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World Water Forum, Mexico City (D.Petry)

## 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 and use 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.

## Feature

### Developing Coherent Global Scenarios in the Form of Interlinked Regional Scenarios for the Fourth Global Environment Outlook

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Since 1997, the United Nations Environment Programme (UNEP) has produced three Global Environment Outlook (GEO) reports and is currently developing a fourth (GEO-4), to be published in 2007. GEO provides an assessment of, and outlook for, the state of the global environment in a manner that links science with options for action. In GEO-4, this will partly be achieved through an 'Outlook' chapter that examines a set of scenarios extending to the year 2050, with a focus on the environmental implications of different societal priorities and choices. The chapter will build on four scenarios that were originally presented in GEO-3: Markets First, Policy First, Security First, and Sustainability First. The process of developing the GEO-4 Outlook component involves an international collaboration of quantitative and qualitative experts using a wide range of modelling and narrative tools. This paper discusses the theory and process behind the development of the GEO-4 scenarios.

The outlook component of the GEO reports explores possible futures with a focus on the environmental implications of various trends and societal choices. The intention has always been that it would build upon the analysis in the previous sections of the report, particularly the state and trends chapters, and contribute to the final, more policy oriented chapter. The actual nature of the outlook component has evolved markedly from report to report. Three areas in particular where this evolution has occurred are: 1) the balance between narrative and quantification, 2) the incorporation of participatory processes in the development of the outlook component, and 3) the use of a set of multiple, plausible futures vis a vis a single business as usual, best guess, or reference scenario. These reflect the broad trends in both the theory and practice of scenario development over the past decade.

GEO-3 was the first to take a more exploratory approach to the outlook, going beyond the baseline and policy variant approach adopted in the previous GEOs. It looked out to 2032, complementing the 30-year retrospective looking back to 1972, the founding year of UNEP, adopted in other sections of the report. The analysis explored consequences and implications of alternative, comprehensively defined pathways into the future. It considered four contrasting, yet all plausible scenarios for society, with a strong narrative component complemented by quantitative impact analysis. On the process side, a Core Scenario Group and regional scenario workgroups were established (UNEP, 2002, UNEP/RIVM, 2004). Since the publication of GEO-3, a number of other environmentally relevant scenario exercises have been completed. At the global level, the most notable of these are the global and sub-global scenarios of the Millennium Ecosystem Assessment (Millennium Ecosystem Assessment 2005; Millennium Ecosystem Assessment 2005). Within the GEO process itself, scenarios have been developed as part of the African Environmental Outlook (UNEP and AMCE 2002), the Caucasus Environment Outlook (UNEP 2002), the second GEO for the Latin America and the Caribbean (UNEP 2003), and GEO Andino 2003: *Perspectivas del Medio Ambiente* (PNUMA and Secretaría General de la Comunidad Andina 2003). The development of the outlook component of GEO-4 is benefitting from these and other recently completed and ongoing scenario activities<sup>2</sup>. Based on feedback from regional consultations held in late 2004, and a desire to focus on strengthening key components of the analysis, however, the decision was made to update and refine the GEO-3 scenarios rather than develop a new or adopt another scenario set. In particular, the GEO-4 process aims to build on the scenarios developed for GEO-3 in the following ways:

- improve the global-regional and regional-regional links;
- extend the time horizon from 2032 to 2050;
- improve and extend the quantitative aspects;
- extend the use of the scenarios for analysis of options for action;
- improve the communicability of the scenarios; and
- explore specific feedback loops between drivers and between outcomes and drivers within the scenarios.

