an effective way, they often remain at an unconscious level. However, paradigms can also be challenged if problems occur such as conflicts or non-attainment of goals. Paradigms influence also the design of resource management and governance systems. In particular, participatory and integrated resource management has to deal with conflicting paradigms held by stakeholders.

The article presents a methodology to analyse paradigms related to resource management and governance systems. The methodology helps to analyse underlying paradigms of stakeholders that might cause misunderstanding and conflict. For instance, stakeholders with a “control floods paradigm” may be more interested in the protection of values through the construction of dikes and minimization of flood risks.

An “adapt to floods paradigm” however considers the controlled flow of water between the river and surrounding landscape by using an adaptive management approach. Both kinds of paradigms might be effective for application in specific areas. For example, an “adapt to floods paradigm” can be applied in rural areas where retention areas are available, while a “control floods paradigm” is more likely to be implemented in urban areas with fewer adaptation options. The methodology presented allows for the elicitation of these *sub-system paradigms* and their coordination through an *overall-system paradigm* encompassing integrated and adaptive management. While subsystem paradigms are applied by various stakeholders, an overall-system paradigm defines the general character of the resource management and governance system. Thereby, an “integrated and adaptive management *overall-system paradigm*” increases the adaptive capacity of the management and governance system as it allows for a diversity of paradigms at the subsystem level.

This methodology helps policy-makers to consider various sub-system paradigms and develop policies that coordinate these sub-system paradigms in an integrated way. The methodology can also be applied by planners of a participatory process in order to elicit the diverging paradigms of stakeholders at an early stage. Based upon such an analysis, the different paradigms can be addressed early in the process.

The methodology is based upon a participatory model building approach to elicit and investigate paradigms held by stakeholders. These paradigms are set in a larger context through the application of the Management and Transition Framework (MTF), an analytical tool for the analysis of management and governance systems. The MTF also allows for the identification of transition pathways towards sustainable resource management. As an example, this tool has been applied to flood management in the Tisza Basin. Future research will apply and further develop this methodology in other contexts and regions with issues related to natural resources management.

New Projects



WaterNeeds: Exploring the role of ecosystem services and environmental hazards in sustainable water resources management

www.waterneeds.uos.de (online in May 2013)

Overcoming the trade-offs between human and environmental water needs in times of global change is a focus of the *WaterNeeds* project funded by the German Research Foundation and initiated this year by the Institute of Environmental Systems Research in Osnabrück. The focus of the project is on the role of ecosystem services and environmental hazards.

Different case studies across Europe, South Africa, China, and Australia will be compared according to relevant institutional settings important for sustainable and adaptive water resources management in order to fulfill the requirements for human and environmental water needs.

The sustainable management of water resources in times of global change is one of the most pressing challenges of the 21st century. Alarming trends such as water shortages and pollution, climate change, unprecedented socio-economic growth and deterioration of ecosystem integrity increase the pressure on water quality and quantity. Often, socio-economic requirements (e.g., water for agriculture or industrial usages, sanitation and drinking) are preferred over water for ecological processes and functions. These current trends might be profitable in the short-term but are not sustainable in the long term.

The importance of ecosystem service for human well-being can be expressed by the concept of ecosystem services. This concept provides a strategy for the integrated management of land, water and living resources that promotes sustainable use and conservation in an equitable way and explains the effects of human policies and actions on natural systems and human well-being. The novel approach of WaterNeeds combines the analyses of governance and management characteristics and their impacts on ecosystem services and environmental hazards embedded in various social and ecological contexts. The main research objectives of WaterNeeds are therefore:

- to analyze the **conditions under which a reframing of water management objectives** in terms of an integrated perspective on ecosystem services and environmental hazards support transitions towards adaptive and integrated water governance and management; and
- to (further) **develop and test a conceptual and methodological framework** for analyzing transitions towards adaptive and integrated water governance and management.

The project takes up these scientific challenges in order to contribute to a better understanding of the linkages between the characteristics of governance systems, the nature of different ecosystem services and the sustainable management of water resources.

The results will be used to improve the management of ecosystem services and the diverse water requirements of both human and ecological systems. The project will identify the major drivers for and barriers to adaptive and integrative water resources management. Both scientists and policy makers will benefit from this analysis. However, scientists must continue to report their findings not just in the scientific literature. They need to be proactive in discussing the implications of their work with water managers and policy makers. Furthermore, it is crucial to acknowledge that the science-policy link does not involve a one-way flow. A science-policy dialogue requires a refinement of questions and approaches by both sectors in order to better understand the human and ecological water needs and the various ecosystem services improving human well-being.

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TIAS Highlights

IMPACTS WORLD 2013 conference

Potsdam, Germany, May 27-30, 2013

The IMPACTS WORLD 2013 conference supports the development of a new vision for climate impacts research by laying the foundations for regular, community-driven syntheses of climate change impact analyses. It will bring together leading scientists and decision makers from local to international levels.