The process of developing the GEO-4 scenarios is involving the participation of a wide range of experts from all parts of the world, with the intent to not only improve the scenarios themselves, but also to provide as many people as possible with ownership of the process and its outcomes.<sup>3</sup> The inner core of 4 includes a lead coordinator, co-coordinators for the narrative and quantitative components, and a representative from UNEP headquarters in Nairobi. Regional team leaders (1-2 per region<sup>4</sup>), quantitative modellers, and an expert on facilitating participatory processes, make up the remainder of the Chapter Working Group of approximately 15-20 persons. This core team provides a range of perspectives from across the regions, ages, genders, sectors, and disciplines. Recognizing the impossibility of the above groups to be truly representative or fully versed in all areas required for the development of the chapter, other regional and modelling experts are being called in to provide additional perspectives and expertise. The First Global & Regional Scenarios Development Meeting of GEO-4, held in September 2005, brought together regional teams, most members of the Chapter Working Group, representatives from other chapters of GEO-4, and several participants from the International Assessment of Agricultural Science & Technology for Development (IAASTD). This allowed the regional groups to work intensively on issues related to their individual region while, at the same time, benefiting from direct contact with the other participants. In total, over 90 people participated in the meeting.

Follow-up activities to date have included 5 regional meetings to further develop the regional aspects of the scenarios. From 6-10 March 2006, the core team met at UNEP headquarters in Nairobi as part of the 2nd Production and Authors Meeting for GEO4, where extensive discussions were held to explore: 1) the consistency between the storylines and the initial quantification, 2) the consistency between the regional stories, particularly to identify cases that affect the ability to tell coherent global stories in each of the scenarios, and 3) means to integrate the scenarios chapter with the other 9 chapters in the report. The outcomes of these meetings and further work until the end of March will be used to produce the first draft of the chapter, which will be available for external review at the end of April 2006.

The further development of the chapter will involve iterations of both the narrative and quantitative components of the scenarios, in response to internal and external reviews of drafts of the chapter, as well as regional consultations to be held in 2006. Further meetings at the global and regional levels with members of the core group, regional teams, and other experts, including a planned meeting on the linkages between environmental change and changes in human well being, will enhance the collaboration within and between these groups, which, in turn will enhance the final product.

Should you wish to learn more about this effort and keep up with its progress, please register: <http://dewa03.unep.org/geo/chapter9>.

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<sup>2</sup> Among the ongoing activities are the OECD's 2nd Environmental Outlook, the second African Environment Outlook, and the new International Assessment of Agricultural Science and Technology for Development. See Rothman (Kassel paper) and Millennium Project State of Future 2005 for more extensive lists of environmentally relevant scenarios.

<sup>3</sup>It is hoped that the regional teams and others will build upon the development of the chapter to produce related products highlighting and providing more detail on particular aspects of the scenarios that are of interest to their audiences. Due to space limitations, the actual chapter to appear in GEO-4 will necessarily need to present a summary of what is expected to be a rich and extensive set of underlying material.

<sup>4</sup>UNEP divides the world into 7 major regions: Africa, Asia & the Pacific, Europe, Latin America & the Caribbean, North America, West Asia, and the Polar regions. These are further sub-divided into 23 sub-regions. For Details: <http://www.unep.org/geo/region.htm>

## TIAS News

### TIAS workshop - Complexity and uncertainty, and a new role for models

A special TIAS session has been organised by Claudia Pahl-Wostl and Marcela Brugnach of the Institute of Environmental Systems Research to be held during this summer's iEMSS "Summit on Environmental Modelling and Software" in Burlington, Vermont in July (see "Events" listing). In this session the organizers investigate what complexity and uncertainty mean for models and the way we approach modelling. They aim to revise the assumptions upon which models are being built and used, and argue that the modelling activity needs to shift its goal of prediction to a new role: that of communication, exploration and understanding. In particular, the focus is on models and methods that allow a pluralistic representation of reality, embrace various types of uncertainties and ambiguities, and advance the modelling activity by combining it with other methods of knowledge integration. More information: <http://www.iemss.org/iemss2006>

### TIAS Annual Meeting

This year's TIAS Annual General Meeting took place online March 16 - 23. There were 27 registered participants for the electronic forum. Although an electronic meeting cannot replace a "live" meeting, it is an alternative forum that the society may have to fall back on in those years when a suitable related event (i.e. conference) attracting a sufficient number of TIAS members, is not available. Due to the widely dispersed membership of the society, the executive will aim to hold at least one live general meeting, followed by an online meeting or at least an electronic voting system in order to ensure that all members have an opportunity to participate. Minutes of the 2006 meeting will be available to members by mid-April.