A primary goal of the meeting is to prepare the way for significant advances in the following:

- A programme for perpetual cross-sectoral impacts modelling improvement, inter-comparison and synthesis that will establish the necessary quantitative knowledge base in order to assess the risk of overlapping and amplifying climate change impacts, ensure quality control of models, and gain a better understanding of the many sources of uncertainty.
- Coherent regional representations of climate impact studies including the spatial distribution of negative and positive effects.
- An ongoing observation programme with a wide spatial coverage across sectors in order to monitor crucial changes and provide coherent data for model validation.
- Ensuring consistency in data (for instance, through coordinated community-wide efforts on hot-spot mapping such as CLIMSAVE www.climsave.eu).

Visit the conference website for further details:
www.climate-impacts-2013.org/

5th Delft Symposium: Developing Capacity from Rio to Reality: Who is taking the lead?

Delft, The Netherlands, May 29-31, 2013

The Delft Symposium is the international forum for water users, development practitioners, researchers, policy makers and capacity development specialists to discuss the challenges, current realities and new opportunities for knowledge and capacity development in the water sector.

The Symposium will cover the various levels that need to be addressed when dealing with capacity development including the knowledge and capacity of individuals, organisations, sector(s) and the enabling environment.

In order to address the main question *Who is taking the lead in knowledge and capacity development across sectors, disciplines and other boundaries so it can be leveraged to become more effective and efficient?*, the Symposium will focus on the following three themes:

- Challenges for water sector capacity development
- Landscape of experiences with capacity development
- Innovation in water sector capacity development

For further information, please visit: www.unesco-ihc.org/CD-Symposium/Themes-of-Symposium.

IAIA13 Impact Assessment: The Next Generation

Calgary, Canada, May 13-16, 2013

The International Association for Impact Assessment announces its annual conference, „Impact Assessment: the Next Generation“ (www.iaia.org/conferences/iaia13/)

The conference theme embraces the impact of current global change now and in the coming decades and how impact assessment (IA) itself will evolve as a result. The “next generation” refers to both a new generation of practitioners and new approaches to IA practice internationally to address issues of global concern. The next few decades are seen as a nexus of environmental effects to the global commons (e.g., climate change, biodiversity, soil degradation and loss, ocean

productivity, loss of aboriginal cultures) coupled with increased urban, human and economic development. These global changes have profound implications to the trajectory of IA and of nations.

For more information: <http://www.iaia.org/conferences/iaia13/>

Transformation in a Changing Climate

Oslo, Norway, June 19- 21, 2013

The “Transformation in a Changing Climate” conference will take place at Georg Sverdrups Hus at the University of Oslo.

The event will bring together diverse perspectives on deliberate transformation in response to climate change. The event will serve as a creative, innovative and inspirational gathering that catalyzes new insights on transformation processes and the implications for research, policy and practice. Such insights will contribute to international transdisciplinary research initiatives, including *Future Earth*.

The conference will include a wide range of both conventional and unconventional activities, events and workshops based around the theme of transformation.

Conference Themes:

- The Economics of Transformation
- The Politics of Transformation
- Technical and Infrastructural Transformation
- Urban Transformation
- Community-based Transformation
- Transformative Learning and Leadership
- Social-ecological Transformation
- Transformation of Values, Norms and Worldviews
- Transformation of Research and Policy
- Transformative Communication
- The Art of Transformation

Visit the conference website: www.iss.uio.no/transformation

20th International Congress on Modelling and Simulation (MODSIM2013)

Adelaide, South Australia, December 1-6, 2013

Organized by the Modelling and Simulation Society of Australia and New Zealand, the Australian Society for Operations Research and the DSTO led Defence Operations Research Symposium, the theme for this MODSIM2013 event will be *Adapting to Change: the multiple roles of modelling*.

There are a range of streams that may be of interest to TIAS members including "Environment and Ecology", "Operations Research" and "Participatory decision making and modelling social systems".

Call for abstract submissions: High quality abstracts are invited (max 250 words) on all aspects of modelling and simulation to a relevant session. Abstracts must be submitted by 30 April 2013.

Call for sessions: Proposals for session topics for MODSIM 2013 can be submitted by sending a title and a one paragraph or more description along with your contact details to congress convenors John Boland and Julia Piantadosi (modsim2013@unisa.edu.au).

Conference website: www.mssanz.org.au/modsim2013

International Conference: “Water in the Anthropocene: Challenges for Science and Governance. Indicators, Thresholds and Uncertainties of the Global Water System”

Bonn, Germany on 21-24 May 2013

The conference is organized by the Global Water System Project and its International Project Office based in Bonn, Germany. It is kindly supported by the German Federal Ministry of Education and Research (BMBF). The focus of the conference is to address the global dimensions of water system changes due to anthropogenic as well as natural influences.