## Events and Courses

(for events after August 2006 - see TIAS website)

4 - 5 April 2006, **Monitoring processes under the Water Framework Directive**. The workshop explores what tools to use, when to use them, and what challenges are likely to arise in the process. Workshop presented in the context of the Harmoni-CA Project. Osnabrück, Germany. For more information contact: Gyrite Brandt, [gbr@geus.dk](mailto:gbr@geus.dk).

4 - 8 April 2006, **International Symposium on Water and Land Management for Sustainable Irrigated Agriculture**, Adana, Turkey. Hosted by Cukurova University. For more information, <http://symp2006.cu.edu.tr> or contact the Symposium Secretariat: [yazarat@cu.edu.tr](mailto:yazarat@cu.edu.tr) or [symp2006@cu.edu.tr](mailto:symp2006@cu.edu.tr)

5 - 7 April 2006, **3rd Harmoni-CA Forum & Conference**, Osnabrück, Germany. The focus of the conference is set by the priorities within the **European Water Framework Directive** activities for 2006, including the design of monitoring programmes and the involvement of interested parties in the implementation process. As the need for support is high with the innovations of the WFD, new tools are needed to meet policy requirements. More information: <http://www.harmoni-ca.info/>

17 - 18 May 2006, **New water policies - the Water Framework Directive Symposium**. Barcelona. Spain. Organised by European Water Association and ADECAGUA (Spanish National Association). <http://www.ewaonline.de>

4 - 7 June 2006, **Participatory Approaches in Science and Technology (PATH) Conference**, Edinburgh, UK. Call for Proposals for Papers, Sessions and Posters. Deadline for submission: 13th January 2006. <http://www.macaulay.ac.uk/PATHconference/>

12 - 23 June 2006, **NECSI Summer School: Week One - Complex Physical, Biological and Social Systems; Week Two - Modeling, Networks and Evolution of Complex Systems**. Both programmes take place at MIT, Cambridge, Massachusetts, US. Each programme is the equivalent to a one-semester course in a one-week format. They may be taken independently or consecutively. For more information: <http://necsi.org/education/school/summer06.html>

25 - 30 June 2006, **International Conference on Complex Systems (ICCS)**. Boston, Massachusetts. For information: <http://necsi.org/events/iccs6/>

3 - 7 July 2006, **Third World Congress of Environmental and Resource Economists**, Kyoto, Japan. Deadline for Early Registration: April 30, 2006. More information: [wc3-info@congre.co.jp](mailto:wc3-info@congre.co.jp).

9 - 12 July 2006, 3rd Biennial meeting of the International Environmental Modelling and Software Society, "**Summit on Environmental Modelling and Software**", Burlington, Vermont, USA, <http://www.iemss.org/iemss2006>. (As part of the iEMSS conference, there will be a special TIAS workshop: Complexity and uncertainty, and a new role for models.)

15 - 19 July 2006, **2nd EuroScience Open Forum (ESOF)** will take place in Munich, Germany. [www.esof2006.org](http://www.esof2006.org)

19 - 22 August 2006, The Second International Conference on **Environmental Science and Technology** sponsored by the American Academy of Sciences will be held in Houston, Texas, USA. <http://www.aasci.org/conference/env/2006/index.html>

## Past Events

5th Emissions Trading and Carbon Markets, 21-22 November 2005. London, UK. The event provided strategic insights into the dynamics of the international carbon market. For more information on the outcomes: <http://www.euromoneyenergy.com/>