The conference will provide the platform to present global and regional perspectives of world wide experiences on the responses of water management to global change in order to address issues such as variability in supply, increasing demands for water, environmental flows, and land use change. It will help to build links between science and policy and practice in the area of water resources management and governance, related institutional and technological innovations and identify in which ways research can assist policy and practice in the field of sustainable freshwater management.

Participants from all continents and dealing with various water-related problems are expected to attend this conference.

Visit the conference website for further information: <http://www.gwsp.org/conference2013.html>

New Publications

Bammer, G. 2013. **Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems**. ANU E Press.

“This book provides collaborative research teams with a systematic approach for addressing complex real-world problems like widespread poverty, global climate change, organised crime, and escalating health care costs. The three core domains are Synthesising disciplinary and stakeholder knowledge, Understanding and managing diverse unknowns, and Providing integrated research support for policy and practice change.

Each of these three domains is organised around five questions For what and for whom? Which knowledge, unknowns and aspects of policy or practice? How? Context? Outcome? This simple framework lays the foundations for developing compilations of concepts, methods and case studies about applying systems thinking, scoping and boundary setting, framing, dealing with values, harnessing and managing differences, undertaking dialogue, building models, applying common metrics, accepting unknowns, advocacy, end-user engagement, understanding authorisation, dealing with organisational facilitators and barriers, and much more.

The book makes a case for a new research style—integrative applied research—and a new discipline of Integration and Implementation Sciences or I2S. It advocates for progressing these through an I2S Development Drive. It builds on theory and practice-

based research in multi-, inter- and transdisciplinarity, post-normal science, systemic intervention, integrated assessment, sustainability science, team science, mode 2, action research and other approaches.“

ISBN: 9781922144270

Giaoutzi, M., and Sapio, B. 2012. **Recent Developments in Foresight Methodologies (Complex Networks and Dynamic Systems)**. Springer.

“Foresight is an area within Futures Studies that focuses on critical thinking concerning long term developments, whether within the public sector or in industry and management, and is something of a sub-section of complexity and network science. This book examines developments in foresight methodologies and relates in its greater part to the work done in the context of the COSTA22 network of the EU on Foresight Methodologies.

Foresight is a professional practice that supports significant decisions, and as such it needs to be more assured of its claims to knowledge (methodology). Foresight is practiced across many domains and is not the preserve of specialized ‘futurists’, or indeed of foresight specialists. However, the disciplines of foresight are not well articulated or disseminated across domains, leading to re-inventions and practice that does not make best use of experience in other domains. The methodological development of foresight is an important task that aims at strengthening the pool of the tools available for application, thereby empowering the actors involved in foresight practice.

Elaborating further on methodological issues, such as those presented in the present book, enables the actors involved in foresight to begin to critique current practice from this perspective and, thirdly, to begin to design foresight practice. The present trends towards methodological concerns indicates a move from ‘given’ expert-predicted futures to one in which futures are nurtured through a dialogue among “stakeholders.”

The book has four parts, each elaborating on a set of aspects of foresight methodologies. After an introductory section, Part II considers theorizing about foresight methodologies. Part III covers system content issues, and Part IV presents foresight tools and approaches.“

ISBN: 9781461452140

McNeill, D., Nesheim, I., Brouwer, F. 2012. **Land Use Policies for Sustainable Development: Exploring Integrated Assessment Approaches**. Edward Elgar Publishing.

“The urgent need to enhance sustainable development in developing countries has never been greater: poverty levels are growing, land conversions are uncontrolled, and there is rapid loss of biodiversity through land use change. This important and timely book highlights the need for integrated assessment tools for developing countries, considering the long-term impacts of decisions taken today. The success of land use policies has in the past often been hampered by the fact that we simply do not know enough about their impact on sustainable development across developing countries. This book contributes to bridging this knowledge gap whilst facilitating the successful design and implementation of land use policies.

The challenge of land use changes in response to changes in the policy environment - macro policy, agricultural and forest policy, environmental policy - is explored with a focus on the

South. Detailed case studies encompassing seven countries across Africa, Asia and Latin America are presented via a common framework of analysis. In each case, sustainable development concerns are identified from environmental, economic and social perspectives. The interrelated causes of these problems are analysed by identifying key drivers and relevant land use policies, and the potential impact of prioritized land use policies are then discussed.

This important book will prove invaluable to academics, researchers, postgraduate students and policy makers concerned with land-use planning, sustainable development and environmental studies.“

ISBN: 9781849802925

Eric Brousseau, Tom Dedeurwaerder, Pierre-Andre Jouvét. 2012. **Global Environmental Commons: Analytical and Political Challenges in Building Governance Mechanisms**Oxford : Oxford University Press.