## Job Openings and Academic Programmes

The Catchment Science Centre at the University of Sheffield together with the UK Environment Agency is offering **six PhD Fellowships** (funded by European Commission Marie Curie programme) for research in the CatSci project to provide the scientific underpinning for the management of catchments in order to deliver good ecological quality in freshwater ecosystems. These Fellowships are available only to non-UK applicants, will start before 31st December 2006, and are 3-year fixed term appointments. For more information: <http://www.shef.ac.uk/csc/catsci.html>

Centre for Water Systems at the University of Exeter (UK) is offering a new **MSc in Integrated Urban Water Management**, beginning in October 2006. More information: <http://www.ex.ac.uk/cws>

## Recent Publications

**Newsletter of the Interdisciplinary Research Unit on Risk Governance and Sustainable Technology Development (ZIRN) and DIALOGIK g GmbH** Published four times a year online, the newsletter provides information about the research activities of these two organisations. To register: <http://www.dialogik-expert.de/en/list/list.htm>

New e-journal launched by the Institute for Environmental and Sustainability Communication (INFU) at the University Lüneburg, Germany, **Communication, Cooperation, Participation. Research and Practice for a Sustainable Future (CCP)**. The multi-lingual communication platform is creating a forum to discuss scientific papers and practical experiences in communication processes that engage questions regarding the future. For more information: [www.uni-lueneburg.de/infu/ccp/](http://www.uni-lueneburg.de/infu/ccp/)

**UNEP Trade and Economics Branch E-Bulletin: Issue No 18**, October-December 2005. Of special interest is the section on environmental and integrated assessment. <http://www.unep.ch/etb/publications/etbInforBul.php>

**7th edition of newsletter on the Human Dimension in Water Management** (focus on social learning and public participation) [http://www.harmonicop.info/\\_files/\\_down/\\_HDWMNewsletterNo7\\_December05.pdf](http://www.harmonicop.info/_files/_down/_HDWMNewsletterNo7_December05.pdf)

Special issue of "**Theory, Culture & Society**", edited by John Urry, and focusing on complexity, chaos, lock-ins...and society: <http://tcs.sagepub.com/content/vol22/issue5/>

**The European environment - State and outlook 2005** is the newest State of Environment report (No 1/2005) by European Environment Agency (EEA). The entire report is downloadable: [http://reports.eea.eu.int/state\\_of\\_environment\\_report\\_2005\\_1/](http://reports.eea.eu.int/state_of_environment_report_2005_1/) Of particular interest is the lengthy "**chapter**" on **Integrated Assessment** which includes sections on atmospheric environment, climate change, air pollution and health, aquatic environment, freshwaters, marine and coastal environment, terrestrial environment, soil, biodiversity, integration, and environment and economic sectors.

**Water Rights Reform: Lessons for Institutional Design** Edited by Bryan Randolph Bruns, Claudia Ringler, and Ruth Meinzen-Dick. 2005. Published by the International Food Policy Research Institute. To order: <http://www.ifpri.org/pubs/books/oc49.asp>

**Integrated River Basin Governance: Learning from International Experience.** Bruce Hooper. 2005. IWA Publishing. The book is designed to help practitioners implement integrated approaches to river basin management (IRBM), and to help the coming generation of senior university students learn how to design IRBM. To order: [http://www.iwapublishing.com/template\\_cfm?name=integrated\\_river\\_basin\\_governance\\_newspage](http://www.iwapublishing.com/template_cfm?name=integrated_river_basin_governance_newspage)

**Flood Hazards and Health: Responding to Present and Future Risks.** Edited by Roger Few and Franziska Matthies. 2006. <http://shop.earthscan.co.uk/ProductDetails/mcs/productID/601/>

**Environmental Management Systems: A Step-by-Step Guide to Implementation and Maintenance.** By Christopher Sheldon & Mark Yoxon. 2006. Earthscan Books. 3rd Edition. <http://shop.earthscan.co.uk/ProductDetails/mcs/productID/635/>