“Environmental challenges, and the potential solutions to address them, have a direct effect on living standards, the organization of economies, major infrastructures, and modes of urbanization. Since the publication of path-breaking contributions on the governance of environmental resources in the early 1990s, many political initiatives have been taken, numerous governance experiments have been conducted, and a large multi-disciplinary field of research has opened up.

This interdisciplinary book takes stock of the knowledge that has accumulated to date, and addresses new challenges in the provision of environmental goods. It focuses on three essential dimensions with respect to governance. First, it addresses the issue of designing governance solutions through analyzing systems of rules, and levels of organization, in the governance and management of environmental issues. Second, it draws renewed attention to the negotiation processes among stakeholders playing a crucial role in reaching agreements over issues and solutions, and in choosing and implementing particular policy instruments. Finally, it shows that compliance depends on a combination of formal rules, enforced by recognized authorities, and informal obligations, such as social and individual norms.

The evolution of the research frontiers on environmental governance shows that more legitimate and informed processes of collective decision, and more subtle and effective ways of managing compliance, can contribute to more effective policy. However, this book also illustrates that more democratic and effective governance should rely on more direct and pluralistic forms of involvement of citizens and stakeholders in the collective decision making processes.“

ISBN: 9780199656202

Courses

Summer School 2013: Addressing climate change challenges from a multidisciplinary perspective

8th- 10th of July in Palacio Miramar - San Sebastian

The objective of the summer school is to offer an updated and multidisciplinary view of the ongoing trends in climate

change research. The BC3 summer school is organized in collaboration with the University of the Basque Country and aims to become a high quality and excellent summer course gathering leading experts on the field and students from top universities and research centres worldwide.

This year the 2013 summer school (July 8th, 9th, 10th) entitled "Addressing Climate Change Challenges from a Multidisciplinary Perspective" will be structured similarly to IPCC (International Panel for Climate Change) assessment reports. For this purpose, we have invited researchers that can help us to better understand the biophysical part behind the economics of climate change. The course will have three main sessions/days, each of them focusing in one of the subjects of the IPCC Working Groups: climate science, adaptation and impact and mitigations of climate change. An IPCC-member scientist will be a keynote lecture for each session. After that, top leading invited speakers will cover in more detail the main key issues in the climate change research agenda.

The topics that will be covered this year are: arctic sea ice dynamics, ocean circulation models and its implications for state-shift events, sea level rise projections and implications, impacts of climate change on water, food and health, mitigation options, technologies and cost, climate policies at global level and economic instruments.

The school is open to Master students, PhD students, postdoctoral fellows and other researchers as well as policy makers interested in acquiring a deep understanding of climate change and the policies designed to fight it.

PhD students and postdoctoral participants will have the opportunity to present their work in a specific poster session and get feedback from the faculty.

For further information: www.bc3research.org/summerschool

The advisory board acts in an advisory capacity on issues affecting the Society, supports the executive in the taking of collective decisions, and helps to promote the activities of the Society.

TIAS Blog

If you wish to announce events, forthcoming publications or any other TIAS-related news, you might consider to post this information on the new TIAS blog:

<http://tiasonline.wordpress.com/>

Please send your entry to Caroline van Bers (info@tias-web.info) or Johannes Halbe (jhalbe@uos.de).

Annual General Meeting 2013

The TIAS AGM will be held in June this year. The date will be announced to all members in mid-May.

Call for Submissions

TIAS Members are encouraged to submit feature articles and/or news items for future issues of TIAS Quarterly. Contact Caroline van Bers: info@tias-web.info

TIAS News

The TIAS Executive Board, Claudia Pahl-Wostl, Jan Bakkes and Jill Jäger welcomed the following new and returning advisory board members in 2012. They are:

Dr. John Callewart, Graham Institute, University of Michigan, USA

Mr. Peter de Smedt, Research Centre of the Flemish Government, Belgium

Mr. Dirk Günther, German Federal Environment Agency, Germany

Dr. Matt Hare, seeconsult GmbH, Germany

Dr. Rik Leemans, Environmental Systems Analysis Group, Wageningen University, The Netherlands

Dr. Pim Martens, International Centre for Integrated Assessment and Sustainable Development (ICIS), Maastricht University, The Netherlands

Dr. Laszlo Pinter, Measurement and Assessment Program, International Institute for Sustainable Development, Winnipeg, Canada

Dr. Stefan Reis, Centre for Ecology & Hydrology, UK

Dr. Joan David Tàbara, Institute of Environmental Sciences and Technology (IEST), Autonomous University of Barcelona, Spain

Dr. Hedwig van Delden, Research Institute for Knowledge Systems, The Netherlands

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TIAS Membership fees:

Individuals: € 50 / US\$ 65 annually

Students € 15/ US\$ 20 annually

Institutions: € 200/ US\$ 250 annually