**Trading in Genes - Development Perspectives on Biotechnology, Trade and Sustainability,** Edited by Ricardo Melendez-Ortiz and Vicente Sanchez, 2005. Earthscan Books. <http://shop.earthscan.co.uk/productdetails/mcs/productid/473/>

**Sustainability Assessment - Criteria, Processes and Applications,** By Robert B. Gibson, Selma Hassan, Susan Holtz, James Tansey and Graham Whitelaw. Earthscan Books. <http://shop.earthscan.co.uk/ProductDetails/mcs/productID/>

**Sustainable Future for the Mediterranean - The Blue Plan's Environment And Development Outlook,** Edited by Guillaume Benoit and Aline Comeau. 2005. Earthscan Books <http://shop.earthscan.co.uk/ProductDetails/mcs/productID/667/>

**The Peri-Urban Interface: Approaches to Sustainable Natural and Human Resource Use** Edited by Duncan McGregor, David Simon and Donald Thompson, 2005. Earthscan Books. <http://shop.earthscan.co.uk/ProductDetails/mcs/productID/612>

## Interesting Links

RTD info - **Special issue on surveys about science.** Of interest to those working at the science/stakeholders interface. [http://europa.eu.int/comm/research/rtdinfo/special\\_euro/index\\_en.html](http://europa.eu.int/comm/research/rtdinfo/special_euro/index_en.html)

Participation is invited for a **regional dialogue** launched in the context of Nostrum-DSS Project. The initiative aims to contribute to the achievement of improved governance and planning in the field of **sustainable water management**, by establishing a network between the science, policy, and civil society spheres, by fostering active involvement of the relevant stakeholders, and through the development and dissemination of Best Practices Guidelines for the design and implementation of DSS tools for IWRM in the Mediterranean Area. More information: <http://www.feem-web.it/nostrum/index.php>

UNEP Economic and Trade Branch. **Towards an international framework for integrated assessment/sustainability appraisal.** A UNEP consultative meeting to discuss the possible development of an international framework for integrated assessment/

sustainability appraisal (IA/SA) was convened in September 2005. The initiative's overall objective is to agree on a common set of principles and produce reference materials for countries undertaking IA/SA that can be used in the formulation and design of policies, plans and programmes in support of sustainable development. Central to this initiative is a commitment to build countries' capacities to undertake IA/SA. For more information: <http://www.unep.ch/etb/events/framework.php>

UNEP Economic and Trade Branch. **Second Review Meeting on Integrated Assessment and Planning for Sustainable Development took place on 21-22 September 2005** in Geneva, Switzerland. The objective of this initiative is to promote integration of environmental, social, and economic considerations into national policy-making processes, through the use of Integrated Assessment and Planning. For more information and developments: [http://www.unep.ch/etb/events/2005IAPSD21\\_22Sep.php](http://www.unep.ch/etb/events/2005IAPSD21_22Sep.php)

Three short videos presenting the use of **companion modelling approaches for natural resource management and support to agricultural innovation in Vietnam** are available on-line at: [http://www.canal.ird.fr/canal.php?url=/sommaries/thema8\\_en.htm](http://www.canal.ird.fr/canal.php?url=/sommaries/thema8_en.htm)

## Call for Submissions

### Journal Submissions

The journal *Integrated Assessment* is seeking submissions for upcoming issues. Prospective authors may visit the website [www.iajonline.org](http://www.iajonline.org) for more details on manuscript submissions.

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### Articles & News Items

The editors of *TIAS Quarterly* have skipped one issue due out in January 2006, due to lack of feature article submissions. Rather than relying only upon open calls, specific individuals will be contacted in future to request articles on specific themes. Members of the IA community are nonetheless invited to submit feature articles and/or news items (events, publications, job openings) for publication in future issues of the *TIAS Quarterly*. For more information, please contact Caroline van Bers:

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### The TIAS Quarterly

The *TIAS Quarterly* is the newsletter of The Integrated Assessment Society.

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TIAS Membership information: <http://www.tias-web.info/>  
€ 40/year (students € 10/year)